

Relation of Economic Performance and Creation of Sources of Consumption in Regions of the European Union

IVANA KRAFTOVÁ, ZDENĚK MATĚJA

University of Pardubice, Faculty of Economics and Administration

Studentská 95, 532 10 Pardubice

Czech Republic

ivana.kraftova@upce.cz, zdenek.mateja@upce.cz

Abstract

The development of consumption source indicators and performance of NUTS 2 in the EU for a period from 2000 to 2009 is investigated considering Krugman's idea of living standards increasing based on levels of worker performance related to EU policy convergence. We aim to assess correlations of selected indicators and compare the dynamics of their development for the whole sample, to evaluate the effectiveness of EU regional policy and to discuss the possible modification of its instruments.

Key words: Convergence policy of EU, NUTS 2 regions, economic performance, sources of individual consumption.

JEL Classification: R12, R58

1 Introduction

A major area of EU policy is the area of cohesion policy, which can undoubtedly be testified by the funds it has been allocated in the last two multiannual financial frameworks to support the objective “cohesion for growth and employment”: in the planning period 2007-2013 the amount of approximately 335 billion EUR, i.e. 33.70 % of the total commitment, and in the planning period 2014-2020 the amount of 325 billion EUR (i.e. 33.85 %) (EC, 2013). Despite the reduction in the absolute amount of planned support, which can be indicated by a significant transfer of resources to support the objective “competitiveness for growth and employment”, which can also indicate a certain degree of fulfilment of the objectives of cohesion policy in the form of a small number of regions i.e. the potential recipients of cohesion policy support, there is a relative increase of 0.15% with a three percent reduction in the volume of the total planned commitment of the EU. The importance given to policies aimed at the cohesion of regions across the EU territory will remain preserved in the future; the objective remains to achieve the necessary degree of cohesion within the European integration grouping. This can also be highlighted by the steps taken in the negotiation of association agreements with other countries.

The beginnings of economic and social cohesion can be associated with the adoption of the Single European Act in 1986 and later in 1992 by the incorporation of the Maastricht Treaty into the EC Treaty, Articles 158-162. (It should be noted that at the time the EU was represented by 12 Member States, whose number soon increased in 1995 to 15 and 10 years later saw the largest

increase from 10 to 25 new Member States, while in 2013 the total number of Member States was 28). The last three expansions meant the accession of states with a prevalence of less developed regions at various different levels, and so the emphasis on the convergence objectives of cohesion policy was further enhanced by a focus on promoting growth. We can then talk of the objective of “growth orientated convergence of EU regions”.

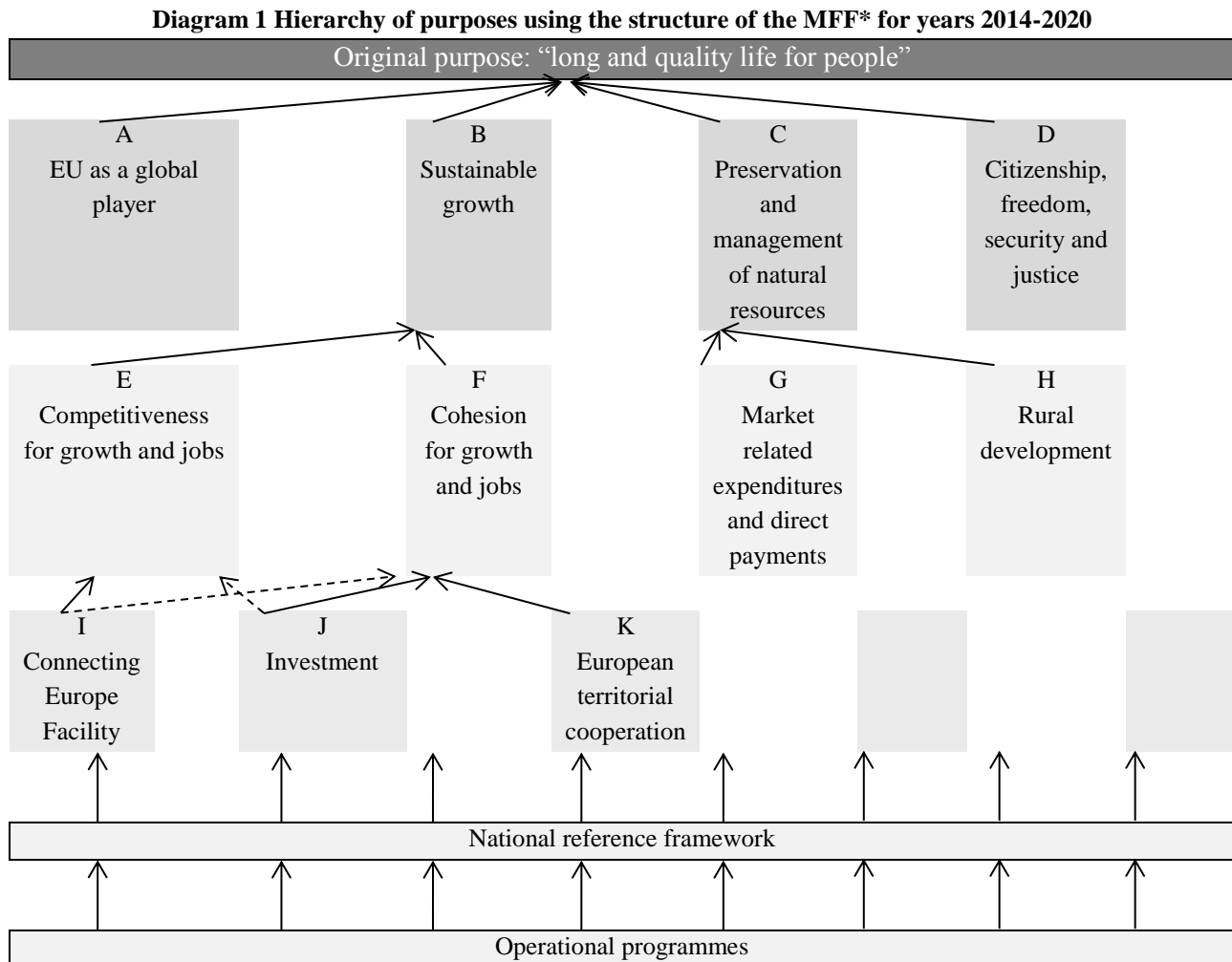
Intensive globalization processes in the late 20th century meant new challenges for the EU, the competition between world centres - Europe, USA, Japan and more recently China - shows the need for new approaches to economic policy: the changing qualification requirements, their level and ongoing provision, requirements for innovation activities of enterprises and the changing demographic structure all create pressure to make social security changes. In addition, relatively low labour productivity and high unemployment rates have reduced the competitiveness of Europe against its traditional rivals. Furthermore, Asian countries led by China have begun to strengthen their position in performance, whereas the global position of the EU begins to weaken.

The aggressive goals set by the Lisbon Strategy in 2000, the idea of Europe as “the most competitive and dynamic knowledge-based economy in the world” remained an unfulfilled vision. The version built as a complex scenario of economic, social and environmental renewal supplemented by the partnership for growth and employment in March 2005 (EC, 2005), a year after the biggest ever enlargement of the EU cohesion policy, was to focus on strengthening sustainable development, competitiveness and employment. For the new programming period 2007-2013 the “Community strategic guidelines” (EC, 2006), have become an important element of the new cohesion policy which mainly deal with investment, employment, knowledge and innovation, territorial cohesion and cooperation and represent an indicative framework for Member States in the preparation of national strategic reference frameworks and operational programmes for the given period.

Any meaningful policy should have a defined purpose, and therefore the concept of cohesion policy can be viewed from a teleological point of view (Engliš, 1930). It is subject to the principle of finality perceived from the present to the future, despite the fact that it transforms into strategies, agreements and standards that have a normative rather than teleological character. The design and creation of strategies, agreements and standards, however, has a teleological basis; they are designed, created and reflected by their intended purpose.

Within the teleological system, understood as a system of means and purposes, the main original general purpose can be conceived as a “long and quality life for people”. It is obvious that such a purpose, standing on the top, has a unique position in a hierarchical system of means and purposes. It is also true that purposes of a lower level, i.e. derivative purposes, may be and usually are the means to fulfilling the purposes of a higher order. Between the means that should fulfil the purpose and the purpose itself there is a relationship known as the “purpose line” which determines the teleological quality of the means. The means may hold a purpose line in the direction of fulfilling the purpose, then they have a positive teleological quality (they are useful) or they can conversely go in the opposite direction of fulfilling the purpose, thus having a negative teleological quality (they are harmful). This is also true of EU policy objectives and the instruments applied for their fulfilment.

When identifying policy objectives and their fulfilment it is necessary to address - in addition to the above relationship of hierarchical succession - the question of relations between different objectives (purposes), and means, as shown in Diagram 1. It is very important to correctly assess the competition of purposes, when a means can serve various different purposes, which may mean a greater degree of use (Example I and J in Diagram 1) (EC, 2011), and assess the competition of means in relation to the allocation of limited resources (Example relation E and F in Diagram 1). Teleological perception of the relationship has a practical use when describing the allocation of EU funds, as also shown in Diagram 1.



Source: own work

Note: *MFF = Multiannual Financial Framework

As we can see from Diagram 1, which indicates the generally formulated original purpose, the central element is people. Man as a consumer in its effort to maximize consumption in a broader sense, i.e. consumption as a means to achieve the original purpose, consumption acting in a direction towards this purpose, with its teleological understood quality in relation to the purpose line. The continuity of consumption with the production function of the human factor is quite obvious. Only to a limited extent can man consume what has not been produced. If consumption is understood as the fulfilment of a desired standard of living, it is not possible to disagree with

the idea of the winner of the 2008 Nobel Prize in Economics, P. Krugman, who said that: “*The ability of the state [or region] to improve the standard of living depends almost entirely on the ability to increase output per worker*”. (Krugman, 1994) This obviously applies across economically diversified countries and we can assume it is also valid for regions of the EU.

The coherence of EU as a whole is determined by the consistency of its regions, hence the importance of studying convergence – either on a general theoretical level (beta, sigma and delta convergence), (Barro and Sala-I-Martin, 2004), (Abrahám and Vošta, 2011) or as an assessment of reality through specific indicators and approaches. At the same time, deciding on the use of specific indicators is a very specific problem. Gross domestic product per capita is considered an indirect (proxy) indicator of living standards as well as the performance of the economy, but due to the way it is constructed it has a number of “weaknesses” in the sense of usefulness for the evaluation of policy implications - for example, it does not measure environmental sustainability or quantify social inclusion - therefore it should not be the sole criterion for the assessment. The aim is to include issues of environmental and social affairs (comprehensive environment, quality of life and well-being) (EC, 2009) in the national account of statistics.

A comparative study presents different views on the development of EU Member States in terms of the objectives of cohesion policy (Pellegrini et al., 2013) and shows the consequences of EU enlargement e.g. A. Krueger concludes that while Member States converge in terms of gross domestic product per capita in PPS (measured variation range in 2000-2008), internal disparities between the regions within the states increase. (Krueger, 2011) It is not unusual to also point out that the causality between the high consumption of income in a given state and the tendency for low investment (and vice versa) is weakening as a result of the significant effects of global capital markets and international trade. (Dubská, 2006)

There are a number of factors acting on regional convergence processes (investment and its structure, manpower and its quality, institutional support of activities, the impact of FDI on the regional labour market, (Zdražil and Hýblová, 2013) technology and its utilization, business and living environment, geographical and geo-economic location). The economic resilience of the regions to cyclical recessionary fluctuations is also different. (Svoboda and Maštálka, 2013) Long-term disputes dictate the weight of individual growth factors without it being entirely clear which of them is the most important and where and how they are applicable. (Kraftová, 2008)

2 Objective and the Selected Methodology

The objective of the research was to verify the following hypotheses:

- i) there is a significant correlation between the sources of individual consumption and economic performance at the level of European NUTS 2;
- ii) higher dynamics of the rate of growth of regional performance compared to the dynamics of growth of individual resource consumption lead to a greater decrease in the regional variability indicator of consumption, i.e. the delta convergence is fulfilled in this sense.

Eurostat data was used for the analysis. From the total number of 272 NUTS 2 of all of the 28 states, 85 NUTS 2 had to be excluded because of an absence of the relevant data. Therefore, the

sample includes 187 NUTS 2 (69 %) of eighteen EU Member States (regardless of whether the country was an EU Member State in the year of the survey or not).

We assessed a ten-year period from 2000 to 2009, which includes the impact of the global economic crisis that hit Europe in 2008.

The analysis works with regional disposable income of private households as an indicator of sources of individual consumption and regional gross domestic product as an indicator of performance. The relative performance indicator (P_t) was calculated as a share of GDP in PPS per economically active person.

$$P_t = \frac{GDP_t}{EAP_t} \quad (1)$$

Where: GDP = gross domestic product at current market prices in PPS
EAP = economically active person from 15 to 64 years
t = time, year

Furthermore, the indicator of relative creation of sources of individual consumption (H_t) as a share of regional disposable income of private households in PPCS and the mid-year population of the relevant region was calculated.

$$H_t = \frac{DIH_t}{MYP_t} \quad (2)$$

Where: DIH = disposable income of private households in PPCS
MYP = mid-year population
t = time, year

We deliberately relate gross domestic product to economically active persons in formula (1) because we want to emphasize the performance aspect of potential creators of product. In contrast, formula (2) includes the whole population (or rather their mid-year) in the calculation because they are all consumers.

To achieve the first identified objective the following was evaluated for the entire examined sample.

- development and position of the chain indices of absolute regional indicators of consumption and performance using the geometric average in 2000-2009;
- development of utilized parameters of human resources (population, number of economically active persons) as input data for the calculation of relative consumption and performance indicators;
- development of the level of correlation using Kendall's correlation coefficient to establish the significance of the correlation of the relationship between (P_t) and (H_t);

When evaluating the dynamics of development of both of the monitored fields - production and consumption (objective No. 2) - the starting points were:

- relation of the minimum and maximum values of indicators P_t and H_t (attention is devoted to the internal differentiation of both indicators);
- relation of both indicators in their extreme values i.e. the minimum and maximum values.

The extreme values (minimum and maximum values of the observed indicators) were chosen intentionally because they show the variation range of values achieved in the sample, which the used level of mean values often does not capture. Furthermore, their development helps to compare the disparity or degree of conformity of the dynamics of this development. The relation or rather the development of the relation between the measured indicators of consumption and performance is not without significance and this is the extreme values.

3 Findings

3.1 Consumption and performance - correlation of regional indicators

The main potential source of individual consumption of the sample of surveyed regions on the NUTS 2 level of EU countries during the ten year period from 2000 to 2009 measured by the sum of regional disposable income of private households (ΣH_t) recorded an annual increase (geometric mean of about 3 %), with the lowest increase being is linked to the years 2003 and 2008 (approximately 1 %). There was a quantitative change in the year of great EU enlargement (2004) - increase of sources of consumption in the surveyed NUTS 2 as a whole, while the reduction in growth in 2008 reflects the origins of the global economic crisis, which is further reflected in the decline in consumption sources in 2009 by more than 2 %.

The performance of the sample of surveyed NUTS 2 EU countries in the ten year study period (2000-2009), as measured by the sum of the regional gross domestic product (ΣP_t), recorded an annual increase between 2000 and 2007 (geometric mean of about 4.6 %), after stagnating in 2008 there was a sharp decline of about 5.7 % in 2009. In comparison with the absolute values of consumption in this case after the small growth in 2003, the year the EU was enlarged by the addition of 10 new states, there was an increase in the growth of performance (it should be noted that the calculations include all of the regions of the sample irrespective of the date of accession of the relevant country to the EU, i.e. the finding is not “matter of fact”), which remains more or less the same up to and including 2007. It can be said that the less developed regions of the EU bring a higher level of year on year performance growth.

The relative values of the indicators of consumption (H_t) and performance (P_t) are linked to the population (in the case of consumption) and the number of economically active persons (in the case of performance). The development of both parameters from the area of human resources evolved positively, i.e. both recorded in the studied decade almost linear growth, albeit to varying degrees. (The population trend line formula $y = 1582.1 x + 361,981$, with reliability $R^2 = 0.998$; the development trend line formula of economically active persons $y = 1674.6 x + 166,270$, with reliability $R^2 = 0.9763$). The total population grew slightly with the population growth index of the reference decade being approximately 3.8 %. On the other hand, the extreme index of increase recorded by Rég. Bruxelles / Brussels Gewest (12 %) - the seat of several European bodies and institutions, in many regions - especially the “new” EU Member States - experienced a population decline (Estonia, Latvia, Lithuania, Romania, some regions of the Czech Republic, Slovakia, and Poland), but also in some regions of “traditional” EU countries (in particular Germany – which includes regions of the former German Democratic Republic – and Sweden). While the number of inhabitants shows the above-mentioned increase of almost 4 %, the increase in the number of economically active people is more than double, i.e. approximately 8 %. It can

be observed that the largest increase of economically active persons was in 2005 when people born in 1990 joined the group, i.e. one year after the social upheavals in the former Eastern Bloc. The increase in birth rate can perhaps be seen as an expression of hope for the future.

The described absolute parameters for the areas of generation of consumption sources and economic performance of regions in the reference decade are manifested in the relative indicators. Taking into account the relation between the partial parameters, there was a high degree of correlation between the indicator of disposable income of private households per capita (H_t) and gross domestic product per economically active person (P_t). Although tests showed a statistical significance of the level of correlation, the results of the analysis show that the level changed over the years. **It can be stated that the degree of correlation between the development of indicators of individual consumption and economic performance in the EU NUTS 2 has a slightly decreasing trend, oscillating around a linear trend** (trend line equation of Kendall's correlation coefficient $y = - 0.0027 x + 0.6$ with reliability $R^2 = 0.4412$). The most significant oscillation was seen in 2005-2009, when the correlation of both of the indicators of the sample regions alternately decreased and increased. EU enlargement in 2004 brought about a considerable reduction in the degree of correlation of the evaluated indicators, while the accession of Romania and Bulgaria on the 1st of January 2007 slightly increased the correlation of the indicators in this year. The sharp decrease of the correlation coefficient was triggered by the onset of the global economic crisis as a result of a decrease in performance.

3.2 Dynamics and variability in regional production and consumption

The analysis of the development of regional creation of sources of consumption (H_t) and performance (P_t) firstly involved changes in extreme values (minima and maxima) for the reference period, which is shown in Table No. 1

Tab. 1 Comparison of minima and maxima of H_t and P_t indicators of European NUTS 2

<i>indicators</i>	<i>units</i>	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	<i>index 2009/ 2000</i>
minima H_t	PPCS	2,158	2,585	2,445	2,174	2,935	2,903	3,230	3,691	4,505	4,122	1.91
maxima H_t	PPCS	20,405	21,277	20,719	21,460	22,625	23,509	25,210	25,987	25,758	25,315	1.24
relation min H_t / max H_t	%	11	12	12	10	13	12	13	14	17	16	x
minima P_t	PPS	7,147	8,400	9,678	10,469	11,197	11,874	13,476	15,099	16,766	15,763	2.21
maxima P_t	PPS	116,185	123,462	129,612	129,225	139,782	151,307	151,885	156,337	151,235	146,304	1.26
relation min P_t /max P_t	%	6	7	7	8	8	8	9	10	11	11	x

Source: own work based on Eurostat data

The minima of disposable income of private households per inhabitant in the studied period were 10 to 16 % of the maximum of this indicator, while the indicator of gross domestic product per economically active person was about one third less, i.e. 6 to 11 %. Of course, both the indicators play a general role in this but we can still see different relational values at low and high levels of the monitored indicators during the studied period. Specifically, when comparing the minimum values of indicators ($\min H_t / \min P_t$), the sample of regions ranges between 21 and 31 %, whereas

for the ratio of maxima ($\max H_t / \max P_t$) is only 16 to 18 %. From this we can derive that the minimum source of consumption is linked to a greater share in the creation of wealth, while the maximum value of the sources of individual consumption represents a lower share in economic output. Analysis of the dynamics of the two areas shows that although the values of minimum disposable income of private households per capita increase at a faster rate (index of 1.91) than the maximum of this indicator (index of 1.24), the values of minimum gross domestic product per economically active person (index of 2.21) increase at a much faster rate than the values of the maximum of this indicator (index 1.26). These results indirectly confirm the validity of the conclusions regarding the beta convergence expressing the tendency of higher growth of the performance of less developed regions compared to more advanced ones. (It is interesting that the minima of indicators H_t and P_t were reached throughout the studied period by the Romanian region of Nord-Est; whilst the maxima of indicator H_t was reached throughout the period by the British region of Inner London. Inner London shares the maxima for performance of the evaluation indicator P_t with the Belgian Région de Bruxelles - Capitale / Brussels Hoofdstedelijk Gewest, which occupies this position during the studied period between 2000 and 2002).

At the same time, however, it is necessary to point out the ambiguous correlation with the development of variability of the indicators of both areas measured by the coefficient of variation in the studied period. The analysis showed that the variability of creation of sources of individual of consumption is lower and falling (from 33.79 % in 2000 to 27.62 % in 2009) with an index of decrease of 0.82; while the variability of performance is higher (from 38.38 % in 2000 - despite a slight increase in 2001 and 2002 - decreasing to 33.38 % in 2008, while in 2009 the variability slightly increases to a level of 33.46 %). The trend is also downward, the same as in the area of consumption, albeit with less intensity (index of 0.87). It can be concluded that the minimum values of performance (P_t) increase in European NUTS 2 faster than the minimum values of indicators linked to individual consumption (H_t). **This higher dynamic of performance enables the variability in consumption to reduce faster, in other words: convergence efforts are fulfilled in the area of consumption due to a higher dynamic of performance.**

4 Conclusions

The continuing importance of EU cohesion policy in the future is reflected not only in strategic documents but also budgeted funds. A teleological concept of economic policy emphasizes the adequacy of their instruments in relation to the purpose, i.e. the objectives of the economic policy.

The analysis of a sample of European regions in a ten-year period (it must be emphasized this includes the period which was hit by the global economic crisis) has demonstrated a conditionality between the growth of sources of individual consumption (H_t) and the growth of performance (P_t) – the correlation between them is statistically significant but it oscillates around a declining trend. It is affected by a recessionary decline in the performance of the regions. The average performance is growing at a faster rate than the average creation of sources of individual consumption, despite the fact that an approximate twofold increase in the economically active population compared to the increase in the total population of the regions is recorded in the studied period, mainly as a result of the baby boom of the 1990's.

An analysis of the dynamics of the development of extreme values and the variability of consumption and performance indicators confirms in this sense despite the effects of the global crisis, the fulfilment of the beta convergence, i.e. that the less advanced regions are growing faster. It should be noted that the variability in performance decreases more slowly than the variability in the creation of sources of consumption. The analysis shows large differences in the indicator creation of sources of individual consumption (H_i), the largest growth recorded in the studied period was the performance minimum (P_i), then the consumption minimum (H_i). The rate of growth of the maxima of both indicators was almost the same. The situation of countries that joined the EU after 2003 shows an overall positive effect of their membership in the EU. It can be said that their inclusion in the EU has reduced their rate of development, but they have increased their productivity growth. An interesting and positively evaluated finding is the expression of delta convergence: declining regional variability in consumption growth is supported by the growth of performance. Hence, this fulfils the objective of “growth orientated convergence of regions”.

It is clear that growth of sources of consumption without growth of performance is not sustainable in the long term; on the other hand, supporting growth of performance cannot be an end in itself. In terms of the application of instruments of EU economic policy, particularly in the area of cohesion policy, it is not beneficial to focus only on gross domestic product per capita, it is necessary to use other additional indicators so that the applied instruments and allocated resources can ensure fulfilment of the main purpose, i.e. “long and quality of life of the inhabitants of the individual regions of Europe and the EU as a whole”.

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References

- ABRHÁM, J., VOŠTA, M. 2011. Ekonomický růst a konvergence rozšířené Evropské unie. *Acta Oeconomica Pragensia*, 5/2011, 16 s. ISSN 1804-2112.
- BARRO, R., SALA-I-MARTIN, X. 2004. *Economic Growth*. 2nd ed. Cambridge; Massachusetts; London: The MIT Press, 2004. 654 p. ISBN 0-262-02553-9.
- DUBSKÁ, D. 2006. Investice a ekonomický růst v České republice: kam se ztrácí vysoká míra investic? [online] Praha : ČSÚ, 2006. [cit. 20.6.2013] Dostupné z: <czso.cz/csu/2006edicniplan.nsf/p/1135-06>.
- EC. 2013. Multiannual Financial Framework 2014-2020. [Online] Available on WWW: http://ec.europ.eu/budget/mff/index_en.cfm [cit. 16/11/2013].
- EC. 2011. COM/2011/0665 final - 2011/0302 (COD): Proposal for a Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility.

- EC. 2009. KOM(2009) 433 „Překročit HDP: Měření pokroku v měnícím se světě“.
- EC. 2006. Rozhodnutí Rady ze dne 6. října 2006 o strategických obecných zásadách Společenství pro soudržnost Úřední věstník L 291, 21/10/2006 S. 0011 – 0032.
- EC. 2005. COM/2005/0330: Common Actions for Growth and Employment : The Community Lisbon Programme [SEC(2005) 981].
- ENGLIŠ. K. 1930. Teleologie jako forma vědeckého poznání. Praha : Nakladatelství F. Topič, 1930.
- KRAFTOVÁ, I. 2008. Extenzivní a intenzivní aspekt vlivu sektorových posunů na regionální konvergenci (na příkladu českých zemí a Slovenska). Region Direct, Vol I, No 1/2008, p. 42-66. ISSN 1337-8473.
- KRUEGER, A. 2011. Convergence and disparities in regional Gross Domestic Product. Eurostat. Statistic in focus 46/2011. P. 2-6. ISSN 1977-0316.
- KRUGMAN, P. 1994. Competitiveness: an international economics reader. New York, NY: Council on Foreign Relations, 1994. ISBN 978-087-6091-777.
- PELLEGRINI, G., TERRIBILE, F., TAROLA, O., MUCCIGROSSO, T., BUSILLO, F. 2013. Measuring the effects of European Regional Policy on economic growth: A regression discontinuity approach. Papers in Regional Science, Vol. 92 No 1 March 2013 doi:10.1111/j.1435-5957.2012.00459.x.
- SVOBODA, O., MAŠTÁLKA, M. 2013. The Resilience of Czech Regions to Economic Crisis. (Odolnost krajů České republiky vůči hospodářské krizi.) In Sborník příspěvků XVI. Mezinárodního kolokvia o regionálních vědách, Valtice, 19. - 21. 6. 2013, Brno: Masarykova univerzita, 2013, s. 487-493. ISBN 978-80-210-6257-3.
- ZDRAŽIL, P., HÝBLOVÁ, A. 2013. Komparace dopadu srovnatelných investičních akcí na rozvoj regionů. (Comparison of similar investments impact on regional development). In: Sborník příspěvků XVI. Mezinárodního kolokvia o regionálních vědách, Valtice, 19. - 21. 6. 2013, Brno: Masarykova univerzita, 2013, s. 154-161. ISBN: 978-80-210-6257-3.