

# PERFORMANCE AND INNOVATION IN THE PUBLIC SECTOR OF THE EUROPEAN UNION COUNTRIES. AN ANALYSIS BASED ON THE DYNAMICS OF PERCEPTIONS, 2009-2016\*

Ramona ȚIGĂNAȘU  
Gabriela Carmen PASCARIU  
Peter NIJKAMP

**Ramona ȚIGĂNAȘU** (corresponding author)  
Researcher, PhD, Centre for European Studies,  
'Alexandru Ioan Cuza' University of Iași, Iași, Romania  
Tel.: 0040-745-455.305  
E-mail: ramona.frunza@uaic.ro

**Gabriela Carmen PASCARIU**  
Professor, PhD, Centre for Research in International  
Economic Relations and European Studies,  
'Alexandru Ioan Cuza' University of Iași, Iași, Romania  
E-mail: gcpas@uaic.ro

**Peter NIJKAMP**  
Professor, PhD, Jheronimus Academy of Data Science,  
's-Hertogenbosch, the Netherlands Centre for European Studies,  
'Alexandru Ioan Cuza' University of Iași, Iași, Romania  
E-mail: p.nijkamp@jads.nl

\* **Acknowledgement:** This work was supported by a grant of the Ministry of Research and Innovation, CNCS – UEFISCDI, project number PN-III-P4-ID-PCCF-2016-0166, within the PNCDI III project 'ReGrowEU – Advancing ground-breaking research in regional growth and development theories, through a resilience approach: towards a convergent, balanced and sustainable European Union'.

DOI:10.24193/tras.SI2019.6  
Published First Online: 2019/12/21

## Abstract

Based on empirical perception data, the present paper introduces a new approach in government performance assessment in relation to public innovation capacity and quality of public services. Innovation in the public sector has reached a high level of priority on the public agenda of the EU, while the interest of academics in this topic has steadily increased over the last decade. However, a fundamental theory on this issue is missing, and only a limited amount of research offers an in-depth analysis of the correlations between innovation and different components associated with government effectiveness. This study aims to fill this gap in the literature, by developing an index of government performance for assessing the ability of EU member-state governments to adopt a strategic vision on innovation and to provide good-quality public services. In addition, the dynamics in the interdependencies between the innovation capacity and various drivers of government performance was highlighted, as well as the convergence/divergence trends between Member States. The empirical research in this paper identifies the EU states which may be considered as examples of good practices in adopting an innovative perspective on public administrations, as well as in proposing specific policy recommendations that could foster decision-making processes related to innovation in the public sector.

**Keywords:** government performance, public sector innovation, public policy effectiveness, public services quality, perceptions, European Union.



## 1. Introduction

In recent years, innovation and technological development have dominated the European public discourse. The Europe 2020 strategy, with the inclusion of ‘smart growth’ as a strategic priority, has led to a complex set of re-orientations of EU and Member States policies for a stronger integration of innovation and R&D in policies. In the public sector, innovation could comprise a complex set of events, processes, outputs or innovation environments (Bekkers and Tummers, 2018; Castells, 1996). The ability to innovate depends essentially on the quality of formal institutions; the process of innovation is dynamic, progressive, moving from the creation of new systems (‘green field innovation’) to improving the present systems (‘sustaining innovation’) and finally to changing the systems (‘disruptive innovation’) (OECD, 2017). But beyond the different perspectives on the meaning of innovation itself, public sector innovation is clearly related to leadership (the capacity of the leaders to induce in the public sector a ‘culture of innovation’) and the ability to promote a collaborative approach (Lewis, Ricard and Klijn, 2017; de Vries, Bekkers and Tummers, 2016). Innovation should not only be linked to the effectiveness of the government system, but also to the extent of innovative behavior in society, thus creating an environment directed towards innovation – an ‘architecture of innovation’ (Arundel, Block and Ferguson, 2019), which may generate and intensify positive interactions between the public and private sectors and, also, to offer a transparency of the decision-making process (Savignon *et al.*, 2018; Zolli and Healy, 2012; Bason, 2010). In this context, various barriers should be removed (e.g., legislative, technical, cultural), new laws and procedures adopted, human capital developed, the financial resources created, the institutional structure and the management system transformed. There is a need for a mix of formal and informal arrangements, depending on the decisions made, and these need to be guided by responsibility, strategic planning, multi-actor cooperation, dialogue with the civil society, adaptability to changes, compliance with rules, social justice (Sen, 2009). Last but not least, it is necessary to introduce a rapid adaptation to technological changes, so as to integrate the innovation in public services and to adopt a strategic vision (Funda, 2007). Do the governments of the EU member states have the capacity to respond effectively to societal challenges by opening up to innovation, adapting to newness, overcoming barriers, contributing to the promotion of optimal conditions for stimulating economic performance and for increasing well-being?

The paper proposes a new approach in governments performance assessment, based on a new database created through an in-depth analysis of a survey addressed to experts from the Ministries of Economy and Finance and development agencies from 144 countries (in 2016) by *Agence Française de Développement (AFD)*. The analysis was carried out for 3 years (2009, 2012 and 2016), in order to highlight the dynamics of the government performance capacity and the convergence/divergence trends between EU Member States, as a result from the perceptions of experts.

The evaluation of the performance of the public sector through perceptions is a widely accepted approach, often used by various international organizations and by

expert groups for its high relevance for an in-depth evaluation of the impact of governance on the performance of economic systems and of individual welfare as final objectives of the government. What the present research brings as a new approach is, on the one hand, the use of a new database and, on the other, the integration of some variables that allow the assessment of the public sector's capacity in EU Member States (28) in order to provide strategies according to the needs of society, integrating competences, resources (human, financial, informational), structures and processes, so that they facilitate and contribute to the increase of the quality of public services. We are specifically interested in highlighting the ability of governments to adopt a strategic vision on innovation, including a collaborative approach; in other words, to evaluate the capacity of governments in promoting an institutional architecture that is favorable to innovation and the way this correlates with the effectiveness of public policies and the quality of public services. We consider that such an analysis can contribute to the development of an analytical framework for identifying the particular combinations of institutional features and functions that define the public sector of EU countries, which may lead to the outline of more effective public policies, noting that there is no institutional model to be followed, but only elements that can be associated with good governance.

The next section of the paper details the specific aspects of innovation in the public sector, from the perspective of the role of innovation in enhancing government performance and the methods for assessing innovation capacity. Section 3 largely explains the advantages and limitations of a perception-based analysis, the research methods applied and the way the database was built. In Section 4 the results are interpreted from the point of view of interdependencies between government performance indicators, highlighting the importance of adopting a strategic vision and creating a favorable framework for innovation in increasing government performance. The concluding section summarizes the main findings of our research, with an emphasis on their relevance to European public policies.

## **2. Government performance and innovation: interdependencies and assessment**

The performance of the public sector can be assessed, in the simplest way, through the ability of the government to achieve its goals in an efficient manner. However, government performance assessment, especially in relation to innovation, is extremely difficult, the general view being that a basic theory is missing (Arundel, Block and Ferguson, 2019; Andrews, 2008). Some authors propose an evaluation through output and outcome indicators in the standard areas of government policies, such as education, health, quality of administration, economic affairs, security and social welfare (Adam, Delis and Kammas, 2011; Angelopoulos, Philippopoulos and Tsionas, 2008). But, the quantification cannot always be done accurately (especially in countries with institutional weaknesses), and in many areas there is no valid comparative data on all countries for a systematic assessment of government performance, which in practice

involves more than just a simple aggregation of indicators. Other authors prefer the use of secondary data (Kaufmann, Kraay and Mastruzzi, 2010) by aggregating the results of surveys applied to citizens, companies and/or experts, the most known method, based on 6 indexes, being the one applied for calculating the Worldwide Governance Indicators (WGI).

The assessment based on the perceptions, although subjective and quite limited, is considered relevant, because perceptions have an essential role in the decisions of the economic actors and they reflect government performance *de facto* and not *de jure*, the distance between them being quite significant, especially in countries with poor institutions. In addition, some key aspects of a good governance cannot be assessed by quantitative indicators (e.g., corruption, freedom of expression, free media). Furthermore, the public sector mainly incorporates social goods and takes into account specific/cultural values, which implies a use of indicators derived from qualitative assessments, which involve subjectivity and can only be evaluated by perceptions.

A specific challenge over the past years results from the need to integrate innovation in the evaluation of government performance, both as a determinant of effectiveness's enhancing and as goal of an effective governance. Do we rely in this case on subjective perception indicators or do we use objective performance indicators?

An assessment of what innovation means in the public sector is difficult to establish, as there is a lack of clarity on what innovation in the public sector entails compared to the private domain. Innovation can be related to products, processes, or institutional architecture. For example, many of the activities included in the Oslo Manual (R&D, acquiring external knowledge, design, testing and evaluation) are rarely used in public sector innovation assessment, whereas other activities (training and procurement of equipment, ICT, etc.) are regularly taken into account (OECD and European Commission, 2005). Studies regarding the EU (Gault, 2018; Șandor, 2018; European Commission, 2016; European Commission, 2014; Biagi and Loi, 2013; Hartley, Sorensen and Torfing, 2013; Halvorsen *et al.*, 2005; Bartlett and Dibben, 2002) refer to indicators such as: the number of employees with higher education, e-government, e-public procurement, e-health, research and development expenses (as % of GDP), public-private partnership agreements, number of patents, share of scientists, papers, research projects, export of creative goods (as % of total exports), percentage of creative jobs, access to internet, etc., in order to assess the innovation in both public and private sectors at national level.

Innovation in the public sector can also be a new way of acting or introducing new methods, tools or new institutions adopted by governments to achieve their goals (Brown and Osborne, 2013; Hughes, Moore and Kataria, 2011; Hartley, 2005); consequently, it is necessary to identify and assess the factors and synergies that determine a culture of innovation and the creation of an institutional architecture favorable to innovation in the public sector (OECD and European Commission, 2018 and 2005; OECD, 2015). A useful tool is the Public Sector Innovation Observatory (OPSI), developed by OECD as result of a project Horizon 2020. OPSI collects and analyzes the

most important aspects of the innovation in the public sector and, based on them, formulates new recommendations. In order to draw a model of innovation in the public sector, OPSI proposes several options: (1) *enhancement-oriented innovation*, grounded on already existing structures, knowledge, processes and working programs; (2) *mission-oriented innovation*, which involves a more radical passage from the existing state to the building of new paradigms; (3) *adaptive innovation*, described by the answer to shocks, offered primarily by the citizens, who feel best the effects of change and act accordingly; (4) *anticipatory innovation*, which implies large-scale, uncertain changes, projected in the future and with an autonomy of innovations (OECD, 2019). Innovation in the public sector is therefore of a different nature, extremely complex and in order to evaluate the activities, impact or attitudes related to innovation, more and more surveys are being used (European Commission's Innobarometer Survey, NES-TA, MEPIN, etc.). Although the accuracy of the data may be debatable, it is considered that a perception analysis can provide the support for the development of policies that encourage innovation, strengthening the geospatial networks between the business environment and the public sector, through the transfer of know-how and technology.

An analysis of government performance based on perceptions can provide a highly analytical and sensitive dashboard for the causal relationships established between various components of society and the governance system, and may have greater relevance in mapping different public policies. Individuals, being the beneficiaries of the public services, are directly affected by the actions of national governments and local public administrations. Therefore, even though they may have a high degree of subjectivism through self-reported data, perceptions can be expressed starting from factual reality, as they may be transferred into effects of societal well-being. Perceptions as a data source for evaluating the governance system are often also used in the estimation of Worldwide Governance Indicators (WGI) as widely accepted tools for evaluating good governance.

### **3. Methods and data**

In the present study, having as main objective to assess the governmental capacity of EU member states to perform and to highlight the interdependencies between different performance factors, the hypotheses of our analysis are:

*H1:* There is a high interdependence between governments' performance capacity and innovation capacity, and

*H2:* There are differences between EU member states regarding perceptions of government performance capacity, but they are extremely fluctuating and converge over time.

Therefore, in our research we aim to answer the following questions: (1) What factors facilitate the integration of innovation and a strategic vision on the governance system of EU countries? (2) Are governments that integrate this dimension the ones that have more effective public policies and/or a better quality of services? (3) Are there

significant differences, on the one hand, between the ability of governments of the Eurozone to perform well, compared with those from Central and Eastern Europe, and, on the other, between the perceptions regarding the capacity of the governments to perform and the government effectiveness resulting from official statistical sources? (4) Do they converge over time, and if so, are they dependent on which specific circumstances?

The data needed for our analysis were collected based on opinion polls by the *Agence Française de Développement (AFD)*, through *CEPII (Le Center d'études prospectives et des informations internationales)*, a French center for research and expertise on the world economy, and *DG Trésor (Directorate General of the Treasury)*, by designing and applying a questionnaire to experts from various divisions of the Ministries of Economy and Finance and development agencies in each country included in the survey. We consider that the CEPII database offers the following advantages for our research: (1) it includes a number of over 300 items, which can provide a deeper examination of a wide spectrum of issues concerning government performance, on the economic, social, and environmental areas, from a short and long-term perspective of analysis; (2) it is also made up of perceptions that allow the distinct ability of the government to innovate and promote innovation in the economy and society, as a specific objective of our research; (3) CEPII provides a platform for debate between the university sector, experts, practitioners, decision makers and other interested parties (public and private), so that the data is as accurate as possible; (4) it offers a relatively lower degree of subjectivity of opinions, the questions included in the questionnaires being, as far as possible, broken down for a clearer and focused understanding; (5) the questionnaires were constantly tested and improved.

The differences between questionnaires being significant after 2006, the construction of a harmonized database was only possible after that time, the analysis being carried out for the years 2009, 2012 and 2016, a sufficiently long period to evaluate the dynamics of perceptions, too. In order to find the same correspondent and to develop a coherent set of variables, all questions were analyzed (133 in 2009; 130 in 2012 and 127 in 2016, respectively). Obviously, the methodological approach was difficult as: the geographical coverage varied over time (from 51 countries in 2001 to 144 countries in 2016); certain questions were formulated differently, although the essence was, at times, the same; it was necessary for the questions to be broken down into several items (367 for 2009, 330 items for 2012 and 320 for 2016), in order to reduce the subjectivity of opinions.

By evaluating all the components of the questionnaires and selecting those that reflect the progress of the government and the degree of assertiveness towards the needs of society, 42 variables were grouped into 3 sub-indexes/factors: *Factor A\_PPE – Public policy effectiveness*, *Factor B\_SVI – Strategic vision and innovation and the Factor C\_QPS – Quality of public services*, according to the descriptions from Annex 1. Based on the 3 factors, we developed an index, named *Government Capacity to Perform (GCP)*, of a latent nature, by using a structural equation:

$$GCP_{i,t} = \alpha_0 + \alpha_1 Factor A\_PPE_{i,t} + \alpha_2 Factor B\_SVI_{i,t} + \alpha_3 Factor C\_QPS_{i,t} + \epsilon_{i,t}$$

In *Factor A\_PPE*, we included 15 variables that reflect, to a large extent, the perceptions about the government's ability to adopt policies with a positive impact on the economy (the quality of formal and informal institutions, the effectiveness of the fiscal system, partnerships with private actors and civil society, others). *Factor B\_SVI* (13 variables) was constructed in such a way so as to highlight the perceptions about the government's ability to create favorable conditions and opportunities for innovation, to promote innovative behavior and to support the development of the innovation capacity in society. We considered these functions to be more relevant in assessing the links between government's performance and innovation than taking into account input or output variables such as research and development expenditures, the number of scientists, the university-industry partnerships, the government's procurement of advanced technological products, digitization, the export of creative goods, the number of scientific papers, research projects, licenses/patents, etc. In our opinion, the variables included in *Factor B\_SVI* reflect the government's ability to create an architecture of innovation with synergy effects throughout the system and reflect a long-term vision on innovation. In the *Factor C\_QPS* we included 14 variables that highlight the social effects generated by public policies as perceived by the experts and that ultimately reflect the extent to which a government manages to respond through better policies and innovation to the purpose for which it functions, namely the people's wellbeing (Andrade, Duarte and Simões, 2018).

To ensure a better comparability of indicators over time and to facilitate a proper interpretation, the variables included in the 3 sub-indexes were aggregated, using Likert-type scaling, ranging from 0 to 4, where 4 denotes the positive perception on an indicator, a high government's capacity and effective public policies, whereas 0 means the opposite. Also, we were interested to compare perceptions in EU countries and to see their dynamics during the analyzed period, using a structuring on types of visions (optimistic, moderate or pessimistic) and mapping of the EU countries. After verifying the robustness, in order to estimate the interdependencies between the constructs that are the subject of our investigation, we used network analysis and SEM-PLS-path analysis, using the programs JASP, SmartPLS and Stata.

#### **4. Results and discussions**

Starting from the assumption that the capacity of a government to perform is strengthened when the institutional structure is not very rigid, as it manages to cover all areas that favor institutional change and allows for the development of new growth pathways through adaptability (Boschma, 2015), in the index described above we included aspects that refer both to the efficiency of the decision-making process (*Factor A\_PPE*) and to the strategic visions of the government, including those regarding innovation and adaptation to technological changes (*Factor B\_SVI*), and to the quality of public services (*Factor C\_QPS*).

Through network analysis we highlighted the connections between the variables of the 3 factors, as well as the way of integrating them into the network, and through

the SEM-PLS (path analysis) method we tested the relationships between the GCP, the 3 sub-indexes and their elements, highlighting the interdependencies between different factors of government performance. In addition, to see if there is an internal consistency between them and the latent variable (GCP), we estimated the p-values, thus confirming the validity of the model (Annex 2).

#### **4.1. Evaluation of connections between government performance indicators**

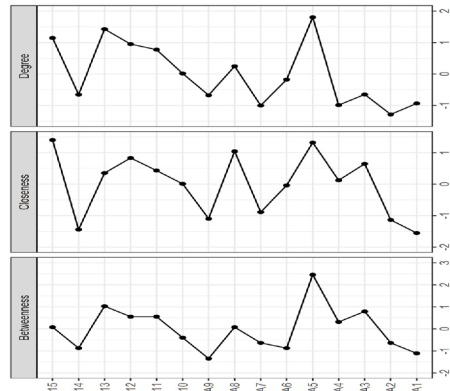
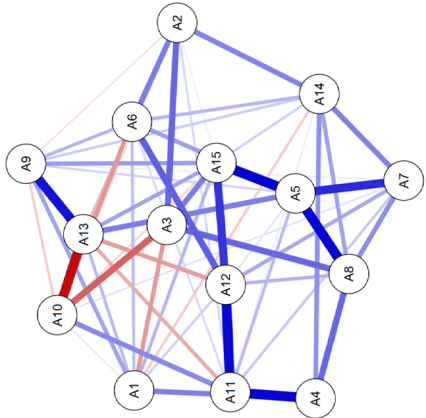
As a regular estimation method, we used *EBICglasso* (Extended Bayesian Information Criterion Graphical Least Absolute Shrinkage and Selection Operator), which estimates partial correlations between all variables and reduces absolute values to zero. Based on the network analysis, we highlighted the *centrality plots*, which measure: *the betweenness*: the number of variables passing through the main node; *the closeness*: the distance between the main node and the other nodes; *the degree*: the level of the load of a variable. In general, a higher centrality indicates that the indicator is important in the network (Figure 1).

The network that incorporates the indicators used in the analysis captures, through the intensity of the blue line, the strongest relationships between nodes, based on the Fruchterman-Reingold algorithm. If no interdependencies are established between certain elements, they will be represented in isolation, as is the case of indicators C8 (Significance of the public sector in the delivery of public services) and C9 (Labor market flexibility), in the diagram corresponding to the C\_QPS Factor. As for the red line, the more it is accentuated, the more the variables establish reverse associations.

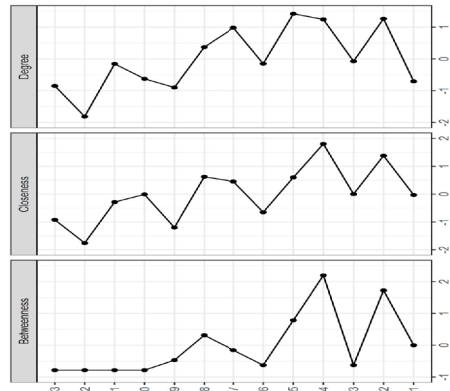
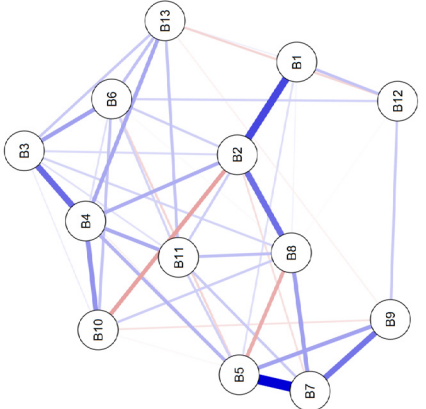
Therefore, regarding the *A\_PPE Factor*, among the most intense correlations we mention the ones between: A4 (*Transparency of economic policy*) and A11 (*Public-private cooperation*); A11 (*Public-private cooperation*), A12 (*Coordination in the public sphere*), A15 (*Coherence and quality of the public policy making process*); A5 (*Ethical behaviour*), A7 (*Transparency in public procurement*), A8 (*Functioning of the legal system*), all these correlated with good institutions: transparency, coherence, coordination, cooperation, compliance with the law. In the absence of these key elements, we are talking about institutional fragility, strategies and visions that are unfit for development, an inertia of the system and the extension of the phenomenon of corruption. The correlations established by our analysis highlight that the main driving force in public policies' effectiveness is the quality of the institutions, in association with the strengthening of policy coherence for the public-private partnership development.

Weaker or negative correlations are established between: A10 (*Tax exemptions*) and A13 (*Significance of public companies to the economy*); A3 (*Internal conflicts*) and A10 (*Tax exemptions*); A1 (*Fiscal autonomy of sub-national authorities*) and A3 (*Internal conflicts*); A13 (*Significance of public companies to the economy*) and A6 (*Efficiency of the tax administration*). We find that fiscal autonomy in the territory is not perceived as being associated with internal political tensions or with the exemption of taxes or that public companies would have a positive correlation with the tax system in ensuring the public policies effectiveness. Therefore, the experts' perception does not link

Factor A\_PPE components



Factor B\_SVI components



Factor C\_QPS components

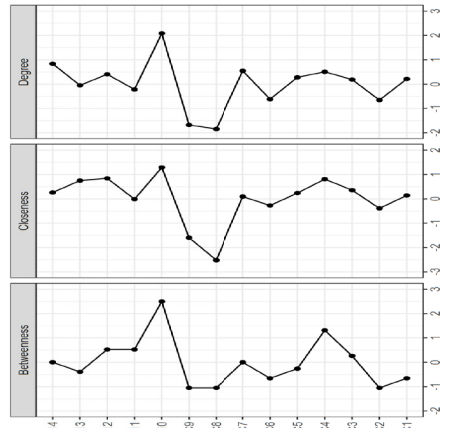
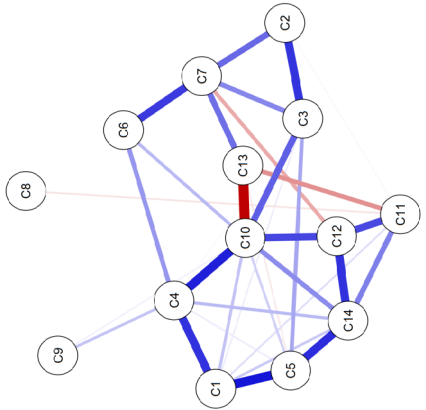


Figure 1: Network analysis and centrality plots  
Source: Authors' representation using JASP software

the existence of public companies with government performance or the efficiency of the tax system, this conclusion being especially very important for the Central and Eastern European economies, which still maintain an important sector of public capital enterprises.

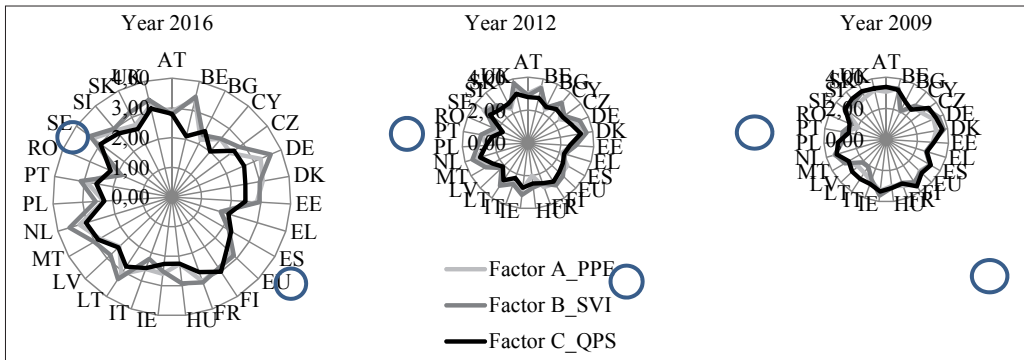
Regarding *Factor B\_SVI*, we observe that the interdependencies are more segmented; although there are links between indicators, they do not have the same intensity as in the case of *Factor A\_PPE*, being more diffuse. Thus, the most relevant connections are between: B1 (*Capacity for State reform*) and B2 (*Capacity for sectoral reform*); B3 (*Long-term vision*) and B4 (*Long-term sectoral strategies*); B5 (*Reflection on the major national issues*) and B7 (*Political authorities decision-making autonomy*); B2 (*Capacity for sectoral reform*) and B8 (*Obstacles to public action*); B7 (*Political authorities decision-making autonomy*) and B9 (*Support for emerging dynamic/innovative sectors*). We observe that, depending on the obstacles that stand in the way of public action, the government's action towards developing sectoral reforms to promote innovation should be outlined. Specifically, if in the health sector, in a certain region/county, we observe there is a lack of cooperation between local actors, a high level of corruption, a poor medical treatment research infrastructure, then the administration should concentrate on measures to correct these weaknesses, not by dealing exhaustively with the problems in this field. This conclusion is important in a context of budgetary constraints, when we need to have more focused public policies to optimize the trade-off between effectiveness and efficiency, especially in relation with the innovation integration.

In the case of *Factor C\_QPS*, we observe the creation of a cluster, including C10 (*Significance of informal work*), C4 (*Equal treatment by the State in terms of access to public schools, public healthcare, public employment*), C1 (*Territorial coverage of public services*), C5 (*Institutional solidarity*), C14 (*Contribution of public sector to well-being*), C12 (*Adaptation of the higher education system to business needs*). Essentially, these relationships highlight the ability of the system to adapt, to meet the demands of society and to make the services they provide more efficient. The lowest correlation is given by C10 (*Significance of informal work*) and C13 (*Prospects for young people*), which indicates that for both national governments and educational institutions, ensuing favorable conditions for inclusion for the young generation, in line with the EU development strategies, should be a priority. Otherwise, informal activities will develop, with a negative impact in the whole economy.

According to the *centrality plot*, in the case of *Factor A\_PPE*, the factor that would influence the efficiency variation of the decision-making process is A5 (*Ethical behavior*); in the case of *Factor B\_SVI*, (in)consistency/(per)mutation produced by B4 (*Long-term sectoral strategies*) generates the most fluctuations on the other components; and, in the case of *Factor C\_QPS*, the strongest effects of broadcast over the entire network are ensured by C10 (*Significance of informal work*). In other words, at the European level, the ethical behaviour in public administration, the integration of a strategic vision regarding innovation and the reduction of the black labour market are perceived as the most relevant determinants in the growth of governmental performance

and, implicitly, in explaining the gaps of the government effectiveness, with strong implications for the quality of public services (Taylor, Leens and van Schendel, 2017; Amundsen and Pinto de Andrade, 2009).

In dynamics, the largest fluctuations were registered in the case of the *Factor C\_QPS*, with a steady degradation of perceptions regarding the quality of public services, the EU average reaching in 2016 the value of 2.54, compared to 2.60 in 2012, respectively 3.13 in 2009 (Figure 2). This contraction is the result of the widespread impact at European level of the measures taken in the public sector in various Member States to reduce wages, after 2009, to reduce public investments, and of the slow economic growth (often due to the incapacity of the government to take effective measures, as perceived by the population), of the delays in relaunching growth and the degradation of the conditions of living for a large part of the population, especially from Central and Eastern Europe.



**Figure 2:** Dashboard of the 3 sub-indexes

**Source:** Authors' representation

The degradation of the quality of public services is correlated with the negative perceptions on the capacity of governments to adopt a strategic vision and to integrate innovation (from 3.04 in 2009, to 2.92 in 2012 and 2.86 in 2016), as well as with a degradation of the effectiveness of public policies (from 2.95 in 2009, to 2.76 in 2012 and 2.74 in 2016). In public debates and in the development strategies approaches, reference is increasingly made to new technologies, to the introduction of software for online procurements, the digitalization of payments for public services, or electronic voting systems, in order to reduce bureaucracy, the high transaction costs and an increase in transparency. With a few exceptions, from this point of view, the most delayed countries are those of Central and Eastern Europe. There are, however, some examples of good practice coming from the new Member States that have realized the importance of innovation in the public system and have thus resorted to information technologies, as is the case in Estonia, a state where electronic governance prevails, offering to all its citizens the possibility to vote online in national elections or to pay online for services (Kattel and Mergel, 2018).

Last but not least, if we look at the causality of effects created between the 3 factors, the strongest link is established between Factor A\_PPE and Factor B\_SVI (0.873), and between Factor A\_PPE and Factor C\_QPS, the conditionality being 67.3% (Table 1).

**Table 1:** Weights matrix

	Factor A_PPE	Factor B_SVI	Factor C_QPS
Factor A_PPE	0.000		
Factor B_SVI	0.873	0.000	
Factor C_QPS	0.673	0.641	0.000

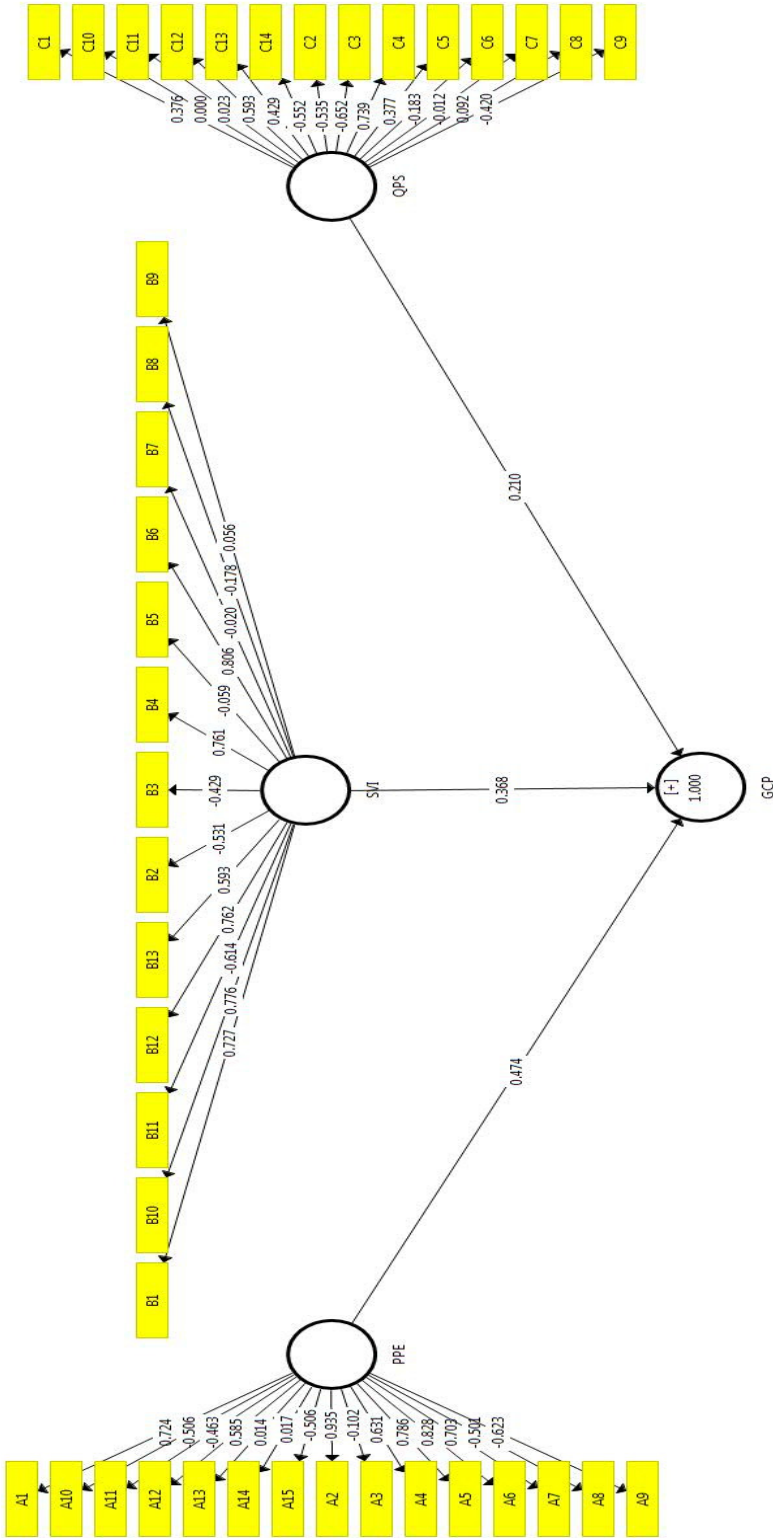
**Source:** Authors' estimates using JASP software

We can say in this case that the effectiveness of public policies depends essentially on the interest and capacity of governments to innovate, the extent to which they adopt a long-term vision and promote innovation in the economy and society. The quality of public services is primarily correlated with the effectiveness of public policies, but the intensity of interdependence with the capacity for innovation is also high (over 0.50). Therefore, policies focused on innovation can improve the overall government performance and may contribute to improving the quality of public services.

#### **4.2. The key conditions of government performance**

According to the structural model (Figure 3), it results that the greatest influence on GCP is exerted by Factor A\_PPE (47.4%), followed by Factor B\_SVI (36.8%), the rest representing the contribution of Factor C\_QPS (21%), this being a consequence of an efficient decision-making process, enhanced by optimal strategies for improving government performance. It also results from Figure 3 that the variables A2 (*Domestic public security*), A6 (*Efficiency of the tax administration*) and A5 (*Ethical behavior*) have the highest causal effect in ensuring a stronger efficiency of the decision-making process (0.935; 0.828, respectively 0.786); next, the indicators B6 (*Priority of the elite in relation to development and growth*), B10 (*Public support for innovation*) and B12 (*Consideration of the public interest in relationships between the State and business*) have the strongest influence on Factor B\_SVI (with values reaching 0.806; 0.776; and 0.762 points, on a scale from 0 to 1), whereas C4 (*Equal treatment by the State in terms of access to public schools, public healthcare, public employment*), C12 (*Adaptation of the higher education system to business needs*) and C2 (*Prospects for young people*) have the greatest impact on the quality of public services (0.739; 0.593; and 0.429).

Therefore, the results of our network analysis are confirmed, the factor with the strongest intensity in the mutual conditioning of the GCP determinants, being Factor A\_PPE. Furthermore, the analysis mostly highlights the role of institutions (A4, A5), of the performance of the tax system (A1, A6) and of the strategic vision (B4). In addition, the analysis allows for a deeper exploration of the determinants of government performance, highlighting the role of investment in human capital (B6, C4, C12), public security (A2), support for innovation (B10) and capacity to adopt reforms



**Figure 3:** The structural model of the analysis  
**Source:** Authors' estimates using SmartPLS software

(B1). So, as it also resulted from the network analysis, it is important for governments to take measures to reduce corruption, to establish an adequate system for taxes and duties administration, and to generate internal order. For adopting a strategic vision, more actors should be consulted and interest should be continuously displayed in supporting innovation. It is also obvious that, given that many European countries, in the recent crisis context, faced fairly high unemployment rates among the young, for quality in public services it is necessary to adopt strategies and policies for the integration of young people on the labor market and for eliminating discrimination. Annex 3 presents the influences of each variable on all 3 factors (*cross loadings*).

The ranking of the EU member states (*top 5 performers versus the last 5 ranked*) according to the values of the 3 sub-indexes, in correlation with the value of the GCP index (Table 2; Figure 4), allows for a comparative analysis of the capacity of the governments of the EU member states to perform, and the role of the 3 factors in determining government's performance.

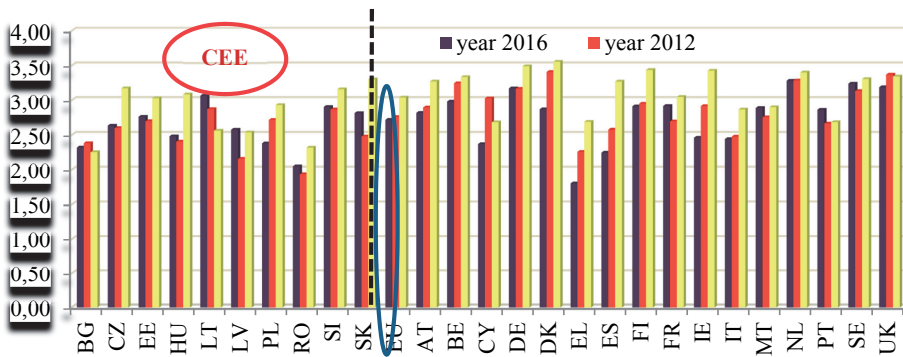
**Table 2:** Top 5 performers versus the last 5 ranked

	year 2016			year 2012			year 2009		
	<i>Factor A_PPE</i>	<i>Factor B_SVI</i>	<i>Factor C_QPS</i>	<i>Factor A_PPE</i>	<i>Factor B_SVI</i>	<i>Factor C_QPS</i>	<i>Factor A_PPE</i>	<i>Factor B_SVI</i>	<i>Factor C_QPS</i>
<b>Top 5 performers</b>	BE=3.38	DE=3.62	UK=3.05	BE=3.49	UK=3.73	DK=3.26	NL=3.47	DK=3.75	DK=3.66
	SE=3.30	NL=3.59	NL=3.01	SE=3.37	DK=3.61	NL=3.04	FI=3.43	DE=3.68	FI=3.59
	DE=3.25	BE=3.47	FI=3.00	DK=3.35	NL=3.53	UK=3.06	BE=3.36	IE=3.61	DE=3.49
	NL=3.24	SE=3.43	SE=2.99	UK=3.32	BE/DE=3.43	SE=2.88	SE=3.34	NL/SK=3.41	SK=3.47
	UK=3.15	UK=3.36	MT=2.86	NL=3.28	IE/CY=3.18	DE=2.86	DE/IE=3.31	UK=3.40	SI=3.41
<b>The last 5 ranked</b>	EL=1.71	EL=1.72	EL=1.98	RO=1.87	LV=2.22	RO=1.68	RO=1.96	BG=2.05	PT=2.44
	RO=2.06	RO=1.85	CY=2.00	HU=2.01	RO=2.25	LV=2.09	BG=1.98	LT=2.10	CY=2.50
	BG=2.15	ES=2.21	BE=2.10	EL=2.14	EL=2.34	PT=2.21	LV=2.48	LV=2.13	RO=2.56
	ES=2.23	IT=2.22	RO=2.24	LV=2.16	BG=2.41	IT=2.26	LT=2.56	RO=2.43	BG/EL=2.73
	HU=2.27	BG=2.33	HU=2.26	BG=2.28	SK=2.43	EL=2.29	EL=2.68	EL=2.67	MT=2.78
<b>EU</b>	<b>2.74</b>	<b>2.86</b>	<b>2.54</b>	<b>2.76</b>	<b>2.92</b>	<b>2.60</b>	<b>2.95</b>	<b>3.04</b>	<b>3.13</b>

**Source:** Authors' calculations

Considering the *Factor A\_PPE*, both in 2012 and in 2016, Belgium assumes the first place, with a slight decrease in 2016 (from 3.49 to 3.38), although, in the 3 analyzed years, Belgium is not in top-5 regarding the quality of public services. A possible cause could be the Euro-zone crisis which forced the institutions to focus their attention more towards the challenges of public debts, reducing the budget deficit, calling for budgetary adjustments, limiting the government's expenses and less interest in investments in education and health. Other countries (Germany, Sweden, Austria, France, Greece, Italy) were affected by the refugee crisis in 2015 and 2016, with important effects on the labor market, on public safety, on the budget and, implicitly, on the perceptions regarding the government performance; other states were targeted by terrorist attacks or separatists (Belgium, France).

France, although not in the top-5 of highest performing states, regarding the *Factor A\_PPE*, is on the 7<sup>th</sup> place in 2016 (3.01 points), after Denmark (3.10 points). Austria is also in the top-10 regarding the quality of public services, reaching in 2009 a score of 3.38 points, in decrease (2.79 points in 2012 and 2.80 points in 2016). Also, without being in the top-5, the strategic vision and innovation are well represented in Austria, with a score of 3.37 for the *Factor B\_SVI* in 2009. Cyprus was in 2012 in the top-5, alongside Ireland, next to countries maintaining the leader position for the entire period covered by our analysis (Great Britain, the Netherlands, Denmark). Cyprus tried to overcome the crisis through structural reforms based on innovation in the public sector, but these did not materialize in favorable effects for the effectiveness of public policies or the quality of public services, the literature referring to explanatory factors such as: the defective system of employment in the public sector, the reduced fiscal responsibility, poor institutions, the lack of an administrative culture and leadership skills.



Note: Central and Eastern European countries = CEEC

Figure 4: Government Capacity to Perform – GCP Index

Source: Authors' representation

We also signal here the case of the Netherlands, in the top-5 for all the 3 sub-indices and all years, except Factor C\_QPS for 2009. Netherlands is also one of the few countries in this hierarchy which improved its innovation capacity in the public sector during the analyzed period, alongside Sweden. In 2009, we have among the countries with a tradition in offering good-quality public services (Denmark, Finland, Germany, Sweden), one country from Central and Eastern Europe – Slovakia – , which, after the crisis, had one of the most dynamic economic growth in the EU, reducing its government's deficit to under 1.5% (BSTI, 2019). Even so, the key-sectors (health, education, infrastructure) remain challenges for the medium and long term, alongside investments in qualified labor force, research and development, which makes Slovakia not assume a high-rank position of government performance in 2012 or in 2016.

The Northern States (Denmark, Sweden, Finland), stable and open economies, with credible and efficient governance systems are constantly at the top of the 3-factors' hierarchy, the public policies being focused on ensuring a high well-being of the pop-

ulation, job creation, the integration of immigrants, the continuous adaptability to new contexts in transformation and innovation, the open dialogue and the increase of the confidence between the economic actors (although, in the case of Finland, in the last period, some undermining of the confidence in institutions has been mentioned, due to the instability of recent governments). Sweden is particularly enjoying a large autonomy on all levels, the reforms being mainly based on strengthening the administrative capacity, in the sense of multiplying the responsiveness to society's needs, promoting the governance centered on equal treatment, morality and assuming due responsibility, which places it in a favorable position regarding the capacity of government performance.

An example of good practice is also Germany, which, due to the budget surplus registered in recent years, has rethought its development strategy in relation to the possibility of providing, on as large a scale as possible, innovative public goods in areas such as education, R&D, defense, gaining the leading position in 2016 regarding Factor B\_SVI, after it exited, in 2012, the top-5, a hierarchy it shares with the Netherlands, Belgium, Sweden and the United Kingdom, countries at the top of the hierarchy regarding the level of digitalization and innovation (European Commission, 2019a; 2019b). In perspective, it remains to be seen how the effects of Brexit will correlate in the case of these countries, taking into account the high interdependencies generated by the European integration system.

#### ***4.3. Dynamics of perceptions on the capacity of governments to perform***

In most EU countries there was a general decline of government performance, according to the experts' opinions in 2012 and 2016, as compared to 2009. A possible explanation could be that, as it has started to feel more clearly the effects of the crisis (lay-offs, wage reductions, lower investments, rising inflation, increasing sovereign debt, credit crisis, etc.), the civil society correlated all these shortcomings with the reforms adopted by governments and their inability to adopt efficient policies. In addition, in Central and Eastern European countries, amid the global crisis, the integration into the European single market and the implementation of European policies have not brought about the economic growth and welfare effects that many citizens were probably expecting. Exceptions to this trend are found in Lithuania (LT) and Bulgaria (BG), where, compared to 2009, perceptions of government effectiveness have improved in both 2012 and 2016. (Figure 4). So, if in 2009 the GCP index in Lithuania registered 2.56 points, in 2012 it was 2.87 and reached a threshold of 3.07 in 2016. Although there are some structural problems in public policies regarding the labor market, education, health or innovation, in recent years Lithuania implemented reforms with positive changes in public administration (e.g., by creating anti-corruption institutions) (BSTI, 2019). These actions have strengthened the confidence in institutions, have reduced the tolerance regarding bribery, and improved the attitude towards transparency in policy making. These aspects are combined with other macroeconomic factors, for example, in reducing the energy dependence on Russia, in obtaining the Schengen and Eurozone membership status and, just like the other two Baltic states – Estonia and Latvia – it

has considerably strengthened its democratic systems. Obviously, as a result of the crisis, the Lithuanian government resorted to economic adjustments, through measures aimed at lowering the wages in the public sector and collective redundancies, while the information on budgetary adjustments was communicated in a transparent manner.

At the bottom of the ranking, for the entire period analyzed, are Romania and Greece, for all 3 factors. These are countries where abuses in the public sector, political scandals, and government failures took place, all slowing down the structural reforms, generating acts of corruption, fragility of the legal systems, reduced integration of innovative goods and services, weak collaboration between authorities and the civil society. Compared to the EU average regarding the GCP index which oscillated from 3.04 in 2009 to 2.76 in 2012 and 2.72 in 2016, Romania appears to follow the same downward trend (Figure 5), registering index values of 2.32 in 2009; 1.94 in 2012 and 2.05 in 2016. The pre-accession period meant for Romania an adjustment of the development strategies in accordance with the *acquis communautaire*, which improved the level of perception of the quality of public services in 2009 (2.56 points, the highest score, in fact, from all the elements included in the analysis). Though, in the case of Factor A\_PPE and Factor C\_QPS, we found declines in 2012 compared to 2009 and in 2016 an overrun of the initial threshold, as far as Factor B\_SVI is concerned, we discovered constant reductions (2.43 in 2009; 2.25 in 2012 and 1.85 in 2016).

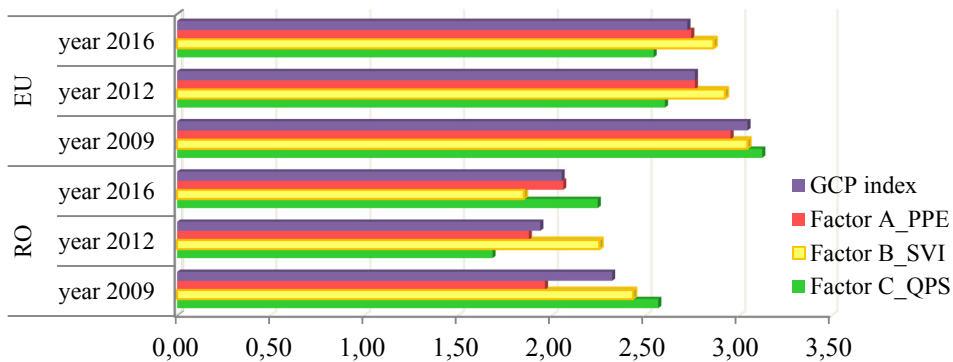


Figure 5: Romania compared to EU average

Source: Authors' representation

Despite reforms and investments in public administration, respectively the improvement of the professional skills of civil servants, the experts did not perceive an improvement neither regarding the integration into the administration of a strategic vision, nor with regard of assuming a clear role in supporting and promoting innovation in the economy. In fact, according to the Digital Economy and Society Index (DESI) for 2019 (European Commission, 2019a), Romania was on the second to last position regarding digitization in the EU (ahead of Bulgaria), with an index of 36.5 compared to the EU average of 52.5, respectively 69.9 for Finland (the highest index). If we take into account the Digital public services, as an indicator of innovation in the public sector, Romania is on the last position, with an index of 43.2 compared to the

EU average of 62.9, the gap being higher. The lowest sub-index, from the period considered, is recorded by the Factor C\_QPS in 2012 (1.68), due to the fact that the reforms are simulated and inconsistent in important sectors such as education, health, public administration/state-owned enterprises, the civil society systematically manifesting its aversion toward state policies, justice reforms, lack of strategic vision in the medium and long term and poor performance in fighting corruption. Political instability is also a factor that has led to a deterioration of perceptions about the government's ability to perform, especially on the background of failures that significantly affect individual well-being.

However, the decline in confidence in the government's ability to perform has been an almost widespread trend in EU countries during this time (Figure 4). Furthermore, using an indicator of variation of perceptions ( $\Delta$  perceptions), calculated based on the following relation:

$$\Delta \text{ perceptions} = \left[ \frac{(GCP \text{ index } c_{y1} - GCP \text{ index } c_{y0}) / GCP \text{ index } c_{y0}}{(GCP \text{ index } EU_{y1} - GCP \text{ index } EU_{y0}) / GCP \text{ index } EU_{y0}} - \frac{(GCP \text{ index } EU_{y1} - GCP \text{ index } EU_{y0}) / GCP \text{ index } EU_{y0}}{|GCP \text{ index } EU_{y1} - GCP \text{ index } EU_{y0} / GCP \text{ index } EU_{y0}|} \right]$$

where: c= country;

$y_0$  = the year for which the reporting is made/the base year;

$y_1$  = the year selected to relate to another (in our case, the values for 2016 and 2012 were compared to those for 2009), and

$GCP \text{ index } EU_{y1} - GCP \text{ index } EU_{y0} / GCP \text{ index } EU_{y0}$  means the deviation of the GCP from the European average,

we observe that, with some exceptions (DK, EL, ES, HU, IE, LT, SK), regarding the significant changes in those countries (for example, the success of administrative reforms in Lithuania; the magnitude of the effects of the economic crisis in EL, ES, IE and the general degradation of the institutional climate, reflected in the decrease of the quality of the institutions and of government efficiency), the perceptions are relatively constant (Figure 6).

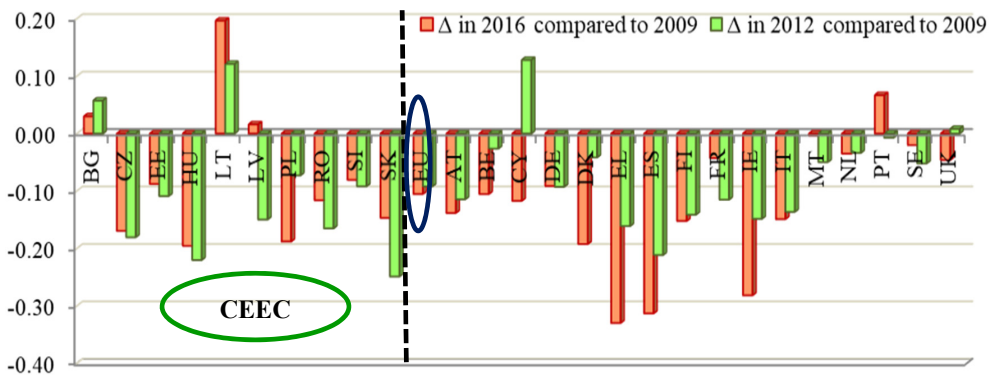


Figure 6: National changes in terms of GDP index in 2016 and 2012, compared to 2009

Source: Authors' representation

Also, despite a comprehensive Europeanization process in the new Member States with a positive impact on institutional and governance patterns convergence, the strengthening of the European economic governance system, the implementation of systematic reforms in public administrations, the specific investments for increasing the digitization in public services and the incentives for innovation in the Member States through European funds, no convergence of government performance as perceived by experts was recorded (Figure 7).

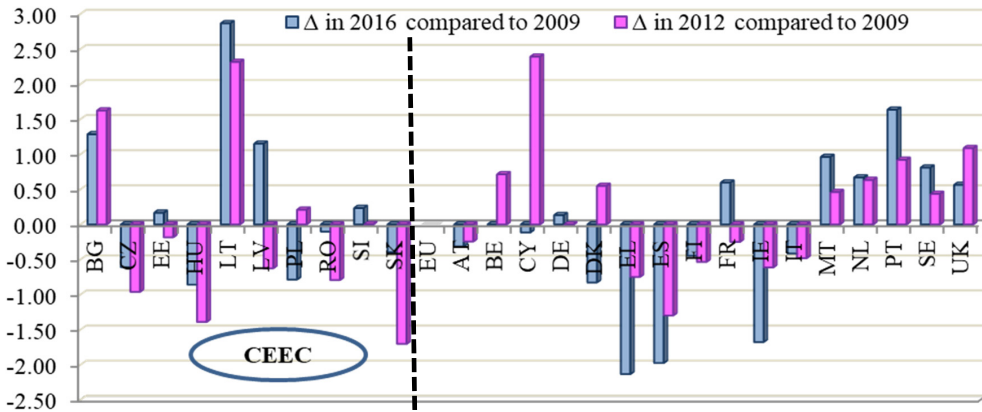


Figure 7: GCP index deviation from the EU average, 2016 and 2012, compared to 2009 ( $\Delta EU=0$ )

Source: Authors' representation

The positive deviation signifying an improvement of the perceptions of over 1.5 points for several countries – Bulgaria, Cyprus, Lithuania – interferes with the negative deviation of over 1.5 points signifying a deterioration of perceptions in Greece, Spain, Ireland. The geographic dynamics of the government performance is mainly reflecting an accentuation of the disparities between the Member States, with the replication of the central-peripheral economic pattern, against the background of the general deterioration of perceptions throughout the EU, as seen above.

In addition, the mapping of perceptions in dynamics (Annex 4) reflects this picture even more clearly, highlighting 3 types of visions: *the optimistic vision*: values over 3.00; *the moderate vision*: values between 2.00 and 3.00; *the pessimistic view*: values below 2.00. Looking at the maps, we notice that the optimism was more extensive in 2009, including even in some Central and Eastern European countries (the Czech Republic, Estonia, Slovenia, Slovakia, Hungary), the crisis' effects not being yet generalized; the challenges they had to face (mass layoffs, relocations, economic fragmentation, financial cuts in the public sector, wage cuts) were barely felt. Furthermore, the implications generated by the implementation of public policies propagate in the economy after a period of time. Clearly, the questions of the survey applied in 2009 concerned the institutional profiles until then, a period which opened, as we know, the path of opportunities for the citizens of the 10 countries through the waves of enlargement in 2004 and 2007, this being reflected in how the effectiveness of state

institutions is perceived. After 2009, a reconfiguration of perceptions is observed, with the moderate vision expanding, to encompass, in 2012 and 2016, many of the Western-European countries. Thus, if in 2009, countries such as Austria, Finland, France, Spain were included in the category of optimists, in subsequent years they are no longer on this list. Just 4 countries appear in the group of optimists in all the years analyzed: Sweden, The Netherlands, Germany and the United Kingdom. Alongside these, in 2016, the inclusion of Lithuania among the optimistic states is worth mentioning and the reasons for such a classification were set out above. Regarding Romania, although in 2009 it was in the category of countries with a moderate vision regarding the GCP, until 2012 the perceptions about the effectiveness of the government deteriorated towards pessimism.

Breaking down the 3 sub-indexes, we find that in 2009, in Romania and Bulgaria, the *Factor A\_PPE* had the lowest value. In 2012, Bulgaria exited this classification and in 2016 Romania, too, both being replaced by Greece. In fact, Greece is alongside Romania in the area of pessimistic vision, regarding the *Factor B\_SVI* (in 2016) and regarding the *Factor C\_QPS* (2016), which underlines once more that when there is a dysfunction of a component, be it strategy, applied policies, absorption of innovation, the effects are felt in a chain. In the Romanian public sector, from 2009 to 2013, a series of measures were undertaken, aiming at reducing the salaries of the public employees by 25%, blocking all employment. This accentuated the political instability, no essential reforms in health, education or justice being adopted, according to the expectations of the population, so perceptions about government performance degraded constantly. The causes in Greece, although different, had the same result: the explosion of sovereign debts, imbalances in the labor market, the refugee invasion.

Overall, we can state that in the top of the best performing countries with regard to public policy effectiveness, strategic vision, innovation capacity or quality of public services, are, with a few exceptions, the developed countries of the Union (BE, DE, DK, FI, NL, SE, UK), whereas in the top of the under-performing countries are the Southern-European countries (EL, ES, IT, PT), the cohesion countries (except Italy), and Central and Eastern European countries (BG, HU, LV, RO). The sub-indexes' hierarchy clearly correlates with the hierarchy of the total index of government performance and with the level of country development. As a result, a regional development and convergence strategy should fundamentally focus on the capacity of governments to perform.

## 5. Conclusions

In the current research, we started from the premise that the capacity of a government to perform is strengthened when the institutional structure is flexible and adaptive, as it manages to cover all areas that favor change and allows the identification and adoption of new approaches, principles, methods and tools, through adjustment to new circumstances and challenges.

Therefore, in the construction of the index suggested by us ('the government's capacity to perform' – GCP) for assessing the government performance, we included the aspects we considered relevant from an institutional perspective for the effectiveness of the decision-making process, the ability to act strategically, through innovation for instance, as well as for enhancing the quality of public services. Considering that in the construction of the index we adopted a plausible vision regarding the selection of the variables that belonged to the three sub-indexes (Factor A\_PPE – Public policy effectiveness, Factor B\_SVI – Strategic vision and innovation and the Factor C\_QPS – Quality of public services), it is clear that there will be no identical 'replica' in the literature, generated by other methods of assessment and the items considered; only elements that refer to what defines good governance could be similar. We may refer here to a limitation of the model proposed by us, especially from the perspective of comparability of results with indices that reflect government capacity to perform, and which integrate within their structure data collected from official statistics.

However, we consider that the model presented in the current paper highlights, in a specific way, the factors sustaining innovation and adoption of a strategic vision in the government system, related to the efficiency of public policies and the quality of public services. Furthermore, in order to check the results of our analysis comparing the established methods of assessment for government effectiveness (GE), we have reported them to the GE component included in the Worldwide Governance Indicators (WGI). From the data of our study, we find first a heterogeneity among EU countries regarding government performance, with the developed countries of the Union on top and the countries of the South (including Italy) and the East at the bottom, the two peripheries being convergent. Also, in a dynamic perspective, there is a general degradation of government performance in the case of many EU countries, with the persistence of gaps, the results being similar to those of the GE application (see World Bank database – 2009, 2012, 2016).

Secondly, it can be noted that the 3 sub-indexes correlate and are self-supporting each other. Countries that perform on public policy effectiveness, also display a high strategic vision and innovation capacity correlated with a high quality of public services and similarly in the case of poorly performing countries. It follows that public policies, including the European cohesion policy (increasingly focused on the key role of innovation and intelligent specialization in ensuring good governance or in stimulating endogenous growth), risk to fail in the EU's strategic objectives' achievement, if the measures do not reach more effectively the key determinants of the public policies' effectiveness and the quality of public services.

Thirdly, we notice a relative stability of the hierarchy, maintaining at the bottom of the list the countries in the two economic and spatial peripheries of the EU, with indices' values that do not improve – they even deteriorate –, despite the numerous reform programs in the public administration, supported by European policies. Last but not least, during the period analyzed, no convergence of the member states' governmental performance was observed, in a context of general degradation of govern-

ments' capacity to adopt effective policies and to innovate. Comparing these conclusions based on perceptions with the statistical data of digitalization of the economy and society, according to DESI (European Commission, 2019a), or with the innovation performance in EU countries, according to the European innovation scoreboard (European Commission, 2019b), both reflecting a general tendency of enhancing innovation performance in the EU member states, demonstrates a deficit in public communication. Making governments more open towards citizens, promoting a collaborative approach, and improving transparency and communication strategies should clearly be key coordinates of good governance in the EU member states.

### References:

1. Adam, A., Delis, M. and Kammas, P., 'Public Sector Efficiency: Leveling the Playing Field between OECD Countries', 2011, *Public Choice*, vol. 146, no. 1-2, pp. 163-183.
2. Agence Française de Développement (AFD), 2019, [Online] available at <https://www.afd.fr/en>, accessed on May 21, 2019.
3. Andrade, J., Duarte, A. and Simões, M., 'Education and Health: Welfare State Composition and Growth across Country Groups', 2018, *Eastern Journal of European Studies*, vol. 9, no. 2, pp. 111-144.
4. Andrews, M., 'The Good Governance Agenda: Beyond Indicators without Theory', 2008, *Oxford Development Studies*, vol. 36, no. 4, pp. 379-407.
5. Angelopoulos, K., Philippopoulos, A. and Tsionas, E., 'Does Public Sector Efficiency Matter? Revisiting the Relation between Fiscal Size and Economic Growth in a World Sample', 2008, *Public Choice*, vol. 137, no. 1, pp. 137-245.
6. Amundsen, I. and Pinto de Andrade, V. (eds.), *Public Sector Ethics*, Catholic University of Angola and Chr. Michelsen Institute, 2009, [Online] available at <https://www.cmi.no/publications/file/3290-introduction-to-public-sector-ethics.pdf>, accessed on May 12, 2019.
7. Arundel, A., Bloch, C. and Ferguson, B., 'Advancing Innovation in the Public Sector: Aligning Innovation Measurement with Policy Goals', 2019, *Research Policy*, vol. 48, no. 3, pp. 789-798.
8. Bartlett, D. and Dibben, P., 'Public Sector Innovation and Entrepreneurship: Case Studies from Local Government', 2002, *Local Government Studies*, vol. 28, no. 4, pp. 107-121.
9. Bason, C., *Leading Public Sector Innovation: Co-creating for a Better Society*, UK: Bristol University Press, 2010.
10. Bekkers, V. and Tummers, L., 'Innovation in the Public Sector: Towards an Open and Collaborative Approach', 2018, *International Review of Administrative Science*, vol. 84, no. 2, pp. 209-213.
11. Bertelsmann Stiftung's Transformation Index (BSTI), 'Country Reports', 2019, [Online] available at <https://www.bti-project.org/en/home>, accessed on August 25, 2019.
12. Biagi, F. and Loi, M., 'Measuring ICT Use and Learning Outcomes: Evidence from Recent Econometric Studies', 2013, *European Journal of Education*, vol. 48, no. 1, pp. 28-42.
13. Boschma, R., 'Towards an Evolutionary Perspective on Regional Resilience', 2015, *Regional Studies*, vol. 49, no. 5, pp. 733-751.
14. Brown, L. and Osborne, S.P., 'Risk and Innovation: Towards a Framework for Risk Governance in Public Services', 2013, *Public Management Review*, vol. 15, no. 2, pp. 186-208.

15. Castells, M., *The Rise of the Network Society*, Cambridge: Blackwell, 1996.
16. Center d'études prospectives et des informations internationales (CEPII), 2019, [Online] available at <http://www.cepii.fr/>, accessed on August 25, 2019.
17. De Vries, H. Bekkers, V. and Tummers, L.G., 'Innovation in the Public Sector: A Systematic Review and Future Research Agenda', 2016, *Public Administration*, vol. 94, no. 1, pp. 146-166.
18. European Commission, 'European Public Sector Innovation Scoreboard 2013. A Pilot Exercise', Directorate-General for Enterprise and Industry, 2014, [Online] available at <https://publications.europa.eu/en/publication-detail/-/publication/fe2a3b4b-3d7e-444d-82bc-790a0ab33737>, accessed on June 13, 2019.
19. European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'EU eGovernment Action Plan 2016-2020. Accelerating the Digital Transformation of Government', C/2016/0179 final, Bruxelles, 2016, [Online] available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0179>, accessed on June 21, 2019.
20. European Commission, 'The Digital Economy and Society Index (DESI)', Eurostat, 2019a, [Online] available at <https://ec.europa.eu/digital-single-market/en/desi>, accessed on August 14, 2019.
21. European Commission, 'European Innovation Scoreboard 2019', 2019b, [Online] available at [https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_en](https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en), accessed on August 14, 2019.
22. Gault, F., 'Defining and Measuring Innovation in All Sectors of the Economy', 2018, *Research Policy*, vol. 47, no. 3, pp. 617-622.
23. Kattel, R. and Mergel, I., 'Estonia's Digital Transformation: Mission Mystique and the Hiding Hand', UCL Institute for Innovation and Public Purpose Working Paper Series (IIP-PWP 2018-09), 2018, [Online] available at [https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp-wp-2018-09\\_estonias\\_digital\\_transformation.pdf](https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp-wp-2018-09_estonias_digital_transformation.pdf), accessed on July 4, 2019.
24. Funda, C.E., 'The Link between Innovation Performance and Governance', JRC Scientific and Technological Reports, 2007, [Online] available at <https://www.ucl.ac.uk/bartlett/public-purpose/wp2018-09>, accessed on March 19, 2019.
25. Kaufmann, D., Kraay, A. and Mastruzzi, M., 'The Worldwide Governance Indicators: Methodology and Analytical Issues', World Bank Policy Research Working Paper No. 5430, 2010, [Online] available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1682130##](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130##), accessed on May 21, 2019.
26. Halvorsen, T., Hauknes, J., Miles, I. and Roste, R., 'Innovation in the Public Sector: On the Differences between Public and Private Sector Innovation', Publin Report, no. D9, Oslo, 2005, [Online] available at <http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan046809.pdf>, accessed on June 16, 2019.
27. Hartley, J., 'Innovation in Governance and Public Services: Past and Present', 2005, *Public Money & Management*, vol. 25, no. 1, pp. 27-34.
28. Hartley, J., Sorensen, J. and Torfing, J., 'Collaborative Innovation: A Viable Alternative to Market Competition and Organizational Entrepreneurship', 2013, *Public Administration Review*, vol. 73, no. 6, pp. 821-830.
29. Hughes, A., Moore, K. and Kataria, N., 'Innovation in Public Sector Organizations: A Pilot Survey for Measuring Innovation across the Public Sector', NESTA Index Report, London,

- 2011, [Online] available at [https://media.nesta.org.uk/documents/innovation\\_in\\_public\\_sector\\_orgs.pdf](https://media.nesta.org.uk/documents/innovation_in_public_sector_orgs.pdf), accessed on March 9, 2019.
30. Lewis, J.M., Ricard, L.M., and Klijn, E.H., 'How Innovation Drivers, Networking and Leadership Shape Public Sector Innovation Capacity', 2017, *International Review of Administrative Science*, vol. 84, no. 2, pp. 288-307.
  31. OECD and European Commission, *Oslo Manual. Guidelines for Collecting and Interpreting Innovation Data*, 3<sup>rd</sup> edition, Paris and Luxembourg: OECD Publishing, 2005, [Online] available at [https://read.oecd-ilibrary.org/science-and-technology/oslo-manual\\_9789264013100-en#page1](https://read.oecd-ilibrary.org/science-and-technology/oslo-manual_9789264013100-en#page1), accessed on June 4, 2019.
  32. OECD, *Frascati Manual 2015. Guidelines for Collecting and Reporting Data on Research and Experimental Development*, Paris: OECD Publishing, 2015, [Online] available at <http://www.oecd.org/sti/frascati-manual-2015-9789264239012-en.htm>, accessed on July 31, 2019.
  33. OECD, *Fostering Innovation in the Public Sector*, Paris: OECD Publishing, 2017, [Online] available at <http://dx.doi.org/10.1787/9789264270879-en>, accessed on July 20, 2019.
  34. OECD and European Commission, *Oslo Manual 2018. Guidelines for Collecting, Reporting and Using Data on Innovation*, 4th edition, Paris and Luxembourg: OECD Publishing, 2018, [Online] available at <https://www.oecd.org/science/oslo-manual-2018-9789264304604-en.htm>, accessed on July 25, 2019.
  35. OECD, 'Observatory of Public Sector Innovation, Measuring Public Sector Innovation. Why, When, How, for Whom and Where To?', 2019, [Online] available at <https://oecd-opsi.org/wp-content/uploads/2019/05/Measuring-Public-Sector-Innovation-Part-5b-of-Life-cycle.pdf>, accessed on July 25, 2019.
  36. Savignon, A.B., Gnan, L., Hinna, A. and Monteduro, F. (eds.), *Hybridity in the Governance and Delivery of Public Services*, UK: Emerald Publishing Ltd., 2018.
  37. Sen, A., *The Idea of Justice*, London: Allen Lane, 2009.
  38. Şandor, S.D., 'Measuring Public Sector Innovation', 2018, *Transylvanian Review of Administrative Sciences*, no. 54E, pp. 125-137.
  39. Taylor, L., Leenes, R. and van Schendel, S., 'Public Sector Data Ethics. From Principles to Practice', Tilburg University, 2017, [Online] available at <https://kennisopenbaarbestuur.nl/media/254747/public-sector-data-ethics.pdf>, accessed on August 10, 2019.
  40. Zolli, A. and Healy, A.M., *Resilience: Why Things Bounce Back*, London: Headline Publishing Group, 2012.
  41. World Bank, 'Worldwide Governance Indicators', 2019, [Online] available at <https://info.worldbank.org/governance/wgi/>, accessed on August 30, 2019.

## Annex 1: Sub-indexes and indicators

Code	Sub-indices/indicators	Scale	
<i>Factor</i> <b>A_PPE</b>	<b>PUBLIC POLICY EFFECTIVENESS</b>	<i>Minimum</i>	<i>Maximum</i>
A1	Fiscal autonomy of sub-national authorities	0=No fiscal autonomy	4=Total autonomy
A2	Domestic public security	0=Very low security	4=High security
A3	Internal conflicts	0=Serious conflicts	4=No conflict
A4	Transparency of economic policy	0=Very little transparency	4=High transparency
A5	Ethical behavior	0=No ethics	4=Very high level of moral activities
A6	Efficiency of the tax administration	0=Very low efficiency	4=High efficiency
A7	Transparency in public procurement	0=Very low level	4=High level
A8	Functioning of the legal system	0=Poor functioning	4=Efficient functioning
A9	Influence of economic stakeholders on public policies	0=Significant influence	4=Very little influence
A10	Tax exemptions	0=No exemption	4=Many exemptions
A11	Public-private cooperation	0=No cooperation	4=Very strong cooperation
A12	Coordination in the public sphere	0=Very little coordination	4=Strong coordination
A13	Significance of public companies to the economy (proportion of GDP accounted for by State-owned and partly State-owned firms)	0=Very high	4=Very low
A14	Effectiveness of social dialogue	0=Very little social dialogue	4=Effective social dialogue
A15	Coherence and quality of the public policy making process	0=Very low	4=Very good
<i>Factor</i> <b>B_SVI</b>	<b>STRATEGIC VISION AND INNOVATION</b>		
B1	Capacity for State reform	0=Very low capacity	4=Strong capacity
B2	Capacity for sectoral reform	0=Very low capacity	4=Strong capacity
B3	Long-term vision	0=Very weak strategic vision	4=Strong strategic vision
B4	Long-term sectoral strategies	0=Very weak strategic vision	4=Strong strategic vision
B5	Reflection on the major national issues	0=No reflection	4=High reflection
B6	Priority of the elite in relation to development and growth	0=Very low priority	4=Very high priority
B7	Political authorities decision-making autonomy	0=Very limited decision-making autonomy	4=Strong decision-making autonomy
B8	Obstacles to public action (political divisions, interest groups, lack of cooperation between stakeholder, regional conflicts, external pressures, etc.)	0=Severe	4=Very limited
B9	Support for emerging dynamic/innovative sectors	0=No support	4=Strong support
B10	Public support for innovation	0=Very low support	4=Strong

<b>Code</b>	<b>Sub-indices/indicators</b>	<b>Scale</b>	
B11	Adaptation and innovation	<b>0=</b> Low ability to adapt and innovate	<b>4=</b> Very strong ability to adapt and innovate
B12	Consideration of the public interest in relationships between the State and business	<b>0=</b> No consideration of public interest	<b>4=</b> Strong consideration of public interest
B13	Society's capacity to mobilize to take up innovative challenges (internal or external)	<b>0=</b> Very low capacity	<b>4=</b> Strong capacity
<b>Factor C_QPS</b>	<b>QUALITY OF PUBLIC SERVICES</b>		
C1	Territorial coverage of public services (public schools, basic healthcare services, electricity, transport infrastructure, sanitation networks, etc.)	<b>0=</b> Low coverage	<b>4=</b> Territory entirely covered
C2	Development of the middle classes	<b>0=</b> Losing significant ground	<b>4=</b> Gaining significant ground
C3	Extent of discrimination	<b>0=</b> Major discrimination	<b>4=</b> No discrimination
C4	Equal treatment by the State in terms of access to public schools, public healthcare, public employment	<b>0=</b> Very little equality	<b>4=</b> Strong equal treatment
C5	Institutional solidarity regarding health and disability, unemployment, retirement	<b>0=</b> No public or private institution supporting solidarity	<b>4=</b> Very large proportion of the population covered
C6	Governance of natural resources	<b>0=</b> Very poor	<b>4=</b> Very good
C7	Proportion of public revenues from the exploitation of natural resources	<b>0=</b> Very low proportion	<b>4=</b> Very high proportion
C8	Significance of the public sector in the delivery of public services	<b>0=</b> Very high proportion by public sector	<b>4=</b> Small proportion by public sector
C9	Labor market flexibility	<b>0=</b> Significant	<b>4=</b> Little
C10	Significance of informal work	<b>0=</b> Very important	<b>4=</b> No informal work
C11	Adaptation of the training supply to business needs	<b>0=</b> Not suited	<b>4=</b> Suited
C12	Adaptation of the higher education system to business needs	<b>0=</b> Not suited	<b>4=</b> Suited
C13	Prospects for young people	<b>0=</b> Clearly inward oriented	<b>4=</b> Clearly outward oriented
C14	Contribution of public sector to well-being	<b>0=</b> Non-effective	<b>4=</b> Very effective

Annex 2: Outer loadings

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O /STDEV)	P Values	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O /STDEV)	P Values
A1 <- PPE	0.724	0.724	0.063	11.495	0.000	B3 <- SVI	-0.429	-0.425	6.136	0.000
A1 <- GCP	0.714	0.715	0.063	11.278	0.000	B3 <- GCP	-0.410	-0.405	6.185	0.000
A10 <- PPE	-0.506	-0.510	0.080	6.334	0.000	B4 <- SVI	0.761	0.764	15.427	0.000
A10 <- GCP	-0.456	-0.464	0.082	5.567	0.000	B4 <- GCP	0.826	0.824	17.852	0.000
A11 <- PPE	-0.463	-0.460	0.067	6.961	0.000	B5 <- SVI	-0.059	-0.058	0.547	0.585
A11 <- GCP	-0.429	-0.426	0.069	6.242	0.000	B5 <- GCP	-0.044	-0.046	0.100	0.434
A12 <- PPE	0.585	0.579	0.086	6.773	0.000	B6 <- SVI	0.806	0.805	15.995	0.000
A12 <- GCP	0.523	0.520	0.082	6.383	0.000	B6 <- GCP	0.793	0.792	13.834	0.000
A13 <- PPE	0.014	0.008	0.089	0.164	0.870	B7 <- SVI	-0.020	-0.021	0.107	0.189
A13 <- GCP	-0.007	-0.012	0.083	0.084	0.933	B7 <- GCP	-0.018	-0.016	0.094	0.186
A14 <- PPE	0.017	0.024	0.097	0.181	0.857	B8 <- SVI	-0.178	-0.165	0.115	1.551
A14 <- GCP	0.032	0.037	0.090	0.358	0.721	B8 <- GCP	-0.181	-0.170	0.105	1.724
A15 <- PPE	-0.506	-0.504	0.067	7.597	0.000	B9 <- SVI	0.056	0.043	0.112	0.503
A15 <- GCP	-0.538	-0.535	0.066	8.100	0.000	B9 <- GCP	0.044	0.034	0.099	0.444
A2 <- PPE	0.935	0.935	0.016	60.165	0.000	C1 <- QPS	0.376	0.379	0.147	2.550
A2 <- GCP	0.929	0.928	0.022	43.106	0.000	C1 <- GCP	0.295	0.296	0.125	2.359
A3 <- PPE	-0.102	-0.100	0.110	0.926	0.355	C10 <- QPS	0.000	0.090	0.219	0.002
A3 <- GCP	-0.134	-0.130	0.109	1.225	0.221	C10 <- GCP	0.020	0.089	0.165	0.123
A4 <- PPE	0.631	0.624	0.081	7.832	0.000	C11 <- QPS	0.023	0.030	0.129	0.178
A4 <- GCP	0.616	0.612	0.077	7.970	0.000	C11 <- GCP	0.002	0.007	0.093	0.024
A5 <- PPE	0.786	0.778	0.059	13.361	0.000	C12 <- QPS	0.593	0.597	0.065	9.084
A5 <- GCP	0.729	0.722	0.065	11.281	0.000	C12 <- GCP	0.550	0.559	0.063	8.674
A6 <- PPE	0.828	0.831	0.053	15.528	0.000	C13 <- QPS	0.429	0.427	0.110	3.910
A6 <- GCP	0.832	0.832	0.049	16.820	0.000	C13 <- GCP	0.351	0.353	0.093	3.757

<b>A7 &lt;- PPE</b>	0.703	0.694	0.070	9.992	0.000	<b>C14 &lt;- QPS</b>	-0.552	-0.537	0.090	6.101	0.000
<b>A7 &lt;- GCP</b>	0.615	0.609	0.076	8.107	0.000	<b>C14 &lt;- GCP</b>	-0.437	-0.430	0.070	6.208	0.000
<b>A8 &lt;- PPE</b>	-0.501	-0.498	0.068	7.392	0.000	<b>C2 &lt;- QPS</b>	-0.535	-0.517	0.087	6.152	0.000
<b>A8 &lt;- GCP</b>	-0.542	-0.538	0.067	8.045	0.000	<b>C2 &lt;- GCP</b>	-0.502	-0.492	0.068	7.365	0.000
<b>A9 &lt;- PPE</b>	-0.623	-0.619	0.061	10.191	0.000	<b>C3 &lt;- QPS</b>	-0.652	-0.645	0.063	10.406	0.000
<b>A9 &lt;- GCP</b>	-0.594	-0.593	0.064	9.329	0.000	<b>C3 &lt;- GCP</b>	-0.582	-0.577	0.063	9.268	0.000
<b>B1 &lt;- SVI</b>	0.727	0.722	0.067	10.824	0.000	<b>C4 &lt;- QPS</b>	0.739	0.728	0.065	11.450	0.000
<b>B1 &lt;- GCP</b>	0.671	0.671	0.071	9.478	0.000	<b>C4 &lt;- GCP</b>	0.728	0.723	0.071	10.210	0.000
<b>B10 &lt;- SVI</b>	0.776	0.783	0.044	17.823	0.000	<b>C5 &lt;- QPS</b>	0.377	0.373	0.152	2.484	0.013
<b>B10 &lt;- GCP</b>	0.686	0.696	0.058	11.907	0.000	<b>C5 &lt;- GCP</b>	0.211	0.224	0.127	1.657	0.098
<b>B11 &lt;- SVI</b>	-0.614	-0.614	0.063	9.672	0.000	<b>C6 &lt;- QPS</b>	-0.183	-0.172	0.153	1.194	0.233
<b>B11 &lt;- GCP</b>	-0.582	-0.582	0.065	9.007	0.000	<b>C6 &lt;- GCP</b>	-0.158	-0.155	0.125	1.259	0.208
<b>B12 &lt;- SVI</b>	0.762	0.770	0.047	16.247	0.000	<b>C7 &lt;- QPS</b>	-0.012	-0.013	0.132	0.093	0.926
<b>B12 &lt;- GCP</b>	0.690	0.703	0.052	13.373	0.000	<b>C7 &lt;- GCP</b>	0.020	0.021	0.096	0.206	0.837
<b>B13 &lt;- SVI</b>	0.593	0.592	0.089	6.669	0.000	<b>C8 &lt;- QPS</b>	0.092	0.112	0.105	0.881	0.379
<b>B13 &lt;- GCP</b>	0.542	0.541	0.086	6.285	0.000	<b>C8 &lt;- GCP</b>	0.079	0.098	0.082	0.966	0.335
<b>B2 &lt;- SVI</b>	-0.531	-0.526	0.069	7.734	0.000	<b>C9 &lt;- QPS</b>	-0.420	-0.418	0.090	4.651	0.000
<b>B2 &lt;- GCP</b>	-0.522	-0.518	0.067	7.807	0.000	<b>C9 &lt;- GCP</b>	-0.347	-0.349	0.065	5.365	0.000

**Source:** Authors' estimates using SmartPLS

### Annex 3: Cross loadings

	GCP	PPE	QPS	SVI		GCP	PPE	QPS	SVI
<b>A1</b>	0.714	0.724	0.617	0.654	<b>B3</b>	-0.410	-0.319	-0.479	-0.429
<b>A10</b>	-0.456	-0.506	-0.281	-0.426	<b>B4</b>	0.826	0.832	0.717	0.761
<b>A11</b>	-0.429	-0.463	-0.330	-0.381	<b>B5</b>	-0.044	-0.011	-0.079	-0.059
<b>A12</b>	0.523	0.585	0.377	0.451	<b>B6</b>	0.793	0.758	0.651	0.806
<b>A13</b>	-0.007	0.014	-0.027	-0.022	<b>B7</b>	-0.018	0.020	-0.092	-0.020
<b>A14</b>	0.032	0.017	0.100	0.008	<b>B8</b>	-0.181	-0.114	-0.288	-0.178
<b>A15</b>	-0.538	-0.506	-0.546	-0.496	<b>B9</b>	0.044	0.022	0.062	0.056
<b>A2</b>	0.929	0.935	0.751	0.890	<b>C1</b>	0.295	0.254	0.376	0.259
<b>A3</b>	-0.134	-0.102	-0.162	-0.139	<b>C10</b>	0.020	0.030	0.000	0.016
<b>A4</b>	0.616	0.631	0.447	0.604	<b>C11</b>	0.002	-0.012	0.023	0.009
<b>A5</b>	0.729	0.786	0.594	0.629	<b>C12</b>	0.550	0.480	0.593	0.536
<b>A6</b>	0.832	0.828	0.725	0.778	<b>C13</b>	0.351	0.314	0.429	0.304
<b>A7</b>	0.615	0.703	0.495	0.481	<b>C14</b>	-0.437	-0.361	-0.552	-0.408
<b>A8</b>	-0.542	-0.501	-0.582	-0.495	<b>C2</b>	-0.502	-0.471	-0.535	-0.449
<b>A9</b>	-0.594	-0.623	-0.437	-0.562	<b>C3</b>	-0.582	-0.507	-0.652	-0.556
<b>B1</b>	0.671	0.625	0.507	0.727	<b>C4</b>	0.728	0.708	0.739	0.642
<b>B10</b>	0.686	0.601	0.547	0.776	<b>C5</b>	0.211	0.169	0.377	0.139
<b>B11</b>	-0.582	-0.551	-0.448	-0.614	<b>C6</b>	-0.158	-0.157	-0.183	-0.122
<b>B12</b>	0.690	0.612	0.567	0.762	<b>C7</b>	0.020	0.028	-0.012	0.024
<b>B13</b>	0.542	0.523	0.359	0.593	<b>C8</b>	0.079	0.067	0.092	0.076
<b>B2</b>	-0.522	-0.444	-0.552	-0.531	<b>C9</b>	-0.347	-0.299	-0.420	-0.317

Source: Authors' estimates using SmartPLS

## Annex 4: Mapping of perceptions – dynamics (2009-2016)

