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Regional disparities in price levels across the European Union

Bachelor thesis

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Abstract

Undisputedly, including price levels should be an integral part of any regional analysis. Currently, at the country level, purchasing power parities (or, in the case of the European Union, purchasing power standards) are used. However, these measures account only for one national parity in each country and do not reflect inter-regional price differentials. Consequently, this approach distorts the information value of the indicators (regional GDP per capita, disposable income per capita, et cetera) since the majority of countries are definitely not homogenous from the perspective of prices. Therefore, the aim of this thesis is to estimate regional price levels across the EU regions using an econometric model, which is based on available data on regional price levels for six countries in Europe. After estimating a regression equation and checking for the predictive power, regional price levels for the rest of EU regions at NUTS 2 level are estimated for the first time. Subsequently, they are used for recalculation of socio-economic indicators. The results imply that significant differences between analyses with one national price level and actual regional levels exist. This raises also several issues for policy implications (for instance potential sub-optimality of the European Cohesion policy, which is analysed as well) and shows the necessity and importance of precise estimation of regional price disparities. A part of the thesis also comprises the graphical visualisation of the estimated price levels in the form of two maps.

JEL classification R10, R15, R58, E31

Keywords regional price levels, price disparities, econometric model, real income disparities, real GDP disparities

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Abstrakt

Je nepochybné, že zahrnutie cenovej hladiny by malo byť neoddeliteľnou súčasťou akejkoľvek regionálnej analýzy. Na úrovni štátov sú v súčasnej dobe používané parity kúpnej sily (respektíve, v prípade Európskej Únie, štandardy kúpnej sily). Tieto ukazovatele však zohľadňujú v každej krajine jednu národnú cenovú paritu a nereflektujú skutočné medzi-regionálne cenové rozdiely. Tento prístup má však za následok deformáciu výpovednej hodnoty indikátorov (regionálne HDP per capita, disponibilný príjem a tak ďalej), keďže väčšina krajín rozhodne nie je vzhľadom na ceny homogénna. Z tohto dôvodu je cieľom tejto práce odhadnúť regionálne cenové hladiny naprieč regiónmi EÚ s použitím ekonometrického modelu, ktorý je založený na dostupných údajoch k regionálnym cenovým hladinám v šiestich krajinách Európy. Po odhadnutí regresnej rovnice a kontrole predikčnej sily modelu mimo vzorky sú po prvýkrát v danom rozsahu odhadnuté regionálne cenové hladiny pre zvyšok regiónov EÚ na úrovni NUTS 2. Následne sú použité pre rekalkuláciu socio-ekonomických indikátorov, pričom výsledky naznačujú, že existujú významné rozdiely medzi analýzami s jednou celoštátnou cenovou hladinou a so skutočnými regionálnymi hladinami. Tento fakt vznáša takisto niekoľko otázok pre dopady politík (napríklad potenciálnu sub-optimálnosť európskej kohéznej politiky, ktorá je takisto analyzovaná) a poukazuje na nevyhnutnosť a dôležitosť presného odhadu regionálnych cenových rozdielov. Súčasťou práce je aj grafické zobrazenie odhadnutých cenových hladín v podobe dvoch máp.

JEL klasifikácia R10, R15, R58, E31

Kľúčové slová regionálne cenové hladiny, cenové rozdiely, ekonometrický model, rozdiely v reálnom príjme, rozdiely v reálnom HDP

Počet znakov: 75 747 (vrátane medzier)

Declaration of Authorship

I hereby proclaim that I wrote my bachelor thesis on my own under the leadership of my supervisor and that the references include all resources and literature I have used.

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Prague, May 14, 2015

Signature

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Institute of Economic Studies

Project of the bachelor thesis

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Proposed topic: Regional disparities in price levels across the European Union

Topic characteristic

Prices are an important determinant of the living standard and inequality. The price level may be characterized as the average of current prices across the entire spectrum of goods and services produced in the economy. The most common price level index is the Consumer Price Index (CPI). Purchasing power parities (PPPs) are indicators of price level differences across countries. As a set of currency conversion rates, PPPs are inter-country price ratios that can be used to enable comparisons of monetary indicators of different countries, e.g. GDP per capita. In order to make such comparisons, the macroeconomic data are converted into a common currency. For EU members, within the Eurostat-OECD Programme, this artificial "EU average" currency is known as the „purchasing power standard" (PPS).

In economic analyses and studies usually one country price level is taken into consideration. It is possible to find many articles on the comparison of regions or on the convergence between EU regions, but the current approach of most researchers and policy makers is to use regional indicators converted, for the case of EU regions, in the above-mentioned PPS. But the price level may differ significantly across single regions within a country. As many researchers point out (among others Čadil et al. in his works considering the case of Czech Republic), "although the PPS indicators work well for countries they probably fail for regions. The main reason is that regional purchasing power standards do not reflect actual regional price levels – there is only a national parity (price level) which is equally applied to all the regions within a country".

Therefore, the aim of this thesis is to estimate (or summarize for cases where it was already done) regional price levels and price indices in lower territorial units (NUTS 2 or 3 level). Although price levels are one of the most watched economic indicators in the world, on the regional level only very insufficient data usually exist. Depending on availability, the estimation will be done by using data particularly from national statistics offices on regional consumer price indices, housing prices, family budget statistics, et cetera. Estimated regional price levels can be then used for recalculating the real GDP and the analysis of real wages or pensions within the regions.

Hypotheses and research questions

- Do purchase power standards with one countrywide price level and with regional price levels differ significantly?
- How nominal wages and pensions differ from real wages and pensions when regional price levels are considered?
- European Cohesion policy and structural funds are based on PPS indicators. Would using the regional price level change the allocation of resources and increase the allocation efficiency?
- Could using regional price levels change the evaluation of rich and poor regions and lead to remapping EU regions?

Outline

Introduction
Theoretical background
Methodology
Estimating regional price levels
Recalculating GDP in „regional PPS", real wages and pensions
Comments on results
Conclusion

Literature

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1 Introduction

Regardless of what kind of economic research across regions of various levels is carried out, both researchers and the public are often interested in regional values of macroeconomic indicators like gross domestic product, disposable income or wages. Those, however, cannot be properly examined without incorporating regional price levels. When comparing economic well-being in different countries, unadjusted indicators are not sufficient since prices may be substantially different and these geographical differences with obvious welfare implications definitely have to be taken into account. To do that, common practice nowadays is to use purchasing power parities in respective countries (or, in the case we are talking about the European Union, purchasing power standards) as indicators of price level. Historically, it was not always like that: some time ago, indicators were expressed in terms of various currencies (converted at the exchange rate, usually to US dollars). Nevertheless, this approach had several drawbacks. As it is pointed out by European Commission (2006) (cited in Čadil et al, 2014), exchange rate does not reflect all prices and is mainly influenced by a currency's supply and demand, intervention by central banks, speculation etc. This is also one of the reasons why using PPP (or PPS) is widely recommended.

At this point, however, a question arises. If the price levels are included in any *inter-country* analysis, why they are not so frequently used in an *intra-country* analysis (i.e. *inter-regional* analysis) of particular regions or other administrative units of a country) since hardly can it be assumed that there is one price level in a whole country? The answer to the foregoing question is simple – in most cases regional price level data do not exist - they are not reported. As Čadil et al. (2014) comments, "although the PPS works sufficiently well on the country level it has to be said that it fails on the regional level". Due to the fact that it would be probably enormously difficult and costly for statistical offices to cover a whole country when collecting prices, it is usually done only in capital cities and afterwards spatial adjustment factors for each product category are used in order to compute national price levels.

When geographic price disparities are mentioned, it can be viewed at in two possible ways – the first option is to analyse regional price level disparities, the second option involves regional inflation rate disparities (regional consumer price index (CPI) disparities). Even though at least some countries release the data on regional inflation rates (normalized in a base year), this does not comprise any information about the actual price levels in these regions. As Roos (2006) points out, “the problem is that the actual price levels in the base year typically are unknown”. Nevertheless, this does not mean that they are not significant - information on price levels have both theoretical and practical impact. As it was already suggested, different price levels may imply noticeable changes in wealth distribution. GDP per capita adjusted for regional price levels (or, in other words, GDP per capita in “regional PPP”) and GDP per capita in PPP (with one uniform national price level) may be in some regions completely different. As will be shown later, price level may range well from approximately 85 up to 125 (where 100 is the national price level) within one country. Therefore, GDP per capita adjusted for this price level may be significantly lower or higher than commonly reported. If this is the case, the classification of regions into groups eligible under the EU Regional (Cohesion) Policy, which is based on non-adjusted indicators, might not be optimal and could differ slightly after using regional price levels. Similarly, one can be interested in other macroeconomic indicators like disposable income, wages, pensions et cetera. In accordance with Aten & Heston (2003) we can maintain that accurate regional estimates of output are desired as an indicator of level of development and as a variable used to explain internal migration, demand patterns, fertility and other aspects of behaviour.

And yet, despite the importance of information on regional price levels that was shown in the previous paragraphs, they are not widely available. Therefore, the main aim of this thesis is to estimate the price levels in regions of European countries as best as possible. This will be carried out with the use of an econometric model. The basic ordinary least squares regression, which has shown up to be the only viable method, will be run with the aim to find the overall explanation for regional disparities in price levels. Afterwards, both predicted price levels and price levels which are already available will be used for recalculation of macroeconomic indicators (in particular GDP per capita and disposable income), and some comparisons will be done. The goal is to analyse how big the differences across regions are, what is the variation before and after applying regional prices, to find out which regions are constantly being overestimated and which underestimated and what practical consequences in terms of regional policy may arise. Regional price levels are the other important component important in evaluating the true regional purchasing power across all European regions which should stand alongside national parities.

The thesis is organized as follows: in Section 2, there is a brief literature review, Section 3 provides more theoretical background to the topic, Section 4 deals with econometric models. After all, we can find the out-of-sample predictions of price levels in the Section 5 and the recalculated economic indicators and their analytical consequences in Section 6. Section 7 encompasses the conclusion and summary of the thesis. Oversized tables with estimates for all NUTS 2 regions and maps visualising them are located in Appendix.

2 Literature Review

The price level problems have been studied widely in the economic literature, from both theoretical and empirical points of view. There are plenty of papers suggesting that price levels across regions may differ significantly. Regional economic theory demonstrates that the law of one price does not hold either across states or regions (e.g. McCann, 2001). Krugman (1991) as a great popularizer of spatial economic theory explained the reason why some regional differences exist and how a country can "endogenously become differentiated into an industrialized core and an agricultural periphery" already at times when economic geography occupied only a marginal position in economics. Spatial economic theory is also used in explaining and determining regional price levels. Price index effect is emphasized in New Economic Geography models, where the price level is considered to be a result of centripetal (operating towards agglomerations) and centrifugal (against agglomerations) forces. The example of spatial economic theory can be found in e.g. Kosfeld et al. (2008), whose paper relies on the price mechanisms of the Helpman model in developing spatial-econometric models for regional price level and its major components.

Despite the fact that the problem of price levels is very common in economic literature, there is a general lack of works that would lead to eventual computations or estimates of regional price levels within countries, implying a great space for the contribution of this thesis. To the best of my knowledge, it was done only in six countries in the EU. Probably the most profound analysis was done by Roos (2006), who estimated price levels in German cities using the data set of price levels of 50 German cities from Ströhl (1994). He found the model and then used it in the out-of-sample prediction of price levels in other cities, which were afterwards aggregated to the state level. For the US, the similar estimation of price levels at the state level was done, using hedonic regression model with individual price observations, or microdata (Aten & D'Souza, 2008). Amongst other papers using an econometric model for price level determination is also for example the one by Aten and Heston (2003), who, in view of the lack of area-wide regional price data, adopted an econometric approach in estimating regional price level from an international perspective.

Completely different approach was adopted by Czech researchers (Čadil, Mazouch, Musil & Kramulova, 2012, 2014 and Čadil & Mazouch, 2011), who used the modified official methodology by OECD and Eurostat on PPP based on the expenditure-oriented Éltetö-Köves- Szulc method (EKS). While on the national levels, expenditure approach to GDP computation is used, on regional level it is usually not possible, since it is not compiled at all. Hence Čadil et al. (2012) based their estimates on final household consumption, as it constitutes main part of expenditure approach (covers approx. 50%) and for which substantial differences are expected. Other components of GDP, such as gross (fixed) capital formation or government consumption are not included in their computation. They used this method in order to estimate price levels in the Czech Republic. According to their findings, the price level in Prague agglomeration is very high relative to other regions (almost 20 percentage points above national level), meaning that Prague (Prague´s GDP per capita or disposable income) is rather overestimated and the standard of living is actually lower than it is suggested to be by non-adjusted indicators. Moreover, as Bajgar & Janský (2014) suggests, as far as wage differentials are concerned, the proportion which is not counterweighted by higher price levels, is counterweighted by higher level of education and professional structure of the labour force. Therefore, in real terms, an average worker in Prague earns the same amount of money as an average worker in other parts of the country.

In some aspects similar is the approach of Radvanský, Fuchs (2008), who estimated regional price indices at NUTS 3 regions in Slovakia based on data from family accounts (family budget statistics). These family budget statistics (household budget surveys), although not widely available for the public, should be provided by most of the European countries and therefore it could potentially be one of the viable methods how to estimate regional price levels.

As it was already mentioned, it is not common that regional price levels are sampled statistically across all regions in a respective country. Nevertheless, some price surveys were performed, for example Ströhl (1994), who provides data on price levels in 50 German cities, or Rostin (1979) (31 German cities). They provide statistical evidence that there really exist substantial price disparities which should not be left without notice. As far as European national statistical offices are concerned, to the best of my knowledge only UK’s Office for National Statistics (2010) uses the methodology consistent with the approach used by Eurostat in the calculation of PPPs for the Eurostat-OECD PPP Programme also in calculation of regional price levels (the term Relative Regional Consumer Price Levels (RRCPLs) is used there).

Price levels estimates can be also provided by other institutions - in Italy, the Italian National Institute of Statistics (Istat) cooperated with the Bank of Italy, in Austria it was done by Austrian Society for Marketing (Österreichische Gesellschaft für Marketing).

The second strand of literature focuses on already mentioned regional inflation differentials. A profound empirical analysis was done by Beck et al. (2009) who examined dataset of regional inflation rates from six euro area countries and came to conclusion that inflation differentials across European regions are not only large (regional heterogeneity is substantially larger than national heterogeneity) but also long-lasting. Nevertheless, until now we are still far from the ideal state of having both regional purchasing power parities and regional inflation rates provided everywhere.

The need and necessity of reporting regional price levels is emphasized across many of the above-mentioned papers (and in even more which has not been mentioned). To summarize the main point why it is so we can again cite Kosfeld (2005) who points out that high income can be partially or even completely compensated for by high costs of living and therefore regional standard of living as well as catching-up of poorer regions cannot be reliably appraised by nominal indicators.

3 Theoretical background

At the very beginning, the definitions of several terms, which has been already mentioned and will be widely used in the thesis, are stated. Since the main topic of this thesis are price levels, they will be also the first to be described. As Eurostat defines, the *price level index*[1], abbreviated as PLI, expresses the price level of a given country relative to another (or relative to a group of countries like the European Union), by dividing the *purchasing power parities* (PPPs) by the current nominal *exchange rate*. If the price level index of a country is higher than 100, the country concerned is relatively expensive compared to the one to which it is compared (for example EU), while if the price level index is lower than 100, then the country is relatively cheap compared to the other country.

The *regional price level* is also a term that will be used in our intra-country regional analysis. It can be also interchanged for *regional purchasing power parities (RPPP)* (as Čadil et al. (2014) do in their work).

According to Eurostat`s glossary, *purchasing power parities (PPPs)*[2] are indicators of price level differences across countries and they indicate how many currency units a particular quantity of goods and services costs in different countries – they are both currency convertors and spatial price deflators. They have been produced and published under the common Eurostat-OECD PPP Programme already for several decades. According to the methodology for this programme (issued by the European Commission, 2006), PPPs are calculated in three stages. The first stage is at the product level, where price relatives are calculated for individual goods and services. The second stage is at the product group level, where the price relatives calculated for the products in the group are averaged, usually without weights, to obtain PPPs for the group. The third is at the aggregation levels, where the PPPs for the product groups covered by the aggregation level are weighted and averaged to obtain weighted PPPs for the aggregation level. The weights used to aggregate the PPPs in the third stage are the expenditures on the product groups as estimated in the national accounts. In stages 2 and 3, Èltetö-Köves-Szulc (EKS) method is used. As the European Commission (2006) describes, EKS is an index method based on Laspeyres, Paasche and Fisher indices, where, after several transformations to deal with reversibility, transitivity and aggregation issues, we get a

[1] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Price_level
[2] http://ec.europa.eu/eurostat/web/purchasing-power-parities/overview

PPP index which shows the ratio of price levels among the base country and other countries, calculated for all goods and services in the consumption basket. The sample of products used to calculate PPPs is drawn from the whole range of final goods and services comprising GDP (consumer goods and services, government services and capital goods). Of course, there is a degree of uncertainty associated with the basic price data and the methods used for compiling PPPs, what may cause some minor differences between the PLIs, especially when countries are clustered around a very narrow range. Nonetheless, these potential differences in ranking countries according to PLI are not statistically or economically significant[3].

The next indicator used across the EU is *purchasing power standard (PPS)* [4] as an artificial currency unit. Theoretically, one PPS can buy the same amount of goods and services in each country. However, price differences across borders mean that different amounts of national currency units are needed for the same goods and services depending on the country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective purchasing power parities. In other words, PPS is the technical term used by Eurostat for the common currency in which national accounts aggregates are expressed when adjusted for price level differences using PPPs. Thus, PPPs can be interpreted as the exchange rate of the PPS against the euro.

3.1 Spatial economics

Basically, spatial economics is the study of how space (distance) affects economic behaviour. In the past, as Krugman (1991) comments, nations were treated as dimensionless points and economic geography has lain largely dormant. Today, centre-periphery pattern is very well known and the study of economic geography – of where and why economic activity occur, of the location of factors of production in space – has been growing sharply over the last years and has been a subject of big contributions. As Fujita et al. (1999) declares, this surge of interest has been initially driven to some extent by real-world concerns - in particular by plans to unify the European market, and the attempt to understand how this deeper integration will work by comparing international economics within Europe with interregional economics within the United States.

Emergence of New Economic Geography (NEG) was an extremely important event in

[3] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Price_level
[4] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Purchasing_power_standard_(PPS)

terms of regional analyses. This theory points out that spatial price differentials are expected to play a crucial role in shaping the economic landscape. The theory distinguishes between two types of forces shaping the landsapce – centripetal (working towards agglomerations) and centrifugal forces (working towards dispersion). As Kosfeld et al. (2005) asserts, the price index effect highlighted in NEG models gives reason for the existence of forward linkages that operate towards agglomeration. While low commodity prices may most notably be observed in big cities, prices of non-tradable goods tend to fall with distance from centres (Tabuchi, 2001, cited in Kosfeld et al., 2005). Due to congestion effects, land scarcity and other urban costs, prices of non-tradables tend to be high in agglomerated areas. Market access is substantial here - a firm`s good access to large markets means greater demand for its products. As a consequence of cost savings from large-scale production and lower transportation costs, firms can afford to pay their workers higher wages. Therefore, increasing returns to scale and transportation costs act as forces towards agglomeration. Oppositely, at the same time higher wages and lower prices of manufactured goods attracting workers causes housing prices to ascent. In connection with worsening living conditions, congestions effects in densely populated regions act towards dispersion.

Thus, as it was said, wages are higher in areas with higher economic activity than in peripheral regions. Moreover, wages and income are simultaneously determined and as Kosfeld (2008) asserts, high-wage regions match with high-income regions. Based on his paper on regional price levels for German case, we can also claim that the spatial distribution of income is well in accordance with that of the regional price level. Roos (2003, 2006) uses wage rate directly as one of the price level determinants (others are for instance population size, population density, etc.).

The assumptions of equal regional price level is usually used only in order to cope with the lack of regional price indices. However, without proper regional price levels distortions in many areas of research can arise – even from the theoretical point of view. At first, for instance, in NEG models, a wage equation in testing the market potential approach is usually derived under the assumption of equal price levels in all regions (e.g. Redding & Venables, 2003) what can cause biased results. The same applies for example for convergence theory.

In this section we showed a bit of theory behind the regional analysis. In the next chapters we will try to estimate regional price levels from empirical point of view.

4 Econometric model

To the best of my knowledge, the data on regional price levels are available only for 6 countries out of 28 countries of the European Union: Austria, Czech Republic, Germany, Italy, Slovakia and the United Kingdom. Even among these 6 countries, only 4 of them provide regional price levels at the level NUTS 2 or lower (Austria and Italy at NUTS 2, Czech Republic and Slovakia at NUTS 3), while UK and Germany provide regional price levels only at NUTS 1 levels. Despite the fact that methodology for computation of these regional price levels is different in each case, it can be assumed that all the sources of data are reliable and relevant and they provide credible regional prices estimates as precisely as possible. Next to that, the estimations were made in different years. We might be interested in shifting the data to the same base year by applying also regional inflation rates, unfortunately, only several statistical offices in Europe pursue regional inflation rates. From our sample of countries which have their regional price levels computed or estimated, only Germany provides regional inflation rates (at NUTS 1 level). Therefore, in the following analysis, for each country we use data for independent variables from the respective year when country`s regional price levels were estimated. By that we implicitly assume that the causal relationships between explanatory variables and explained variable do not change over time.

At the very beginning, it is also important to note that any model and its power and goodness-of-fit is considerably limited by the amount and the type of data available. The available dataset consist of 79 observations - regions of 6 countries. This means that neither can we deal with countries separately (a small number of observations), nor can we use panel data analysis (no time series data available at all). Therefore, one model with all regional data available will be constructed and a basic OLS regression will be used. We assume that the ceteris paribus effect of particular variables does not change over countries. Since there are significant differences in the absolute values of variables which are used in the regression (e.g. GDP per capita in Germany and GDP per capita in Slovakia), two methods how to get rid of these international differences in absolute values will be used: firstly, the ratio (proportion) of regional values to average or total national values (i.e. country-adjusted data) and, secondly, the ratio (proportion) of regional values to average European values (EU-adjusted data).

Creation of the model is inspired by Roos (2006), who predicted price levels across Germany by using OLS regression of price levels in 50 German cities on several variables (population size, GDP per capita, dummy variable for tourism etc.). According to Roos (2006), this framework is not meant to provide a "good explanation *why* price levels are as observed. It should rather be interpreted as a reasonable and pragmatic approach to find variables which one might expect to be correlated with the dependent variable. If high and stable correlations are found, this is enough for prediction." Similarly, the purpose of this work is not to look at an exact ceteris paribus effect of single explanatory variables on explained variable – regional price level, but rather to find a model which would fit the data in the best possible way and which could be used for approximate out-of-sample predictions.

4.1 Dependent variable

As a dependent variable, the regional price levels for six European countries are used. A detailed list, description and sources are stated in Table 1 in Appendix.

4.2 Independent variables

There are several variables that might be expected to have a significant impact on price levels. To begin with, we will analyse it from the perspective of demand and supply. Again, as Roos (2006) asserts, one can suppose markets are spatially segmented so that there is no spatial arbitrage and no strategic price setting between firms in different regions. Furthermore, firms and consumers are immobile in the short run. Intermediate inputs are traded between regions at no transportation costs and have the same price everywhere. In such a world, regional price differences are determined by differences in local supply and demand only.

If we assumed this, then, in the sake of correct estimation, we would need the general equilibrium model since the variables may be simultaneously determined. Some of the right-hand side variables correlated with the error term cause endogeneity bias. From the theoretical point of view, the adequate procedure to deal with endogeneity would be either to estimate a system of equations or to instrument endogenous variables. Both procedures are, however, markedly problematic or even impossible regarding the data available. Nevertheless, in accordance with Roos (2006) we can maintain that "even if they are biased, they can be used for prediction".

The absolute size of the coefficients is not very interesting since one does not want to interpret them on the background of the theoretical model. Instead, we search for variables which best explain the variation in the dependent variable and predict the data with a lower error. As a determinant of the local demand, we use local income (net *disposable income* of private households per capita[5]). The same is valid for local supply since the substantial portion of income comes from wages Due to unavailability of data, we have to assume that the pattern of consumer preferences is the same in each region. The other way could be to use only a variable *compensation of employees*[6] or *GDP per capita* in a region. We will see later on whether these variables are significant or not. As for the size of population (and therefore the size of demand), we can use either absolute *population* size or the population *density*. Instead of density, there is also a possibility to use a dummy variable distinguishing between urban (typically high density regions) and rural areas (with lower population density). With similar justification I also use dummy variables for regions where capitals and cities with population above certain percentage of the total country population are located. Other factors than can be correlated with demand (and consequently prices) are for instance level of *employment, unemployment*, *at-risk-of-poverty rate*. Since the local demand may come from both local residents and visitors, the variable specifying the level of *tourism* is also introduced.

The list of all independent variables is displayed in Appendix (Table 2).

4.3 Country-adjusted data

As it was said, we have to deal with big absolute differences in the input data across our sample of countries. In order to solve that, in this part values in proportion to a respective average national value are used on the side of explanatory variables, i.e.:

$$x_i = \frac{value\ of\ a\ variable\ \ in\ a\ region}{average\ (or\ total)\ national\ value} . 100\%$$

---

[5] The disposable income of private households is the balance of primary income (operating surplus/mixed income plus compensation of employees plus property income received minus property income paid) and the redistribution of income in cash. These transactions comprise social contributions paid, social benefits in cash received, current taxes on income and wealth paid, as well as other current transfers. Disposable income does not include social transfers in kind coming from public administrations or non-profit institutions serving households. (From http://ec.europa.eu/eurostat/web/products-datasets/-/tgs00026)

[6] Compensation of employees is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period. Compensation of employees consists of wages and salaries, and of employers' social contributions. (From: http://ec.europa.eu/eurostat/en/web/products-datasets/-/TEINA075_R2)

where x_i is an independent variable used in a regression. A term *country-adjusted data* will be used for this modification across the thesis.

After running several regressions and after considering *ladder of powers*[7], it was found out that log transformation fits the data best. Surprisingly, variables like percentage of population living in a region or relative density do not show to have a significant effect on price levels (at least not when using other variables). Instead of them, a dummy variable for *capital* city and for cities with population more than 1% of the total country population and a dummy variable for *rural areas* appear to be significant. From the list of potential variables determining demand in a region (disposable income, GDP, compensation of employees), *disposable income* seems to be the most suitable. The variables *disposable income* and *GDP per capita* or *compensation* are not used together. Although they are different, there is a strong correlation between them (pairwise correlation coefficient 0.827 between GDP and income and 0.893 between compensation and income). Similarly, the variables *at-risk-of-poverty rate* and *unemployment rate* are not included in the models together, since they are highly correlated (pairwise correlation coefficient 0.884).

Although we use a log-linear model (where independent variables are also in log-form except for the dummy variables), obviously, for the sake of better illustration and comprehensibility, we want to obtain fitted values in the identity form, not in the log form. Therefore the re-transformation is used:

$$\boxed{\widetilde{y_i} = \exp(\hat{y}_{\log i}) * \exp\left(\frac{RMSE^2}{2}\right)}$$ [8]

where $\hat{y}_{\log i}$ stands for the fitted value in the log-form and RMSE is root-mean-square error from the regression (later only RMSE). From the list of potentially relevant and significant variables, the final choice of variables was constructed basically by using an approach described by Cipra (2008) – I regressed every single potential explanatory variable on the explained variable, chose the one with the biggest t-statistics, then used that one and added other one by one, again chose from the variables on the second place

[7] STATA command *ladder* searches a subset of the ladder of powers (Tukey 1977) for a transform that converts a variable into a normally distributed variable. In: StataCorp. 2009. *Stata 11 Base Reference Manual*. College Station, TX: Stata Press

[8] Gould, W. 2011. *Use poisson rather than regress; tell a friend*. The STATA blog. Available at: http://blog.stata.com/2011/08/22/use-poisson-rather-than-regress-tell-a-friend/ (09/01/2015)

the one with the biggest t-statistics and so on – i.e. explanatory variables were repeatedly added until the moment when none of the left ones was significant any longer. I came to the models as follows (at first, several modifications of the same model are presented in Table 1 and after that a conclusion regarding which model is the better one will be reached).

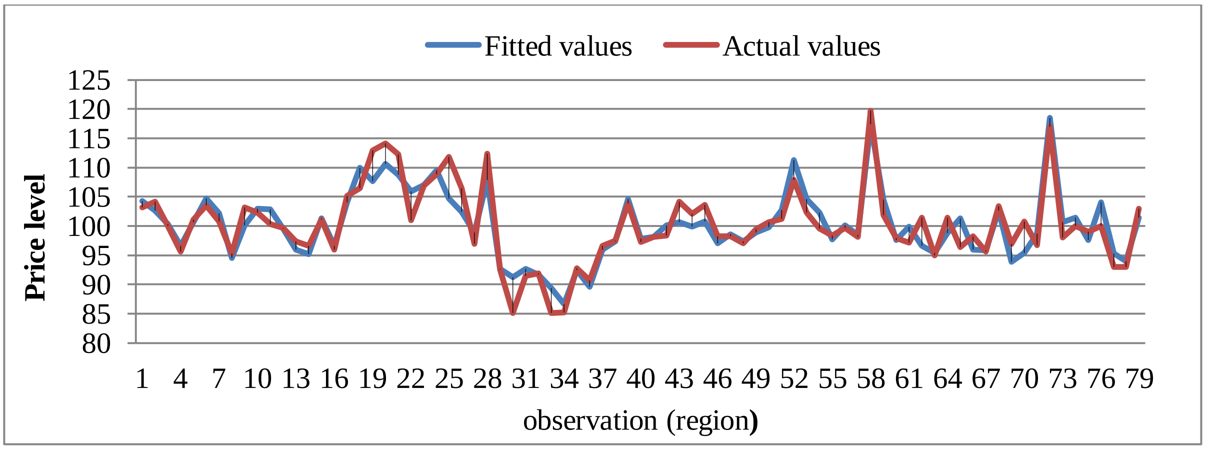
Table 1: Estimation results

VARIABLES	(1) Model A0	(2) Model A1	(3) Model B0	(2) Model B1
logrelincome	0.190***	0.232***	0.175***	0.227***
	(0.0492)	(0.0460)	(0.0514)	(0.0445)
dumrural	-0.0495***	-0.0459***	-0.0498***	-0.0493***
	(0.00681)	(0.00673)	(0.00677)	(0.00689)
cityover1nc	0.0263***	0.0268***	0.0269***	0.0228***
	(0.00704)	(0.00720)	(0.00700)	(0.00679)
logrelrisk	-0.0312**			
	(0.0149)			
capital	0.0579***	0.0539***	0.0619***	0.0545***
	(0.0130)	(0.0132)	(0.0133)	(0.0130)
logrelemploy	0.139*	0.196***	0.137*	
	(0.0723)	(0.0684)	(0.0714)	
logrelunemp			-0.0339**	-0.0443***
			(0.0149)	(0.0141)
Constant	3.241***	2.643***	3.333***	3.775***
	(0.329)	(0.168)	(0.345)	(0.261)
Observations	79	79	79	79
R-squared	0.855	0.846	0.857	0.849
Adj. R-squared	0.8429	0.8358	0.8389	0.8389
RMSE	0.02537	0.02594	0.02523	0.02569
F-stat	70.74	80.40	71.68	82.25
imtest	0.0070	0.3459	0.3992	0.2578
ovtest	0.7001	0.7198	0.8498	0.5462

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The first difference is that Models A0 and A1 include the level of employment (*logrelemploy*) while Models B0 and B1 includes also (or only) level of unemployment (*logrelunemp*). All of the variables in all models have expected signs: disposable income, location of capital and other big cities in a region are positively correlated with the price level, while level of unemployment and the fact that a region is predominantly rural have negative impact on the price level. As can be seen in the first and the third column, although the Model A0 and B0 shows better RMSE, *logrelemploy* is not significant even at 5% significance level, therefore the model B1 with unemployment rate will be used in further analysis. The RMSE of the Model B1 is 0.02569, what represents the RMSE of 2.289 when the data recalculated back into the identity form from the log transformation[9]. This is the lowest value it has been possible to achieve in comparison with all other models. The graphical comparison between fitted (predicted) versus and actual (known) values can be seen in Graph 1.

Graph 1: Fitted vs. Actual values (Model B1)



<u>Econometric issues</u>: At first, potential outliers should be analysed. Two approaches are applied. At first, outliers are identified using *Cook´s distance*, which was proposed by Cook in 1977 and which measures the effect of deleting a given observation and identifies both outliers and high leverage points and becomes the most commonly used estimate of the influence of a data point in a least squares regression (Sorokina et al., 2013). Observations where Cook`s distance is bigger than the convention cut-off point *4/n*, in our case 4/79, are omitted from the regression[10]. Some other sources[11] suggest *4/(n-k-1)* (i.e. 4/73) as the cut-off for identifying an observation as an outlier, but after all, in our case it leads to exactly same results. After that, the Model B1 is left with 75

[9] Since we are rather interested in real identity values rather than values in log form, RMSE of those is also computed: at first, predicted values are transformed into level-form using the already-mentioned formula $\tilde{y}_i = \exp(\hat{y}_{\log i}) * \exp\left(\frac{RMSE^2}{2}\right)$. Then the RMSE between values obtained from the above formula and actual known values is calculated using the formula $RMSE = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \tilde{y}_i)^2}{n-k-1}}$.

[10] *STATA Web Books: Regression with Stata*. Available at: http://www.ats.ucla.edu/stat/stata/webbooks/reg/chapter2/statareg2.htm

[11] e.g. Belsley, D. A., Kuh, E. and Welsch, R. E. (2005). *Frontmatter, in Regression Diagnostics: Identifying Inuential Data and Sources of Collinearity*. Wiley, New York.

observations (Table 2, column 2). (Estimation results from Model B1 in column 1 of Table 2 are stated again just for the sake of easier visual comparisons.) Coefficients from Model B2 are quite similar to those in model B1 and descriptive statistics are generally better. The second approach is to use *robust regression*. Provided that data are not incorrectly entered, neither they are from a different population than most of our data, there is no compelling reason to exclude them from the analysis. Then, robust regression might be a good strategy since it is a compromise between excluding these points entirely from the analysis and including all the data points and treating all them equally in OLS regression (since robust regression is a form of weighted and reweighted least squares regression). In Stata, the command *rreg* is used. Citing Stata Manual (2009), *rreg* goes through a series of iterations in which it computes and recomputes weights for each of the observations. It first runs the OLS regression, gets the Cook's D for each observation, and then drops any observation with Cook's distance greater than 1. Weights derive from one of two weight functions, *Huber weights* and *biweight*, which are used until convergence. Both weighting functions are used because Huber weights have problems dealing with severe outliers, whereas biweights sometimes fail to converge or have multiple solutions.[12] In Huber weighting, observations with small residuals get a weight of 1, the larger the residual, the smaller the weight. With biweighting, all cases with a non-zero residual get down-weighted at least a little.[13] The results from this regression are shown in Table 2, column 3. When using this command, none of the observation is excluded (since Cook`s distance has to be bigger than 1 in order for an observation to be excluded). Comparing the coefficients from all of three columns we can see that there is no big difference amongst them. Therefore, the initial Model B1 can be marked as appropriate to use (as for the Model B2, there is no compelling reason to exclude several observations, as for the Model B3 – *rreg*, we would have to deal with pseudovalues - *ereturn* values (such as e(r2), e(rmse)) which are left over from the OLS regression model and computed under this command and which, according to Street, Carroll and Ruppert (1998), are not meaningful and should not be used[14]).

[12] StataCorp. 2009. *Stata 11 Base Reference Manual*. College Station, TX: Stata Press

[13] *Stata Data Analysis Examples: Robust Regression.* UCLA: Statistical Consulting Group. Available at: http://www.ats.ucla.edu/stat/stata/dae/rreg.htm

[14] In: *How can I get an R2 with robust regression?* UCLA: Statistical Consulting Group. Available at: http://www.ats.ucla.edu/stat/stata/faq/rregr2.htm

Table 2: Estimation results – outliers analysis

VARIABLES	(1) Model B1	(2) Model B2	(3) Model B3 – *rreg*
logrelincome	0.227***	0.239***	0.213***
	(0.0445)	(0.0343)	(0.0454)
dumrural	-0.0493***	-0.0479***	-0.0470***
	(0.00689)	(0.00607)	(0.00702)
cityover1nc	0.0228***	0.0221***	0.0220***
	(0.00679)	(0.00613)	(0.00692)
logrelunemp	-0.0443***	-0.0388***	-0.0457***
	(0.0141)	(0.0122)	(0.0144)
capital	0.0545***	0.0518***	0.0560***
	(0.0130)	(0.00852)	(0.0132)
Constant	3.775***	3.693***	3.844***
	(0.261)	(0.205)	(0.266)
Observations	79	75	79
R-squared	0.849	0.863	0.837
RMSE	0.02569	0.02336	0.0262

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Checking for assumptions: Besides endogeneity, which was already discussed, we want to check for other Gauss-Markov assumptions for OLS regression. At first, for checking the assumption of linearity, *acprplot*, which graphs augmented component-plus-residual plot, a.k.a. augmented partial residual plot and is used to identify nonlinearities in the data[15], was plotted. In the Graphs 2 and 3 for both non-dummy variables it is possible to see that ordinary regression line is quite close to the smoothed line (*lowess smoothing*) and therefore we can assert that there is no evidence for non-linearity. Graph 4 offers additional graphical insight to potential heteroskedasticity (*rvfplot*). Residuals band width is approximately equal everywhere. Moreover, both Breusch-Pagan /Cook-Weisberg test for heteroskedasticity (*hettest,* H_0: Constant variance, p-value 0.58), and White's general test for heteroskedasticity (*imtest, white*; p-value 0.26), which is more general because it adds a lot of terms to test for more types of heteroskedasticity[16], proves that heteroskedasticity is not a problem in this model. Furthermore, the possibility of clustered standard errors is tested (since observations are

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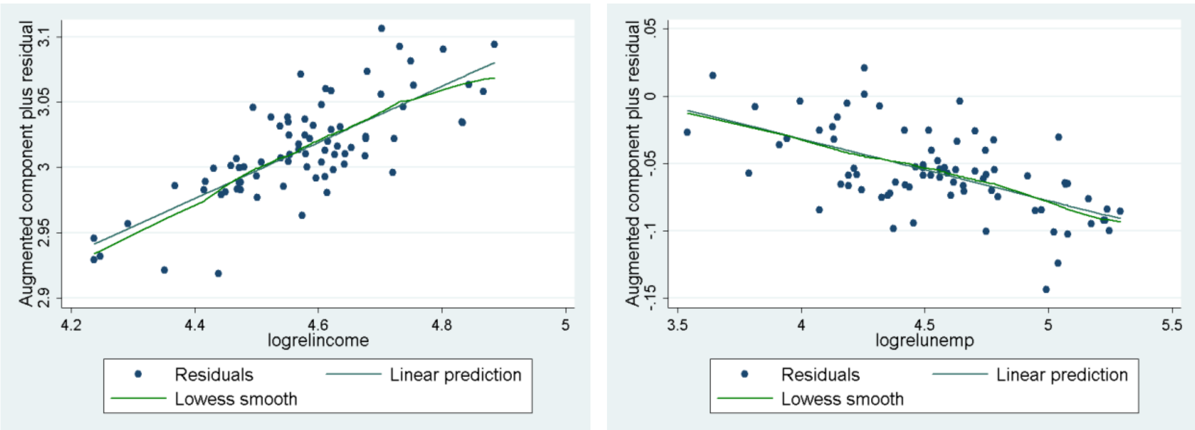
15 *STATA Web Books: Regression with Stata*. Available at: http://www.ats.ucla.edu/stat/stata/webbooks/reg/chapter2/statareg2.htm

16 *Heteroskedasticity*. Lecture notes. Available at: https://www3.nd.edu/~rwilliam/stats2/l25.pdf (11/01/2015)

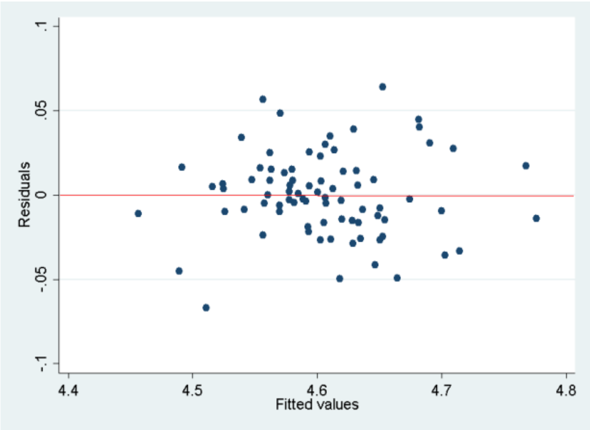
clustered into countries and the observations may be correlated within countries, but are independent between countries). Only in one case robust standard error is bigger in such a way that it makes the variable (*cityover1nc*) noticeably less significant – a change from p-value 0.001 to 0.1. Nevertheless, regarding the fact that a bigger number of clusters would be ideal (as Nichols & Schaffer (2007) suggest, with a small number of clusters the cure can be worse than the disease), this change in standard errors is not so significant that we would have to decline the original non-robust Model B1.

Variance inflation factor (VIF), which indicates the severity of multicollinearity, is well-acceptable (rule-of-thumb values suggested not to be exceeded are usually 10 or 5) (Table 3). Last but not least, moving from Gauss Markov assumptions, the brief look at the normality of residuals follows. It is visualised in the Graph 5 that plots the univariate *Kernel density* estimate, where this Kernel density estimate comparatively copies normal density distribution. In addition, based on the Skewness/Kurtosis (Jarque-Bera) tests for Normality (*sktest*) with p-value 0.71, the null hypothesis of normality of residuals cannot be rejected. At the very end, Remsey regression specification-error test (RESET) for omitted variables (*ovtest*) was performed and with p-value 0.55 there is not enough evidence to claim the model has some omitted variables. In conclusion, by all of the previous steps we have shown that using this model might be well reasonable.

Graph 2 & 3: Acprplots



Graph 4: Residuals-versus-fitted plot



Graph 5: Kernel density estimate

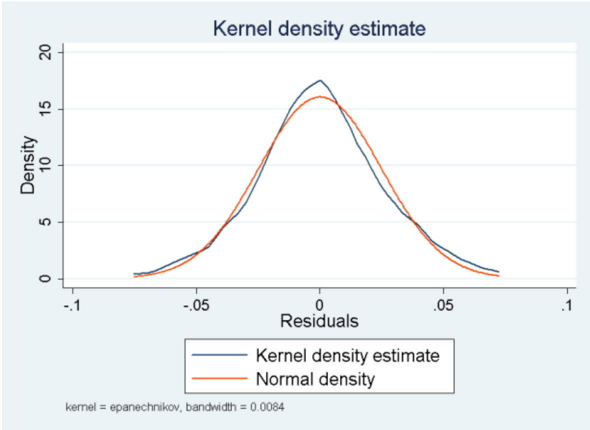


Table 3: Variance inflation factor

Variable	VIF	1/VIF
logrelincome	4.41	0.226541
logrelunemp	3.92	0.254913
capital	1.41	0.709276
dumrural	1.23	0.813816
cityover1nc	1.14	0.878833
Mean VIF	2.59	

4.4 EU-adjusted data

In this part of the thesis, the data for explanatory variables are transformed in the following way: regional values are divided by the European average value. We will call this as *EU-adjsuted data*. Again, from the list of potentially relevant variables, the final choice of variables is constructed in a same way as in the previous section with country-adjusted data based on the approach of sequential adding of explanatory variables proposed by Cipra (2008). The models can be further divided into two groups:

4.4.1 Non-adjusted dependent variable

In these versions of models, the dependent variable (price level) is just the same as in the country-adjusted data, only explanatory variables are EU-adjusted. Several variations of the model are stated in the following Table 4. Amongst explanatory variables, the variable *PPS*, which stands for the purchasing power standard, appears. By that, we can distinguish between countries in the sense of an adjustment factor which is needed when the explanatory variables are but the dependent variable is not adjusted relative to the EU average. Presumably, it has the negative sign –for countries with PPS above EU-average, the dependent variable has to be decreased back to the country-relative level. Obviously, we cannot simply use dummy variables for countries since our goal is to use the model for the out-of-sample predictions for other countries afterwards. Another way could be to use a dummy variable for the *new member states* of the EU (membership from 2004 and later), however, such models turned out to have weaker predictive power.

From Table 4, Model D1 is preferred and will be subject to further analysis, since all of its variales are significant both under ordinary and robust regression Fitted versus actual values are depicted in Graph 6. The RMSE of this model is 0.02771, in identity form it is 2.757. Analogously to the previous subsection 4.3, robust regression (rreg) with Huber weights and biweights is run, giving the very similar results and therefore justifying the use of the Model D1. Also, the regression with clusterd errors behaves analogously to the regression from previous subsection. Graphs 7 – 10 display other econometric measures[17]. In Graphs 7 and 8 it is vissible that the data have the uniform pattern and that linear prediction line does again relatively well correspond with the lowess smoothing line, indicating we do not have to be concerned about nonlinearity. According to Graph 9 (rvfplot) and the result of White`s test for heteroskedasticity (p-value 0.54) it may be

[17] more theoretical details about particular graphs to be found in subsection 4.3 Country-adjusted data

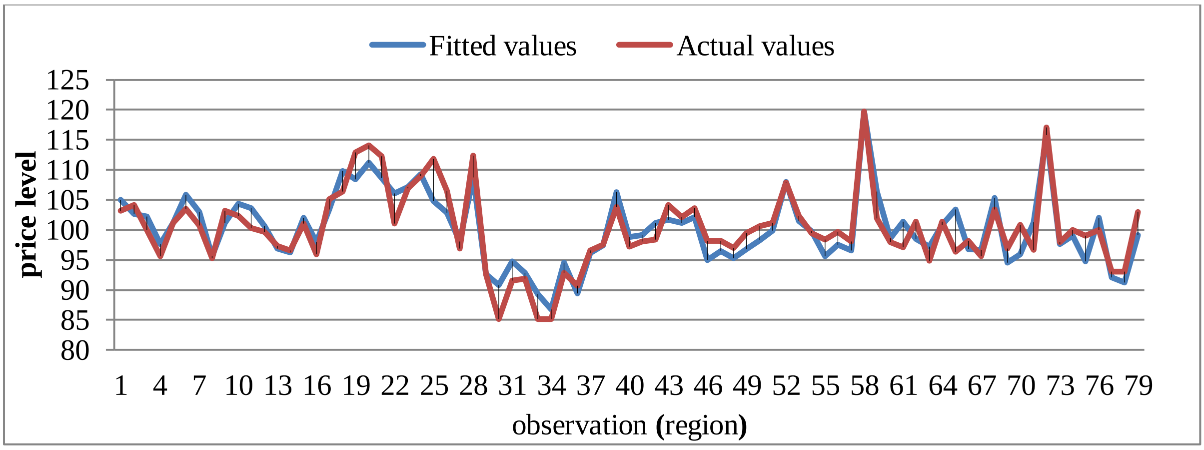
very well asserted that heteroskedasticity is not present in this model. In a similar way, Graph 10 (Kernel density estimate) and the results of Skewness-Kurtosis test (p-value 0.62) demonstate that residuals are approximately normally distributed. In Table 5 we can see that for one variable (*logrelincome*) VIF only slightly exceeds the rule-of-thumb value 10.

Table 4: Estimation results

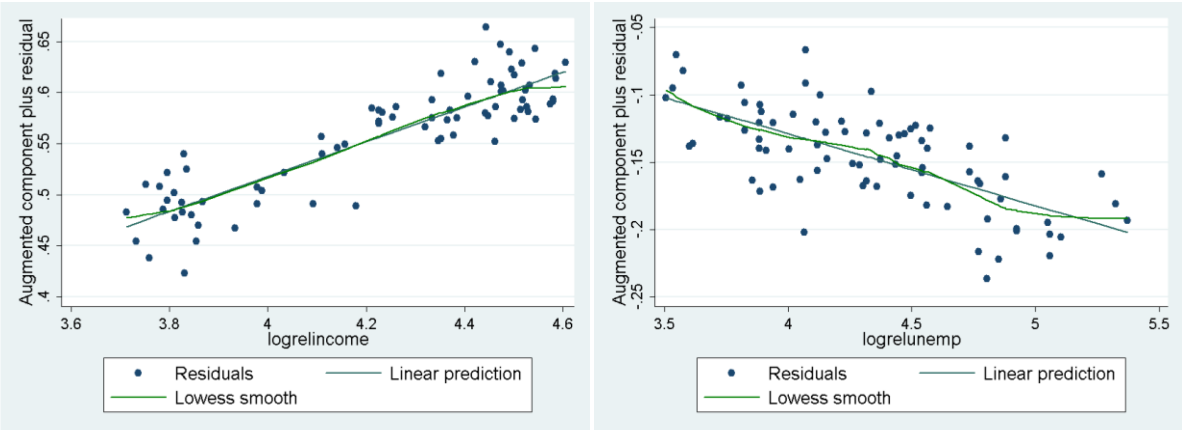
VARIABLES	(1) MODEL D0	(2) MODEL D1	(3) MODEL D2	(4) MODEL D1 Huber
logrelunemp	-0.0480***	-0.0537***	-0.0555***	-0.0562***
	(0.0113)	(0.0112)	(0.0107)	(0.0116)
dumrural	-0.0571***	-0.0600***	-0.0588***	-0.0597***
	(0.00740)	(0.00742)	(0.00708)	(0.00772)
capital	0.0651***	0.0648***	0.0557***	0.0647***
	(0.0127)	(0.0130)	(0.0126)	(0.0135)
cityover1nc	0.0286***	0.0289***	0.0253***	0.0278***
	(0.00723)	(0.00739)	(0.00683)	(0.00769)
logrelemploy	0.0570**			
	(0.0278)			
logrelincome	0.158***	0.165***	0.159***	0.155***
	(0.0338)	(0.0343)	(0.0322)	(0.0357)
PPS	-0.00318***	-0.00308***	-0.00310***	-0.00299***
	(0.000511)	(0.000520)	(0.000478)	(0.000541)
Constant	4.153***	4.401***	4.439***	4.447***
	(0.191)	(0.151)	(0.144)	(0.158)
Observations	79	79	76	79
R-squared	0.837	0.827	0.841	0.812
Adj. R-squared	0.8206	0.8126	0.8274	
RMSE	0.02711	0.02771	0.02531	
F-stat	51.97	57.38	60.92	
imtest	0.5442	0.5425	0.6099	
ovtest	0.3817	0.1768	0.1872	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

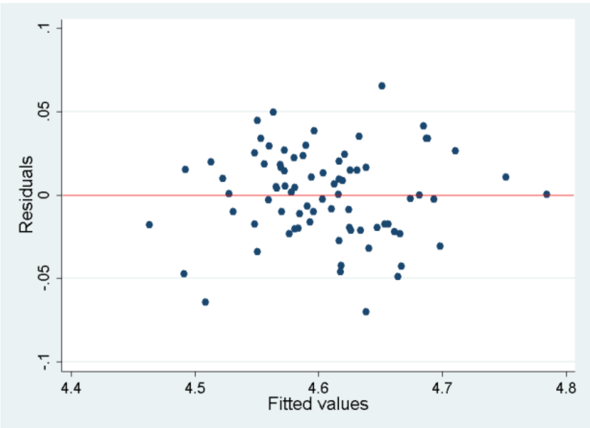
Graph 6: Fitted values vs. actual values



Graph 7&8: Acprplots



Graph 9: Residuals-versus-fitted plot



Graph 10: Kernel density estimate

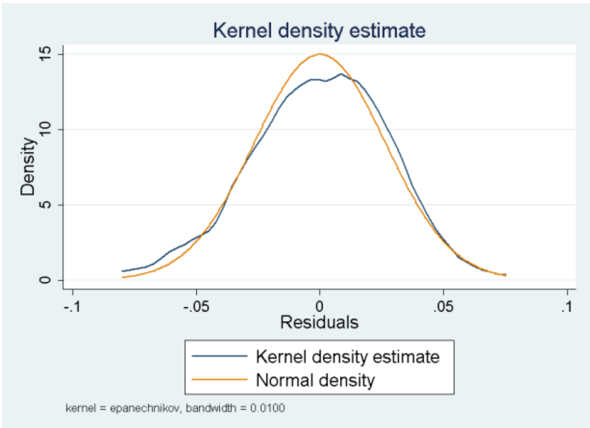


Table 5: Variance Inflation Factor

Variable	VIF	1/VIF
logrelincome	10.02	0.099810
PPS	6.84	0.146110
logrelunemp1	2.70	0.370320
dumrural	1.23	0.815633
capital	1.22	0.819011
cityover1nc	1.16	0.863078
Mean VIF	3.86	

4.4.2 EU-adjusted dependent variable

In the following models, a price level in any region (as a dependent variable) is multiplied by the national value of *PPS*. Doing so, the distinction between countries is made at the side of the dependent variable. Then a question whether to include PPS also among explanatory variables (instead of dummy variables for countries) or not arises. Although by including it, an extremely high level of multicollinearity and artificially high R-squared is encountered, it will be taken into account when looking at the results. Secondly, PPS can be excluded from the list of explanatory variables, though at the expense of higher errors and possibly ommited variable bias.

- Models without PPS

  As it is shown in Table 6, models with the dependent variable adjusted for national PPS include new explanatory variables which are significant, however, goodness-of-fit is worse, at least when looking at RMSE. RMSE of Model E1 in identity form is relatively high: 3.026 and it may be only assumed that out-of-sample predictive power will be even worser. Therefore, neither of the following models from Table 6 will be used in further analysis.

Table 6: Estimation results

VARIABLES	(1) E0	(2) E1	(3) E2	(4) E1 rreg
logrelincome	0.0863*	0.104**	0.0944**	0.0977**
	(0.0436)	(0.0436)	(0.0417)	(0.0470)
newms	-0.281***	-0.279***	-0.287***	-0.286***
	(0.0279)	(0.0284)	(0.0277)	(0.0306)
logcompens	0.0755**	0.0690**	0.0663**	0.0673**
	(0.0293)	(0.0297)	(0.0298)	(0.0321)
dumrural	-0.0524***	-0.0517***	-0.0516***	-0.0500***
	(0.00817)	(0.00833)	(0.00818)	(0.00898)
logrelunemp	-0.0763***	-0.0774***	-0.0793***	-0.0782***
	(0.0148)	(0.0151)	(0.0149)	(0.0163)
capital	0.0450**	0.0510***	0.0522**	0.0522***
	(0.0174)	(0.0175)	(0.0207)	(0.0189)
cityover1nc	0.0230***	0.0213**	0.0218***	0.0209**
	(0.00810)	(0.00822)	(0.00786)	(0.00886)
dumnights	0.0152*			
	(0.00766)			
Constant	8.835***	8.798***	8.861***	8.837***
	(0.288)	(0.294)	(0.289)	(0.317)
Observations	79	79	75	79
R-squared	0.979	0.978	0.981	0.974
RMSE	0.0302	0.03021	0.2965	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

- Models with PPS

  Next, models where the dependent variable is EU-adjusted and at the same time PPS is used as one of the explanatory variables are constructed. This explicitly suggests higher level of multicollinearity and is in fact confirmed by artificially extremely high R-squared. Nonetheless, being aware of this, the model can be still used for fitting the data and used for predictions if other parameters are satisfactory. In details, RMSE in Model F1 is 2.743, what is far from being ideal, but better than in the previous subsection. The fitted values are plotted against actual values in Graph 11. For the regression with omitted outliers (Table 7, column 2), the robust regression (Table 7, column 3) and other econometric issues (Graphs 12-15 and Table 8) the same things as in the previous models are valid.

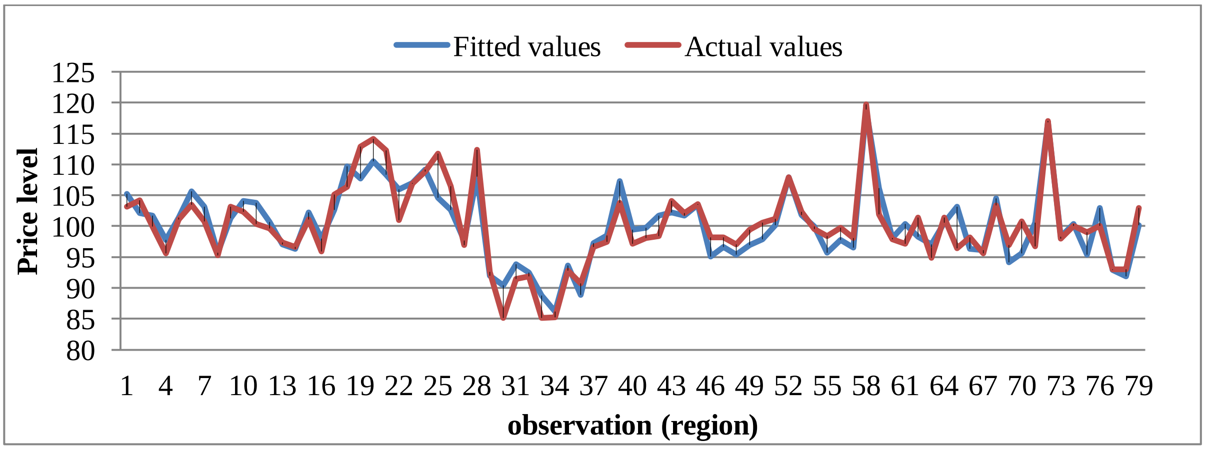
Table 7: Estimation results

VARIABLES	(1) Model F1	(2) Model F2	(3) Model F1 rreg
logrelunemp	-0.0507***	-0.0518***	-0.0536***
	(0.0110)	(0.0106)	(0.0115)
dumrural	-0.0619***	-0.0606***	-0.0619***
	(0.00728)	(0.00696)	(0.00761)
cityover1nc	0.0239***	0.0206***	0.0230***
	(0.00725)	(0.00671)	(0.00758)
capital	0.0584***	0.0542***	0.0588***
	(0.0128)	(0.0137)	(0.0133)
logrelincome	0.179***	0.173***	0.166***
	(0.0337)	(0.0316)	(0.0352)
PPS	0.00825***	0.00826***	0.00838***
	(0.000510)	(0.000470)	(0.000533)
Constant	7.790***	7.820***	7.845***
	(0.149)	(0.143)	(0.155)
Observations	79	75	79
R-squared	0.9817	0.985	0.980
Adj. R-squared	0.9802	0.9833	
RMSE	0.02719	0.02484	
F-stat	644.67	728.45	
imtest, white	0.5526	0.5168	
ovtest	0.0079	0.1175	

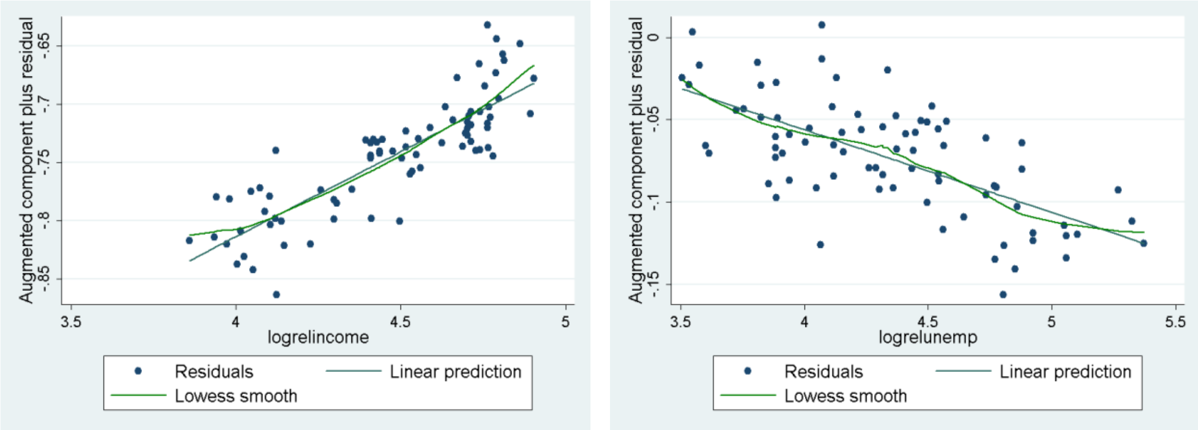
Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

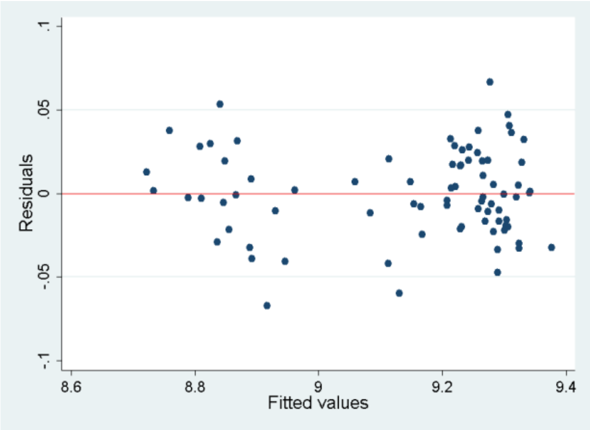
Graph 11: Fitted values vs. actual values



Graph 12 & 13: Acprplots



Graph 14: Residuals-versus-fitted plot



Graph 15: Kernel density estimate

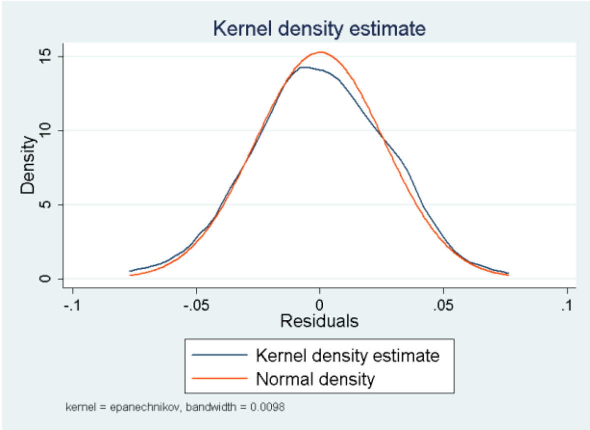


Table 8: VIF

Variable	VIF	1/VIF
logrelincome	10.02	0.099810
PPS	6.84	0.146110
logrelunemp1	2.70	0.370320
dumrural	1.23	0.815633
capital	1.22	0.819011
cityover1nc	1.16	0.863078
Mean VIF	3.86	

4.5 Other possibilities

4.5.1 Differences

The second possibility how to deal with great disparities in absolute values among countries could be the use of differences between an actual value of a variable in a given region and an average national value. According to the fact that we have such a different countries like Germany or the United Kingdom and on the other hand Slovakia together in one sample, it is difficult to make a valid assumption that this deviation from the average could be proportionately equal in these countries and therefore could eliminate the problem. In spite of that, the equation has been regressed, but in any version the RMSE has not fallen under approximately 2.8, what is well above the RMSE in Model B2 where proportional values are used. This gives an evidence that using differences really cannot fully mitigate the problem of the vast range of absolute values and therefore it will not be used.

4.5.2 Instrumental variables

As it was already suggested, it is possible that some of the variables may be endogenous. According to Wooldridge (2009), an important form of endogeneity of explanatory variables is simultaneity which arises when one or more of the explanatory variables is jointly determined with the dependent variable, typically through an equilibrium mechanism. In particular, the variable disposable income should be considered in our regression since it may be viewed as simultaneously codetermined with price level with each variable affecting the other, what would lead to the biased OLS estimator (simultaneity bias). In that case we would need simultaneous equations models which are beyond the scope of this work. With respect to the data available at regional level, it is difficult to find proper instrumental variables. Both density of population and the size of the population were used, but they appeared to be weak instruments. Moreover, the IV estimator can have a substantial bias in small samples (Wooldridge, 2009), therefore this method will not be used in our analysis at all.

4.6 Out of sample predictive power

Since our goal is to use the econometric model for predicting the unknown regional price levels in other countries, the *in-sample* goodness-of-fit is not enough and we have to analyse *out-of-sample predictive power*. In order to do this, the procedure was following: at first, from the models evaluated as fitting the data relatively well under the in-sample analysis (Model B1 from Table 2, Model D1 from Table 4 Model F1 from Table 7), one observation was excluded, a model was estimated with the reduced sample, and the coefficients obtained in that way were used for prediction of an excluded observation. Since the actual value for this observation is known, it can be easily compared and the out-of-sample prediction errors can be computed. This was done for each observation (79 in each model). In the following Table 9, the average coefficients and the average RMSE (labelled $\overline{RMSE}_{\text{in}}$ which expresses RMSE of data in log-transformation) from these 79 regressions are displayed. The statistics of the biggest importance is RMSE_{out}. This number expresses the root mean square error between values which has been predicted out-of-sample and actual values. For better illustration, it is already reported as an error in predicted values in level-form (i.e. it stands for an actual error in the price level with the range of values from cca 85 to 120). Obviously, it has to be assumed that it will be a bit higher than in the in-sample analysis, but this increase is demanded not to be somehow substantial. In the first case (Model B1) the original RMSE in model with 79 observations was 2.597. RMSE_{out} has increased by a bit more than two tenths to 2.814.
In the second case (Model D1) original in-sample RMSE was 2.757. The out-of-sample RMSE_{out} is 3.036, what is again an increase of less than three tenths. As for Model F1, in-sample RMSE of 2.743 increased to out-of-sample RMSE_{out} of 3.027, what is again very similar to the previous cases. Estimated coefficients are also very similar to coefficients from respective original models. Again, the model B1 shows the smallest error, but it can be asserted that out-of-sample predictive power of all three models is acceptable. Although it is far from being perfect (since already in-sample RMSEs are relatively high), it is the best prediction what can be obtained regarding the availability and nature of the data. Out-of-sample predictive power was also tested in models with restricted number of observations (without outliers) although these models will not be used. Not only initial RMSE, but also RMSE_{out} is significantly lower (for example, in the Model B2 with , it increased from 2.387 only to 2.392. Based on this, we can really

see that a big part of RMSEs comes from those three/four observations and is not systematically much higher.

Table 9: Average coefficients from reduced sample (out-of-sample analysis)

VARIABLES[18]	(1) Model B1(out)	(2) Model D1(out)	(3) Model F1(out)
logrelincome	0.2268***	0.1648***	0.1786***
capital	0.0545***	0.0648***	0.0584***
dumrural	-0.0493***	-0.0600***	-0.0619***
logrelunemp	-0.0443***	-0.0538***	0.0507***
cityover1	0.0228***	0.0289***	0.0239***
Constant	3.7744***	4.4009***	7.7897***
Observations	78	78	78
$\overline{RMSE}_{in}$	0.0257	0.0277	0.0272
$RMSE_{out}$	2.2814	2.6487	3.0266

*** p<0.01, ** p<0.05, * p<0.1

[18] value of variables is different for the Model B2 (country-adjusted data) and D2 (EU-adjusted data)

5 Out-of-sample estimates

When predicting the price level out-of-sample, one possibility would be to use coefficients only from the Model B2 from the very beginning, since the prediction error is lower there. Nonetheless, price levels will be estimated also by using other models and then comparison will be drawn. In Table 10, predicted price levels for NUTS 2 regions of Poland and Hungary are stated. These two countries are chosen based on their geographical proximity and potential similarities with the countries within our sample. The predicted price levels for the rest of NUTS 2 regions of the EU are stated in Table 4 in Appendix.

Comparing the models we can see that the Models B1 and D1 give very similar predictions, even though one is based on country adjusted data and the second one on the EU-adjusted. On the other hand, the Model F1 seems to be noticeably overestimating the overall price level, since the average value in a country is almost 105.[19] Naturally, it should be somewhere near 100, although not necessarily exactly, since it is not the weighted average. When regions in other countries are predicted, we can see that this model is relatively suitable only for countries in the middle part of the list of countries by economic power and the countries at the very top or bottom are over/underestimated. This is probably due to the fact that in the input data, there was a more homogenous group of countries (PPS, which is used in this model, ranges from 67 to 110 while in the whole EU it ranges from 44 in Bulgaria to 136 in Denmark and exactly those countries are not predicted very well). The same situation arises in the Model D1 predictions for other countries.

To sum it up, according to the analysis and comparisons of the models, the most suitable model for out-of-sample predictions is the Model B1. This has been already justified by its best results under the profound in-sample analysis. Furthermore, comparing models B1 and B2, we can also see that using either the model with the full sample or the model without observations with the Cook`s distance above cut-off point does not make a big difference in predictions: the average difference in predicted values is 0.18 between Models B1 and B2.

The results of predictions are not only summarised in Table 4, but are also graphically represented in Appendix, Map 1. This cartogram-type map was created in the open-source geographical information system software *QGIS*, version 2.8.2. The

[19] The Models

reference geodata needed for the construction of the first layer of the map are available from the Eurostat service Geographical Information System at the Commission (GISCO).

In Table 5 in Appendix, price levels predicted using the Model B1 have been multiplied by the respective national PPS so that international comparisons may be performed. Those are the input data for the next visual outcome –Map 2 in Appendix.

Thanks to this regional analysis, we can also observe which is the most expensive or the cheapest region: in Hovedstaten, capital region in Denmark around Copenhagen, regional purchasing power parity is 150.4, in Stockholm it is 137, in Helsinki 135 (where EU-27 = 100). On the other hand, regions with the lowest purchasing power are Bulgarian Severozapaden and Severen Tsentralen with regionally adjusted purchasing power parity only slightly over 40.

Table 10: Estimated price levels in Poland and Hungary

Country	**NUTS 2 region**	**Model B1**	**Model B2**	**Model D1**	**Model D2**	**Model F1**
Poland	PL11 – Lódzkie	103,64	103,40	106,01	105,73	110,04
	PL12 – Mazowieckie	115,14	114,89	116,51	115,41	121,14
	PL21 – Malopolskie	101,37	101,00	104,26	104,16	108,17
	PL22 – Slaskie	104,63	104,63	104,96	105,48	110,23
	PL31 – Lubelskie	91,62	91,39	93,64	93,66	96,92
	PL32 – Podkarpackie	89,23	89,00	91,53	91,57	94,67
	PL33 – Swietokrzyskie	96,80	96,60	99,17	99,24	103,24
	PL34 – Podlaskie	92,01	91,82	93,84	93,85	97,18
	PL41 – Wielkopolskie	99,61	99,52	100,85	100,51	104,31
	PL42 – Zachodniopomorskie	101,57	101,45	103,23	103,52	107,81
	PL43 – Lubuskie	98,15	97,92	100,16	100,51	104,58
	PL51 – Dolnoslaskie	103,49	103,40	105,20	105,13	109,58
	PL52 – Opolskie	93,32	93,16	94,82	94,93	98,36
	PL61 - Kujawsko-Pomorskie	98,42	98,20	100,32	100,70	104,80
	PL62 - Warminsko-Mazurskie	92,21	92,00	93,76	94,11	97,43
	PL63 – Pomorskie	102,87	102,59	105,25	105,18	109,39
	AVERAGE	***99,00***	***98,81***	***100,84***	**100,86**	**104,87**
Hungary	HU10 - Közép-Magyarország	109,68	109,18	108,96	108,11	112,80
	HU21 - Közép-Dunántúl	96,92	96,88	94,59	94,74	98,23
	HU22 - Nyugat-Dunántúl	100,20	100,06	98,40	98,15	101,62
	HU23 - Dél-Dunántúl	97,05	96,96	95,21	95,34	98,67
	HU31 - Észak-Magyarország	100,11	99,99	98,56	99,15	103,01
	HU32 - Észak-Alföld	94,82	94,75	93,00	93,39	96,60
	HU33 - Dél-Alföld	96,75	96,54	95,35	95,44	98,63
	AVERAGE	***99,36***	***99,20***	***97,72***	***97,76***	***101,37***

6 Analytical consequences

6.1 Recalculations of macroeconomic indicators

To begin with, we are interested in GDP per capita as one of the most widely used macroeconomic measures. In terms of GDP per capita, as Table 3 (for 6 countries in our sample) and Table 4 (for countries with predicted price levels in this thesis) in Appendix shows, substantial differences between the officially presented GDP per capita in PPS (with "national PPS") and the values adjusted for the regional price levels exist.

The average absolute difference between the adjusted and non-adjusted values is 1081.85 euro. Furthermore, it is important to emphasize that these interregional differences in GDP per capita shrink when regional price levels instead of average national one are used. The average *coefficient of variation (CV)*[20] averaged across all countries drops from 0.2857 to 0.2325. This is nothing else than insinuating that true regional differences in standard of living are smaller than usually reported, but they still exists. Among this group of countries, the highest regional variation in GDP in "RPPP" is in Slovakia: it decreased from 0.543 in GDP in PPS only to 0.425 in GDP in RPPP, what is a sign of a vast regional disparities in economic productivity. Very similar, the second highest variation in GDP is in Romania: although it dropped from 0.5229 to 0.3524, it is still high. Table 11 offers the summary of CVs and average differences between values before and after applying regional price levels.

When using the regional price levels, the most substantial change occurred in Bucharest, Prague and Bratislavský kraj: the change in proportion of regional GDP per capita to national level is around 50 percentage points (p.p.) in Bucharest and 35 percentage points (p.p.) in Prague and Bratislava. In detail, in Bucharest, the usual GDP per capita in PPS is 237% of the national average while after applying also regional price level, it drops to 187%. In Bratislava, the respective values are 241% and 206% and in Prague 214% of national average drops to only 179%. This can be considered as an evidence of substantial overvaluation of capitals in this part of Central and Eastern Europe. The capitals and a very small area around them are extremely distinctive – both in terms of economic productivity and price levels. However, there is no evidence that this should be

[20] $CV = \frac{\sigma}{\mu}$ where σ is the standard deviation and μ is the mean; $\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$. In our case, the mean is the average national value.

the case of capitals in the western part of Europe like London or Berlin. (To be more specific, the prices in Berlin are only at 99,89 % of Germany´s average level, in London 107,9 % of average UK´s level, while in Bucharest, Prague and Bratislava it is 126%, 119,7 and 117%.)

At the opposite end of the list, regions like Molise or Basilicata (both Italy), where the estimated price level is just slightly above 85%, are considerably underestimated from the perspective of living standard. After factoring regional prices into calculations, the ratio of regional GDP to national value rises by approximately 13 percentage points (from 78.5% to 92.2% in Molise and from 69.3% to 81.5% in Basilicata).

We can see the although GDP per capita is much higher in some regions (most often capital cities and other urban centres, corresponding with the agglomeration effect of NEG), it is also partly compensated by higher prices. Those are also important findings from the point of view of convergence. In accordance with Čadil et al. (2014), we can claim that calculating the proper RPPPs (regional purchasing power parities) could be one of the crucial elements in explaining the convergence puzzle.

The second variable of interest is the *disposable income* per capita. In comparison with GDP, the overall variation is smaller in general. But the same finding as in the previous case is valid: after accounting for price levels, the variation among regions is lower (average coefficient of variation drops from 0.1121 to 0.0750). The highest regional variation in disposable income is in Romania (0.2077) and Italy (0.1164). The average absolute difference between adjusted and non-adjusted for regional price levels is 622.64 euro.

Obviously, when using regional prices levels, the most substantial change occurred in the same regions as in GDP analysis: Bucharest, Prague and Bratislavský kraj. In Bucharest, the true value of disposable income should be 153% of the national average instead of 194%, what is the change of 41 p.p. In Prague, it is only 109,5% of the national average instead of 131%, and in Bratislavský kraj 111% instead of 130%. On the other hand, in two Italian regions (Molise, Basilicata) the percentage value if disposable income in “RPPP” increases from 83% to 98% (77% to 90.5%, respectively) of the national average. Evidently, those are only examples from the bottom or top of the list, there is a change (either more or less substantial) in every region.

Table 11: Analysis of DI and GDP before and after applying regional price levels

Country	Average difference in DI values*	CV in DI p.c.**	CV in DI p.c. in RPPP***	Average difference in GDP* values	CV in GDP p.c.	CV in GDP p.c. in RPPP
Austria	554,07	0,0251	0,0332	869,80	0,1815	0,1567
Belgium	797,23	0,0938	0,0691	1 356,60	0,3332	0,3084
Bulgaria	247,50	0,1611	0,1121	489,04	0,3971	0,3424
Czech Republic	408,03	0,1033	0,0554	919,57	0,3506	0,2662
Denmark	469,57	0,0319	0,0215	1 125,35	0,1933	0,1598
Finland	885,52	0,0902	0,0260	1 768,81	0,2235	0,1442
France	662,99	0,0709	0,0458	954,14	0,2220	0,1831
Germany	434,65	0,1002	0,0808	697,84	0,2760	0,2527
Greece	545,02	0,0981	0,0689	808,68	0,2119	0,1831
Hungary	275,52	0,0705	0,0489	582,70	0,3659	0,3192
Ireland	655,97	0,0640	0,0810	1 391,44	0,2543	0,2464
Italy	1 439,52	0,1872	0,1164	2 213,70	0,2484	0,1756
Netherlands	417,01	0,0883	0,0757	936,87	0,4098	0,3986
Poland	393,79	0,1501	0,0959	592,19	0,2484	0,1905
Portugal	594,34	0,1268	0,0829	977,34	0,2159	0,1576
Romania	477,60	0,3525	0,2077	1 119,24	0,5229	0,3524
Slovakia	484,55	0,1203	0,0574	1 140,77	0,5433	0,4249
Slovenia	696,24	0,0583	0,0391	1 267,30	0,1847	0,1253
Spain	763,10	0,1618	0,1047	1 256,74	0,1839	0,1295
Sweden	719,96	0,0774	0,0544	1 437,02	0,1622	0,1319
United Kingdom	320,56	0,1228	0,0982	594,41	0,2706	0,2336

*DI = disposable income

** p.c. = per capita

***RPPP = regional purchasing power parity = regional price level

6.2 EU Cohesion policy

The aim of EU Cohesion (Regional) policy is to promote regional development, sustainable development, support job creation, business competitiveness, economic growth and improve citizens' quality of life. It is financed by the Structural Funds and the Cohesion Fund and according to Kosfeld (2005), it accounts for about 95% of all community regional aid. The criteria for eligibility are, however, due to a lack of regional price data, based on nominal regional GDP. As we already know, regional GDP (or income) disparities can be partly (or even completely) compensated for by spatial price differentials and as Kosfeld (2005) puts it, the extent of distortions may seriously matter. Jüssen (2005) explicitly stresses that regional policy is is oriented to regions where GDP is artificially undervalued

Despite the support of less-developed regions by Cohesion policy, convergence is not guaranteed. As Čadil et al. (2014) highlight, convergence among EU countries but divergence (or non-convergence) among regions within these countries is witnessed. The European Commission report on the Cohesion Fund (European Commission 1999, cited in Čadil et al., 2014) shows that between 1986 and 1996 regional disparities decreased only in the UK and Portugal.

EU Cohesion Policy is always planned for a period of six years. The optimality of Cohesion Policy will be therefore tested in two blocks: Cohesion policy 2007 – 2013 and 2014 – 2020.

Cohesion policy 2007 – 2013

According to the Council regulation[21], the regions eligible for funding from the Structural Funds under the Convergence objective shall be regions corresponding to NUTS level 2 whose gross domestic product (GDP) per capita, measured in purchasing power parities and calculated on the basis of Community figures for the period 2000 to 2002, is less than 75 % of the average GDP of the EU-25 for the same reference period. Moreover, the NUTS level 2 regions which would have been eligible for Convergence objective status had the eligibility threshold remained at 75 % of the average GDP of the EU-15, but which lose eligibility because their nominal GDP per capita level exceeds 75 % of the average GDP of the EU-25 shall be eligible, on a transitional and specific basis, for financing by the Structural Funds under the Convergence objective.

Cohesion policy 2014 – 2020

The new Cohesion policy focuses on economic growth and job creation and investments should be targeted on four key areas: research and innovation, information and communication technologies (ICT), enhancing the competitiveness of small and medium-sized enterprises and supporting the shift towards a low-carbon economy. Resources shall be allocated among the following three categories of NUTS level 2

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[21] COUNCIL REGULATION (EC) No 1083/2006. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006R1083&qid=1418078647034&from=EN [8/12/2014]

regions:

(a) less developed regions, whose GDP per capita is less than 75 % of the average GDP of the EU-27

(b) transition regions, whose GDP per capita is between 75 % and 90 % of the average GDP of the EU-27

(c) more developed regions, whose GDP per capita is above 90 % of the average GDP of the EU-27.

The classification of regions under one of the three categories of regions shall be determined on the basis of how the GDP per capita of each region, measured in purchasing power parities (PPS) and calculated on the basis of Union figures for the period 2007 - 2009, relates to the average GDP of the EU-27 for the same reference period. [22] The complete list of regions assorted into categories is a part of Commission implementing decision.[23]

The question is, however, what could change if we account for different price levels among regions? For the same reason as why GDP per capita in PPS and not in nominal terms is used, we should employ "regional PPS". The detailed results when this is done are provided in Appendix, separately for six countries with the available data on regional price levels in Table 5 and for countries with regional price levels estimated in this thesis in Table 6. The ratio GDP per capita in PPS to the average EU-27 (or EU-25 depending on the period) is recalculated using GDP per capita in "regional PPS" (values adjusted for regional price levels). Since within our sample of countries there is also Czech Republic and Slovakia with price levels on NUTS level 3, they are aggregated at NUTS level 2 regions. This aggregation is performed in two ways: based on population size and based on the economic power expressed as the share of NUTS 3 GDP on total respective NUTS 2 GDP, oth ways yield very similar results.

The results of recalculations are following: as for Cohesion policy 2007 – 2013, altogether, out of all NUTS 2 units used in analysis, 8 units were misclassified. In details, Brandenburg, Mecklenburg-Vorpommern (Germany), Puglia, Calabria, Sicilia (Italy), Dytiki Makedonia (Greece) and Galicia, Castilla la Mancha (Spain) were all eligible under convergence objective, however, considering their lower price levels, they were, in

[22] REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303&from=EN [08/12/2014]

[23] 2014/99/EU: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014D0099

fact, above 75% threshold. Of course, a worse case would be the opposite situation – when a region should have been eligible but did not receive funds and this situation did not fortunately happen, but it does not change anything about the potential sub-optimality. In terms of Cohesion policy 2014 – 2020, twelve regions should have been in fact classified as more developed instead of transition (Leipzig (Germany), Abruzzo, Molise (Italy), Northumeberland and Tyne and Wear (UK); Castilla, Región de Murcia, Canarias (Spain), Lorraine, Franche-Comté, Poitou-Charentes, Auvergne, Languedoc-Roussillon (France). Five regions should have been classified as transition instead of less developed: Basilicata, Calabria (Italy), Extremadura (Spain), Alentejo (Portugal) and Vzhodna Slovenija (Slovenia). The opposite movement across categories was in Kent (UK), Mazowieckie (Poland) and Bucuresti-Ilfov (Romania), which should be in fact amongst transition regions instead of more developed ones one and then Strední Čechy (Czech Republic) which should have been reported due to its a bit higher price level among less developed regions and not transition regions. Altogether under the current Cohesion Policy, 21 NUTS level 2 regions out of 234 concerned are misclassified, what is circa 9%. Although this percentage is not very high, it definitely cannot be considered as marginal and if the importance of the whole European Cohesion policy is assumed, then also this non-correspondence should not be left unnoticed.

7 Conclusion

In this thesis I have used the available data on regional price levels in six countries in the EU in order to estimate the econometric model which would capture the dependency of the price level on several potential variables and fit the data with the smallest possible error. After finding several potential versions of the model (which had arisen from several possible transformations how to deal with big differences in absolute numbers) and after checking for assumptions, out-of-sample predictive power was also tested. Afterwards, the main goal of this thesis – the regional price level predictions in NUTS 2 regions in the rest of the EU - could be achieved. The model with the best goodness-of-fit measures and the best in-sample predictive power showed also the most sensible out-of-sample predictions. Of course, the results are far away from being precise. There are several reasons for that – in particular, a very limited amount of data is available (both for the dependant variable - to the best of my knowledge, at the time when this thesis was written, only six countries out of the all EU member states had their regional price levels provided; and for the explanatory variables, since not all potentially relevant variables are widely available on NUTS 2 level). Other reasons are the endogeneity in the model or the fact that even the input data are in most cases only estimates. Nevertheless, the predicted results seem to be very reasonable and the structure of an "expensive capital, cheap periphery and semi-urban regions with middle levels of income somewhere around the average of national price level" observed in our input data for six countries is logically maintained everywhere.

As for the prediction outcome, both country-relative results (where a base 100 is a respective country national price level) and EU-relative results (where a base 100 is the EU-27 average) are calculated. This enables international comparisons of regions from the perspective of purchasing power.

This is for the first time the regional price levels are estimated to such an extent – in the whole European Union at NUTS 2 level.

After price levels were estimated, they were used for recalculations of economic indicators. I took a look especially on GDP per capita and disposable income per capita. It was found out that regional differences and therefore the variation across regions within countries is significantly lower when the indicators are adjusted for regional price levels. For instance, the average coefficient of variation in regional GDP per capita drops from 0.2857 to 0.2325, in regional disposable income from 0.1121 to 0.0750. Similarly, the absolute size differences between pairs of values adjusted and non-adjusted for price levels were analysed.

Another field where regional price levels would be of the great help is the cohesion (or regional) policy. Due to the unavailability of regional data, the indicators are usually expressed in nominal terms, although as it was shown, disparities are up to the certain degree always compensated for by price differentials. EU Cohesion policy for two reference periods (2007 – 2014 and 2014 – 2020) was analysed and regions which would have fallen into a different category had the regional price levels been used were identified. It was found out that approximately 9 % of all regions had been wrongly categorized.

Those are, however, only examples where regional price levels are needed. In fact, in any kind of any regional analysis we cannot omit the important information on regional prices, because without that, results may be substantially distorted. Whether we would like to make comparisons of regional wages, salaries, pensions or social welfare, it cannot be done properly in nominal terms. Similarly, it is impossible to solve the convergence puzzle without reflecting regional price levels.

To sum it up, this thesis emphasizes the essentiality of regional price levels and the importance of embodying them into regional analyses and policies and tries to provide the first complete estimates of regional price levels across the whole European Union. At the same time, it opens space for further, more precise estimation of regional price levels and subsequently for more proper regional analysis, for rethinking the effectiveness of regional policies and for reconsidering regional convergence.

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APPENDIX

Table 1: The list of available regional price levels (dependent variable in models)

Country	Year	NUTS level	Observation	Territory	Price level
Germany	**2010**	**1**	**1**	Baden-Wurttemberg	103.15
Source: ROOS, M.W.M., 2006. Regional price levels in Germany. Applied Economics.Vol. 38, No. 13, s. 1553-1565. DOI: 10.1080/00036840500407207. [2014-11-10] Description: author`s prediction using the regression of known price levels of 50 German cities on several independent variables. Data do not contain prices of housing. Original data are from 1993, adjusted for regional inflation rates.			**2**	Bayern	104.15
			3	Berlin	99.98
			4	Brandenburg	95.62
			5	Bremen	101.14
			6	Hamburg	103.46
			7	Hessen	100.76
			8	Mecklenburg-Vorpommern	95.26
			9	Niedersachsen	103.19
			10	Nordrhein-Westfalen	102.3
			11	Rheinland-Pfalz	100.34
			12	Saarland	99.68
			13	Sachsen	97.36
			14	Sachsen-Anhalt	96.59
			15	Schleswig-Holstein	101.08
			16	Thuringen	95.94
Italy	**2006**	**2**	**17**	Piemonte	105.1
Source: PITTAU, M. G., 2011. Do Spatial Price Indices Reshuffle the Italian Income Distribution?. Modern Economy, 2011, Vol. 02, No. 03, p. 259-265. http://www.scirp.org/journal/PaperDownload.aspx?DOI=10.4236/me.2011.23029[2014-11-10] Description: Data estimated by National Bank of Italy together with Italian National Office of Statistics. Prices related to all consumer goods, services and housing are incorporated.			**18**	Valle d'Aosta	106.4
			19	Liguria	112.9
			20	Lombardia	114.1
			21	Trentino Alto Adige	112.3
			22	Veneto	101
			23	Friuli Venezia Giulia	106.9
			24	Emilia-Romagna	108.9
			25	Toscana	111.8
			26	Umbria	106.5
			27	Marche	96.9
			28	Lazio	112.4
			29	Abruzzo	92.6
			30	Molise	85.1
			31	Campania	91.5
			32	Puglia	91.9
			33	Basilicata	85.1
			34	Calabria	85.2
			35	Sicilia	92.8
			36	Sardegna	90.7
Austria	**2008**	**2**	**37**	Burgenland	96.6
Source: Österreichische Gesellschaft für Marketing, 2009. Reale Kaufkraft 2008. Available at: http://www.ogm.at/inhalt/2012/04/RealeKaufkraft11.pdf [2014-11-10] Desciption: The study of the Austrian Statistical Office together with OGM (Österreichische Gesellschaft für Marketing)			**38**	Niederösterreich	97.5
			39	Wien	103.8
			40	Kärnten	97.2
			41	Steiermark	98.1
			42	Oberösterreich	98.4
			43	Salzburg	104.1
			44	Tirol	102.1
			45	Vorarlberg	103.6

United Kingdom	**2010**	**1**	**46**	North East	98.2
Source: UK Relative Regional Consumer Price levels for Goods and Services for 2010. Office for National Statistics, 2011. Available at: http://data.gov.uk/dataset/regional_consumer_price_levels [2014-05-31] Description: Price levels of goods and services. By-product of a project conducted by the Office for National Statistics (ONS) to calculate UK Spatial Adjustment Factors (SAFs) for Eurostat			**47**	North West	98.2
			48	Yorkshire and the Humber	97
			49	East Midlands	99.4
			50	West Midlands	100.6
			51	East of England	101.2
			52	London	107.9
			53	South East	102.3
			54	South West	99.5
			55	Wales	98.4
			56	Scotland	99.7
			57	Northern Ireland	98.1
Czech Republic	**2007**	**3**	**58**	Hlavní město Praha	119.7
Source: ČADIL, J. et al., 2012b. Application of Regional Price Levels on Estimation of Regional Macro-Aggregates Per Capita in PPS. Statistika, Vol. 49, No. 4. Available at: http://www.czso.cz/csu/2012edicniplan.nsf/engt/EC004449B2/$File/e-180212q4k01.pdf [2014-11-10] Description: Adjusted Eurostat methodology, estimation based on final household consumption			**59**	Středočeský kraj	101.9
			60	Jihočeský kraj	97.9
			61	Plzeňský kraj	97.1
			62	Karlovarský kraj	101.4
			63	Ústecký kraj	94.9
			64	Liberecký kraj	101.4
			65	Královéhradecký kraj	96.4
			66	Pardubický kraj	98.2
			67	Vysočina	95.6
			68	Jihomoravský kraj	103.4
			69	Olomoucký kraj	96.9
			70	Zlínský kraj	100.8
			71	Moravskoslezský kraj	96.7
Slovakia	**2009**	**3**	**72**	Bratislavský	117
Source: RADVANSKÝ, M. & FUCHS, L. Computing real income at NUTS 3 regions. Available at: http://ecomod.net/system/files/Computing%20real%20income%20at%20NUTS%203%20regions%20Radvansky%20Fuchs.pdf. [2014-11-10] Description: estimation based on the data from the family budget survey			**73**	Trnavský	98
			74	Trenčiansky	100
			75	Nitriansky	99
			76	Žilinský	100
			77	Banskobystrický	93
			78	Prešovský	93
			79	Košický	103

Table 2: The list of all potential independent variables

Name	Explanation and sources
relpop	**Population** Proportion of population in a region to the total population in a country in %. Source: Eurostat
reldensity	**Population density** Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat
capital	dummy variable – 1 if it is a region where a country`s **capital** is located, 0 otherwise
relincome	**Net disposable income of households in purchasing power standard based on final consumption per inhabitant**. Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat (for NUTS 1 and 2 regions) Czech Statistical Office for Czech NUTS 3 Statistical Office of the Slovak Republic for Slovak NUTS 3
relgdp	**Gross domestic product (GDP) at current market prices in Purchasing Power Standard per inhabitant** Relative number: value in a respective region in proportion to an average national value in % Source: Eurostat
relemploy	**Employment rate (population from 15 to 64y.) in %** Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat (for NUTS 1 and 2 regions) Czech Statistical Office for Czech NUTS 3 Statistical Office of the Slovak Republic for Slovak NUTS 3
relunemp	**Unemployment rate (population 15y. or over) in %** Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat (for NUTS 1 and 2 regions) Czech Statistical Office for Czech NUTS 3 Statistical Office of the Slovak Republic for Slovak NUTS 3
relrisk	**At-risk-of-poverty rate (percentage of total population)** Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat (for NUTS 1 and 2 regions) data unavailable for NUTS 3 regions – for both Czech and Slovak NUTS 3 regions data for corresponding NUTS 2 regions are used
relcompens	**Compensation of employees (per employee)** Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat
reltourism	**Total nights spent at tourist accommodation establishments per**

	thousand inhabitants Relative number: value in a respective region in proportion to an average national (or EU) value in % Source: Eurostat
dumtour	dummy variable: 1 if an above-mentioned relative number of nights spent is higher than national average, 0 otherwise
reltourism2	**Net occupancy rates of bed places** Relative number: value in a respective region in proportion to an average national (or EU) value in % The only data available are from 2012 and later. The assumption is that this relative number does not change significantly over several years. Source: Eurostat (for NUTS 1 and 2 regions) data unavailable for NUTS 3 regions – for both Czech and Slovak NUTS 3 regions data for corresponding NUTS 2 regions are used
relbeds	**Number of bed-places in hotels; holiday and other short-stay accommodation** Proportion of a number of bed-places in a region to a total number of bed-places in a country Source: Eurostat
releduc	**Percentage of population from 25 to 64 years with tertiary education** Source: Eurostat Source: Eurostat (for NUTS 1 and 2 regions) data unavailable for NUTS 3 regions – for both Czech and Slovak NUTS 3 regions data for corresponding NUTS 2 regions are used
dumrural	dummy variable: 1 if it is predominantly **rural area** (NUTS 3) or predominantly rural areas prevail over predominantly urban areas and intermediate areas (NUTS 1 and NUTS 2); 0 otherwise. Based on official Urban-Rural Typology of NUTS 3 regions developed by European Commission (DG REGIO and DG AGRI). Source: Eurostat
cityover2	dummy variable: 1 for a **city with population of more than 2% of total country population**; 0 otherwise
cityover1	dummy variable: 1 for a **city with population of more than 1% of total country population** (except for capital); 0 otherwise

Note: Naturally, in the subsection 4.5.1 Differences, for every concerned variable, differences between a regional value and an average country value were used rather than relative values (proportions)

Table 3: Analysis of DI and GDP before and after applying regional price levels

Region	Price level	(1) Dispos. income per capita in PPS*	(2) Dispos. income per capita in PPS adjusted for regional price level	Difference (1) - (2) (in absolute terms)	(3) GDP per capita in PPS*	(4) GDP per capita in PPS adjusted for regional price level	Difference (4) - (5) (in absolute terms)
GERMANY		**18 700**			**29 200**		
Baden-Wurttemberg	103.15	20 100	19 486.00	614.00	33 900	32 864.45	1 035.55
Bayern	104.15	20 600	19 779.23	820.77	34 600	33 221.43	1 378,57
Berlin	99,98	16 000	16 003,22	3,22	28 700	28 705.78	5,78
Brandenburg	95,62	16 400	17 151,45	751,45	21 800	22 798,88	998,88
Bremen	101,14	19 000	18 786,59	213,41	39 900	39 451,85	448,15
Hamburg	103,46	20 100	19 427,03	672,97	51 700	49 969,03	1 730,97
Hessen	100,76	19 100	18 955,13	144,87	36 000	35 726,94	273,06
Mecklenburg-Vorpommern	95,26	15 500	16 271,69	771,69	21 100	22 150,50	1 050,50
Niedersachsen	103,19	17 700	17 152,90	547,10	27 200	26 359,25	840,75
Nordrhein-Westfalen	102,30	18 800	18 377,54	422,46	31 100	30 401,14	698,86
Rheinland-Pfalz	100,34	19 400	19 334,87	65,13	27 600	27 507,35	92,65
Saarland	99,68	17 500	17 555,31	55,31	29 200	29 292,29	92,29
Sachsen	97,36	16 300	16 741,36	441,36	22 200	22 801,12	601,12

Sachsen-Anhalt	96,59	15 700	16 254,78	554,78	21 600	22 363,27	763,27
Schleswig-Holstein	101,08	18 900	18 697,69	202,31	25 600	25 325,97	274,03
Thuringen	95,94	15 900	16 573,50	673,50	20 800	21 681,05	881,05
MAE				***434,65***			***697,84***
CV		***0,1002***	***0,0808***		***0,2760***	***0,2527***	
ITALY		**16 100**			**25 100**		
Piemonte	105,10	18 100	17 221,69	878,31	27 100	25 784,97	1 315,03
Valle d'Aosta	106,40	20 000	18 796,99	1203,01	32 600	30 639,10	1 960,90
Liguria	112,90	17 800	15 766,16	2033,84	26 100	23 117,80	2 982,20
Lombardia	114,10	19 100	16 739,70	2360,30	32 800	28 746,71	4 053,29
Trentino Alto Adige	112,30	19 173	17 073,02	2099,98	36 100	32 146,04	3 953,96
Veneto	101,00	17 900	17 722,77	177,23	28 800	28 514,85	285,15
Friuli Venezia Giulia	106,90	18 500	17 305,89	1194,11	28 500	26 660,43	1 839,57
Emilia-Romagna	108,90	19 300	17 722,68	1577,32	30 400	27 915,52	2 484,48
Toscana	111,80	17 400	15 563,51	1836,49	27 100	24 239,71	2 860,29
Umbria	106,50	16 100	15 117,37	982,63	23 100	21 690,14	1 409,86
Marche	96,90	17 000	17 543,86	543,86	25 200	26 006,19	806,19
Lazio	112,40	17 600	15 658,36	1941,64	29 000	25 800,71	3 199,29
Abruzzo	92,60	13 500	14 578,83	1078,83	21 100	22 786,18	1 686,18
Molise	85,10	13 400	15 746,18	2346,18	19 700	23 149,24	3 449,24

Campania	91,50	11 300	12 349,73	1049,73	15 800	17 267,76	1 467,76
Puglia	91,90	12 000	13 057,67	1057,67	16 500	17 954,30	1 454,30
Basilicata	85,10	12 400	14 571,09	2171,09	17 400	20 446,53	3 046,53
Calabria	85,20	11 600	13 615,02	2015,02	16 100	18 896,71	2 796,71
Sicilia	92,80	11 600	12 500,00	900,00	16 300	17 564,66	1 264,66
Sardegna	90,70	13 100	14 443,22	1343,22	19 100	21 058,43	1 958,43
MAE				***1439,52***			***2 213,70***
CV		***0,1872***	***0,1164***		***0,2484***	***0,1756***	
AUSTRIA		**19 500**			**30 900**		
Burgenland	96,60	19 100	19 772,26	672,26	21 000	21 739,13	739,13
Nieder-österreich	97,50	20 300	20 820,51	520,51	25 400	26 051,28	651,28
Wien	103,80	19 700	18 978,81	721,19	40 200	38 728,32	1 471,68
Kärnten	97,20	18 800	19 341,56	541,56	26 000	26 748,97	748,97
Steiermark	98,10	18 900	19 266,06	366,06	26 800	27 319,06	519,06
Oberösterreich	98,40	19 400	19 715,45	315,45	30 600	31 097,56	497,56
Salzburg	104,10	19 800	19 020,17	779,83	35 700	34 293,95	1 406,05
Tirol	102,10	18 900	18 511,26	388,74	32 000	31 341,82	658,18
Vorarlberg	103,60	19 600	18 918,92	681,08	32 700	31 563,71	1 136,29
MAE				***554,07***			***869,80***
CV		***0,0251***	***0,0332***		***0,1815***	***0,1567***	

UK		**16 100**			**26 300**		
North East	98,20	13 900	14 154,79	254,79	20 500	20 875,76	375,76
North West	98,20	14 500	14 765,78	265,78	23 900	24 338,09	438,09
Yorkshire and the Humber	97,00	14 100	14 536,08	436,08	22 800	23 505,15	705,15
East Midlands	99,40	14 600	14 688,13	88,13	22 500	22 635,81	135,81
West Midlands	100,60	14 200	14 115,31	84,69	22 500	22 365,81	134,19
East of England	101,20	16 900	16 699,60	200,40	25 400	25 098,81	301,19
London	107,90	20 200	18 721,04	1478,96	47 200	43 744,21	3 455,79
South East	102,30	18 100	17 693,06	406,94	29 500	28 836,75	663,25
South West	99,50	16 200	16 281,41	81,41	25 100	25 226,13	126,13
Wales	98,40	14 100	14 329,27	229,27	19 200	19 512,20	312,20
Scotland	99,70	15 700	15 747,24	47,24	25 500	25 576,73	76,73
Northern Ireland	98,10	14 100	14 373,09	273,09	21 100	21 508,66	408,66
MAE				***320,56***			***594,41***
CV		***0,1228***	***0,0982***		***0,2706***	***0,2336***	
CZECH REP		**10 256**			**19 700**		
Hlavní město Praha	119,70	13 449	11 235,56	2213,41	42 200	35 254,80	6 945,20
Středočeský kraj	101,90	10 853	10 650,37	202,36	17 400	17 075,56	324,44

Jihočeský kraj	97,90	9 685	9 892,72	207,75	16 700	17 058,22	358,22
Plzeňský kraj	97,10	10 119	10 421,21	302,21	17 500	18 022,66	522,66
Karlovarský kraj	101,40	9 520	9 388,41	131,44	14 200	14 003,94	196,06
Ústecký kraj	94,90	9 329	9 830,16	501,34	16 000	16 859,85	859,85
Liberecký kraj	101,40	9 754	9 618,89	134,66	15 100	14 891,52	208,48
Královéhradecký kraj	96,40	9 899	10 268,74	369,67	17 200	17 842,32	642,32
Pardubický kraj	98,20	9 488	9 661,73	173,91	15 900	16 191,45	291,45
Vysočina	95,60	9 762	10 211,52	449,31	16 000	16 736,40	736,40
Jihomoravský kraj	103,40	10 132	9 798,72	333,16	18 600	17 988,39	611,61
Olomoucký kraj	96,90	9 248	9 544,08	295,87	15 000	15 479,88	479,88
Zlínský kraj	100,80	9 581	9 505,20	76,04	16 500	16 369,05	130,95
Moravskoslezský kraj	96,70	9 414	9 735,18	321,26	16 600	17 166,49	566,49
MAE				***408,03***			***919,57***
CV		***0,1033***	***0,0554***		***0,3506***	***0,2662***	
SLOVAKIA		**10 133**			**18 100**		
Bratislavský kraj	117,00	13 164	11 251,04	1912,68	43 700	37 350,43	6 349,57
Trnavský kraj	98,00	10 348	10 559,23	211,18	20 300	20 714,29	414,29
Trenčiansky kraj	100,00	10 258	10 258,37	0,00	16 100	16 100,00	0,00
Nitriansky kraj	99,00	9 918	10 017,80	100,18	15 000	15 151,52	151,52
Žilinský kraj	100,00	10 240	10 240,44	0,00	16 100	16 100,00	0,00

Banskobystrický	93,00	9 451	10 162,72	711,39	13 500	14 516,13	1 016,13
Prešovský kraj	93,00	8 824	9 487,78	664,14	10 300	11 075,27	775,27
Košický kraj	103,00	9 505	9 228,29	276,85	14 400	13 980,58	419,42
MAE				***484,55***			***1 140,77***
CV		***0,1203***	***0,0574***		***0,5433***	***0,4249***	
AVERAGE MAE				***685,66***			***1 169,63***
AVERAGE CV		***0,1098***	***0,0736***		***0,3117***	***0,2516***	

Table 4: Out-of-sample predictions for the rest of the Europe & Analysis of DI and GDP before and after applying regional price levels

Region	Price level	(1) Disposable income per capita in PPS*	(2) Disposable income per capita in PPS adjusted for regional price level	Difference (1) - (2) (in absolute terms)	(3) GDP per capita in PPS*	(4) GDP per capita in PPS adjusted for regional price level	Difference (4) - (5) (in absolute terms)
BE - Belgium		16700			29 400		
BE10 - Région de Bruxelles-Capitale	**104,32**	15700	15 050,17	649,83	55 100	52 819,39	2 280,61
BE21 - Prov. Antwerpen	**105,97**	17400	16 419,17	980,83	33 900	31 989,08	1 910,92
BE22 - Prov. Limburg (BE)	**102,62**	16300	15 883,38	416,62	24 000	23 386,57	613,43
BE23 - Prov. Oost-Vlaanderen	**107,20**	17800	16 604,59	1195,41	26 500	24 720,32	1 779,68
BE24 - Prov. Vlaams-Brabant	**107,48**	19600	18 235,99	1364,01	31 100	28 935,68	2 164,32
BE25 - Prov. West-Vlaanderen	**108,00**	17300	16 018,75	1281,25	27 600	25 555,93	2 044,07
BE31 - Prov. Brabant Wallon	**103,79**	18700	18 017,11	682,89	32 300	31 120,47	1 179,53
BE32 - Prov. Hainaut	**98,12**	14600	14 880,41	280,41	19 200	19 568,76	368,76
BE33 - Prov. Liège	**99,40**	14900	14 989,82	89,82	21 800	21 931,42	131,42
BE34 - Prov. Luxembourg (BE)	**95,10**	15500	16 298,17	798,17	19 800	20 819,60	1 019,60
BE35 - Prov. Namur	**93,65**	15200	16 230,31	1030,31	21 100	22 530,24	1 430,24
Average difference				**797,23**			**1356,60**
CV		***0,0938***	***0,0691***		***0,3332***	***0,3084***	

BG - Bulgaria		5500			10 800		
BG31 - Severozapaden	**91,23**	4400	4 822,92	422,92	6 500	7 124,76	624,76
BG32 - Severen tsentralen	**94,10**	4600	4 888,62	288,62	7 100	7 545,47	445,47
BG33 - Severoiztochen	**99,25**	4900	4 936,79	36,79	8 800	8 866,07	66,07
BG34 - Yugoiztochen	**102,89**	5400	5 248,51	151,49	8 800	8 553,12	246,88
BG41 - Yugozapaden	**109,00**	6900	6 330,36	569,64	18 500	16 972,71	1 527,29
BG42 - Yuzhen tsentralen	**100,32**	4900	4 884,46	15,54	7 500	7 476,22	23,78
Average difference				**247,50**			**489,04**
CV		***0,1611***	***0,1121***		***0,3971***	***0,3424***	
DK - Denmark	13600			31 200			
DK01 - Hovedstaden	**110,29**	14300	12 966,17	1333,83	38 600	34 999,60	3 600,40
DK02 - Sjælland	**98,61**	13400	13 588,89	188,89	21 900	22 208,71	308,71
DK03 - Syddanmark	**97,79**	13200	13 498,19	298,19	27 700	28 325,75	625,75
DK04 - Midtjylland	**98,19**	13300	13 544,69	244,69	28 200	28 718,82	518,82
DK05 - Nordjylland	**97,91**	13200	13 482,26	282,26	26 800	27 373,06	573,06
Average difference				**469,57**			**1125,35**
CV		***0,0319***	***0,0215***		***0,1933***	***0,1598***	
IE - Ireland		15400			31 400		
IE01 - Border, Midland and Western	**101,25**	14100	13 925,79	174,21	20 800	20 543,00	257,00
IE02 - Southern and Eastern	**107,71**	15900	14 762,28	1137,72	35 300	32 774,11	2 525,89
Average difference				**655,97**			**1391,44**
CV		***0,0640***	***0,0738***		***0,2543***	***0,2464***	

EL - Greece		14000			21 300		
EL11 - Anatoliki Makedonia, Thraki	**92,26**	11900	12 898,07	998,07	15 800	17 125,17	1 325,17
EL12 - Kentriki Makedonia	**101,25**	12900	12 741,14	158,86	16 700	16 494,34	205,66
EL13 - Dytiki Makedonia	**94,69**	13500	14 257,17	757,17	19 700	20 804,91	1 104,91
EL14 - Thessalia	**97,25**	13100	13 470,83	370,83	15 400	15 835,94	435,94
EL21 - Ipeiros	**100,02**	13300	13 296,93	3,07	15 100	15 096,51	3,49
EL22 - Ionia Nisia	**94,91**	13500	14 223,52	723,52	20 700	21 809,40	1 109,40
EL23 - Dytiki Ellada	**95,94**	12300	12 820,94	520,94	16 000	16 677,64	677,64
EL24 - Sterea Ellada	**93,22**	12100	12 979,70	879,70	19 200	20 595,88	1 395,88
EL25 - Peloponnisos	**96,03**	13100	13 640,92	540,92	17 100	17 806,08	706,08
EL30 - Attiki	**110,31**	16100	14 595,58	1504,42	28 500	25 836,90	2 663,10
EL41 - Voreio Aigaio	**97,59**	14000	14 346,46	346,46	16 800	17 215,76	415,76
EL42 - Notio Aigaio	**98,38**	14300	14 535,57	235,57	24 100	24 497,00	397,00
EL43 - Kriti	**99,61**	11700	11 745,76	45,76	18 600	18 672,74	72,74
Average difference				**545,02**			**808,68**
CV		***0,0981***	***0,0689***		***0,2119***	***0,1831***	
ES - Spain		14500			24 100		
ES11 - Galicia	**96,17**	13700	14 245,05	545,05	21 900	22 771,28	871,28
ES12 - Principado de Asturias	**103,11**	15100	14 643,92	456,08	22 600	21 917,39	682,61
ES13 - Cantabria	**103,17**	14700	14 248,84	451,16	23 500	22 778,75	721,25
ES21 - País Vasco	**111,34**	19600	17 603,62	1996,38	32 000	28 740,61	3 259,39
ES22 - Comunidad Foral de Navarra	**109,64**	18700	17 055,59	1644,41	30 700	28 000,35	2 699,65
ES23 - La Rioja	**104,13**	15400	14 789,39	610,61	26 900	25 833,42	1 066,58

ES24 - Aragón	**107,47**	16200	15 074,41	1125,59	26 900	25 030,97	1 869,03
ES30 - Comunidad de Madrid	**112,63**	17500	15 537,68	1962,32	31 300	27 790,25	3 509,75
ES41 - Castilla y León	**102,52**	14700	14 339,14	360,86	23 400	22 825,57	574,43
ES42 - Castilla-la Mancha	**92,33**	12200	13 213,26	1013,26	19 300	20 902,94	1 602,94
ES43 - Extremadura	**90,23**	11200	12 412,73	1212,73	16 900	18 729,92	1 829,92
ES51 - Cataluña	**107,27**	16600	15 474,38	1125,62	28 200	26 287,80	1 912,20
ES52 - Comunidad Valenciana	**100,33**	13000	12 956,97	43,03	21 400	21 329,16	70,84
ES53 - Illes Balears	**101,11**	14500	14 340,21	159,79	25 300	25 021,19	278,81
ES61 - Andalucía	**96,93**	11600	11 966,90	366,90	18 300	18 878,82	578,82
ES62 - Región de Murcia	**96,49**	12100	12 540,65	440,65	20 100	20 831,99	731,99
ES63 - Ciudad Autónoma de Ceuta (ES)	**99,55**	14000	14 063,92	63,92	21 400	21 497,71	97,71
ES64 - Ciudad Autónoma de Melilla (ES)	**97,40**	12600	12 936,87	336,87	19 400	19 918,68	518,68
ES70 - Canarias (ES)	**95,36**	12000	12 583,76	583,76	20 600	21 602,12	1 002,12
AVERAGE DIFFERENCE				**763,10**			**1256,74**
CV		***0,1618***	***0,1047***		***0,1839***	***0,1295***	
FR - France		17400			26 600		
FR10 - Île de France	**112,15**	21200	18 903,07	2296,93	44 200	39 411,11	4 788,89
FR21 - Champagne-Ardenne	**99,58**	16200	16 268,80	68,80	22 800	22 896,82	96,82
FR22 - Picardie	**94,12**	16400	17 425,23	1025,23	20 300	21 569,03	1 269,03
FR23 - Haute-Normandie	**100,09**	16700	16 685,74	14,26	23 200	23 180,19	19,81
FR24 - Centre (FR)	**97,51**	17400	17 843,75	443,75	22 300	22 868,72	568,72
FR25 - Basse-Normandie	**95,83**	16600	17 322,61	722,61	20 700	21 601,08	901,08

FR26 - Bourgogne	**96,05**	17100	17 803,77	703,77	22 000	22 905,44	905,44
FR30 - Nord - Pas-de-Calais	**98,92**	15100	15 264,43	164,43	21 400	21 633,04	233,04
FR41 - Lorraine	**94,30**	15900	16 861,17	961,17	20 400	21 633,20	1 233,20
FR42 - Alsace	**103,66**	17000	16 399,70	600,30	24 600	23 731,33	868,67
FR43 - Franche-Comté	**95,52**	16400	17 169,95	769,95	21 000	21 985,91	985,91
FR51 - Pays de la Loire	**102,83**	16600	16 142,39	457,61	23 400	22 754,94	645,06
FR52 - Bretagne	**96,54**	16600	17 195,70	595,70	21 700	22 478,71	778,71
FR53 - Poitou-Charentes	**96,22**	16700	17 356,54	656,54	21 300	22 137,38	837,38
FR61 - Aquitaine	**103,88**	17200	16 557,43	642,57	23 300	22 429,54	870,46
FR62 - Midi-Pyrénées	**98,65**	16900	17 131,56	231,56	23 200	23 517,88	317,88
FR63 - Limousin	**96,94**	17000	17 536,40	536,40	20 300	20 940,52	640,52
FR71 - Rhône-Alpes	**104,42**	17600	16 854,30	745,70	26 500	25 377,21	1 122,79
FR72 - Auvergne	**96,94**	17000	17 536,40	536,40	21 200	21 868,92	668,92
FR81 - Languedoc-Roussillon	**92,57**	15800	17 067,65	1267,65	20 400	22 036,72	1 636,72
FR82 - Provence-Alpes-Côte d'Azur	**103,26**	17400	16 850,37	549,63	25 100	24 307,14	792,86
FR83 - Corse	**96,44**	16100	16 694,89	594,89	21 900	22 709,20	809,20
AVERAGE DIFFERENCE				**662,99**			**954,14**
CV		***0,0709***	***0,0458***		***0,2220***	***0,1831***	
HU - Hungary	8100			16 100			
HU10 - Közép-Magyarország	**109,68**	8700	7 931,92	768,08	26 500	24 160,43	2 339,57
HU21 - Közép-Dunántúl	**96,92**	8200	8 460,54	260,54	14 100	14 548,01	448,01
HU22 - Nyugat-Dunántúl	**100,20**	8400	8 383,27	16,73	16 100	16 067,93	32,07
HU23 - Dél-Dunántúl	**97,05**	7700	7 933,67	233,67	11 000	11 333,82	333,82

HU31 - Észak-Magyarország	**100,11**	7500	7 492,10	7,90	9 800	9 789,68	10,32
HU32 - Észak-Alföld	**94,82**	7200	7 593,05	393,05	10 300	10 862,28	562,28
HU33 - Dél-Alföld	**96,75**	7400	7 648,68	248,68	10 500	10 852,86	352,86
AVERAGE DIFFERENCE				**275,52**			**582,70**
CV		***0,0705***	***0,0489***		***0,3459***	***0,3192***	
NL - Netherlands	14400			31 700			
NL11 - Groningen	**98,39**	11900	12 094,48	194,48	43 100	43 804,39	704,39
NL12 - Friesland (NL)	**98,03**	12700	12 954,64	254,64	25 500	26 011,28	511,28
NL13 - Drenthe	**98,14**	12600	12 838,96	238,96	23 600	24 047,57	447,57
NL21 - Overijssel	**98,94**	13000	13 139,81	139,81	27 700	27 997,91	297,91
NL22 - Gelderland	**100,77**	13900	13 794,40	105,60	26 600	26 397,91	202,09
NL23 - Flevoland	**102,18**	14000	13 701,87	298,13	23 200	22 705,96	494,04
NL31 - Utrecht	**107,07**	16100	15 036,68	1063,32	37 500	35 023,31	2 476,69
NL32 - Noord-Holland	**108,64**	15300	14 083,59	1216,41	36 300	33 414,01	2 885,99
NL33 - Zuid-Holland	**103,81**	14900	14 352,96	547,04	31 500	30 343,50	1 156,50
NL34 - Zeeland	**102,14**	13600	13 314,99	285,01	30 400	29 762,93	637,07
NL41 - Noord-Brabant	**103,81**	14400	13 871,65	528,35	32 000	30 825,90	1 174,10
NL42 - Limburg (NL)	**100,92**	14600	14 467,59	132,41	28 100	27 845,15	254,85
AVERAGE DIFFERENCE				**417,01**			**936,87**
CV		***0,0883***	***0,0757***		***0,1861***	***0,1811***	
PL - Poland		9300			15 400		
PL11 - Lódzkie	**103,64**	9300	8 973,57	326,43	14 300	13 798,07	501,93

PL12 - Mazowieckie	**115,14**	12300	10 682,20	1617,80	25 200	21 885,48	3 314,52
PL21 - Malopolskie	**101,37**	8400	8 286,62	113,38	13 100	12 923,18	176,82
PL22 - Slaskie	**104,63**	10700	10 226,70	473,30	16 600	15 865,72	734,28
PL31 - Lubelskie	**91,62**	7500	8 185,98	685,98	10 400	11 351,22	951,22
PL32 - Podkarpackie	**89,23**	6900	7 732,55	832,55	10 300	11 542,79	1 242,79
PL33 - Swietokrzyskie	**96,80**	8000	8 264,61	264,61	11 600	11 983,68	383,68
PL34 - Podlaskie	**92,01**	7700	8 369,03	669,03	11 200	12 173,13	973,13
PL41 - Wielkopolskie	**99,61**	9600	9 637,65	37,65	16 100	16 163,14	63,14
PL42 - Zachodniopomorskie	**101,57**	9000	8 861,19	138,81	13 300	13 094,87	205,13
PL43 - Lubuskie	**98,15**	8300	8 456,57	156,57	13 000	13 245,24	245,24
PL51 - Dolnoslaskie	**103,49**	9600	9 276,22	323,78	17 300	16 716,53	583,47
PL52 - Opolskie	**93,32**	8100	8 679,81	579,81	12 500	13 394,77	894,77
PL61 - Kujawsko-Pomorskie	**98,42**	8400	8 535,22	135,22	12 900	13 107,67	207,67
PL62 - Warminsko-Mazurskie	**92,21**	7700	8 350,42	650,42	11 200	12 146,06	946,06
PL63 - Pomorskie	**102,87**	9000	8 748,98	251,02	14 700	14 290,00	410,00
AVERAGE DIFFERENCE				**393,79**			**592,19**
CV		***0,1501***	***0,0959***		***0,2484***	***0,1905***	
PT - Portugal		12300			19 600		
PT11 - Norte	**99,16**	10500	10 588,80	88,80	15 700	15 832,77	132,77
PT15 - Algarve	**96,41**	12900	13 379,82	479,82	20 200	20 951,34	751,34
PT16 - Centro (PT)	**95,35**	11000	11 535,86	535,86	16 200	16 989,18	789,18
PT17 - Área Metropolitana de Lisboa	**112,52**	15600	13 864,06	1735,94	27 400	24 350,98	3 049,02
PT18 - Alentejo	**94,98**	11700	12 318,62	618,62	18 100	19 057,01	957,01

PT20 - Região Autónoma dos Açores (PT)	**103,25**	12300	11 912,41	387,59	18 400	17 820,19	579,81
PT30 - Região Autónoma da Madeira (PT)	**106,57**	13000	12 198,49	801,51	25 400	23 833,97	1 566,03
AVERAGE DIFFERENCE				**594,34**			**977,34**
CV		***0,1268***	***0,0829***		***0,2159***	***0,1576***	
RO - Romania	5600			11 700			
RO11 - Nord-Vest	**96,75**	5100	5 271,44	171,44	10 500	10 852,96	352,96
RO12 - Centru	**94,90**	5100	5 373,88	273,88	11 200	11 801,46	601,46
RO21 - Nord-Est	**98,98**	4400	4 445,24	45,24	7 200	7 274,03	74,03
RO22 - Sud-Est	**95,65**	5100	5 331,99	231,99	9 600	10 036,69	436,69
RO31 - Sud - Muntenia	**95,03**	4900	5 156,25	256,25	9 700	10 207,27	507,27
RO32 - Bucuresti - Ilfov	**126,83**	10900	8 594,30	2305,70	27 800	21 919,40	5 880,60
RO41 - Sud-Vest Oltenia	**96,33**	5100	5 294,37	194,37	9 000	9 343,01	343,01
RO42 - Vest	**106,04**	6000	5 658,09	341,91	13 300	12 542,09	757,91
AVERAGE DIFFERENCE				**477,60**			**1119,24**
CV		***0,3525***	***0,2077***		***0,5229***	***0,3524***	
SI - Slovenia		12000			20 600		
SI01 - Vzhodna Slovenija	**96,78**	11300	11 675,96	375,96	17 000	17 565,61	565,61
SI02 - Zahodna Slovenija	**108,7**	12700	11 683,49	1016,51	24 600	22 631,01	1 968,99
AVERAGE DIFFERENCE				**696,24**			**1267,3**
CV		***0,0583***	***0,0267***		***0,1847***	***0,1253***	

FI - Finland		15000			27 900		
FI19 - Länsi-Suomi	**97,00**	14200	14 639,38	439,38	25 100	25 876,66	776,66
FI1B - Helsinki-Uusimaa	**114,10**	17200	15 074,00	2126,00	38 000	33 303,02	4 696,98
FI1C - Etelä-Suomi	**97,56**	14600	14 964,47	364,47	23 700	24 291,64	591,64
FI1D - Pohjois- ja Itä-Suomi	**95,72**	13700	14 312,23	612,23	22 600	23 609,96	1 009,96
AVERAGE DIFFERENCE				**885,52**			**1768,81**
CV		***0,0902***	***0,0260***		***0,2235***	***0,1442***	
SE - Sweden		15500			30 200		
SE11 - Stockholm	**111,25**	17900	16 090,45	1809,55	41 000	36 855,22	4 144,78
SE12 - Östra Mellansverige	**106,36**	14800	13 914,84	885,16	25 700	24 162,93	1 537,07
SE21 - Småland med öarna	**95,65**	14700	15 369,00	669,00	26 300	27 496,91	1 196,91
SE22 - Sydsverige	**102,15**	14700	14 390,54	309,46	26 100	25 550,55	549,45
SE23 - Västsverige	**102,20**	15200	14 872,48	327,52	28 600	27 983,74	616,26
SE31 - Norra Mellansverige	**95,67**	14200	14 842,11	642,11	25 800	26 966,64	1 166,64
SE32 - Mellersta Norrland	**93,65**	14400	15 377,10	977,10	29 300	31 288,13	1 988,13
SE33 - Övre Norrland	**99,05**	14500	14 639,79	139,79	30 800	31 096,94	296,94
AVERAGE DIFFERENCE				**719,96**			**1 437,02**
CV		***0,0774***	***0,0544***		***0,1622***	***0,1319***	

Table 5: International price level comparison

Region	Price level
DK01 - Hovedstaden	150,431
SE11 - Stockholm	137,500
FI1B - Helsinki-Uusimaa	136,126
DK02 - Sjælland	134,504
DK04 - Midtjylland	133,936
DK05 - Nordjylland	133,544
DK03 - Syddanmark	133,387
SE12 - Östra Mellansverige	131,463
SE23 - Västsverige	126,322
SE22 - Sydsverige	126,258
FR10 - Île de France	125,946
SE33 - Övre Norrland	122,420
NL32 - Noord-Holland	120,913
BE25 - Prov. West-Vlaanderen	119,770
BE24 - Prov. Vlaams-Brabant	119,195
NL31 - Utrecht	119,171
IE02 - Southern and Eastern	119,016
BE23 - Prov. Oost-Vlaanderen	118,884
SE31 - Norra Mellansverige	118,253
SE21 - Småland med öarna	118,220
BE21 - Prov. Antwerpen	117,525
FR71 - Rhône-Alpes	117,269
ITC4 - Lombardia	116,838
FR61 - Aquitaine	116,658
FR42 - Alsace	116,411
FI1C - Etelä-Suomi	116,394
FR82 - Provence-Alpes-Côte d'Azur	115,963
SE32 - Mellersta Norrland	115,746
FI19 - Länsi-Suomi	115,719
BE10 - Région de Bruxelles-Capitale	115,688
ITC3 - Liguria	115,610
NL33 - Zuid-Holland	115,542
NL41 - Noord-Brabant	115,539
FR51 - Pays de la Loire	115,483
BE31 - Prov. Brabant Wallon	115,103
ITI4 - Lazio	115,098
ITH1,2 - Trentino Alto Adige	114,995
ITI1 - Toscana	114,483
FI1D - Pohjois- ja Itä-Suomi	114,197
UKI - London	113,942
BE22 - Prov. Limburg (BE)	113,809
NL23 - Flevoland	113,722
NL34 - Zeeland	113,682
AT32 - Salzburg	113,573
AT13 - Wien	113,246
AT34 - Vorarlberg	113,028
FR23 - Haute-Normandie	112,396
NL42 - Limburg (NL)	112,319
NL22 - Gelderland	112,152
IE01 - Border, Midland and Western	111,882
FR21 - Champagne-Ardenne	111,825
ITH5 - Emilia-Romagna	111,514
AT33 - Tirol	111,391
FR30 - Nord - Pas-de-Calais	111,090
FR62 - Midi-Pyrénées	110,782
BE33 - Prov. Liège	110,235
NL21 - Overijssel	110,116
NL11 - Groningen	109,510
FR24 - Centre (FR)	109,507
ITH4 - Friuli Venezia Giulia	109,466
NL13 - Drenthe	109,229
NL12 - Friesland (NL)	109,112
ITI2 - Umbria	109,056
ITC2 - Valle d'Aosta	108,954
FR63 - Limousin	108,865
FR72 - Auvergne	108,865
BE32 - Prov. Hainaut	108,810
DE2 - Bayern	108,628
FR52 - Bretagne	108,410
FR83 - Corse	108,298
FR53 - Poitou-Charentes	108,052
UKJ - South East	108,029
DE6 - Hamburg	107,913
FR26 - Bourgogne	107,861
DE9 - Niedersachsen	107,627
ITC1 - Piemonte	107,622
FR25 - Basse-Normandie	107,615
DE1 - Baden-Wurttemberg	107,586
AT31 - Oberösterreich	107,354
FR43 - Franche-Comté	107,264
AT22 - Steiermark	107,027
UKH - East of England	106,867
DEA - Nordrhein-Westfalen	106,698
AT12 - Niederösterreich	106,373
UKG - West Midlands	106,234

AT21 - Kärnten	106,045
FR41 - Lorraine	105,898
ES30 - Comunidad de Madrid	105,872
FR22 - Picardie	105,693
DE5 - Bremen	105,485
BE34 - Prov. Luxembourg (BE)	105,469
DEF - Schleswig-Holstein	105,429
AT11 - Burgenland	105,391
UKM - Scotland	105,283
DE7 - Hessen	105,097
UKK - South West	105,072
UKF - East Midlands	104,966
ES21 - País Vasco	104,660
DEB - Rheinland-Pfalz	104,651
DE3 - Berlin	104,279
DEC - Saarland	103,971
FR81 - Languedoc-Roussillon	103,959
UKL - Wales	103,910
BE35 - Prov. Namur	103,860
UKC - North East	103,699
UKD - North West	103,699
UKN - Northern Ireland	103,594
ITH3 - Veneto	103,424
ES22 - Comunidad Foral de Navarra	103,063
UKE - Yorkshire and the Humber	102,432
DED - Sachsen	101,550
EL30 - Attiki	101,372
ES24 - Aragón	101,019
ES51 - Cataluña	100,838
DEE - Sachsen-Anhalt	100,740

DEG - Thuringen	100,062
DE4 - Brandenburg	99,730
DE8 - Mecklenburg-Vorpommern	99,354
ITI3 - Marche	99,226
ES23 - La Rioja	97,881
ES13 - Cantabria	96,976
ES12 - Principado de Asturias	96,928
ES41 - Castilla y León	96,366
ES53 - Illes Balears	95,047
ITG1 - Sicilia	95,027
ITF1 - Abruzzo	94,822
ES52 - Comunidad Valenciana	94,312
ITF4 - Puglia	94,106
ITF3 - Campania	93,696
ES63 - Ciudad Autónoma de Ceuta (ES)	93,573
PT17 - Área Metropolitana de Lisboa	93,168
EL12 - Kentriki Makedonia (NUTS 2010)	93,046
ITG2 - Sardegna	92,877
EL21 - Ipeiros (NUTS 2010)	91,921
ES64 - Ciudad Autónoma de Melilla (ES)	91,552
EL43 - Kriti	91,542
SI02 - Zahodna Slovenija (NUTS 2010)	91,308
ES61 - Andalucía	91,118
ES62 - Región de Murcia	90,697
EL42 - Notio Aigaio	90,411
ES11 - Galicia	90,403
EL41 - Voreio Aigaio	89,681

ES70 - Canarias (ES)	89,639
EL14 - Thessalia (NUTS 2010)	89,370
EL25 - Peloponnisos (NUTS 2010)	88,256
PT30 - Região Autónoma da Madeira (PT)	88,240
EL23 - Dytiki Ellada (NUTS 2010)	88,166
ITF6 - Calabria	87,245
EL22 - Ionia Nisia (NUTS 2010)	87,225
ITF2 - Molise	87,142
ITF5 - Basilicata	87,142
EL13 - Dytiki Makedonia (NUTS 2010)	87,019
ES42 - Castilla-la Mancha	86,792
CZ010 - Hlavní město Praha	86,543
EL24 - Sterea Ellada (NUTS 2010)	85,672
PT20 - Região Autónoma dos Açores (PT)	85,494
ES43 - Extremadura	84,816
EL11 - Anatoliki Makedonia, Thraki (NUTS 2010)	84,789
PT11 - Norte	82,106
SI01 - Vzhodna Slovenija (NUTS 2010)	81,295
PT15 - Algarve	79,831
PT16 - Centro (PT)	78,954
PT18 - Alentejo	78,642
SK010 - Bratislavský kraj	78,156
CZ064 - Jihomoravský kraj	74,758

CZ020 - Středočeský kraj	73,674
CZ041 - Karlovarský kraj	73,312
CZ051 - Liberecký kraj	73,312
CZ072 - Zlínský kraj	72,878
CZ053 - Pardubický kraj	70,999
CZ031 - Jihočeský kraj	70,782
CZ032 - Plzeňský kraj	70,203
CZ071 - Olomoucký kraj	70,059
CZ080 - Moravskoslezský kraj	69,914
CZ052 - Královéhradecký kraj	69,697
CZ063 - Vysočina	69,119
SK042 - Košický kraj	68,804
PL12 - Mazowieckie	68,741
CZ042 - Ústecký kraj	68,613
SK022 - Trenčiansky kraj	66,800
SK031 - Žilinský kraj	66,800
SK023 - Nitriansky kraj	66,132
HU10 - Közép-Magyarország	65,481
SK021 - Trnavský kraj	65,464
RO32 - Bucuresti - Ilfov	62,780
PL22 - Slaskie	62,463
SK032 - Banskobystrický	62,124
SK041 - Prešovský kraj	62,124
PL11 - Lódzkie	61,872
PL51 - Dolnoslaskie	61,784
PL63 - Pomorskie	61,413
PL42 - Zachodniopomorskie	60,635
PL21 - Malopolskie	60,517
HU22 - Nyugat-Dunántúl	59,819
HU31 - Észak-Magyarország	59,763
PL41 - Wielkopolskie	59,467
PL61 - Kujawsko-Pomorskie	58,754
PL43 - Lubuskie	58,595

HU23 - Dél-Dunántúl	57,942
HU21 - Közép-Dunántúl	57,862
PL33 - Swietokrzyskie	57,789
HU33 - Dél-Alföld	57,759
HU32 - Észak-Alföld	56,610
PL52 - Opolskie	55,712
PL62 - Warminsko-Mazurskie	55,050
PL34 - Podlaskie	54,928
PL31 - Lubelskie	54,697
PL32 - Podkarpackie	53,272
RO42 - Vest	52,491
RO21 - Nord-Est	48,996
BG41 - Yugozapaden	48,286
RO11 - Nord-Vest	47,890
RO41 - Sud-Vest Oltenia	47,683
RO22 - Sud-Est	47,346
RO31 - Sud - Muntenia	47,040
RO12 - Centru	46,977
BG34 - Yugoiztochen	45,579
BG42 - Yuzhen tsentralen	44,441
BG33 - Severoiztochen	43,970
BG32 - Severen tsentralen	41,685
BG31 - Severozapaden	40,415

Table 6: Recalculations: Cohesion Policy

Region****	Average GDP (2007 - 2009)	Ratio (regional GDP/average EU GDP)*	Adjusted average GDP**	Ratio (adjusted regional GDP/average EU GDP)**	Average GDP (2000 - 2002)	Ratio (regional GDP/average EU GDP)	Adjusted average GDP	Ratio (adjusted regional GDP/average EU GDP)
EU-27	*24 500*							
EU-25					*20 991*			
Germany								
Stuttgart	34 167	1,395	33 123	1,352	28 733	1,369	27 856	1,327
Karlsruhe	32 000	1,306	31 022	1,266	26 300	1,253	25 497	1,215
Freiburg	27 333	1,116	26 498	1,082	22 633	1,078	21 942	1,045
Tübingen	29 733	1,214	28 825	1,177	23 933	1,140	23 202	1,105
Oberbayern	38 733	1,581	37 190	1,518	32 733	1,559	31 429	1,497
Niederbayern	27 000	1,102	25 924	1,058	21 233	1,012	20 387	0,971
Oberpfalz	28 467	1,162	27 332	1,116	22 033	1,050	21 155	1,008
Oberfranken	25 433	1,038	24 420	0,997	20 500	0,977	19 683	0,938
Mittelfranken	30 033	1,226	28 837	1,177	24 300	1,158	23 332	1,111
Unterfranken	28 267	1,154	27 140	1,108	22 667	1,080	21 764	1,037
Schwaben	28 000	1,143	26 884	1,097	22 567	1,075	21 668	1,032
Berlin	26 200	1,069	26 205	1,070	21 767	1,037	21 771	1,037
Brandenburg	19 667	0,803	20 568	0,840	15 467	**0,737**	**16 175**	**0,771**
Bremen	37 567	1,533	37 145	1,516	31 167	1,485	30 817	1,468
Hamburg	48 733	1,989	47 102	1,923	41 700	1,987	40 304	1,920
Darmstadt	39 133	1,597	38 837	1,585	33 133	1,578	32 882	1,566

Gießen	26 067	1,064	25 869	1,056	20 900	0,996	20 741	0,988
Kassel	26 967	1,101	26 762	1,092	21 833	1,040	21 668	1,032
Mecklenburg-Vorpommern	19 200	0,784	20 156	0,823	**15 033**	**0,716**	**15 782**	**0,752**
Braunschweig	26 567	1,084	25 745	1,051	21 700	1,034	21 029	1,002
Hannover	27 400	1,118	26 553	1,084	22 100	1,053	21 417	1,020
Lüneburg	19 833	0,810	19 220	0,785	16 500	0,786	15 990	0,762
Weser-Ems	24 933	1,018	24 163	0,986	20 133	0,959	19 511	0,929
Düsseldorf	32 167	1,313	31 444	1,283	25 367	1,208	24 797	1,181
Köln	30 233	1,234	29 554	1,206	25 500	1,215	24 927	1,187
Münster	25 367	1,035	24 797	1,012	19 600	0,934	19 160	0,913
Detmold	27 933	1,140	27 306	1,115	22 767	1,085	22 255	1,060
Arnsberg	25 567	1,044	24 992	1,020	20 233	0,964	19 779	0,942
Koblenz	24 233	0,989	24 152	0,986	19 700	0,938	19 634	0,935
Trier	23 100	0,943	23 022	0,940	18 600	0,886	18 538	0,883
Rheinhessen-Pfalz	26 300	1,073	26 212	1,070	21 667	1,032	21 594	1,029
Saarland	27 767	1,133	27 854	1,137	21 267	1,013	21 334	1,016
Dresden	20 833	0,850	21 397	0,873	15 933	0,759	16 365	0,780
Chemnitz	19 600	0,800	20 131	0,822	14 767	0,703	15 167	0,723
Leipzig	**21 533**	**0,879**	**22 116**	**0,903**	16 667	0,794	17 118	0,815
Sachsen-Anhalt	19 700	0,804	20 396	0,832	14 900	0,710	15 427	0,735
Schleswig-Holstein	24 067	0,982	23 809	0,972	20 600	0,981	20 379	0,971
Thüringen	18 967	0,774	19 770	0,807	14 667	0,699	15 288	0,728
Italy								
Piemonte	27 633	1,128	26 292	1,073	25 667	1,223	24 421	1,163
Valle d'Aosta/Vallée d'Aoste	32 133	1,312	30 201	1,233	28 033	1,335	26 347	1,255
Liguria	27 033	1,103	23 944	0,977	23 667	1,127	20 963	0,999

Lombardia	32 667	1,333	28 630	1,169	30 000	1,429	26 293	1,253
Provincia Autonoma di Bolzano/Bozen	35 467	1,448	31 610	1,290	31 333	1,493	27 926	1,330
Provincia Autonoma di Trento	30 233	1,234	26 922	1,099	28 167	1,342	25 082	1,195
Veneto	29 567	1,207	29 274	1,195	27 100	1,291	26 832	1,278
Friuli-Venezia Giulia	28 967	1,182	27 097	1,106	26 500	1,262	24 790	1,181
Emilia-Romagna	31 533	1,287	28 956	1,182	29 000	1,382	26 630	1,269
Toscana	27 500	1,122	24 597	1,004	24 700	1,177	22 093	1,052
Umbria	23 867	0,974	22 410	0,915	22 400	1,067	21 033	1,002
Marche	25 867	1,056	26 694	1,090	23 133	1,102	23 873	1,137
Lazio	29 667	1,211	26 394	1,077	26 700	1,272	23 754	1,132
Abruzzo	**21 233**	**0,867**	**22 930**	**0,936**	19 700	0,938	21 274	1,013
Molise	**20 333**	**0,830**	**23 893**	**0,975**	17 800	0,848	20 917	0,996
Campania	16 233	0,663	17 741	0,724	14 333	0,683	15 665	0,746
Puglia	16 667	0,680	18 136	0,740	**15 200**	**0,724**	**16 540**	**0,788**
Basilicata	**18 167**	**0,741**	**21 347**	**0,871**	15 933	0,759	18 723	0,892
Calabria	**16 367**	**0,668**	**19 210**	**0,784**	**14 133**	**0,673**	**16 588**	**0,790**
Sicilia	16 667	0,680	17 960	0,733	**14 633**	**0,697**	**15 769**	**0,751**
Sardegna	19 333	0,789	21 316	0,870	16 767	0,799	18 486	0,881
Austria								
Burgenland	20 300	0,829	21 014	0,858	17 000	0,810	17 598	0,838
Niederösterreich	25 100	1,024	25 744	1,051	20 600	0,981	21 128	1,007
Wien	39 567	1,615	38 118	1,556	35 000	1,667	33 719	1,606
Kärnten	25 733	1,050	26 475	1,081	21 000	1,000	21 605	1,029
Steiermark	26 567	1,084	27 081	1,105	21 467	1,023	21 882	1,042
Oberösterreich	30 267	1,235	30 759	1,255	24 500	1,167	24 898	1,186

Salzburg	35 067	1,431	33 686	1,375	28 133	1,340	27 025	1,287
Tirol	31 700	1,294	31 048	1,267	26 133	1,245	25 596	1,219
Vorarlberg	32 167	1,313	31 049	1,267	26 333	1,254	25 418	1,211
United Kingdom								
Tees Valley and Durham	19 267	0,786	19 620	0,801	15 900	0,757	16 191	0,771
Northumberland and Tyne and Wear	**21 867**	**0,893**	**22 267**	**0,909**	17 900	0,853	18 228	0,868
Cumbria	22 200	0,906	22 607	0,923	17 800	0,848	18 126	0,864
Greater Manchester	24 733	1,010	25 187	1,028	20 933	0,997	21 317	1,016
Lancashire	21 133	0,863	21 521	0,878	18 400	0,877	18 737	0,893
Cheshire	31 700	1,294	32 281	1,318	25 300	1,205	25 764	1,227
Merseyside	21 100	0,861	21 487	0,877	17 700	0,843	18 024	0,859
East Yorkshire and Northern Lincolnshire	22 400	0,914	23 093	0,943	18 033	0,859	18 591	0,886
North Yorkshire	24 000	0,980	24 742	1,010	20 700	0,986	21 340	1,017
South Yorkshire	20 433	0,834	21 065	0,860	16 500	0,786	17 010	0,810
West Yorkshire	25 433	1,038	26 220	1,070	21 133	1,007	21 787	1,038
Derbyshire and Nottinghamshire	21 800	0,890	21 932	0,895	19 000	0,905	19 115	0,911
Leicestershire, Rutland and Northamptonshire	25 033	1,022	25 184	1,028	21 300	1,015	21 429	1,021
Lincolnshire	19 000	0,776	19 115	0,780	16 700	0,796	16 801	0,800
Herefordshire, Worcestershire and Warwickshire	23 333	0,952	23 194	0,947	20 467	0,975	20 345	0,969
Shropshire and Staffordshire	20 700	0,845	20 577	0,840	18 100	0,862	17 992	0,857

West Midlands	23 500	0,959	23 360	0,953	22 367	1,066	22 233	1,059
East Anglia	24 933	1,018	24 638	1,006	21 367	1,018	21 113	1,006
Bedfordshire and Hertfordshire	29 900	1,220	29 545	1,206	27 033	1,288	26 713	1,273
Essex	22 900	0,935	22 628	0,924	19 567	0,932	19 335	0,921
Inner London	83 233	3,397	77 139	3,149	64 633	3,079	59 901	2,854
Outer London	24 667	1,007	22 861	0,933	22 833	1,088	21 162	1,008
Berkshire, Buckinghamshire and Oxfordshire	37 033	1,512	36 201	1,478	33 567	1,599	32 812	1,563
Surrey, East and West Sussex	28 833	1,177	28 185	1,150	26 300	1,253	25 709	1,225
Hampshire and Isle of Wight	27 433	1,120	26 817	1,095	23 533	1,121	23 004	1,096
Kent	**22 500**	**0,918**	**21 994**	**0,898**	19 767	0,942	19 322	0,920
Gloucestershire, Wiltshire and Bristol/Bath area	29 233	1,193	29 380	1,199	25 100	1,196	25 226	1,202
Dorset and Somerset	22 467	0,917	22 580	0,922	18 733	0,892	18 827	0,897
Cornwall and Isles of Scilly	18 033	0,736	18 124	0,740	14 200	0,676	14 271	0,680
Devon	21 767	0,888	21 876	0,893	18 367	0,875	18 459	0,879
West Wales and The Valleys	16 933	0,691	17 209	0,702	14 133	0,673	14 363	0,684
East Wales	24 467	0,999	24 864	1,015	21 267	1,013	21 612	1,030
Eastern Scotland	27 267	1,113	27 349	1,116	22 600	1,077	22 668	1,080
South Western Scotland	24 300	0,992	24 373	0,995	20 267	0,965	20 328	0,968
North Eastern Scotland	40 367	1,648	40 488	1,653	31 133	1,483	31 227	1,488

Highlands and Islands	21 267	0,868	21 331	0,871	17 167	0,818	17 218	0,820
Northern Ireland (UK)	22 100	0,902	22 528	0,920	18 500	0,881	18 858	0,898
Czech Republic								
Praha	43 033	1,756	35 951	1,467	28 867	1,375	24 116	1,149
Strední Čechy	**18 433**	**0,752**	**18 090**	**0,738**	13 567	0,646	13 314	0,634
Jihozápad	17 400	0,710	17 842	0,728	13 200	0,629	13 535	0,645
Severozápad	15 900	0,649	16 450	0,671	11 800	0,562	12 208	0,582
Severovýchod	16 367	0,668	16 622	0,678	12 733	0,607	12 932	0,616
Jihovýchod	18 033	0,736	17 859	0,729	12 900	0,615	12 775	0,609
Strední Morava	15 900	0,649	16 098	0,657	11 567	0,551	11 711	0,558
Moravskoslezsko	16 800	0,686	17 373	0,709	11 167	0,532	11 548	0,550
Slovakia								
Bratislavský kraj	41 100	1,678	35 128	1,434	22 833	1,088	19 516	0,930
Západné Slovensko	16 600	0,678	16 764	0,684	9 567	0,456	9 661	0,460
Stredné Slovensko	13 933	0,569	14 428	0,589	8 600	0,410	8 905	0,424
Východné Slovensko	11 967	0,488	12 220	0,499	7 833	0,373	7 999	0,381

* GDP in PPS per capita
**GDP in PPS per capita adjusted for regional price levels

*** green if ratio>0,9 (**more developed regions**)
yellow if 0,75≤ratio≤0,9 (**transition regions**)
red if ratio<0,75 (**less developed regions**; for Cohesion Policy 2007 – 2013 regions eligible under Convergence objective)

**** in grey and bold – regions which belong to other category when regional price levels are considered

Table 7: Recalculations: Cohesion Policy

Region*	Average GDP (2007 - 2009)	Ratio (regional GDP/average EU GDP)**	Adjusted average GDP	Ratio (adjusted regional GDP/average EU GDP)**	Average GDP (2000 - 2002)	Ratio (regional GDP/average EU GDP)**	Adjusted average GDP	Ratio (adjusted regional GDP/average EU GDP)**
EU-27	*24 500*				20 991			
BE - Belgium								
BE10 - Région de Bruxelles-Capitale	53 833	2,1973	51 605	2,1063	50 200	2,3915	48 122	2,2925
BE21 - Prov. Antwerpen	33 100	1,3510	31 234	1,2749	28 733	1,3688	27 114	1,2917
BE22 - Prov. Limburg (BE)	23 500	0,9592	22 899	0,9347	20 733	0,9877	20 203	0,9625
BE23 - Prov. Oost-Vlaanderen	25 733	1,0503	24 005	0,9798	21 500	1,0242	20 056	0,9554
BE24 - Prov. Vlaams-Brabant	30 200	1,2327	28 098	1,1469	25 567	1,2180	23 787	1,1332
BE25 - Prov. West-Vlaanderen	26 933	1,0993	24 939	1,0179	23 100	1,1005	21 389	1,0190
BE31 - Prov. Brabant Wallon	28 333	1,1565	27 299	1,1142	22 967	1,0941	22 128	1,0541
BE32 - Prov. Hainaut	18 733	0,7646	19 093	0,7793	16 200	0,7717	16 511	0,7866
BE33 - Prov. Liège	21 200	0,8653	21 328	0,8705	18 367	0,8750	18 477	0,8802
BE34 - Prov. Luxembourg (BE)	19 200	0,7837	20 189	0,8240	17 033	0,8114	17 910	0,8532
BE35 - Prov. Namur	19 933	0,8136	21 284	0,8688	16 967	0,8083	18 117	0,8631
BG - Bulgaria								
BG31 - Severozapaden	6 700	0,2735	7 344	0,2998	5 200	0,2477	5 700	0,2715
BG32 - Severen tsentralen	7 133	0,2912	7 581	0,3094	5 033	0,2398	5 349	0,2548
BG33 - Severoiztochen	8 767	0,3578	8 832	0,3605	5 433	0,2588	5 474	0,2608

BG34 - Yugoiztochen	8 533	0,3483	8 294	0,3385	5 667	0,2700	5 508	0,2624
BG41 - Yugozapaden	17 400	0,7102	15 964	0,6516	8 167	0,3890	7 492	0,3569
BG42 - Yuzhen tsentralen	7 300	0,2980	7 277	0,2970	4 467	0,2128	4 453	0,2121
DK - Denmark								
DK01 - Hovedstaden	35 867	1,4639	32 521	1,3274	30 433	1,4498	27 595	1,3146
DK02 - Sjælland	21 400	0,8735	21 702	0,8858	18 733	0,8924	18 997	0,9050
DK03 - Syddanmark	27 200	1,1102	27 814	1,1353	23 000	1,0957	23 520	1,1204
DK04 - Midtjylland	28 000	1,1429	28 515	1,1639	23 967	1,1417	24 408	1,1627
DK05 - Nordjylland	26 700	1,0898	27 271	1,1131	22 500	1,0719	22 981	1,0948
IE - Ireland								
IE01 - Border, Midland and Western	23 000	0,9388	22 716	0,9272	17 500	0,8337	17 284	0,8234
IE02 - Southern and Eastern	36 867	1,5048	34 229	1,3971	29 633	1,4117	27 513	1,3107
EL - Greece								
EL11 - Anatoliki Makedonia, Thraki	16 433	0,6707	17 812	0,7270	12 800	0,6098	13 874	0,6609
EL12 - Kentriki Makedonia	18 100	0,7388	17 877	0,7297	15 467	0,7368	15 276	0,7277
EL13 - Dytiki Makedonia	20 667	0,8435	21 826	0,8908	***15 600***	***0,7432***	***16 475***	***0,7848***
EL14 - Thessalia	16 833	0,6871	17 310	0,7065	14 567	0,6939	14 979	0,7136
EL21 - Ipeiros	15 933	0,6503	15 930	0,6502	14 300	0,6812	14 297	0,6811
EL22 - Ionia Nisia	22 967	0,9374	24 198	0,9877	16 800	0,8003	17 700	0,8432
EL23 - Dytiki Ellada	17 100	0,6980	17 824	0,7275	13 433	0,6399	14 002	0,6671
EL24 - Sterea Ellada	20 300	0,8286	21 776	0,8888	19 733	0,9401	21 168	1,0084
EL25 - Peloponnisos	18 375	0,7500	19 134	0,7810	16 067	0,7654	16 730	0,7970
EL30 - Attiki	29 600	1,2082	26 834	1,0953	19 900	0,9480	18 040	0,8594
EL41 - Voreio Aigaio	18 433	0,7524	18 890	0,7710	14 500	0,6908	14 859	0,7079
EL42 - Notio Aigaio	25 767	1,0517	26 191	1,0690	20 567	0,9798	20 905	0,9959

EL43 - Kriti	19 967	0,8150	20 045	0,8182	17 000	0,8099	17 066	0,8130
ES - Spain								
ES11 - Galicia	22 367	0,9129	23 257	0,9492	***15 200***	***0,7241***	***15 805***	***0,7529***
ES12 - Principado de Asturias	23 533	0,9605	22 823	0,9315	16 367	0,7797	15 872	0,7561
ES13 - Cantabria	24 500	1,0000	23 748	0,9693	18 333	0,8734	17 771	0,8466
ES21 - País Vasco	32 700	1,3347	29 369	1,1987	23 767	1,1322	21 346	1,0169
ES22 - Comunidad Foral de Navarra	31 767	1,2966	28 973	1,1826	24 433	1,1640	22 285	1,0616
ES23 - La Rioja	27 900	1,1388	26 794	1,0936	21 733	1,0353	20 872	0,9943
ES24 - Aragón	28 067	1,1456	26 117	1,0660	20 433	0,9734	19 014	0,9058
ES30 - Comunidad de Madrid	33 133	1,3524	29 418	1,2007	26 267	1,2513	23 321	1,1110
ES41 - Castilla y León	24 033	0,9810	23 443	0,9569	17 600	0,8384	17 168	0,8179
ES42 - Castilla-la Mancha	***20 667***	***0,8435***	***22 383***	***0,9136***	**15 300**	**0,7289**	**16 571**	**0,7894**
ES43 - Extremadura	***17 367***	***0,7088***	***19 247***	***0,7856***	12 300	0,5860	13 632	0,6494
ES51 - Cataluña	29 467	1,2027	27 469	1,1212	23 700	1,1290	22 093	1,0525
ES52 - Comunidad Valenciana	22 967	0,9374	22 891	0,9343	18 733	0,8924	18 671	0,8895
ES53 - Illes Balears	27 200	1,1102	26 900	1,0980	23 467	1,1179	23 208	1,1056
ES61 - Andalucía	19 533	0,7973	20 151	0,8225	14 433	0,6876	14 890	0,7093
ES62 - Región de Murcia	***21 500***	***0,8776***	***22 283***	***0,9095***	16 367	0,7797	16 963	0,8081
ES63 - Ciudad Autónoma de Ceuta (ES)	22 400	0,9143	22 502	0,9185	16 133	0,7686	16 207	0,7721
ES64 - Ciudad Autónoma de Melilla (ES)	20 800	0,8490	21 356	0,8717	15 767	0,7511	16 188	0,7712
ES70 - Canarias (ES)	**21 767**	**0,8884**	**22 826**	**0,9317**	18 267	0,8702	19 155	0,9125
FR - France								
FR10 - Île de France	42 333	1,7279	37 747	1,5407	35 533	1,6928	31 683	1,5094
FR21 - Champagne-Ardenne	23 467	0,9578	23 566	0,9619	21 100	1,0052	21 190	1,0094

FR22 - Picardie	20 400	0,8327	21 675	0,8847	18 533	0,8829	19 692	0,9381
FR23 - Haute-Normandie	23 133	0,9442	23 114	0,9434	20 767	0,9893	20 749	0,9885
FR24 - Centre (FR)	22 633	0,9238	23 211	0,9474	20 400	0,9718	20 920	0,9966
FR25 - Basse-Normandie	20 767	0,8476	21 671	0,8845	18 700	0,8908	19 514	0,9296
FR26 - Bourgogne	22 633	0,9238	23 565	0,9618	19 967	0,9512	20 788	0,9903
FR30 - Nord - Pas-de-Calais	21 367	0,8721	21 599	0,8816	17 833	0,8496	18 028	0,8588
FR41 - Lorraine	***20 900***	***0,8531***	***22 163***	***0,9046***	18 833	0,8972	19 972	0,9514
FR42 - Alsace	24 767	1,0109	23 892	0,9752	22 433	1,0687	21 641	1,0310
FR43 - Franche-Comté	***21 300***	***0,8694***	***22 300***	***0,9102***	20 200	0,9623	21 148	1,0075
FR51 - Pays de la Loire	23 533	0,9605	22 885	0,9341	20 700	0,9861	20 129	0,9589
FR52 - Bretagne	22 333	0,9116	23 135	0,9443	19 633	0,9353	20 338	0,9689
FR53 - Poitou-Charentes	***21 233***	***0,8667***	***22 068***	***0,9007***	18 900	0,9004	19 643	0,9358
FR61 - Aquitaine	23 333	0,9524	22 462	0,9168	20 667	0,9845	19 895	0,9478
FR62 - Midi-Pyrénées	23 433	0,9565	23 754	0,9696	20 267	0,9655	20 544	0,9787
FR63 - Limousin	20 667	0,8435	21 319	0,8702	18 733	0,8924	19 324	0,9206
FR71 - Rhône-Alpes	26 567	1,0844	25 441	1,0384	22 933	1,0925	21 962	1,0462
FR72 - Auvergne	***21 567***	***0,8803***	***22 247***	***0,9080***	19 033	0,9067	19 634	0,9353
FR81 - Languedoc-Roussillon	***20 767***	***0,8476***	***22 433***	***0,9156***	17 667	0,8416	19 084	0,9091
FR82 - Provence-Alpes-Côte d'Azur	24 600	1,0041	23 823	0,9724	21 067	1,0036	20 401	0,9719
FR83 - Corse	21 067	0,8599	21 845	0,8916	17 133	0,8162	17 766	0,8464
HU - Hungary								
HU10 - Közép-Magyarország	25 733	1,0503	23 461	0,9576	18 033	0,8591	16 441	0,7832
HU21 - Közép-Dunántúl	13 833	0,5646	14 273	0,5826	10 533	0,5018	10 868	0,5177
HU22 - Nyugat-Dunántúl	14 933	0,6095	14 904	0,6083	12 100	0,5764	12 076	0,5753
HU23 - Dél-Dunántúl	10 633	0,4340	10 956	0,4472	8 433	0,4018	8 689	0,4139
HU31 - Észak-Magyarország	9 733	0,3973	9 723	0,3969	7 433	0,3541	7 426	0,3537

HU32 - Észak-Alföld	9 867	0,4027	10 405	0,4247	7 633	0,3636	8 050	0,3835
HU33 - Dél-Alföld	10 333	0,4218	10 681	0,4359	8 367	0,3986	8 648	0,4120
NL - Netherlands								
NL11 - Groningen	43 167	1,7619	43 872	1,7907	30 033	1,4308	30 524	1,4541
NL12 - Friesland (NL)	26 033	1,0626	26 555	1,0839	21 433	1,0211	21 863	1,0415
NL13 - Drenthe	25 000	1,0204	25 474	1,0398	21 000	1,0004	21 398	1,0194
NL21 - Overijssel	28 167	1,1497	28 470	1,1620	22 800	1,0862	23 045	1,0978
NL22 - Gelderland	27 433	1,1197	27 225	1,1112	22 333	1,0639	22 164	1,0558
NL23 - Flevoland	24 133	0,9850	23 619	0,9641	18 967	0,9035	18 563	0,8843
NL31 - Utrecht	38 200	1,5592	35 677	1,4562	32 767	1,5610	30 603	1,4579
NL32 - Noord-Holland	36 633	1,4952	33 721	1,3764	30 233	1,4403	27 830	1,3258
NL33 - Zuid-Holland	32 933	1,3442	31 724	1,2949	26 667	1,2704	25 688	1,2237
NL34 - Zeeland	29 867	1,2190	29 241	1,1935	22 833	1,0878	22 355	1,0650
NL41 - Noord-Brabant	32 200	1,3143	31 019	1,2661	26 500	1,2624	25 528	1,2161
NL42 - Limburg (NL)	28 700	1,1714	28 440	1,1608	23 467	1,1179	23 254	1,1078
PL - Poland								
PL11 - Lódzkie	12 900	0,5265	12 447	0,5080	8 533	0,4065	8 234	0,3922
PL12 - Mazowieckie	***22 267***	***0,9088***	***19 338***	***0,7893***	14 667	0,6987	12 738	0,6068
PL21 - Malopolskie	12 033	0,4912	11 871	0,4845	8 100	0,3859	7 991	0,3807
PL22 - Slaskie	15 000	0,6122	14 336	0,5852	10 233	0,4875	9 781	0,4659
PL31 - Lubelskie	9 500	0,3878	10 369	0,4232	6 733	0,3208	7 349	0,3501
PL32 - Podkarpackie	9 533	0,3891	10 684	0,4361	6 700	0,3192	7 508	0,3577
PL33 - Swietokrzyskie	10 900	0,4449	11 261	0,4596	7 233	0,3446	7 473	0,3560
PL34 - Podlaskie	10 233	0,4177	11 122	0,4540	7 200	0,3430	7 826	0,3728
PL41 - Wielkopolskie	14 667	0,5986	14 724	0,6010	10 000	0,4764	10 039	0,4783
PL42 - Zachodniopomorskie	12 400	0,5061	12 209	0,4983	9 300	0,4430	9 157	0,4362
PL43 - Lubuskie	12 033	0,4912	12 260	0,5004	8 367	0,3986	8 524	0,4061

PL51 - Dolnoslaskie	15 067	0,6150	14 559	0,5942	9 633	0,4589	9 308	0,4434
PL52 - Opolskie	11 633	0,4748	12 466	0,5088	7 667	0,3652	8 215	0,3914
PL61 - Kujawsko-Pomorskie	11 967	0,4884	12 159	0,4963	8 633	0,4113	8 772	0,4179
PL62 - Warminsko-Mazurskie	10 300	0,4204	11 170	0,4559	7 300	0,3478	7 917	0,3771
PL63 - Pomorskie	13 467	0,5497	13 091	0,5343	9 433	0,4494	9 170	0,4369
PT - Portugal								
PT11 - Norte	15 367	0,6272	15 497	0,6325	12 800	0,6098	12 908	0,6149
PT15 - Algarve	21 100	0,8612	21 885	0,8933	17 500	0,8337	18 151	0,8647
PT16 - Centro (PT)	15 967	0,6517	16 744	0,6834	13 400	0,6384	14 053	0,6695
PT17 - Área Metropolitana de Lisboa	27 067	1,1048	24 055	0,9818	22 300	1,0623	19 818	0,9441
PT18 - Alentejo	***17 667***	***0,7211***	***18 601***	***0,7592***	14 433	0,6876	15 196	0,7239
PT20 - Região Autónoma dos Açores (PT)	17 900	0,7306	17 336	0,7076	13 733	0,6542	13 301	0,6336
PT30 - Região Autónoma da Madeira (PT)	25 200	1,0286	23 646	0,9652	18 067	0,8607	16 953	0,8076
RO - Romania								
RO11 - Nord-Vest	10 167	0,4150	10 508	0,4289	5 033	0,2398	5 203	0,2478
RO12 - Centru	10 733	0,4381	11 310	0,4616	5 667	0,2700	5 971	0,2844
RO21 - Nord-Est	6 867	0,2803	6 937	0,2832	3 833	0,1826	3 873	0,1845
RO22 - Sud-Est	8 867	0,3619	9 270	0,3784	4 900	0,2334	5 123	0,2440
RO31 - Sud - Muntenia	9 200	0,3755	9 681	0,3951	4 533	0,2160	4 770	0,2273
RO32 - Bucuresti - Ilfov	***26 367***	***1,0762***	***20 789***	***0,8485***	11 633	0,5542	9 173	0,4370
RO41 - Sud-Vest Oltenia	8 367	0,3415	8 686	0,3545	4 433	0,2112	4 602	0,2192
RO42 - Vest	12 133	0,4952	11 442	0,4670	5 767	0,2747	5 438	0,2591
SI - Slovenia								
SI01 - Vzhodna Slovenija	***17 900***	***0,7306***	***18 496***	***0,7549***	13 467	0,6415	13 915	0,6629

SI02 - Zahodna Slovenija	25 967	1,0599	23 888	0,9750	18 933	0,9020	17 418	0,8298
FI - Finland								
FI19 - Länsi-Suomi	25 733	1,0503	26 530	1,0828	20 200	0,9623	20 825	0,9921
FI1B - Helsinki-Uusimaa	38 400	1,5673	33 654	1,3736	31 167	1,4847	27 314	1,3012
FI1C - Etelä-Suomi	25 433	1,0381	26 068	1,0640	21 233	1,0115	21 763	1,0368
FI1D - Pohjois- ja Itä-Suomi	23 000	0,9388	24 028	0,9807	17 700	0,8432	18 491	0,8809
SE - Sweden								
SE11 - Stockholm	41 633	1,6993	37 425	1,5275	33 567	1,5991	30 173	1,4374
SE12 - Östra Mellansverige	25 633	1,0463	24 100	0,9837	21 033	1,0020	19 775	0,9421
SE21 - Småland med öarna	26 700	1,0898	27 915	1,1394	22 033	1,0496	23 036	1,0974
SE22 - Sydsverige	26 633	1,0871	26 073	1,0642	22 233	1,0592	21 765	1,0369
SE23 - Västsverige	28 667	1,1701	28 049	1,1449	23 567	1,1227	23 059	1,0985
SE31 - Norra Mellansverige	25 600	1,0449	26 758	1,0921	20 967	0,9988	21 915	1,0440
SE32 - Mellersta Norrland	27 233	1,1116	29 081	1,1870	22 733	1,0830	24 276	1,1565
SE33 - Övre Norrland	28 033	1,1442	28 304	1,1552	21 433	1,0211	21 640	1,0309

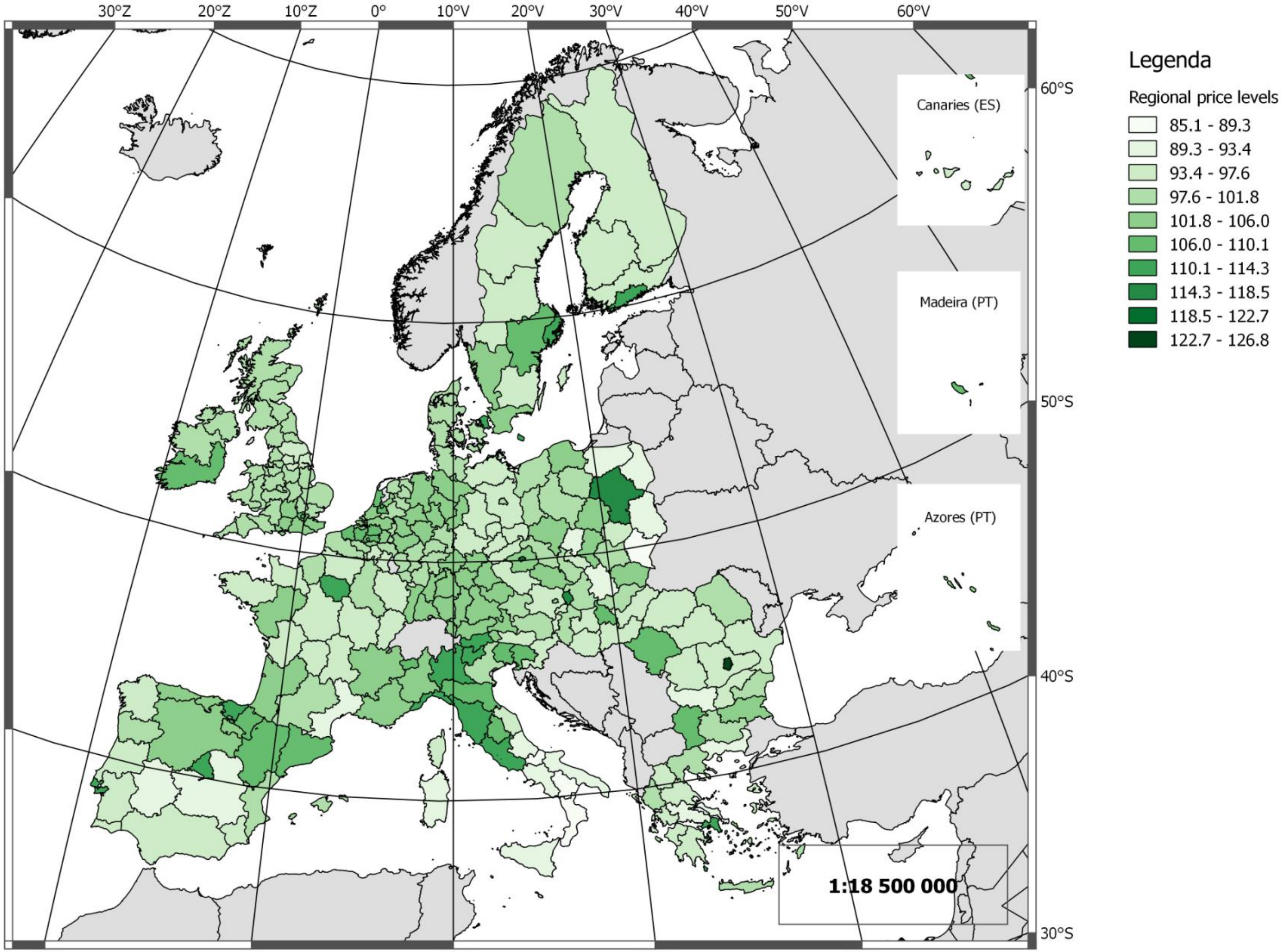
* GDP in PPS per capita
**GDP in PPS per capita adjusted for regional price levels

*** green if ratio>0,9 (**more developed regions**)

yellow if 0,75≤ratio≤0,9 (**transition regions**)

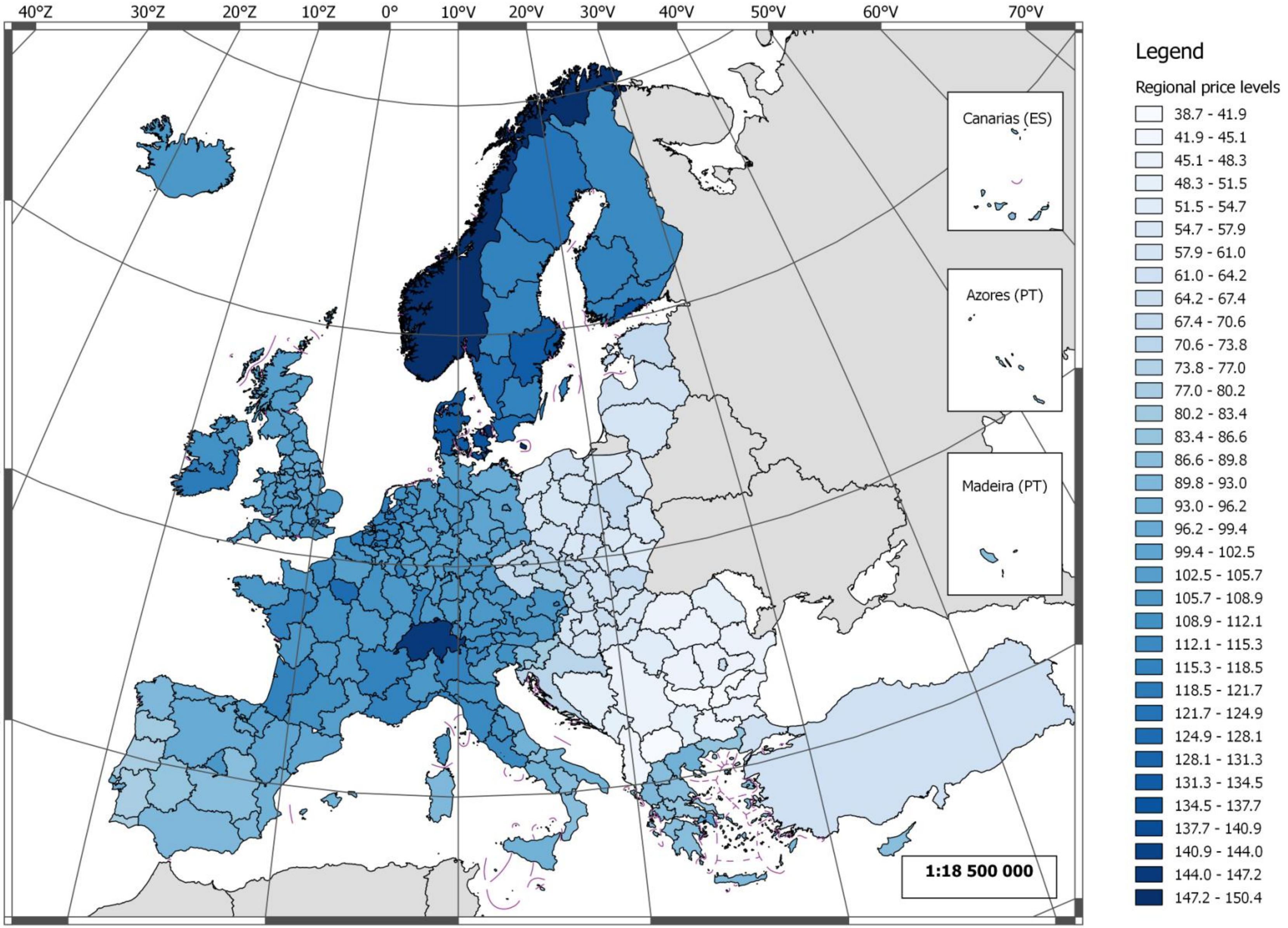
red if ratio<0,75 (**less developed regions**; for Cohesion Policy 2007 – 2013 regions eligible under Convergence objective)

**** in grey and bold – regions which belong to other category when regional price levels are considered



Map 1

Regional price levels by NUTS 2 regions (2010)
(a respective national price level = 100)



Map 2 **Regional price levels by NUTS 2 regions (2010)**
(EU 27 = 100)