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Reducing the administrative expenditures as source for increasing the efficiency of local governance under conditions of the financial crisis

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Introduction

The period we are going through in recent years is marked, economically speaking, by financial crisis effects. These effects, felt in different proportions by each world state, overlapped other old economic processes that focus on bureaucracy high costs, costs that affect the economic efficiency both in private sector and in public one. Evans and Rauch (1999) established the direct connection between the bureaucracy quality and economic development.

The measurement instruments kept in mind the so called “Weberianess scale” (Evans and Rauch, 1999, 761-762) made after bureaucracy principles declared by Weber ([1904-1911], 1968).

The evolutions specific to contemporary period lead to regulations and obligations abundance that highly affect economic results, especially in the private sector. In this context, numerous states such as USA, Netherlands, Germany, UK, Australia, Denmark, Sweden, Norway etc. and European and international organisations. European Union, OECD, World Bank etc. established methodological structures and activation system in order to reduce costs, especially for private firms intended to cover some informational obligations imposed by national or cross-national state legislation. Identified by the “administrative burden” name, these costs were evaluated in the best projects aiming to reduce them. They are the object of some professional networks and their coverage area is getting larger. We mention here SCM Network comprising over 24 states and organisations. Its main objective is the dissemination and development of cooperation itself regarding the administrative burdens reduction.

The strong connections between public and private sectors currently sustained and developed by public economies, and extended area of the New Public Management determine the necessity of public sector preoccupation for administrative costs reduction, including administrative burden. This was imposed also by the financial crisis. Most of the world states reality shows preoccupations in the two directions previously mentioned and the elaboration of new aggregated economic mechanisms capable to evaluate the efficiency and effectiveness of administrative costs reduction strategies. When local and central governments aim to maintain a certain level of production, the economic mechanisms that may best sustain and describe the strategic objectives are those of production factors substitution. Economic analyses emerged from here may offer the necessary information to fulfil the objective of administrative costs reduction referred to reduction levels, economic structure etc.

The proposed research objectives keep in mind to fundament new modalities to approach economic processes related to administrative costs reduction policies and strategies, and to decrease the financial crisis effects. The main hypotheses refer to:

- extending administrative costs reduction topic in public sector;
- integrating the mechanisms of sustaining production factor and the model of production functions in the explanatory step that assures the economic support for politics and mentioned structures;
- evaluating local government efficiency in the actual conditions and applying some concrete measures to reduce the administrative costs.

The approached methodology comprises both descriptive and bibliographic administrative and economic analyses, and certain statistic data analysis instruments.

Chapter I Reducing the administrative costs: programs and mechanisms

I.1. The general conceptual framework

For the public sector the field literature reveals a certain specificity regarding the expenditures' efficiency. Thereby, Stiglitz (2000, 205) presents explanations of inefficiency in the public sector (Stiglitz 2000, p. 205), that refer to the organizational and individual differences, among which: the role of political concerns, absence of competition, absence of incentive pay, difficulty of reducing the staff, as well as the pursuit of bureaucratic objectives – maximizing the size of organization. Similar analyses can be found in Bailey (2002), Connolly and Munro (1999) or Matei (2003). With regard to the structure of the governmental expenditures, for the OECD countries, for example, this comprises: government consumption (20-25%), transfer payments (15-18%), subsidies (2-4%), interest paid (7-8%) and capital expenditure (2-4%). By analyzing the weight of the public expenditures in the GDP, Connolly and Munro (1999, 320-330) reconfirm their growth tendency in accordance with Wagner's Law, as well as in the theories regarding "fiscal illusion" or Baumol Effect (Connolly and Munro 1999, p. 14-15; Andrei, Matei, Stancu and Andrei 2009, 320-330). For Romania, Andrei, Matei, Stancu and Andrei (2009) test the validity of Wagner's Law for the aggregated governmental expenditures, the average elasticity being non-linear and top-heavy.

Public expenditure represents "the ensemble of annual expenditure with public nature of a country, financed on the basis of public budgetary resources" (Dobrotă 1999, 98). In fact, public expenditure reflects the political choices of the Government, representing costs of the elements of economic policy aiming to deliver public goods. These costs relate to delivering goods through the budget of the public sector or represent expenditure in the private sector, induced by regulations and laws made by the public sector.

What we called in the introduction the administrative burden of private companies can be framed in this second category of expenditure. The costs from the first category are in fact public expenditure, as such, of which a part represents the costs of bureaucracy in any public administration. In an extended meaning for the administrative burden, the costs of bureaucracy are in this category for a public administration.

In the structure of the national or local budgets we find:

- *Exhaustive public expenditure* focused on procurement of goods and services (for example: labour, consumables) and capital goods (for example: investments of the public sector in streets, schools, hospitals);
- *Transfer public expenditure*, such as public expenditure for pensions, subsidies, interests, unemployment allowances.

In the general context of the public expenditures, a series of concepts are introduced and used, which are important for the analysis we are carrying out. Thus, in accordance with the International Standard Cost Model Manual and the EU Standard Cost Model Methodology (EU SCM) we will have (EU, 2006, 1):

- *Administrative costs (AC)* are defined by SCM as the costs of administrative activities that businesses are required to conduct in order to comply with the information obligations that are imposed through regulation (DTF, 2007, 4).
- *Information* is to be explained in a broad sense, i.e. including costs of labelling, reporting, monitoring and assessment needed to provide the information and registration. In some cases, the information has to be transferred to public authorities in public parties. In others, it only has to be available for inspection or supply on request.
- An important distinction must be made between *information that would be collected by businesses even in the absence of the legislation* and *information that would not be*

collected without the legal provisions. The costs induced by the latter are called *administrative burdens (AB)*. Some of the administrative burdens are necessary if the underlying objectives of the legislation and prescribed level of protection defined in the Treaties are to be met effectively; for instance where information is needed to make market transparent. But there are also many cases where burdens can be streamlined and reduced without affecting the underlying objectives as such – the latter burdens are clearly unnecessary (DTF, 2007, 4). The *administrative burdens* are that part of the administrative costs which are only incurred as a result of the regulations. Such costs are called *incremental costs* because, in the absence of regulation, they would not be incurred. Conversely, the *business as usual (BAU) costs* are the costs of the activities which businesses would continue to carry out even if the regulatory requirements were removed.

$$\boxed{\text{Administrative Cost}} = \boxed{\text{Business as Usual Cost}} + \boxed{\text{Administrative Burden}}$$

Source: DTF(2007, 4)

$$\text{or, } AC = BUC + AB.$$

BUC's costs are not considered in a baseline measurement because the reductions in regulatory requirements that are considered businesses' usual activities will not result in actual reductions in business costs because businesses will continue to incur the costs meet their own needs. Reducing the costs for business requires that the focus be on administrative burden.

Third-party information obligation costs arise from regulation requiring business to provide information to third parties, such as employees or consumers. The Netherlands and Denmark included third-party information obligation costs in their SCM baseline measurement. However, the UK Standard Cost Model Manual (BRE, 2005) states that third-party costs are excluded from the baseline.

DTF (2007, 5) describes a scheme intending to determine the share of different administrative costs categories in GDP.

$$\boxed{\begin{array}{c} \text{SCM} \\ \text{Baseline} \\ \text{Measurement} \end{array}} - \boxed{\begin{array}{c} \text{Business as} \\ \text{Usual Costs} \\ \text{(BUC)} \end{array}} - \boxed{\begin{array}{c} \text{3}^{\text{rd}} \text{ Party} \\ \text{Information} \\ \text{Obligation} \\ \text{Costs} \end{array}} = \boxed{\begin{array}{c} \text{Administrative} \\ \text{Burden as a \%} \\ \text{of GDP} \end{array}}$$

Source: DTF (2007, 5)

Concrete estimations extracted from different strategic documents are illustrative also.

Table I.1. Estimated administrative costs, structure and percentage of GDP (DTF, 2007, 6)

Country	Measured Administrative Costs	Estimated Administrative Burden (or moving BUC)	Estimated Administrative Burden (excl. 3 rd party costs)
United Kingdom	2.5 %	1.6 %	1.0%
The Netherlands	3.6 %	2.3 %	1.4 %
Denmark	2.2 %	1.4 %	0.9 %
Czech Republic	3.0 %	1.9 %	1.1 %

For the mentioned states it can be observed that the estimated share of administrative burden is between 0.9 % - 1.04% from GDP.

I.2. EU Policies and Programs for reducing the administrative costs

I.2.1. Better Regulation Program

Regulation, a phenomenon happening at local, national or international level, is a mean to answer the challenges triggered by the free movement of goods, services, people and capital, serving several purposes: to protect health by ensuring food safety, to protect the environment by setting air and water quality standards, to set rules for companies competing in the marketplace to create a level playing field.

The European Commission launched a ‘*Better Regulation*’ program 2002 to simplify and generally improve the regulatory environment. It is designed to cut *red tape*, improve the quality of regulation and design better laws for consumers and businesses alike.

The *Better Regulation program* included a mix of different actions:

- introducing a system for assessing the impact assessment and improving the design improvement of major Commission proposals;
- implementing a program of simplification of existing legislation;
- testing Commission proposals still being looked at by the Council of Ministers and the European Parliament, to see whether they should be withdrawn;
- factoring consultation into all Commission initiatives;
- looking at alternatives to laws and regulations (such as self-regulation, or co-regulation by the legislator and interested parties).

The Commission’s ongoing effort - to regulate better - results in examining administrative costs in specific policy areas. The EC set out a method for measuring administrative costs (the EU’s net administrative cost model), inspired by best practice in the Member States, such as the Netherlands and the United Kingdom.

Alternatives to regulation, which can be more cost efficient and effective ways to address certain policy objectives than the classic legal tools, are:

- *Co-regulation* – entrusting the achievement of the goals set out in law, for example to the social partners or to non-governmental organizations
- *Self-regulation* - voluntary agreements between private bodies to deal with their own problems by taking mutual actions;

On 23 March 2005, the European Council requested “the Commission and the Council to consider a common methodology for measuring administrative burdens with the aim of reaching an agreement by the end of 2005”.

On 16 March 2006 the Commission's Communication on Better Regulation for Growth and Jobs in the European Union included, as a companion Staff Working Paper, a detailed outline of a possible “EU Net Administrative Cost Model” (EC, 2005) based on Standard Cost Model.

The outline of an EU Net Administrative Cost Model was amended and refined through a pilot phase carried out from April to September 2005 that led the Commission to present a revised methodology, also called the "EU SCM" (COM, 2005). The Commission listed a number of possible improvements to the EU SCM, while making clear that such optimization was no precondition for its application. An operational manual for applying the model was included on 15 March 2006 in the Impact Assessment guidelines and translated in all EU official languages to ease methodological convergence. The EU SCM has been applied in a number of published or upcoming Impact Assessments to ensure that any administrative burdens generated by new legislation are justified and minimized. Though they share a common methodology, the administrative burden reducing exercise is different from normal Impact Assessment practice. This administrative burden exercise aims to provide a comprehensive ex-post measurement of legislation in a policy area for all levels of legislation and then subsequent identification of reduction targets. Impact assessment, on the other hand, measures all the costs and benefits of available policy options, while the administrative burden methodology is only a partial measurement tool which is to be applied proportionately and used only in assessing ex-ante impacts of proposed changes of legislation (marginal approach).

I.2.2. Action Program to Reduce the Administrative Burden

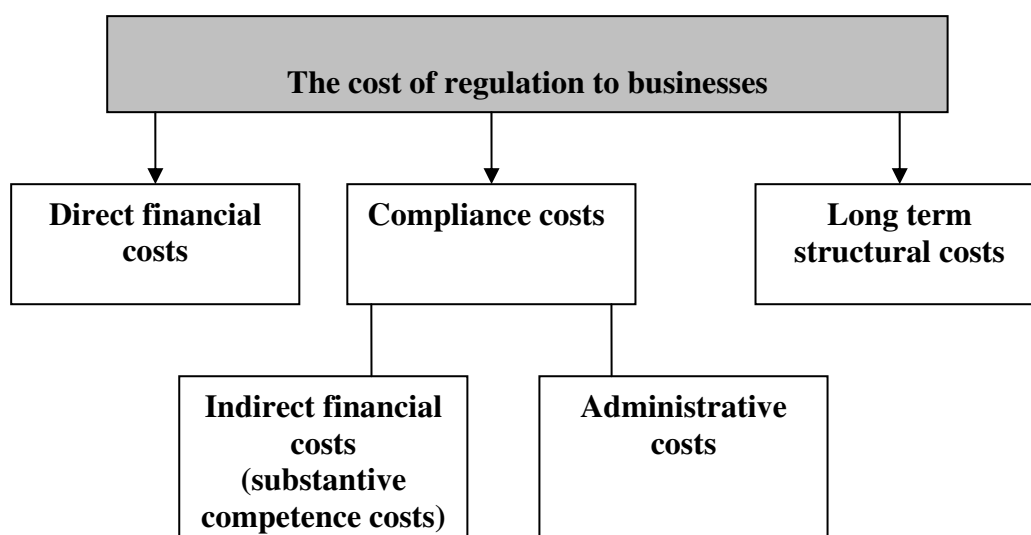
In November 2006, the Commission proposed launching an ambitious *Action Program to reduce the administrative burden* of existing regulation in the EU. As part of this, the Commission proposed that the 2007 Spring European Council had to fix a *reduction target* of 25 %, to be achieved jointly by the EU and Member States by 2012. This underlines the Commission's commitment to Better Regulation as part of the “Growth and Jobs” strategy.

The joint target - to reduce administrative burdens by 25 % in 2012 - covers Community legislation as well as national regulatory measures. Achieving this objective could lead to an increase in the level of EU GDP of approximately 1.4% or € 150 billion in the medium term (Gelauff and Lejour, 2005).

The mentioned document also assesses the administrative costs of the EU Member States that vary between 6.8% (in Greece (GR), Hungary (HU) and RE (Baltic States, Malta and Cyprus)) and 1.5% (United Kingdom (UK), Finland (FI) or Sweden (SE)), the EU average being of 3.5% (the percentages refer to GDP)(COM(2006)). The prospects of reducing with 25% the administrative costs will lead to a reduction by 1.3% of their weight in GDP, on average for EU.

I.3. OECD. The costs of financial and administrative regulation

Regulation has a number of consequences for businesses. Administrative costs are only one type of costs that regulation can entail. The figure below illustrates the different types of costs that regulation can impose on businesses.



Source: OECD (2010. 10)

Direct financial costs are the result of a concrete and direct obligation to transfer a sum of money to the Government or the competent authority. These costs are therefore not related to a need for information on the part of the Government. Such costs include administrative charges, taxes, etc. For example, the fees for applying for a permit would be a financial cost of the regulation.

Compliance costs are all the costs of complying with regulation, with the exception of direct financial costs and long term structural consequences. In the context of the Standard Cost Model, these can be divided into ‘substantive compliance costs’ and ‘administrative costs’. Examples of *substantive compliance costs* include:

1. filters in accordance with environmental requirements;
2. physical facilities in compliance with working conditions’ regulations.

Examples of *administrative costs* include:

1. documentation of the installation of a filter;
2. an annual report on working conditions.

Administrative burdens are the part of administrative costs that businesses sustain simply because of requirements. The administrative burdens are thus a subset of the administrative costs in that the administrative costs also encompass the administrative activities that businesses will continue to conduct if the regulations were removed.

I.4. Standard Cost Model (SCM)

SCM Network comprises for the time being over 24 states and organizations, and recently also Romania. In fact, for Romania, the “Strategy for better regulation at central government level, 2008 – 2013” comprises, as priorities on medium term, “preliminary analysis of the issue of administrative burden, development of a general methodology to assess the administrative costs and to elaborate a concrete action plan in order to implement the Standard Administrative Cost Model”.

There are measurement/ estimating methodologies for quantifying the administrative burden imposed by tax regulations:

- standard measurement methodology, such as what has become known as the SCM, which consists of 4 stages:
- *Information obligations (IO)* for each tax are specified (IO are the obligations arising from regulation to provide information and data to the public sector or third parties. An IO does not necessarily mean that information has to be transferred to the public authority or private persons, but may include a duty to have information available for inspection or supply on request. A regulation may contain many IOs);
 - The *data requirements* applicable to each information obligation are identified;
 - The *administrative requirements* are established;
 - *Cost parameters* (i.e. price, time and quantity) for each administrative activity are collected:
 - *Price* consists of a *tariff*, wage costs plus *overhead* for administrative activities done internally or hourly cost for external service providers;
 - *Time*, the amount of time required to complete the administrative activity;
 - *Quantity* comprises of the size of the *population* of businesses affected and the *frequency* that the activity must be completed each year;

SCM formula:

Cost per administrative activity (or per data requirement) = Price x Time x Quantity (population x frequency)

- tailor-made approach, such as those as employed by the New Zealand and Swedish revenue authorities when quantifying the administrative burden of their respective VAT systems.

Taxes that contribute most to overall administrative burdens:

- Personal income;
- Social contributions - received largely from employers in the form of withholdings from employees' wages - is administered by separate social security agencies (in some countries, multiple agencies), while in other countries (e.g. Finland, Ireland, Netherlands, Norway, Sweden, and UK) it has been integrated with the collection of personal income tax administered by the main revenue body;
- Corporate;
- Value Added Tax (VAT) - imposes the most significant level of burden (in absolute terms) of any tax in most countries;
- Excise.

Integrating the collection of social contributions and personal tax collections should trigger a reduction in the administrative burden of businesses, "placing responsibility for collection (of social contributions) with the tax administration can also significantly reduce compliance costs for employers, with less paperwork as a result of common forms and book-keeping systems, and a common audit program covering income, VAT and payroll taxes, and social contributions based on income and payrolls. The increasing use of Internet-based electronic filing and payment systems with the tax administration also lowers taxpayers' and contributors' compliance costs. This simplification can also improve the accuracy of calculations made by employers and therefore compliance levels"(IMF, 2004).

SCM Network disseminates and makes compatible the good practices from administrative costs decreasing domain. Table I.2 presents a synthesis of the main initiatives and proposals assumed by national governments.

Table I.2. Synthesis of initiatives and proposals for cost reduction

Country	Period/Term	Objective	Targeted area	Comments
Australia	2006-2012	25 %	Businesses and not for profit	<ul style="list-style-type: none"> - Up to July 2011 was provided a 256 mil \$ decrease - In September 2009 the target was revised to 500 mil \$ until July 2012(including substantive compliance and delay costs)
Austria	2007-2012	25 %	<ul style="list-style-type: none"> - Ministries - Austrian businesses 	<ul style="list-style-type: none"> - Global evaluation – 1 billion EUR - Two phase reduction: 2010 for national induced burdens and 2012 for EU induced burdens
Belgium	2007-2012	17-33 %	Organizations from 6 governmental domains	<ul style="list-style-type: none"> - Global evaluation – 61.120.467 EUR - Reduction is made by projects implementation simplification
Czech Republic	2005-2010	20 %	Businesses organizations	In 2008, the Government reconfirms the 2005 objective
Denmark	2001-2012	25 %	<ul style="list-style-type: none"> - Businesses organizations - 15 ministries with attribution in business regulation 	<ul style="list-style-type: none"> - The initial target of 15 % was recalculated in 2002 up to 25 % - E-government strategies keep in mind business but also public authorities reductions
France	2006-2012	25 %	Business organizations	3 % of GDP (60 billions EUR)
Germany	2006-2012	25 %	<ul style="list-style-type: none"> - Businesses organizations - Citizens - Public administration 	<ul style="list-style-type: none"> - In 2009 the Federal Government extended the topic reducing administrative costs for public administration and citizens
Italy	2008-2012	2012	Business organizations	The objectives were set up in accordance with Lisbon Strategy and European Target

Netherlands	2002-2007	25 %	Business organizations	In 2007, the administrative burdens for business were represented by 9,3 billion EUR, the equivalent of 1,7% of GDP and comes, in equal parts, from national and European legislation
Poland	2010	25 %	Business and public organizations	Domains like environment, spatial planning, tourist services, labour law, business activity law, social security were targeted
Spain	2008-2012	30 %	- Businesses organizations - Citizens	- It will increase by 1.4 % of GDP - 10 ministries are targeted
UK	2005-2015	25 %	- Businesses organizations - Policy costs - The third sector	- In the first phase, 2005-2010, the target was a reduction evaluated to 3.3 billion £ - In 2009 the Govern established new objectives for 2010-2015

Source: SCM Network. <http://www.administrative-burdens.com>

The synthesis proves the preoccupation of the majority of European states, and also from other continents, in order to reduce the administrative costs. We refer to administrative costs because many states focus their governmental efforts towards them, overcoming the strict objective of administrative burden.

I.5. World Bank. Economic Benefits for Administrative Reform

The World Bank has developed a series of administrative reform projects that aimed at reducing the administrative and compliance costs (W.B., 2007).

These projects benefit society if they reduce administrative and compliance costs. *Macroeconomic benefits* - Trade liberalization will involve a loss in trade tax revenue that can be substituted with an increase in the domestic tax revenues.

Reduction in administrative costs of collecting the taxes – The modernization of tax administration should lead to lower costs per amount of revenue raised as:

- i.* the tax administration is streamlined;
- ii.* tax officials are better trained;
- iii.* tax payers become more compliant as a result of enhanced tax payer education, and the establishment of taxpayer support centers, process simplification, and improved automation;
- iv.* a simpler tax policy results.

Reduction in compliance cost for the taxpayer - These costs, which tend to be higher than the cost of administering the tax itself, include the cost individuals and enterprises incur in preparing their tax declaration, and dealing with tax audits (Evans, 2003) (in-house costs, bribes).

Support trade liberalization - These benefits have been estimated for 1997–2015 at \$500 billion (1997 dollars), three-quarters of which would result from the dismantling trade barriers in low- and middle- income countries(W.B., 2002).

Reduction in distortions of the present tax regime - strengthening the capacity of the tax administration.

Chapter II The Administrative Costs in the Public Sector

II.1. An extension of the conceptual framework

The extension of this issue towards the public sector will lead to an extension of the content of the administrative burden to include „compliance costs for enterprises, services and citizens, including administrative and bureaucratic (operational) costs as well as capital costs”(SCM, 2005).

Consequently, the administrative costs in the public sector comprise, mainly, the costs for purchasing goods and support services for bureaucracy, as well as payments of some charges etc. The model that will be presented follows the ideas from Matei (2008), and it was used for assessing the public sector performance (Matei 2008, 69-73) or substantiating the marketing strategies under the reduction of the administrative costs (Matei, Matei and Dinu 2009, 17-27).

The weight of public expenditure is different and depends on the development level of the public or of the private sector. Reported to the latter, the administrative burden of the public sector has a non linear evolution. From this perspective it is worth mentioning the models formulated by Musgrave (1974) and Rostow (1960), stating that in the earlier stages of growth and economic development, investments in the public sector are high, providing the core social infrastructure. The purpose of these investments is to help economy to reach higher development stages, where, although the state will continue investments, their role will be to complete the private investments. The conclusions of the two economists are relevant also for the evolution of the administrative costs, both in the public and private sector:

- While total investments increase as proportion from GDP growth, the relative share of the public sector decreases (Musgrave, 1974, 35).
- When economy reaches the maturity stage, the mix of public expenditure will be oriented from the expenditure for infrastructure to expenditure for education, health and welfare services (Rostow, 1960, 9 – 10).

Therefore, if we take into calculation, the total administrative costs (AC_{tot}) obtained by summing up those from public and private sector:

$$AC_{tot} = AC_{public} + AC_{private} \quad (II.1)$$

it will have the following characteristics:

- AC_{tot} can be considered constant, for certain periods of economic development;
- AC_{public} and $AC_{private}$ vary in time;
- between AC_{public} and $AC_{private}$ there is bidirectional transfer due to effects of dislocation between public and private expenditure, specific for different periods of economic and social development.

The above assertions are based on Peacock-Wiseman analyses, stating that „Governments have the trend to spend more money and the citizens do not wish to pay many taxes.

Consequently, the Governments should take into consideration the wishes of their citizens” (Payne, Ewing, Mohammadi, 2006, 37).

In this context, it occurs the so called *effect of dislocation*, namely the public expenditure dislocates the private expenditure in certain periods, such as crises periods.

By using (I.1) and (II.1) we obtain:

$$BUC_{public} + BUC_{privat} = const. - (AB_{public} + AB_{privat}) \quad (II.2)$$

Which lead us to the idea that, at least on a macroeconomic level, the customary costs of the public and private affairs depend directly on the administrative burden.

II.2. Public expenditures evolution during financial crisis

II.2.1 OECD analyses

In the last half century specialized literature increased its concern towards public expenditures evaluation directly related to economical performance. Saunders (1985) analyzes public expenditures size and its impact on GDP in OECD states. What characterizes the period 1960-1981 was the existence of budget deficits on a large scale in the mid '70s after a strong public expenses increase. Recently, Olugbenga (2009) explores the Wagnerian-Keynesian debate over the direction of the causal relationship between government expenditure and economic growth, not only in developed countries but in developing ones also. This exploration is made by examining the relations between dynamic properties of public expenditures and economic growth for 30 OECD countries during 1970-2005.

In fact, OECD preoccupation towards closely monitoring public expenses, towards the expenditures allocation mechanism and the way they contribute to attain a public policy goal are well known.

Some data are relevant for the financial crisis period. For Germany the conclusion in OECD (2010a, Ch.3) is that public finances quickly decline. To be more concrete, it is thought that after a period in which general budget deficit was reduced to a level close to equilibrium (in 2007 and 2008), in 2009 it substantially increased. For 2010 it reaches over 5% of GDP. Deficit reduction method should be reducing public expenditures through an ambitious program. “In reducing the expenses, improving the public administrative effectiveness should have priority since this would allow expenses reduction without decreasing services’ quality and availability”.

For Poland, OECD (2010b, Ch.1) presents another perspective: “Poland registered in 2009 the best performance of GDP increase among the OECD countries”. Although the crisis effects were felt from the adaptation of European currency point of view, the public institutions empowerment remains an essential problem of this country.

For Norway, OECD (2010c, Ch.1) observes a strong resistance towards crisis effects. Nevertheless, after the crisis it is necessary a macro-prudential approach in order to coordinate with other European and international institutions. It is also mentioned (OECD, 2010c, ch.2) “the existence of an unexploited potential for providing efficient public services on lower prices, especially in municipal services, such as education, health and even fiscal expenditures”.

Bearing in mind the high recession level in Hungary, OECD (2010d, ch.1) says that “the crisis was a catalyst for applying decisive structural reforms”. The same source, in Chapter 3 talks about “enhancing financial stability through better regulation”.

Obviously, OECD comprised 30 states fundamental analysis of recent data concerning the financial crisis effects on public expenditures. These offer us the input for sustaining the main idea of this paper: *the necessity for an integrated approach on policies and statistics for public administrative costs and expenditures reduction in times of financial crisis.*

II.2.2 Public budgets' contraction

In order to continue the shortly presented analyses from OECD studies we shall consequently present some statistic data concerning the financial equilibriums at governmental level. The presented period, 1995-2011 highlights cyclical evolution. Moreover, after 2008, 2009 a new cycle of budget deficit or surpluses measurement would occur and it would be characterized by an accentuated increase/decrease.

On account of OECD (2010e), Annex 1 presents, in percents, the evolution of national budgets including a foresight for 2010 and 2011.

A more detailed analysis of national tendencies highlights a number of particularities. These are resulted also from the calculation of Pearson correlation coefficient for the analyzed interval (Annex 2).

For most of the OECD states the correlations intensity is strong, generally overcoming the value of 0.6. The evolution under the correlation mean of most of the OECD states can be found in Czech Republic, Switzerland, Slovakia or Japan.

Negative correlations are being highlighted in the Hungary case or Slovakia.

It is also interesting the correlation with the mean at OECD level or EURO zone. The proven overtime emergence of the economy in most of the OECD states is being underlined at high correlation level. Once more, Hungary and Slovakia are the exceptions since they have negative correlation both with OECD and also with Euro zone mean. Japan has positive correlation just under the mean of the other OECD states.

A general analysis of mentioned states' budget evolution emphasizes a pronounced contraction of national budget that is visible mainly starting with 2008 and even more in 2009.

In figure 2 the budgets contraction phenomenon is very evocative:

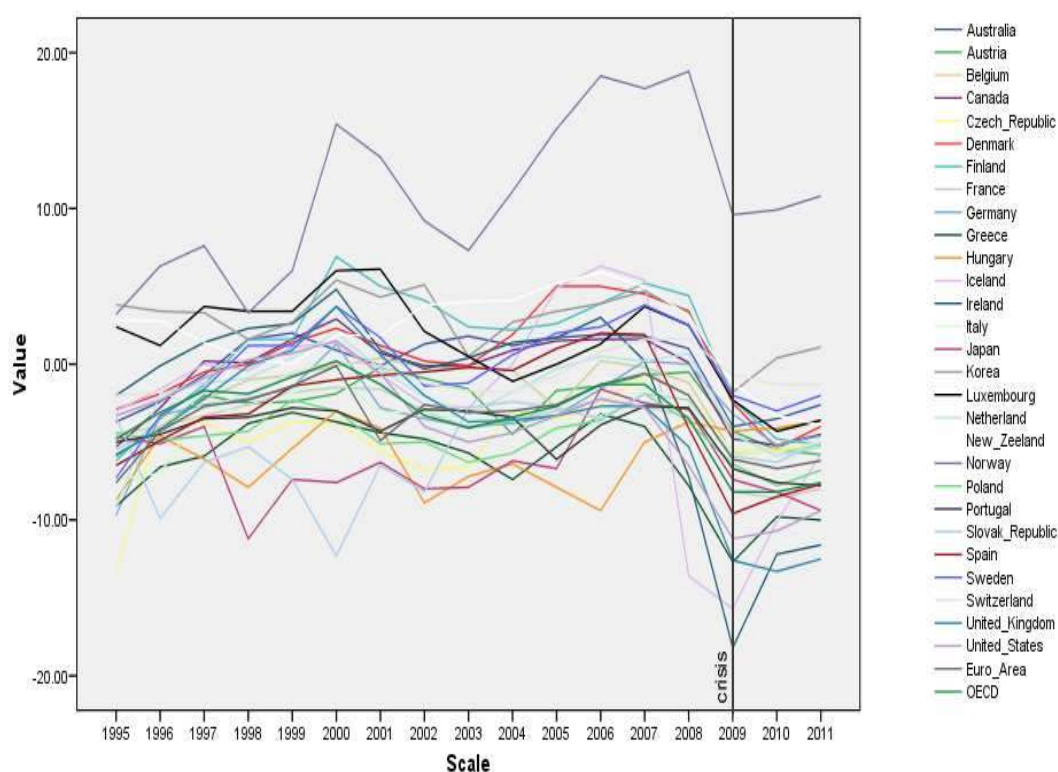


Figure 1 – Budgets evolution during 1995-2011

Most states, both from OECD and also others, have public expenditure reduction strategies in a developing phase. Therefore, deficits are supposed to decrease and their economies to

confirm, starting with 2011, positive evolutions. These strategies correlate with older administrative cost reduction strategies. Hence, the extension of administrative cost reduction subject towards public sector and integrated approach of private and public sector may lead to a more realistic image of economic efficiency maintenance and GDP increased scenarios.

Chapter III Administrative expenditures reduction impact on local government efficiency

The financial crisis determined the overlapping of superposition effects of administrative expenditures reduction with overcoming the financial crisis strategies that aim to decrease public expenditures.

In both of the situations, the governmental objectives focused on those concerning the growth of economic efficiency. Or, like in the case of crisis situation, to preserve these levels for a convenient period of time to cover the crisis.

A more profound economic analysis emphasizes applicable economic mechanism that may explain and substantiate the processes that characterize crisis times.

III.1 A new explanatory model of production factors substitution during financial crisis

Specialized literature shows new approaches towards production factors substitution aiming to state economical models that describe, closer to reality, different economic processes specific to the present days.

In this context Arow, Chenery, Minhas and Solow(1961), Klump and Grandville (2000), Karagianis, Palivos and Papageorgiou (2004), Lovell (1973), Sato and Hoffman (1968), Zaman and Goschin (2007) et al. focus especially on work and capital production factors, the actual approaches incorporating technological progress evolutions that, on the one hand determine “the growth of factors consumption” and, on the other hand, caused “the growth of complex highly qualified work” and “the growth of highly qualified work consumption and the poorly qualified work saving/replacement” completed with “the capital consumption at high technological level”(Zaman and Goschin, 2007, 3-4).

These tendencies generate significant changes in substitution elasticity of different production factors depending on the one hand on the level of social-economical development and, on the other, on factors such as market globalization, connectivity and interdependences and interoperability growth in world economy as a result of information and communication technology extension, new managerial approaches and best practices generalizations and market emergence growth etc.

Nowadays (Zestos (1996), Klump (2005), Karagianis et al. (2004)) the production factors substitution is analyzed from its direct nature point of view-referring to one factors type replacement with other factors with another, or its indirect one – several production factors replacement with other factors with different functions but complementary to productive processes.

Crisis periods emphasize the connection between substitution processes of production factors and technological progress. The objectivity of such a connection is being currently offered by the restrictive characteristic of natural resources, by the necessity to fight pollution at local and global level and, in general, the “global problems” effects on humankind. The financial crises add to these determinations other elements decreasing the financial resources.

The need for sustainability growth under economic, social and environmental aspects and in general for the growth/conservation of production and consumption models efficiency or eco-efficiency overlaps with objectives commonly reachable in most of the strategies for financial crisis effects reduction.

Nevertheless, indirect substitution that is specific for financial crisis times is equivalent with saving in order to maintain and/or to consolidate economic equilibriums. At the present time the most important substitution between capital and work refers to information and communication technology (TIC). According to Zaman and Goschin (2007) TIC becomes a real capital with modernization significance, “restructuring factors of a significant part of traditional work capital in all social departments as a result of positive externalities created especially in costs reduction domain”(Zaman and Goschin, 2007, 4-5).

The continuous growth of workforce qualification, the production “dematerialization” or the corporate management extension in public sector represent as many restructuring and sustaining factors as production factors substitutions.

Administrative costs or public expenditures reduction policies and strategies determine changes in the mechanisms of production factors substitution.

Arrow et al. (1961), Miller (2008), Sato (1967), Morishima (1967), Matei (2008) show theoretical and methodological instruments for macroeconomic analysis of production factors substitution and Cobb-Douglas production functions with their variants CES (Constant Elasticity of Substitution) and VES (Variable Elasticity of Substitution).

As it is known, the production functions are nonlinear expression of production factors capital and work that by using the same instruments (EC, 2009, 24-25) analyzes the productivity gap sources between UE and USA. Getting inspired from Moore’s (2008) papers, the mentioned report considers the following Cobb-Douglas production function:

$$Y = A(EHQ_L)^\alpha k^{1-\alpha}$$

where Y represents GDP, E is employment in persons, H is average hours worked, Q_L is the indicator of the quality of the labour input, K is capital input, A is total factor productivity and α , $1 - \alpha$ is the production elasticity of labour, respectively capital. This laborious study’s conclusions identify, among others, as the cause of growth rate disparity between UE and USA (by approximately 0.8% lower than the 1995-2006 period): demographic aspects, a lower work productivity growth, fewer work hours although the initial work education improved more in the UE. To this it can be added or not, the technical progress. Production functions show production (output) maxim contribution that can be obtained starting from a series of production factors (input) and allow to define and to measure some economic effects related to factors’ yield and to possible substitution between: scale elasticity, factors elasticity, substitution elasticity or, if the case, technology progress rate. We shall focus in our analysis on CES and Cobb-Douglas production factors without technical progress.

According to Andrei and Bourbonnais (2008, 180-184) nonlinear model represented by CES is different based on:

$$Y_t^{-\theta} = \gamma^{-\theta} [\delta K_t^{-\theta} + (1 - \delta)L_t^{-\theta}]^{-\mu} e^{\Sigma_t} \quad \text{III.1}$$

where:

- Y_t – the variable that modifies the outputs from the system
- k_t – fix capital, L_t – human capital
- $\gamma, \delta, \mu, \theta$ – models’ parameters
- ε_t – residual variable with N repartition $N(0, \sigma_\varepsilon^2)$

CES model parameters significances are:

- $\gamma > 0$ – the parameter of production process efficiency
- $\delta \in (0, 1)$ – is known as the parameter of production process distribution
- $\mu > 0$ – scale parameter for the process
- $\theta \geq -1$ – parameter for the two process factors substitution

Two properties are relevant for the CES function:

- production factors substitution elasticity is determined by θ substitution parameter, the relation being :

$$e = \frac{1}{1 + \theta} \quad \text{III.2}$$

Usually, an improper elasticity fraction of production factors substitution means greater opportunities to combine them optimally. On the contrary, a proper elasticity fraction shows rigidity in the composing variety of production factors, as well as consequence delay and absorption incapacity of production factors and investment valorization in technological progress.

- scale efficiency is determined through μ parameter. The scale yield of production factors represents the sum of production factors efficiency, each efficiency being equal to the ratio between factors marginal productivity and mean productivity.

If $\mu \in (0,1)$ production function has a descending scale efficiency. If $\mu > 1$ we have an ascending function of scale performance. For $\mu = 1$ the scale efficiency is constant.

Cobb-Douglas production function is a particular CES case. The expression of Cobb-Douglas function is:

$$Y_t = AK_t^\alpha L_t^\beta e^{\varepsilon_t} \quad \text{III.3}$$

Y_t , K_t , L_t have the significance mentioned earlier and A , α , β represent the real parameters in ε_t , the residual variable.

To be more precise, α will represent partial elasticity of production related to fix capital (e_K), and β –of partial elasticity of productivity related to human capital (e_L). Scale elasticity equals the sum of two partial elasticity cases.

$$e = e_K + e_L \quad \text{III.4}$$

If $e < 1$, the production process will generate the growth of the outputs in a lower proportion than the increase of production factors. If $e > 1$ the production process generates a greater increase of outputs than in the case of production factors. In the case of competition markets, the elasticity is a greater than one ratio.

Therefore, substitution or scale elasticity measures the percentage change in factors proportion due to the change in the change of technical substitution marginal rate. Substitution elasticity shows the proportional variance of quantitative ratio of resulted factors from the proportional variation of marginal rate of technical substitution of one factor related to another. In other words, it represents “an ease measure of the variable factor to be substituted by another” (Hicks, 1932, 117).

In the described context, the determination of CES or Cobb-Douglas production factors may offer information concerning the aggregation flexibility of the two important production factors, work and capital and the capacity to overtake and portray the inclusion level of technical progress as the main resource for efficiency and production conservation in crisis conditions.

III.2 An empirical analysis

Empirical research estimates, in Romania's case, the Cobb-Douglas production functions model using as statistic data:

- GDP as a measure of output.
- Gross fix capital formation (GFCF) as an expression of fix capital production factors.
- Employed population (EMPL) for human capital production factor

The utilized statistic data are those in Annex 3. Making use of the mentioned data series for parameters estimation it was used:

- Trans-log representation for CES function
- Linearization through logarithm function for Cobb-Douglas function.

Therefore, the result is:

$$GDP^{0.25} = (4 \cdot 10^{-6})^{0.25} [1.305GFCF^{0.25} - 0.305EMPL^{0.25}]^{-2.014} \times e^{0.307} \quad \text{III.6}$$

$$R^2 = 0.961, F = 64.650$$

$$GDP = 8.07(GFCF)^{0.775} \cdot (EMPL)^{0.367} \cdot e^{0.338}$$

$$R^2 = 0.957, F = 92.414$$

where substitution elasticity becomes:

- for CES, $e=1.33$ III.7
- for Cobb-Douglas model, $e=1.142$

In both of the situation the scale performance is ascending and the differences resulted from the relative number of utilized statistical data. After calculating CS and CA indicators we can conclude that Cobb-Douglas model offers more likely results than CES model.

Trying to make an evaluation according to the proposed model for the Romanian development regions we find the following value for the elasticity of substitution.

No	Region	e
1	North-West	-2.103
2	Center	1.327
3	North-East	-0.125
4	South-East	-1.397
5	South-Muntenia	1.165
6	Bucharest-Ilfov	1.965
7	South-West Oltenia	-1.143
8	West	-0.587

Table III.1– The elasticity of production factors substitution accordingly to Romanian development regions

The Romanian development regions analysis was made for the statistical data from 2003-2009. The situation shows strong imbalances, the scale efficiency being ascending in only 3 regions, the others having a decreasing aspect, with the special mention for North-West (-2.103), South-East (-1.397) and South-West Oltenia (-1.143).

Conclusions

Making use of fundamental economic analysis on production factors substitutions during financial crises, determined by strategic measures in order to reduce administrative costs and public expenditures offers relevant information concerning public policy-making for national and local government in those mentioned periods.

Zaman and Goschin (2007, 10) highlight the conclusion according to which the mentioned analysis “was an important instrument to substantiate decision at micro and macroeconomic level when it comes to the policy of raising the efficiency and eco-efficiency, to income distribution and to assuring a framework for optimal combination of production factors in conditions of globalization and knowledge-based economy”.

Production factors elasticity is variable according to which time interval it is being taken into consideration. On long term it has the tendency to stabilize at aggregate level.

Crises impose generally negative jumps, therefore, the stable value of the strategies aiming to reduce crisis effects must actually watch for the comeback at the former stabilization and to impose a new ascending trend.

Substitution of production factors due to public expenditures reduction is based on a mechanism that takes place in two stages.

First stage consists of human capital reduction which would lead, under the reallocation in production of resulted sums, to the growth of fix productive human capital. In the second stage the growth of fix productive capital would determine the workforce growth in private sector, workforce with other qualifications and usually better qualified.

In this mechanism we can see two types of substitution. On the one hand, the substitution of human capital /fix capital and on the other, human capital/better qualified human capital. All these types of substitution depend, as mentioned in the literature, on their elasticity level. Only in the condition of supra-unitary elasticity the described substitutions is preferred. Administrative costs reduction strategies overlapping with crisis effects become an important mechanism to preserve or to eventually increase the production efficiency during crisis times.

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Annex 1

	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Japan	Korea
Australia	1,000	0,768**	0,893**	0,923**	0,510*	0,835**	0,848**	0,819**	0,612**	0,835**	-0,326	0,615**	0,725**	0,784**	0,121	0,466
Austria	0,768**	1,000	0,804**	0,802**	0,457	0,767**	0,878**	0,775**	0,689**	0,716**	-0,109	0,365	0,516*	0,740**	0,318	0,513*
Belgium	0,893**	0,804**	1,000	0,895**	0,369	0,754**	0,894**	0,885**	0,574*	0,844**	-0,246	0,579*	0,766**	0,791**	0,215	0,597*
Canada	0,923**	0,802**	0,895**	1,000	0,585*	0,876**	0,902**	0,906**	0,734**	0,862**	-0,143	0,670**	0,785**	0,848**	0,229	0,598*
Czech Republic	0,510*	0,457	0,369	0,585*	1,000	0,577*	0,521*	0,351	0,834**	0,362	0,349	0,247	0,171	0,571*	0,293	0,150
Denmark	0,835**	0,767**	0,754**	0,876**	0,577*	1,000	0,841**	0,785**	0,644**	0,686**	-0,242	0,597*	0,615**	0,645**	0,496*	0,569*
Finland	0,848**	0,878**	0,894**	0,902**	0,521*	0,841**	1,000	0,797**	0,766**	0,721**	-0,041	0,425	0,568*	0,840**	0,202	0,539*
France	0,819**	0,775**	0,885**	0,906**	0,351	0,785**	0,797**	1,000	0,562*	0,917**	-0,247	0,700**	0,898**	0,677**	0,273	0,747**
Germany	0,612**	0,689**	0,574*	0,734**	0,834**	0,644**	0,766**	0,562*	1,000	0,535*	0,374	0,218	0,290	0,814**	0,193	0,304
Greece	0,835**	0,716**	0,844**	0,862**	0,362	0,686**	0,721**	0,917**	0,535*	1,000	-0,312	0,810**	0,899**	0,687**	0,143	0,679**
Hungary	-0,326	-0,109	-0,246	-0,143	0,349	-0,242	-0,041	-0,247	0,374	-0,312	1,000	-0,446	-0,422	0,123	-0,092	-0,177
Iceland	0,615**	0,365	0,579*	0,670**	0,247	0,597*	0,425	0,700**	0,218	0,810**	-0,446	1,000	0,860**	0,379	0,228	0,637**
Ireland	0,725**	0,516*	0,766**	0,785**	0,171	0,615**	0,568*	0,898**	0,290	0,899**	-0,422	0,860**	1,000	0,484*	0,185	0,727**
Italy	0,784**	0,740**	0,791**	0,848**	0,571*	0,645**	0,840**	0,677**	0,814**	0,687**	0,123	0,379	0,484*	1,000	0,077	0,410
Japan	0,121	0,318	0,215	0,229	0,293	0,496*	0,202	0,273	0,193	0,143	-0,092	0,228	0,185	0,077	1,000	0,445
Korea	0,466	0,513*	0,597*	0,598*	0,150	0,569*	0,539*	0,747**	0,304	0,679**	-0,177	0,637**	0,727**	0,410	0,445	1,000
Luxembourg	0,494*	0,680**	0,694**	0,656**	0,085	0,515*	0,622**	0,853**	0,458	0,731**	-0,044	0,471	0,714**	0,578*	0,258	0,716**
Netherlands	0,782**	0,794**	0,742**	0,904**	0,788**	0,804**	0,851**	0,800**	0,914**	0,745**	0,132	0,461	0,573*	0,804**	0,240	0,488*
New Zealand	0,628**	0,586*	0,640**	0,620**	0,197	0,783**	0,596*	0,669**	0,215	0,548*	-0,547*	0,584*	0,659**	0,249	0,596*	0,600*
Norway	0,368	0,509*	0,347	0,461	0,626**	0,667**	0,604*	0,245	0,608**	0,188	0,242	0,144	0,022	0,451	0,539*	0,351
Poland	0,605*	0,572*	0,580*	0,695**	0,361	0,742**	0,584*	0,773**	0,571*	0,706**	-0,123	0,585*	0,636**	0,582*	0,462	0,678**
Portugal	0,744**	0,685**	0,855**	0,749**	0,274	0,610**	0,707**	0,829**	0,515*	0,722**	-0,226	0,417	0,722**	0,672**	0,311	0,571*
Slovak Republic	0,196	0,043	0,050	-0,012	0,033	0,288	-0,003	-0,120	-0,218	-0,155	-0,355	0,018	-0,116	-0,080	0,338	-0,201
Spain	0,899**	0,743**	0,880**	0,897**	0,420	0,862**	0,814**	0,845**	0,475	0,858**	-0,403	0,810**	0,822**	0,648**	0,327	0,645**
Sweden	0,777**	0,732**	0,705**	0,848**	0,779**	0,821**	0,875**	0,648**	0,889**	0,630**	0,177	0,408	0,409	0,838**	0,172	0,361
Switzerland	0,378	0,549*	0,382	0,410	0,515*	0,632**	0,611**	0,303	0,642**	0,260	0,268	0,059	-0,005	0,480	0,490*	0,319
United Kingdom	0,735**	0,670**	0,834**	0,847**	0,211	0,643**	0,726**	0,966**	0,494*	0,896**	-0,216	0,684**	0,915**	0,655**	0,115	0,716**
United States	0,594*	0,506*	0,684**	0,724**	0,139	0,523*	0,518*	0,901**	0,368	0,869**	-0,245	0,750**	0,922**	0,506*	0,129	0,699**
Euro Area	0,879**	0,738**	0,792**	0,922**	0,683**	0,819**	0,834**	0,799**	0,840**	0,798**	-0,093	0,567*	0,669**	0,850**	0,253	0,524*
OECD	0,753**	0,705**	0,823**	0,885**	0,376	0,744**	0,730**	0,976**	0,584*	0,921**	-0,187	0,755**	0,910**	0,680**	0,313	0,761**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

	Luxembourg	Netherlands	New Zealand	Norway	Poland	Portugal	Slovak Republic	Spain	Sweden	Switzerland	United Kingdom	United States	Euro Area	OECD
Australia	0,494*	0,782**	0,628**	0,368	0,605*	0,744**	0,196	0,899**	0,777**	0,378	0,735**	0,594*	0,879**	0,753**
Austria	0,680**	0,794**	0,586*	0,509*	0,572*	0,685**	0,043	0,743**	0,732**	0,549*	0,670**	0,506*	0,738**	0,705**
Belgium	0,694**	0,742**	0,640**	0,347	0,580*	0,855**	0,050	0,880**	0,705**	0,382	0,834**	0,684**	0,792**	0,823**
Canada	0,656**	0,904**	0,620**	0,461	0,695**	0,749**	-0,012	0,897**	0,848**	0,410	0,847**	0,724**	0,922**	0,885**
Czech Republic	0,085	0,788**	0,197	0,626**	0,361	0,274	0,033	0,420	0,779**	0,515*	0,211	0,139	0,683**	0,376
Denmark	0,515*	0,804**	0,783**	0,667**	0,742**	0,610**	0,288	0,862**	0,821**	0,632**	0,643**	0,523*	0,819**	0,744**
Finland	0,622**	0,851**	0,596*	0,604*	0,584*	0,707**	-0,003	0,814**	0,875**	0,611**	0,726**	0,518*	0,834**	0,730**
France	0,853**	0,800**	0,669**	0,245	0,773**	0,829**	-0,120	0,845**	0,648**	0,303	0,966**	0,901**	0,799**	0,976**
Germany	0,458	0,914**	0,215	0,608**	0,571*	0,515*	-0,218	0,475	0,889**	0,642**	0,494*	0,368	0,840**	0,584*
Greece	0,731**	0,745**	0,548*	0,188	0,706**	0,722**	-0,155	0,858**	0,630**	0,260	0,896**	0,869**	0,798**	0,921**
Hungary	-0,044	0,132	-0,547*	0,242	-0,123	-0,226	-0,355	-0,403	0,177	0,268	-0,216	-0,245	-0,093	-0,187
Iceland	0,471	0,461	0,584*	0,144	0,585*	0,417	0,018	0,810**	0,408	0,059	0,684**	0,750**	0,567**	0,755**
Ireland	0,714**	0,573*	0,659**	0,022	0,636**	0,722**	-0,116	0,822**	0,409	-0,005	0,915**	0,922**	0,669**	0,910**
Italy	0,578*	0,804**	0,249	0,451	0,582*	0,672**	-0,080	0,648**	0,838**	0,480	0,655**	0,506*	0,850**	0,680**
Japan	0,258	0,240	0,596*	0,539*	0,462	0,311	0,338	0,327	0,172	0,490*	0,115	0,129	0,253	0,313
Korea	0,716**	0,488*	0,600*	0,351	0,678**	0,571*	-0,201	0,645**	0,361	0,319	0,716**	0,699**	0,524*	0,761**
Luxembourg	1,000	0,589*	0,437	0,095	0,747**	0,755**	-0,279	0,542*	0,435	0,265	0,888**	0,866**	0,567*	0,872**
Netherland	0,589*	1,000	0,437	0,557*	0,655**	0,627**	-0,173	0,702**	0,907**	0,538*	0,714**	0,600*	0,900**	0,791**
New Zealand	0,437	0,437	1,000	0,376	0,538*	0,631**	0,329	0,802**	0,360	0,304	0,557*	0,464	0,555*	0,609**
Norway	0,095	0,557*	0,376	1,000	0,312	0,097	0,235	0,433	0,712**	0,839**	0,076	-0,067	0,457	0,230
Poland	0,747**	0,655**	0,538*	0,312	1,000	0,680**	-0,022	0,614**	0,579*	0,534*	0,726**	0,733**	0,747**	0,822**
Portugal	0,755**	0,627**	0,631**	0,097	0,680**	1,000	-0,023	0,684**	0,472	0,244	0,813**	0,704**	0,767**	0,798**
Slovak Republic	-0,279	-0,173	0,329	0,235	-0,022	-0,023	1,000	0,181	0,061	0,193	-0,276	-0,306	-0,066	-0,186
Spain	0,542*	0,702**	0,802**	0,433	0,614**	0,684**	0,181	1,000	0,682**	0,366	0,758**	0,651**	0,785**	0,803**
Sweden	0,435	0,907**	0,360	0,712**	0,579*	0,472	0,061	0,682**	1,000	0,697**	0,548*	0,404	0,830**	0,632**
Switzerland	0,265	0,538*	0,304	0,839**	0,534*	0,244	0,193	0,366	0,697**	1,000	0,152	0,023	0,470	0,283
United Kingdom	0,888**	0,714**	0,557*	0,076	0,726**	0,813**	-0,276	0,758**	0,548*	0,152	1,000	0,953**	0,740**	0,963**
United States	0,866**	0,600*	0,464	-0,067	0,733**	0,704**	-0,306	0,651**	0,404	0,023	0,953**	1,000	0,628**	0,943**
Euro Area	0,567*	0,900**	0,555*	0,457	0,747**	0,767**	-0,066	0,785**	0,830**	0,470	0,740**	0,628**	1,000	0,808**
OECD	0,872**	0,791**	0,609**	0,230	0,822**	0,798**	-0,186	0,803**	0,632**	0,283	0,963**	0,943**	0,808**	1,000

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Japan
-3,7	-5,9	-4,5	-5,3	-13,4	-2,9	-6,2	-5,5	-9,7	-9,1	-8,7	-3	-2	-7,4	-4,7
-2,4	-4,1	-4	-2,8	-3,3	-1,9	-3,5	-4	-3,3	-6,6	-4,6	-1,6	-0,1	-7	-5,1
-0,7	-2	-2,3	0,2	-3,8	-0,5	-1,3	-3,3	-2,6	-5,9	-6,1	0	1,4	-2,7	-4
1,6	-2,5	-1	0,1	-5	0	1,6	-2,6	-2,2	-3,8	-7,9	-0,4	2,3	-3,1	-11,2
2	-2,4	-0,7	1,6	-3,7	1,4	1,6	-1,8	-1,5	-3,1	-5,4	1,1	2,6	-1,8	-7,4
0,9	-1,9	-0,1	2,9	-3,7	2,3	6,9	-1,5	1,3	-3,7	-3	1,4	4,8	-0,9	-7,6
-0,1	-0,2	0,4	0,7	-5,6	1,2	5	-1,6	-2,8	-4,4	-4,1	-0,7	0,9	-3,1	-6,3
1,3	-0,9	-0,2	-0,1	-6,8	0,2	4,1	-3	-3,5	-4,8	-8,9	-2,6	-0,3	-3	-8
1,8	-1,6	-0,2	-0,1	-6,6	-0,1	2,4	-4,1	-4	-5,7	-7,2	-2,8	0,4	-3,5	-7,9
1,2	-4,5	-0,4	0,9	-2,9	1,9	2,2	-3,6	-3,8	-7,4	-6,4	0	1,4	-3,6	-6,2
1,7	-1,7	-2,8	1,5	-3,6	5	2,6	-3	-3,3	-5,3	-7,9	4,9	1,7	-4,4	-6,7
1,9	-1,4	0,2	1,6	-2,6	5	3,9	-2,3	-1,6	-3,2	-9,4	6,3	3	-3,3	-1,6
1,8	-0,7	-0,2	1,6	-0,7	4,5	5,2	-2,7	0,2	-4	-5	5,4	0,2	-1,5	-2,5
1	-0,5	-1,2	0,1	-2	3,4	4,4	-3,4	0	-7,8	-3,7	-13,6	-7,2	-2,7	-2,9
-4	-4,3	-5,7	-4,8	-5,7	-2,5	-2,3	-8,2	-3,2	-12,7	-4,3	-15,7	-18,2	-5,5	-7,4
-3,5	-5,5	-5,6	-5,2	-5,6	-5,4	-4,8	-8,6	-5,2	-9,8	-4,1	-10,1	-12,2	-5,4	-8,2
-2,6	-5,8	-5,2	-4,5	-5	-4	-5,2	-8	-4,6	-10	-3,6	-5,8	-11,6	-5,1	-9,4

Korea	Luxembourg	Netherland	New Zealand	Norway	Poland	Portugal	Slovak Republic	Spain	Sweden	Switzerland	United Kingdom	United States	Euro Area	OECD
3,8	2,4	-9,2	2,8	3,2	-4,4	-5	-3,4	-6,5	-7,3	-2	-5,8	-3,3	-7,6	-4,8
3,4	1,2	-1,9	2,8	6,3	-4,9	-4,5	-9,9	-4,9	-3,3	-1,8	-4,2	-2,3	-4,3	-3,1
3,3	3,7	-1,2	1,4	7,6	-4,6	-3,5	-6,3	-3,4	-1,6	-2,8	-2,2	-0,9	-2,7	-1,7
1,6	3,4	-0,9	0,4	3,3	-4,3	-3,4	-5,3	-3,2	1,2	-1,9	-0,1	0,3	-2,3	-1,9
2,7	3,4	0,4	0	6	-2,3	-2,8	-7,4	-1,4	1,2	-0,5	0,9	0,7	-1,4	-0,8
5,4	6	2	1,9	15,4	-3	-3	-12,3	-1	3,7	0,1	3,7	1,5	-0,1	0,2
4,3	6,1	-0,3	1,8	13,3	-5,1	-4,3	-6,5	-0,7	1,7	-0,1	0,6	-0,6	-4,9	-1,3
5,1	2,1	-2,1	3,8	9,2	-5	-2,9	-8,2	-0,5	-1,4	-1,2	-2	-4	-2,6	-3,3
0,5	0,5	-3,2	4	7,3	-6,3	-3	-2,8	-0,2	-1,2	-1,7	-3,7	-5	-3,1	-4,1
2,7	-1,1	-1,8	4,1	11,1	-5,7	-3,4	-2,4	-0,4	0,6	-1,8	-3,6	-4,4	-3	-3,4
3,4	0	-0,3	5,2	15,1	-4,1	-6,1	-2,8	1	2	-0,7	-3,3	-3,3	-2,6	-2,7
3,9	1,3	0,5	5,9	18,5	-3,6	-3,9	-3,5	2	2,4	0,8	-2,7	-2,2	-1,3	-1,3
4,7	3,7	0,2	5	17,7	-1,9	-2,7	-1,9	1,9	3,8	1,6	-2,7	-2,8	-0,6	-1,3
3,3	2,5	0,7	3,1	18,8	-3,7	-2,8	-2,3	-4,1	2,5	1,6	-5,3	-6,5	-2	-3,5
-1,8	-2,3	-4,5	-1,2	9,6	-6,4	-6,7	-5,9	-9,6	-2	-0,7	-12,6	-11,2	-6,1	-8,2
0,4	-4,3	-5,9	-3,3	9,9	-7,8	-7,6	-6,3	-8,5	-3	-1,3	-13,3	-10,7	-6,7	-8,2
1,1	-3,6	-5,3	-3,9	10,8	-6,8	-7,8	-5	-7,7	-2	-1,3	-12,5	-9,4	-6,2	-7,6

Table – Production factors and GDP evolution during 1990 – 2009

Year	GDP (100 mil EUR)	EMPL (Population outputs) (thousand pers.)	GFCF (Gross capital formation) (1000 mil EUR)
1990	44.5	12025	1.557
1991	39	11965	1.065
1992	35	11604	1.182
1993	36	11159	1.280
1994	37	11099	1.544
1995	40	10522	1.652
1996	41	10402	1.745
1997	39	10005	1.775
1998	37	9776	1.674
1999	33	9343	1.593
2000	40	9572	1.680
2001	45	9500	1.851
2002	48	9235	2.004
2003	53	9223	2.174
2004	61	9158	2.413
2005	80	9147	2.720
2006	98	9313	4.606
2007	121	9353	9.438
2008	130	9369	6.370
2009	121	9115	5.850