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Trust, local governance and quality of public service in EU regions and cities

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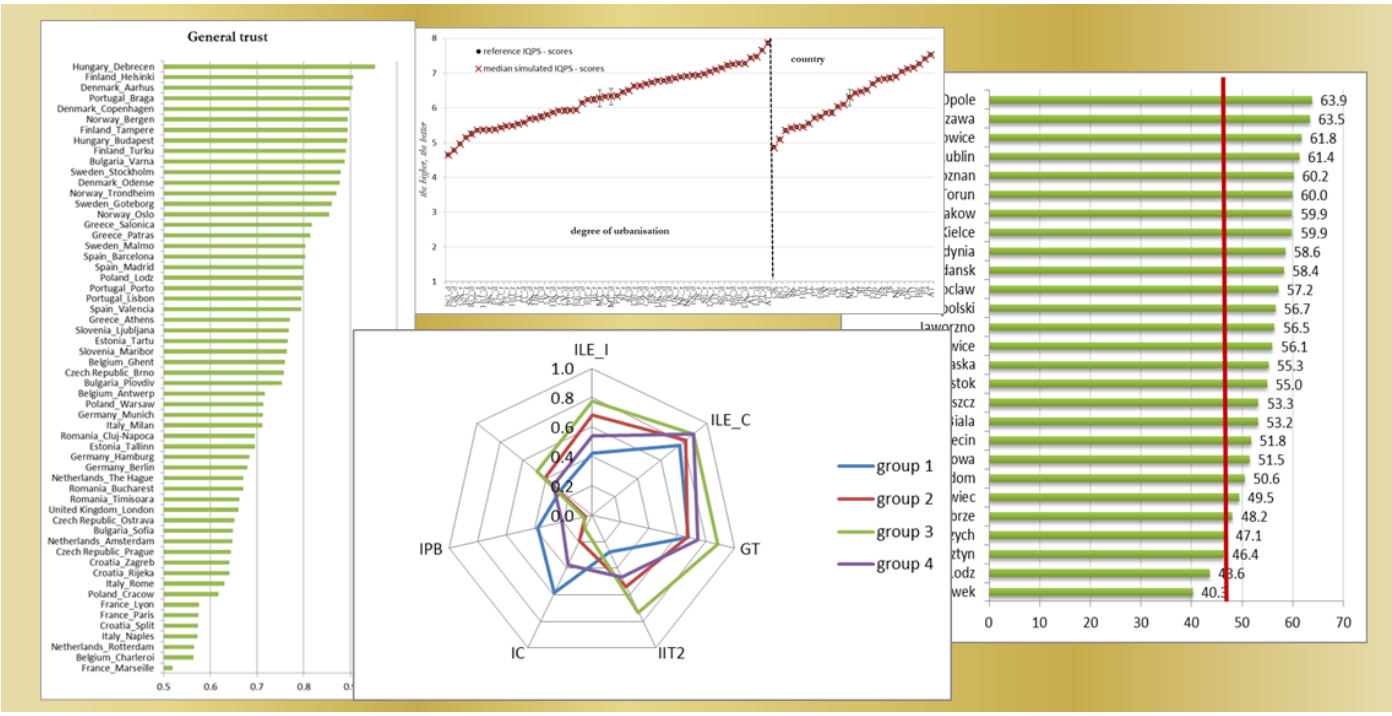

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Abstract
The aim of this report is to present the within-country variability in the EU citizens' perceptions of the generalised and institutional trust, quality of public service and local governance based on their experiences and opinions expressed in three surveys. By within-country variability we understand differences in citizens' perceptions between cities or between (1) cities and (2) towns, suburbs and rural areas. We deal with the citizens' opinions expressed in the surveys we used.

The within-country variability in EU citizens' perceptions of the trust, corruption, local governance and quality of public service and governance are investigated using several composites presenting the differences in citizens' perceptions from three different perspectives and using three different data sets. First, with the European quality of life survey, we explore the level of (1) general trust, (2) institutional trust and (3) quality of public service in different with respect to degree of urbanisation areas in the EU countries. Second, with the Social Diagnosis survey, we examine the level of general trust and attitude towards free riding in 27 of the largest Polish cities. Finally, using data from the World Justice Project we investigate perceptions of law enforcement, generalised and institutional trust, corruption, bribing and performance of the local government in 58 of the largest EU cities.

Our results showed that in general, there are differences in measured phenomena between EU countries, and especially within EU countries in relation to the degree of urbanisation and at city level.

Executive summary

It is widely accepted that institutions contribute considerably to efficiency in implementation of public policies and, thus, to economic development. Institutions are defined as the rules of the game in a society, which govern the behaviour of individuals. Two types of institutions are distinguished: formal and informal. The former relate to the formal rules, which define social, economic, and political activities, e.g. property rights, rule of law with good governance included. The latter are associated with informal rules expressed in the form of social capital, i.e. in networks, trust and norms.

Good governance is understood as 'the traditions and institutions by which authority in a country is exercised. This includes (a) the process by which governments are selected, monitored and replaced; (b) the capacity of the government to effectively formulate and implement sound policies; and (c) the respect of citizens and the state for the institutions that govern economic and social interactions among them' (Kaufmann, Kraay, & Mastruzzi 2010). As clearly stated in the EU *6th Report on Economic, Social and Territorial Cohesion: Investment for jobs and growth. Promoting development and good governance in EU regions and cities*, good governance is the basis for institutional capacity building, creating trust and social capital (European Union 2014, p. 247).

Trust contributes to forming positive, reciprocal ties with other people and increases the willingness of people to act in favour of the community. It is not only believed to be the main contributor in the process of building of social capital but in economic exchanges, by increasing predictability, stability, civic engagement and collective collaboration, it reduces transactions costs, facilitates cooperation with other people (information flow), creates confidence in the regulatory capacity of public institutions and contributes to the general feeling of community and belonging.

Although there has been a growing body of literature on the aforementioned phenomena, they are most often explored from a country-level comparative perspective (Baliamoune-Lutz 2011; Guiso, Sapienza, & Zingales 2008; Tsai, Laczko, & Bjørnskov 2010; Wang & Gordon 2011). The empirical evidence for regional differences is limited.

Therefore, in this report we present the within-country variability in the EU citizens' perceptions of trust, local governance, quality of public service, bribing and corruption, based on their experiences and opinions expressed in three surveys. We want to clearly state that by within-country variability we understand differences in citizens' perceptions between cities or between cities and towns, suburbs and rural areas. We stress that perceptions mean that we deal with citizens' opinions expressed in the surveys we used.

The within-country variability in EU citizens' opinions about broadly understood institutions are investigated using several composites presenting the differences in citizens' perceptions from three different perspectives and using three different data sets. First, with the European Quality of Life Survey, we explored the level of (1) generalised trust, (2) institutional trust, and (3) quality of public service in different with respect to degree of urbanisation areas in a number of EU countries. Second, with the Social Diagnosis survey, which we identified as the only one among country-specific household surveys providing us with not only a city identifier but also with a sufficient sample size at city level, we examined the level of generalised trust and attitude to free riding in 27 of the largest Polish cities. Finally, using data from the World Justice Project we investigated perceptions of the levels of law enforcement, generalised and institutional trust, corruption, bribing and performance of local government in 58 of the largest EU cities.

Our results showed that in respect to within-country variability according to the degree of urbanisation:

— there are differences with respect to the level of generalised trust both between countries and within countries. The highest level of generalised trust is recorded in the Nordic countries, whereas the lowest is in the Central and Eastern European (CEE) countries and Southern European countries. In addition, Slovakia, which scores the fourth worst is also the most diversified country with the difference of generalised trust score between cities and towns, suburbs and rural areas amounting to 1.1 points. It is followed by Portugal, Malta, Denmark, Austria and Greece with the difference in scores ranging between 0.5 and 0.7. The least diversified country with respect to generalised trust is France (0.05 points of difference between cities and towns, suburbs and rural areas);

— with respect to within-country variability of institutional trust, in general the level of this phenomenon is not diversified (see also Figures 2-8). However, in Denmark, Austria, Hungary, Finland, Cyprus, Bulgaria and the Czech Republic the recorded differences are the highest and are always in favour of cities. The only exception to this reasoning is Bulgaria, where institutional trust is higher in towns, suburbs and rural areas than in cities.

— with respect to within-country variability of the quality of public service, we observe that next to countries in which we observe almost no differences in the level of this phenomenon, there are also countries in which considerable differences with respect to the quality of public service are observed. France, the Netherlands, Ireland, Spain and Belgium all have cities that performed better in terms of public service than other areas. In Denmark and Bulgaria, the quality of public service is considerably better in towns, suburbs and rural areas.

The analysis performed for Polish cities showed that:

— people living in Torun, Wroclaw and Ruda Slaska trust other people the most and habitants of Jaworzno trust other people the least (measured by the percentage of people who trust others). Warsaw and Cracow are among the highest scoring places.

— the best scoring with respect to attitude towards free riding are: Opole, Warsaw, Katowice, Lublin and Poznan, all scoring at least 60.0 in the IFR. The worst scoring — below the country average of 47.27 — are: Wloclawek, Lodz, Olsztyn and Walbrzych.

The analysis performed for 58 of the largest EU cities enabled us to distinguish four diverse groups of cities with respect to six independent criteria: Index of Law Enforcement (towards institutions and towards citizens), Generalised Trust, Index of Institutional Trust, Index of Corruption, Index of Paying Bribes and Index of Local Governance. We showed that the best scoring group comprises cities that on average score the best (in six out of seven analysed composites). This group comprises all Danish, Finish and Norwegian cities included in the analysis as well as one Estonian (Tartu), two Swedish (Goteborg and Stockholm) and two Hungarian (Budapest and Debrecen) cities. We also showed that the worst scoring group consists of cities that on average score the worst. This group comprises all Croatian and Slovenian cities, two out of three Bulgarian cities (Plovdiv and Sofia) and one Polish city (Cracow) included in the analysis. It is worth noting that none of the Romanian cities belong to this group. This is interesting because it is commonly found that Romania and Bulgaria are treated as countries that often perform similarly with respect to economic or social outcomes (see, e.g. Annoni, Weziak-Bialowolska, & Dijkstra 2012; Annoni & Weziak-Bialowolska 2014; Charron, Dijkstra, & Lapuente 2014a; Weziak-Bialowolska & Dijkstra 2014; Weziak-Bialowolska 2014). These results show that traditional diversification with respect to geographical location to Western, Northern, Southern and Western Europe is not necessarily correct while examining the institutions and local governance in city perspectives. Although the Western European and Northern European cities are well distinguishable and associated with the most favourable institutional conditions, cities

in the Southern and Eastern part of Europe cannot be classified unequivocally based only on the geographical location.

From the methodological point of view, in all but one case, we confirmed the one-dimensional structure of the conceptualised composites. The remaining case relates to the law enforcement. Guided by the analysis of the correlation matrix and the principal component analysis, we proposed two composites — law enforcement from an institutional perspective and from the citizens' perspective. In addition, the results of the series of uncertainty analyses show that in general, all composite indicators seem to be robust for the two normative assumptions related to the construction methods. This robustness is reflected by considerably narrow uncertainty intervals (difference between the 5^{th} and 95^{th} percentiles).

Data source	Phenomena measured	Level of measurement	Main findings
European Quality of Life Survey *http://eurofound.europa.eu/surveys/eqls*	General trust — measured by the following question: Would you say that most people can be trusted?	By degree of urbanisation: (1) big cities and (2) town, suburbs and rural areas	There are differences with respect to the level of generalised trust both between countries and within countries. The highest level of generalised trust is recorded in the Nordic countries, whereas the lowest is in the Central and Eastern European (CEE) countries and Southern European countries. In addition, Slovakia, which scores the fourth worst, is also the most diversified country with difference of the generalised trust score between cities and towns, suburbs and rural areas amounting to 1.1 points. It is followed by Portugal, Malta, Denmark, Austria and Greece with the difference in scores ranging between 0.5 and 0.7. The least diversified country with respect to the generalised trust is France (0.05 points of difference between cities and towns, suburbs and rural areas);
European Quality of Life Survey http://eurofound.europa.eu/surveys/eqls	Institutional trust — measured by questions describing trust towards national parliament, legal system, press, police, government and local authorities	By degree of urbanisation: (1) big cities and (2) town, suburbs and rural areas	The level of institutional trust is not diversified, but in Denmark, Austria, Hungary and Finland, the recorded differences are the highest and are always in favour of cities
European Quality of Life Survey *http://eurofound.europa.eu/surveys/eqls*	Quality of public service — measured by questions describing quality of the following public service: health services, education system, public transport, child-care service, long-term care service, social or municipal housing, state pension system	By degree of urbanisation: (1) big cities and (2) town, suburbs and rural areas	The level of quality of public service in general is not diversified; however there are exceptions to this regularity; namely, the largest differences between the quality of public service are observed in Ireland and in Slovenia, where the quality of public service is better in towns, suburbs and rural areas
Social Diagnosis http://www.diagnoza.com/index-en.html	General trust — measured by the following question: Generally, do you believe that you can trust most people, or do you think you can never be too careful?	27 of the largest Polish cities	People living in Torun, Wroclaw and Ruda Slaska trust other people the most and habitants of Jaworzno trust other people the least (measured by the percentage of people who trust others). Among the highest scoring are Warsaw and Cracow.
Social Diagnosis *http://www.diagnoza.com/index-en.html*	Attitude towards free riding — measured by questions describing how much people do not accept following	27 of the largest Polish cities	The best scoring with respect to the Index of Free Riding are: Opole, Warsaw, Katowice, Lublin and Poznan. The worst scoring — below the country average — are

	free-riding activities: paying lower taxes than required, avoiding paying public transport fares, unjustly receiving unemployment benefit (i.e. when not entitled to it); unjustly receiving disability benefit; filing an insurance claim under false pretences;		Wloclawek, Lodz, Olsztyn and Walbrzych.
General Poll from the World Justice Project http://worldjusticeproject.org/questionnaires	Law enforcement — institutions — measured by questions describing: the likelihood of stopping the president's illegal actions by (1) the national congress and (2) courts; (3) the likelihood of stopping a government officer's illegal and unfair decision by the judges; (4) the likelihood of sending to jail a police chief who is found taking money from a criminal organization, such as a drug cartel or an arms smuggler; and (5) the likelihood of sending to jail a government officer who is found unlawfully issuing a government license for personal benefit	58 EU cities	Four obtained city groupings are following. The best scoring group is group 3. It included cities that on average score the best (in six out of seven analysed composites). This group comprises all Danish, Finish and Norwegian cities included in the analysis as well as one Estonian (Tartu), two Swedish (Goteborg and Stockholm) and two Hungarian (Budapest and Debrecen) cities. Group 2 is on average the second best scoring group — it scores the second best in five out of seven analysed composites. However, this group scores the best with respect to the perception of bribing — next to group 3 and the worst with respect to generalised trust. This group comprises all Belgian, German, Dutch, and British cities included in the analysis and two Finish (Tampere and Turku), two French (Lyon and Paris), one Italian (Milan), one Estonian (Tallinn) and one Swedish (Malmo) cities. The second worst scoring group is group 4. It scores the second worst with respect to four out of seven composites. However, this group is the best with respect to law enforcement towards its citizens, and the second best with respect to general trust. To this group belong all Czech, Greek, Portuguese, Romanian and Spanish cities included in the analysis, together with two Polish cities (Lodz and Warsaw), one Bulgarian (Varna), one French (Marseille) and two Italian (Rome and Naples) cities. Group 1 consists of cities that on average score the worst. This group comprises all Croatian and Slovenian cities,
General Population Poll from the World Justice Project *http://worldjusticeproject.org/questionnaires*	Law enforcement — citizens measured by questions describing: (1) the likelihood of prosecuting and convicting someone who commits a homicide in your neighbourhood; (2) the likelihood of business owners engaging in small operations of being fined if they operate a business without the required documentation and (3) the likelihood of business owners engaging in small operations of being fined if they do not register to pay taxes when they should.	58 EU cities	

General Population Poll from the World Justice Project *http://worldjusticeproject.org/questionnaires*	General trust is measured using one question: How much trust do you have in people living in this country?	58 EU cities	two out of three Bulgarian cities (Plovdiv and Sofia) and one Polish city (Cracow) included in the analysis. Not one Romanian city belongs to this group. It is interesting because it is commonly found that Romanian and Bulgarian NUTS 1 or NUTS 2 regions and Romania and Bulgaria often perform similarly with respect to economic or social outcomes (see, for example, Annoni et al., 2012; Annoni & Weziak-Bialowolska, 2014; Charron et al., 2013; Weziak-Bialowolska & Dijkstra, 2014; Weziak-Bialowolska, 2014).
General Population Poll from the World Justice Project *http://worldjusticeproject.org/questionnaires*	Institutional trust is measured by questions describing trust towards (1) officers working in the local government; (2) officers working in the national government; (3) the police; and (4) the courts	58 EU cities	
General Population Poll from the World Justice Project http://worldjusticeproject.org/questionnaires	Perception of corruption is measured by questions related to the involvement in corrupt practices of: (1) the officers working in the national government; (2) the officers working in the local government; (3) members of parliament/congress; (4) judges and magistrates; and (5) the officers working in the police	58 EU cities	
General Population Poll from the World Justice Project http://worldjusticeproject.org/questionnaires	Perception of paying bribes is measured by questions related to the citizens' opinion about the necessity of paying bribes or other inducements by people in the neighbourhood to: (1) register their ownership title for a piece of land or house; (2) obtain a driver's license; (3) be admitted to a public school; (4) be treated in a public hospital; and (5) receive the services of the police;	58 EU cities	
General Population Poll from the World Justice Project http://worldjusticeproject.org/questionnaires	Local governance is measured using questions aiming at assessing the performance of the local government with respect to: (1) providing citizens information about the government expenditures; (2) consulting traditional,	58 EU cities	

	civil, and community leaders before making decisions; (3) providing information in plain language about people's legal rights, so that everybody can understand them; (4) providing effective ways to make complaints about public services; (5) providing effective ways to handle complaints against local government officials; and (6) responding to people's concerns about community matters;		

Contents

1. Introduction

There is a recognised belief that countries with better institutions — both soft, such as trust and norms, and hard, such as rule of law and good governance — can expect better economic performance (Andrews, Jilke, & Van de Walle 2014; Baliamoune-Lutz 2011; Dinda 2008; Glaeser & Redlick 2009; Growiec & Growiec 2012; Hall & Ahmad 2013; Halleröd & Seldén 2012; Knack & Keefer 1997; Tabellini 2010; Torsvik 2000), lower crime rates (Blanco 2013), and greater voter turnout (Hug & Spörri 2011), among others. However, sub-national studies on the quality of institutions in the EU countries are considerably limited. The common focus is on countries' performance and the comparability across countries. The only examples of analyses at the regional level we found are the following. With respect to formal institutions, Charron et al. (2014a; 2014b) showed that there is considerable within-country variability with respect to the European quality of governance. With respect to informal institutions, Tabellini (2010) presented that in Europe there are regional differences in the level of generalised trust.

Therefore, the aim of this report is to address this gap by investigating the within-country variability in citizens' perception of trust, corruption, local governance and quality of public service phenomena. We construct several composites presenting the within-country variability from three different perspectives and using three different data sets. First, with the European Quality of Life Survey, we explore the level of (1) general trust, (2) institutional trust and (3) quality of public service with respect to degree of urbanisation areas in different EU countries. Second, with the Social Diagnosis survey, we examine the level of general trust and attitude towards free-riding in 27 of the largest Polish cities. Finally, using data from the World Justice Project we investigate the levels of law enforcement, institutional trust, corruption bribing and performance of the local government in 58 of the largest EU cities.

In the following sections, we first present the concepts being measured highlighting their associations with other economic and social phenomena (Section 2). Second, we devote two sections to present the data used (Section 3) and the methodology applied (Section 4), respectively. Third, in Section 5 using composites constructed based on the European Quality of Life Survey we present the level of trust and quality of public service in different countries with respect to the degree of urbanisation. The last section is devoted to presenting levels of trust and quality of institutions in a number of EU cities.

2. Institutions

North (1990) was the first who related institutions to economic performance. He defined them as 'the rules of the game in a society or, more formally', which are 'humanly devised constraints that shape human interactions' (North, 1990, p. 3). Rodriguez-Pose (2013) stresses that this definition is not complete. It focuses on so-called formal or hard institutions, entirely neglecting informal/soft institutions. As examples of formal institutions Rodriguez-Pose (2013) enumerates constitution, laws, regulations, and the rule of law and property rights, among others. To informal institutions he includes culture, history, religion or identity, as well as social capital (Putnam, 1993), i.e. networks, norms, beliefs and trust. There is widespread agreement that formal institutions are believed to contribute to economic development (Acemoglu, Johnson, & Robinson 2005; North 1990). However, as stressed by Rodriguez-Pose (2013), despite a general belief that informal institutions matter to economic development, quantitative studies find that the overall effects of informal institutions on economic activity and welfare tend to be negligible. Nevertheless, as pointed out by Rodriguez-Pose (2013, p. 1038), there is a strong belief that informal institutions, such as culture, history, religion or identity, play a non-trivial role on the potential of any territory to develop its

economic activity. Local and regional institutions promote development and growth by creating suitable conditions for investment, economic interaction and trade.

2.1. General trust

Robbins (2011) defines trust as confidence that people walking down the street will not steal from you or that if you leave your wallet on the ground, some anonymous person will return it. Bohnet (2008) claims that trust is the willingness to make oneself vulnerable to another person's actions based on the perception of that person's trustworthiness. Accordingly, generalised trust or social trust, which is one of the most recognised component of social capital, relates to a positive belief in the trustworthiness of most people. It goes beyond the boundaries of kinship, friendship and acquaintance (Tan & Tambyah 2010) and is a classic predictor of a prosperous and collectively vibrant country (Robbins 2011).

Trust is believed to be the main contributor in the process of building up social capital (Fukuyama 1995; Hall & Ahmad 2013; Knack & Keefer 1997; Knack 2002). It contributes to forming positive, reciprocal ties with other people, which increases the willingness of people to act in favour of the community (Fukuyama, 2001a, 2001b; Putnam, 1993). In economic exchanges, by increasing predictability, stability, civic engagement and collective collaboration, generalised trust reduces transactions costs (Bialowolska & Bialowolski, 2012; OECD, 2001; Putnam, 2000; Tsai, Laczko, & Bjørnskov, 2010). It also facilitates cooperation with other people (information flow), creates confidence in the regulatory capacity of public institutions, contributes to the general feeling of community and belonging (Dickes, Valentova, & Borsenberger 2009; Hall & Ahmad 2013) and leads to persistently higher levels of education (Halleröd & Seldén 2012). It is believed that determinants of trust comprise education (Knack 2002), legal property rights (Baliamoune-Lutz 2011; Knack & Keefer 1995; Robbins 2011), the rule of law (Fukuyama 2001a; OECD 2001; Robbins 2011), good

governance (Tsai et al. 2010), and corruption (Kotzian 2011; Letki 2006; Robbins 2011), which, in turn, contribute to the development of institutional quality.

2.2. Trust in institutions

Institutional trust is important for legitimising and stabilising social institutions (Kotzian 2011). It shows when citizens have positive expectations about members of such institutions and assume that they will follow procedures that will produce beneficial outcomes for themselves and for society at large (Askvik & Jamil 2013). Citizens grant and withhold trust based on their evaluation of the performance of the institution (Hakhverdian & Mayne 2012).

It is not clear what comprises trust in institutions. For example, Beuningen and Schmeets (2012) distinguish social trust (which corresponds to generalised trust — a term used in this report), political trust and organisational trust. Political trust refers to political institutions and politicians. Organisational trust refers to trust in general institutions such as police, jurisprudence and the press. Bannister and Connolly (2011) distinguish trust in politicians and trust in the machinery of the state, i.e. the civil service, the government. Finally, Hakhverdian and Mayne (2012) distinguish between trust in domestic and international institutions.

Operationalisation of institutional trust can be challenging. Kotzian (2011) claims that there are two components, comprised of the willingness of the person to trust and an institution being worthy of trust. He adds that in some countries, social trust can have a positive effect on institutional trust, whereas in others it will not have such an effect. It depends on trustworthiness of institutions in different countries. This, in turn, depends on the rule of law. In countries, in which it is necessary to bribe an official to obtain something, institutional trustworthiness is lower.

Andrews et al. (2014) investigated the relationship between institutional trust, economic strain and perception of social cohesion. They found that institutional trust has a statistically significant effect on public perceptions of social cohesion in Europe. They highlight that trust can moderate negative externalities for social cohesion associated with economic hardship. Ultimately, this implies that more should be done to understand and support the work that governments undertake to build confidence in the policies that they develop and implement.

Marozzi (2012) claims that public institutions are trusted when they are seen to represent the interests and values of certain identity groups and when citizens are satisfied with the achievements of the institutions. He adds that social scientists should try to understand determinants of trust, which is perceived as a central element to social order and survival of any democratic regime: it affects institutional performance, well-being, economic development and crime reduction.

2.3. Quality of governance

The quality of government — with the government effectiveness included — has been found to lead to better economic performance (Knack & Keefer 1995; Mauro 1995), lower income inequality and poverty (d'Hombres, Elia, & Weber, 2013) and higher levels of subjective happiness (Frey & Stutzer 2002). Additionally, Letki (2006) claims that an institutional dimension, both in the form of individuals' perceptions as well as the quality of governance, i.e. confidence in political institutions and their objective quality, are the strongest predictors of civic morality, which she defines as the attitude towards free-riding.

The nature of the relationship between the quality of governance (i.e. the government effectiveness) and generalised trust has been investigated. It has been found that in general, trust affects the quality of institutions, thus, the quality of governance in numerous ways. First, trustworthy society, politicians and government officials are likely to be truthful and thus less likely to take advantage of

their positions for personal benefit (Bjørnskov & Méon 2013; Boix & Posner 1998; Knack & Keefer 1997; Knack 2002). Second, trust facilitates cooperation and compromises between government bureaucrats (Boix & Posner 1998) as well as adoption of institutional reforms (Knack 2002). Third, trust contributes to solving the principal agent problem, which is observed in the relationship between government and public agencies (Boix & Posner 1998).

Recently, the bidirectional version of a causal relationship between general trust and the quality of institutions was tested by Robbins (2011). Her results show that generalised trust and institutional quality form a positive reciprocal relationship, in which the connection is stronger from generalised trust to institutional quality.

3. Data

One of the aims of this project was to explore the possibility of investigating citizens' perception of the quality of the institutions and good governance in European cities. In our search we explored both household surveys and pool surveys for data. Our aim was also to find a data source that would provide information on a regular basis.

With respect to household surveys, our first choice was the European Union Survey on Income and Living Conditions (EU-SILC). Although this survey comprises a lot of questions, those that refer to institutions are limited. In 2013, an *ad-hoc* model on well-being complemented the main EU-SILC questionnaire. Nevertheless, the survey does not provide information enabling computations at the city level. Therefore, we also explore the country-specific household surveys dealing with aspects of institutions and quality of life. We have investigated the German Socio-Economic Panel (GSOEP), the British Household Panel Survey/Understanding Society, the Italian Survey on Household and Income, the French Household Wealth Survey and the Polish Social Diagnosis. Among these, only

the British, German and Polish surveys comprise questions on institutions and quality of life, whereas the remaining two concentrate on income and wealth issues. Only the Social Diagnosis provided us with a city identifier and a sufficient sample size at the city level. Therefore in the following sections, we present the situation in Polish cities with respect to perceptions of institutions, generalised trust and attitude towards free-riding.

Among investigated non-household surveys we found as very interesting to our purposes following:

1. the Quality of Life in cities. Perception survey in 79 European cities. Flash Eurobarometer 366 (European Union 2013)
2. the Quality of Governance data set (Charron et al. 2014a)
3. Public Opinion in the European Union Regions. Flash Eurobarometer 356 (EC 2012)
4. the General Population Poll used in the World Justice Project to construct the Rule of Law Index (The World Justice Project 2014).

Although all these data sources comprise comprehensive information on quality of governance, only the first and the last ones enable us to look at the city level. The remaining two refer to NUTS 2 regions. The first data source seems to be very well explored (see European Union 2013), contrary to the last one. Although the data in the General Population Poll used in the World Justice Project are collected using probability samples drawn from the three largest cities in each country in a way that ensures representativeness (with respect to basic demographic features) of population in these cities, the results, i.e. the Rule of Law Index is presented only at the country level. Therefore, in our project we concentrated on this data source and we used it to present EU citizens' perceptions of quality of governance in European cities.

4. Methods

The aim of this report is to investigate the within-country variability in the citizens' perception of local governance, quality of public service, trust and corruption. Most of these phenomena are of a complex nature, which implies that they comprise several dimensions. Therefore, in order to comprehensively capture their essence, we used composite indicators, i.e. instruments that aggregate individual variables with the aim of capturing the substance of the relevant phenomenon. These measures are often used in the field of economics or social sciences to monitor initiatives in a variety of policy domains such as industrial competitiveness, sustainable development, quality of life assessment, globalisation, innovation or academic performance (Munda, Nardo, Saisana, & Srebotnjak 2009) and to answer a practical need to rate individuals, regions, and countries, etc. (Paruolo, Saisana, & Saltelli 2013).

To construct composite indicators, we use a series of statistical techniques to ensure their statistical soundness. First, we check our data with respect to coverage. It appears that the data we use are complete, implying that there are not any missing observations and no imputation procedure is required. Second, we analyse indicators with respect to lack of non-normal distribution and lack of outliers. We verify if the values of each indicator fulfil the two following criteria: skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998). Third, we investigate if, provided that data are normalised with the orientation of indicators taken into consideration, all correlation coefficients are positive (at least when statistically significant). Positive correlations imply that all indicators point in the same direction, which is generally desirable when developing a composite indicator. Instead, negative correlations between indicators are problematic. They signal either the presence of trade-offs between the indicators or a conceptual inconsistency (if not a coding or a

calculation error). Fourth, we verify if the correlation between an indicator and the composite is not very low or random, which may imply that indicators may not capture the same aspect as the remaining, more correlated indicators.

Next, we verify if all indicators contribute significantly to the variance of their aggregates and whether a single measure is enough to summarize the indicators that are conceptually grouped in the same composite. As we believe that a composite is probably formative rather than reflective in nature (see the excellent discussion on the reflective and formative indices provided in Bagozzi, 2007), applying the principal component analysis (PCA) is recommended. We expect a one-dimensional solution from the PCA. Therefore, our criteria for component extraction are based on the Keiser-Mayer-Olkin statistic (KMO), which is expected to be above 0.5 (Antony & Visweswara Rao 2007; Wu 2007); the Keiser criterion (i.e. only one eigenvalue above 1); the amount of variance explained (min. 50 %) and the pattern of principal component loadings (i.e. all of the same sign and of similar value). Additionally, we analysed the communalities, which informs how much of the variance in each of the original variables is explained by the extracted principal component. We expected it to be above 0.5, which implies that a principal component comprises at least 50 % of the variance in the original variable.

Having confirmed one-dimensionality of the concept, in the following step, we aggregate variables into a composite indicator. As our composites generally consist of variables belonging to the same battery of questions, implying that they refer to various aspects but are of the same phenomena, we use an arithmetic average with equal weights. This method ensures full compensation of low results in one variable with high results in others, but this is desirable and follows the common practice according to which variables at the lowest level of the framework of the composite — i.e. populating the dimensions — are aggregated using an arithmetic average and then, at the higher levels of the

structure other types of the generalised mean are used (see for example Composite Indicators of Research Excellence by Vertesy and Tarantola (2012)).

Then, we expect a composite to be statistically well balanced, implying that the importance of indicators in a composite indicator is relatively equal, or nominal weights attributed to the indicators should correspond to their importance to a composite. By the importance of indicators we understand their contribution to the variance of the scores of a composite indicator. Therefore, to verify if a composite is statistically well balanced, we calculate the correlation coefficients between the variables and a composite. This coefficient, when squared and rescaled to unity sum, can serve as a proxy for the variable importance (Paruolo et al. 2013).

Finally, to assess the robustness of the composite with regard to the normative assumptions related to the aggregation method (and the level of compensability) and importance of variables, which is made during the conceptualisation step, we perform uncertainty analysis. The aim of this analysis is to measure the overall variation in composite scores and ranks resulting from the uncertainty linked to the assumptions made. To verify the assumption on compensability, we modify the aggregation method, i.e. the arithmetic average, which is also a generalised mean of power 1. We assumed that the power of the generalised mean can vary between 0 (geometric average) and 2. In particular, in the uncertainty analysis, its values are sampled from the uniform distribution U[0; 2]. The second assumption on equal weighting is tested by assuming weights associated to six variables to range about $\pm$ 10 % of the reference weight. The two uncertain factors, namely the power of the generalised mean and the weights, are sampled simultaneously in a quasi-random sampling scheme (Sobol' 1967) with a sample of n= 3,000 in order to capture all possible interaction effects among the assumptions made. Thanks to this, through a procedure being a combination of a Monte Carlo experiment and a multi-modelling approach, the final scores and ranks are presented with

uncertainty expressed by the error terms (5^{th} and 95^{th} percentiles) and compared to the median simulated scores and ranks, respectively.

All the indexes are presented for relevant sub-national entities, i.e. cities or by densely populated and intermediate density and thinly populated areas within the countries. They are always complemented by composite indicator scores computed at the country level. It is worth noting that country averages and EU-averages (if presented) are always calculated as the weighted population averages using all the sampled data.

5. Trust and quality of public service by degree of urbanisation

5.1. European Quality of Life Survey 2012

We identified only one survey that provides both comprehensive information on broadly understood formal institutions and aspects of good governance and enables inter-country comparability of these phenomena in Europe at the sub-national — defined by degree of urbanisation ([1]) — level. This is the European Quality of Life Survey (EQLS) ([2]), ([3]). The aim of the EQLS is to provide comparable and reliable data on the quality of life across Europe. The survey was conducted in the 27 EU Member States and 7 non-EU countries (Croatia, Iceland, Kosovo, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey). The target population was all residents of the countries mentioned above, aged 18 or older who are interviewed through a

([1]) The degree of urbanisation (DEGURBA) creates a classification of all LAU2s (Local Administrative Units — Level 2/municipalities) into the following three categories: (1) Cities, (2) Towns and suburbs, (3) Rural areas. More information can be found at: http://ec.europa.eu/eurostat/ramon/miscellaneous/index.cfm?TargetUrl=DSP_DEGURBA or in Dijkstra and Poelman (2014)

([2]) http://eurofound.europa.eu/surveys/eqls

([3]) We explored also the European Union Survey on Income and Living Conditions (EU-SILC) with respect to measuring institutions. Although the EU-SILC enables analysis by the degree of urbanisation, we found out that in the main data set such information is limited. Nevertheless, in 2013 an ad-hoc model on well-being complemented the main EU-SILC questionnaire. Because the individual data are not still available, this data source was not used in the project.

face-to-face interview conducted in people's homes in the national language(s) of the country. Provided that the weights are used, the survey is representative at the country level in terms of gender, age, urbanisation level, region and household size. The target sample size ranges from 1,000 in the smaller countries to 3,000 in the biggest. Upon completion of the fieldwork, the total number of interviews was 43,636.

Based on data from the EQLS we propose three measures related to the following phenomena:

— general trust

— institutional trust (institutional confidence)

— quality of public service.

General trust is measured with a single question. Institutional trust and quality of public service are measured with composite indicators (CI) computed as the arithmetic means with equal weighting. The sample sizes per country and the number of 'don't know' answers as well as refusals to answer for each analysed question are presented in the Appendix in Table A1. We also recall that all country and the EU-28 averages are computed using all sampled data with application of the proper weights.

5.2. General trust

General trust is measured using data from the question: Would you say that most people can be trusted? (on a scale from 1 to 10) (Y11_Q24). The level of general trust in European countries with respect to degree of urbanisation (we distinguish (1) big cities and (2) town, suburbs and rural areas) measured as a country arithmetic average of the responses, with answers 'don't know' and refusals treated as missing values, is presented in Figure 1 and Table 1 ([4]).

([4]) Degurba for Lithuania is not available.

There are differences with respect to the level of generalised trust both between countries and within countries. The highest level of generalised trust is recorded in the Nordic countries, whereas the lowest is in the Central and Eastern European (CEE) countries and Southern European countries. In addition, Slovakia, which scores the fourth worst, is also the most diversified country with the difference of the generalised trust score between cities and towns, suburbs and rural areas amounting to 1.1 points. It is followed by Portugal, Malta, Denmark, Austria and Greece, with the difference in scores ranging between 0.5 and 0.7. The least diversified country with respect to the generalised trust is France (0.05 points of difference between cities and towns, suburbs and rural areas).

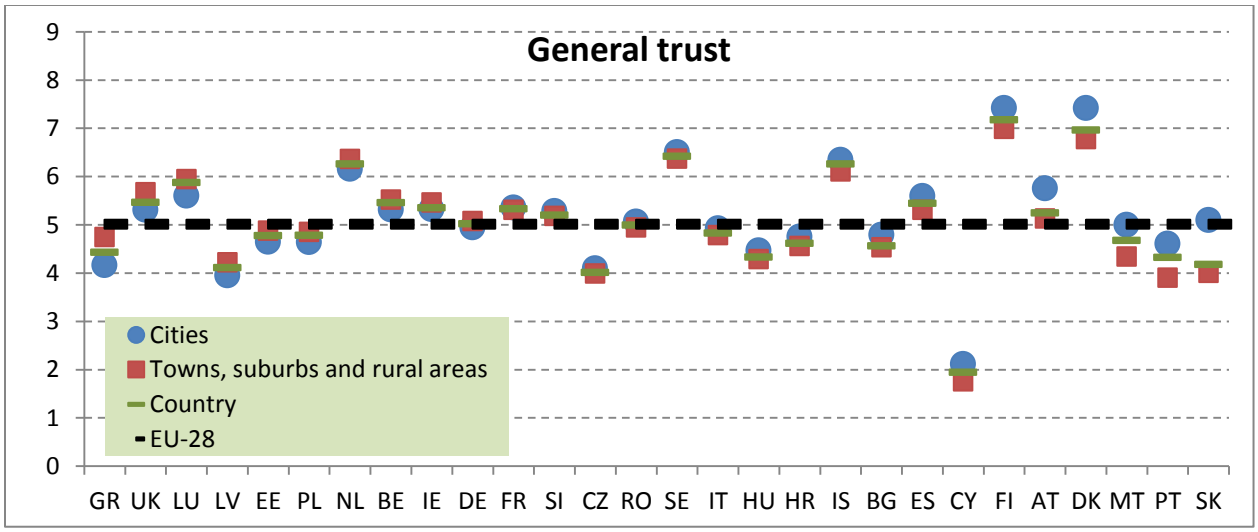

Figure 1. Level of general trust in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012

Table 1. Level of general trust in European countries, cities, towns, suburbs and rural areas

Country	Cities	Towns, suburbs and rural areas	Country	EU-28
AT	5.75	5.13	5.25	5.01
BE	5.32	5.52	5.46	5.01
BG	4.79	4.53	4.56	5.01
CY	2.12	1.76	1.95	5.01
CZ	4.10	3.99	4.02	5.01

DE	4.95	5.08	5.03	5.01
DK	7.42	6.77	6.97	5.01
EE	4.64	4.88	4.78	5.01
ES	5.59	5.31	5.45	5.01
FI	7.42	6.98	7.18	5.01
FR	5.36	5.31	5.34	5.01
GR	4.16	4.75	4.43	5.01
HR	4.75	4.56	4.62	5.01
HU	4.47	4.29	4.33	5.01
IE	5.32	5.46	5.35	5.01
IS	6.34	6.11	6.26	5.01
IT	4.92	4.78	4.83	5.01
LU	5.60	5.94	5.88	5.01
LV	3.95	4.22	4.12	5.01
MT	5.00	4.34	4.68	5.01
NL	6.16	6.36	6.27	5.01
PL	4.64	4.86	4.79	5.01
PT	4.60	3.91	4.33	5.01
RO	5.06	4.94	5.00	5.01
SE	6.50	6.37	6.42	5.01
SI	5.28	5.18	5.20	5.01
SK	5.10	4.00	4.19	5.01
UK	5.31	5.67	5.47	5.01

Source: own computations based on the European Quality of Life Survey 2012

The level of generalised trust in Cyprus, despite being not very diversified with respect to within-country variability, stands out. We find this result quite surprising. However, our effort to verify it by comparing our results with the results of other scholars and/or using different data source did not give us unequivocal conclusions. According to the based on the World Value Survey (WVS) by Delhey et al. (2011), Cyprus is the lowest scoring EU country. The percentage of people who trust in most people is there at a level of about 10 %, while in the second worst EU countries — Slovenia, France and Poland — it accounts for almost 20 %. It is also worth mentioning that according to this study the best scoring with this respect are Norway and Sweden with the percentage of those who trust at the level of about 70 %. It shows that, although Cyprus scores the worst, it does not stand

out as much as in our study. This finding was confirmed by us. Using the European Social Survey (ESS) wave 2012, we calculated the average level of trust in people. The results — despite correlated at the level of 0.82 — do not support the distinctive position of the Cyprus in terms of generalised trust. Although Cyprus scores the second worst (3.646), following Bulgaria (3.347), its score is only slightly worse than that of Portugal (3.649). Additionally, in the study based on the European Social Survey 2002-2010 by Olivera (2013), Cyprus does not stand out and does not score the worst.

However, it must be noted that there are considerable methodological differences between the WVS and the ESS in the way of asking about the level of generalised trust. In the WVS, respondents are asked if most people can be trusted, while in the ESS they are asked to assess on the 11-point scale how much most people can be trusted. These differences may bring about substantial differences in the results. Nevertheless, in European Quality of Life Survey (EQLS), used by us, the way of asking about the generalised trust resembles those used in the ESS. With this in regard, we find very difficult to explain the results we obtain.

5.3. Trust in institutions

Trust in institutions is measured using data from six questions (measured on a scale from 1 — do not trust at all to 10 — trust completely) presented in Table 2. The questions describe trust towards national parliament, legal system, press, police, government, and local authorities.

Table 2. Questions measuring institutional trust

Label	**Question**
Trust in institutions	
Q28a	[Nationality] parliament/How much you personally trust each of the following institutions
Q28b	The legal system/How much you personally trust each of the following institutions
Q28c	The press/How much you personally trust each of the following institutions

Q28d	The police/How much you personally trust each of the following institutions
Q28e	The government/How much you personally trust each of the following institutions
Q28f	The local (municipal) authorities/How much you personally trust each of the following institutions

The level of trust towards each institution in each of the analysed country with respect to country level as well as cities and towns, suburbs and rural areas is presented in Figure 2 — Figure 7 and in Table 3.

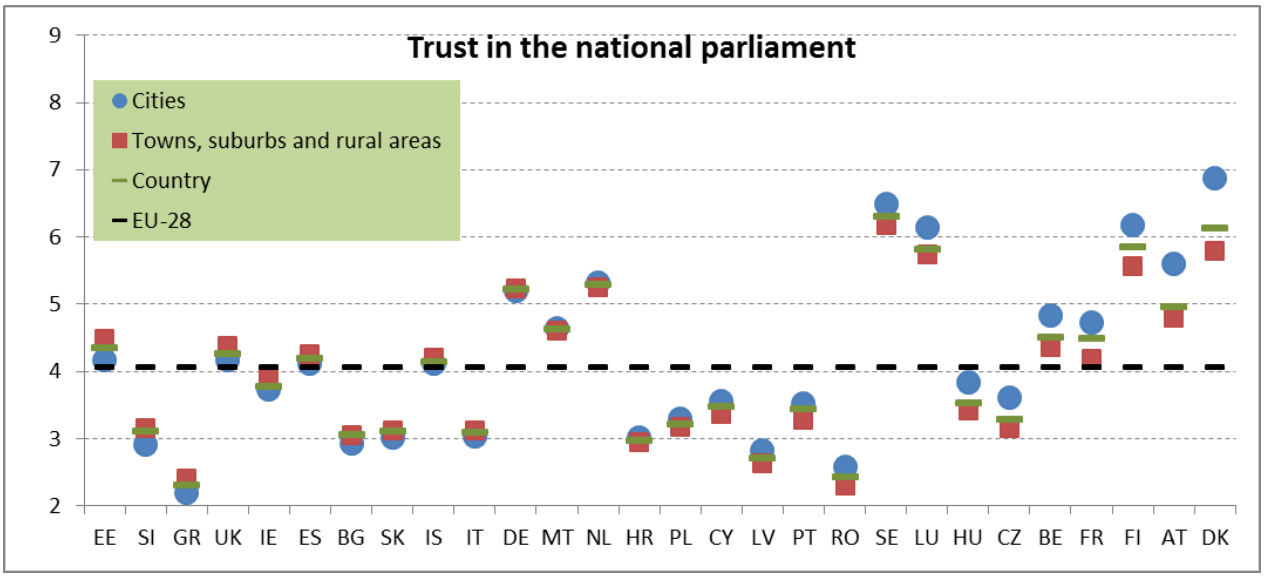

Figure 2. Trust in the national parliament in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

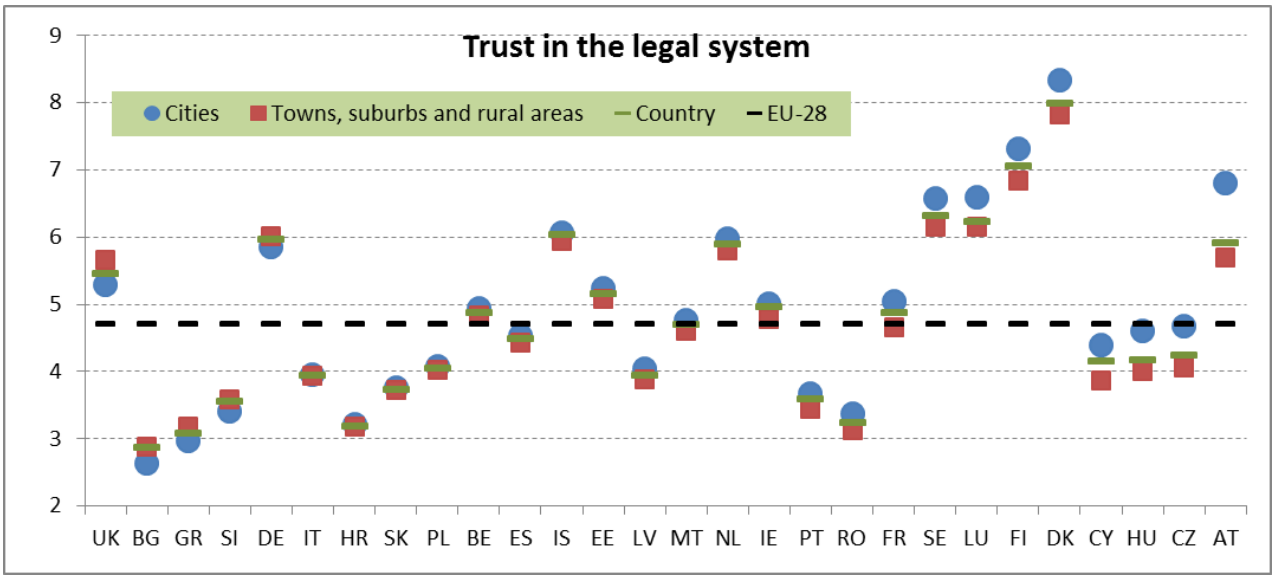

Figure 3. Trust in the legal system in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

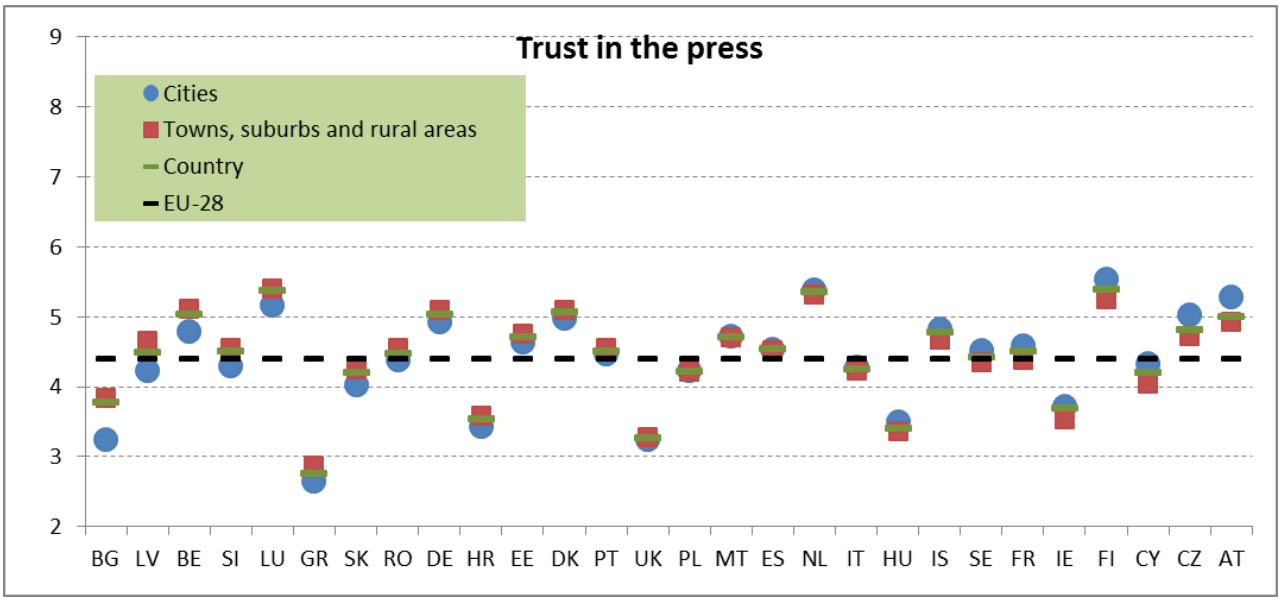

Figure 4. Trust in the press in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

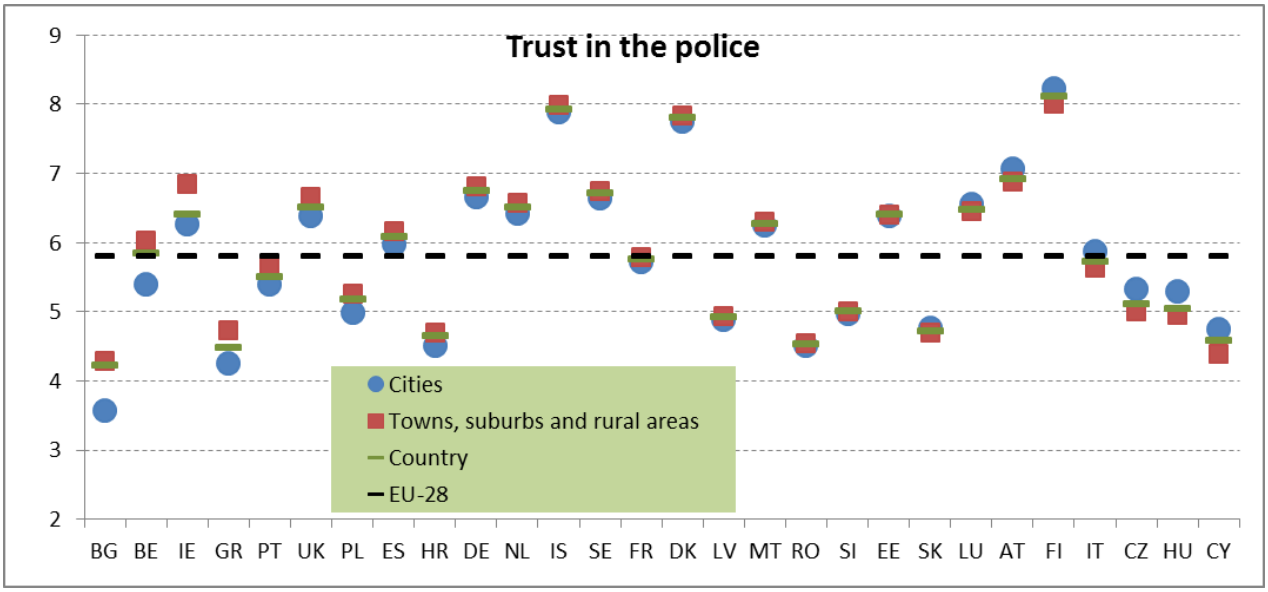

Figure 5. Trust in the police in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

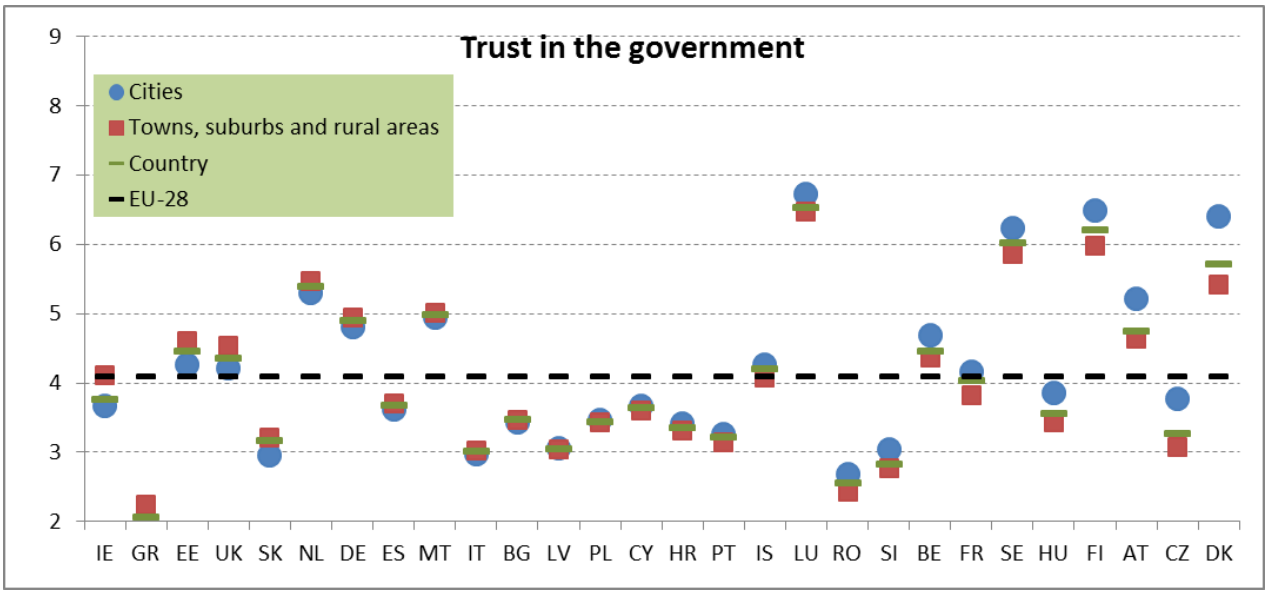

Figure 6. Trust in the government in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

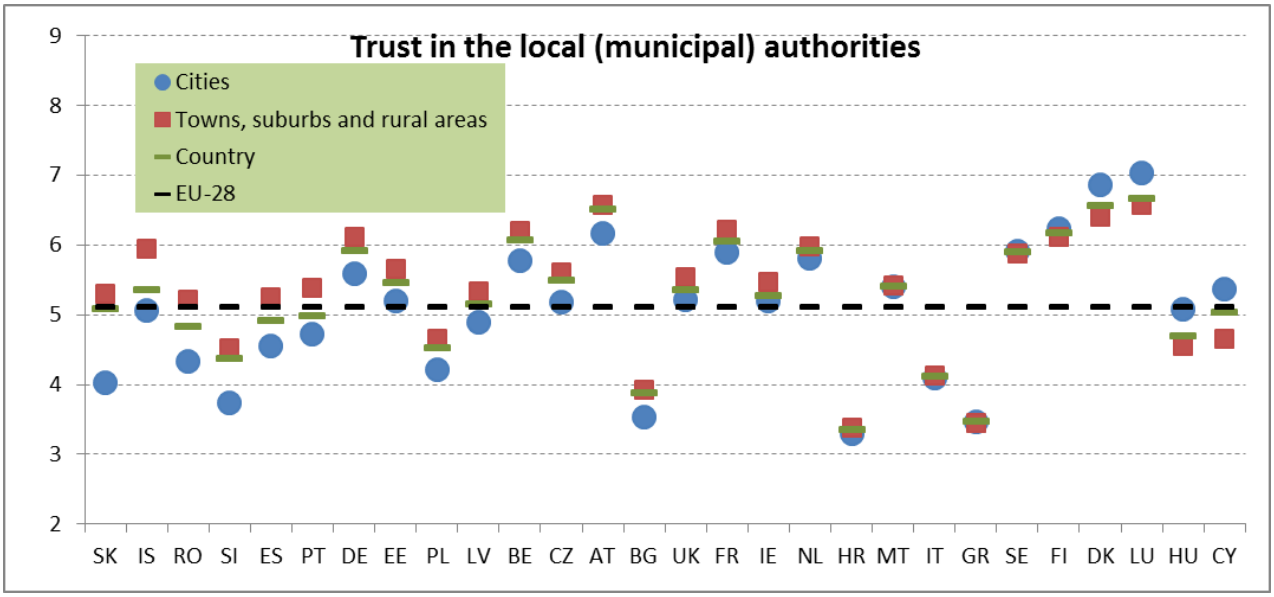

Figure 7. Trust in the local (municipal) authorities in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

Table 3. Level of trust in institutions in European countries with respect to cities and towns, suburbs and rural areas.

Country	Cities	Towns, suburbs and rural areas	Country	EU-28	Cities	Towns, suburbs and rural areas	Country	EU-28	Cities	Towns, suburbs and rural areas	Country	EU-28
	Trust in the national parliament				Trust in the legal system				Trust in the press			
AT	5.60	4.80	4.95	4.07	6.81	5.70	5.91	4.81	5.28	4.93	5.00	4.41
BE	4.84	4.37	4.50	4.07	4.94	4.83	4.86	4.81	4.80	5.12	5.03	4.41
BG	2.94	3.06	3.04	4.07	2.64	2.89	2.86	4.81	3.24	3.84	3.77	4.41
CY	3.55	3.37	3.47	4.07	4.40	3.87	4.15	4.81	4.34	4.04	4.20	4.41
CZ	3.61	3.15	3.28	4.07	4.67	4.06	4.23	4.81	5.03	4.73	4.81	4.41
DE	5.19	5.23	5.21	4.07	5.85	6.01	5.95	4.81	4.93	5.10	5.03	4.41
DK	6.88	5.80	6.12	4.07	8.34	7.83	7.98	4.81	4.98	5.09	5.06	4.41
EE	4.18	4.48	4.35	4.07	5.24	5.08	5.14	4.81	4.63	4.76	4.70	4.41
ES	4.11	4.25	4.18	4.07	4.53	4.42	4.48	4.81	4.54	4.52	4.53	4.41
FI	6.18	5.56	5.84	4.07	7.31	6.84	7.05	4.81	5.54	5.25	5.38	4.41
FR	4.72	4.19	4.49	4.07	5.05	4.65	4.88	4.81	4.58	4.39	4.50	4.41
GR	2.20	2.41	2.30	4.07	2.98	3.19	3.07	4.81	2.66	2.88	2.76	4.41
HR	3.02	2.95	2.97	4.07	3.21	3.18	3.19	4.81	3.43	3.58	3.53	4.41
HU	3.84	3.42	3.52	4.07	4.60	4.01	4.16	4.81	3.50	3.36	3.40	4.41
IE	3.73	3.91	3.77	4.07	5.00	4.79	4.96	4.81	3.73	3.53	3.68	4.41
IS	4.11	4.20	4.14	4.07	6.07	5.94	6.03	4.81	4.82	4.67	4.77	4.41
IT	3.03	3.12	3.09	4.07	3.95	3.94	3.94	4.81	4.29	4.23	4.25	4.41
LU	6.15	5.74	5.81	4.07	6.60	6.15	6.22	4.81	5.17	5.41	5.36	4.41
LV	2.82	2.63	2.70	4.07	4.04	3.88	3.94	4.81	4.23	4.66	4.49	4.41
MT	4.65	4.61	4.63	4.07	4.77	4.61	4.69	4.81	4.72	4.70	4.71	4.41
NL	5.31	5.26	5.28	4.07	5.98	5.81	5.89	4.81	5.38	5.32	5.35	4.41
PL	3.29	3.18	3.21	4.07	4.07	4.03	4.04	4.81	4.22	4.22	4.22	4.41

PT	3.53	3.28	3.43	4.07	3.67	3.44	3.58	4.81	4.47	4.55	4.50	4.41
RO	2.58	2.30	2.43	4.07	3.37	3.13	3.24	4.81	4.38	4.55	4.47	4.41
SE	6.49	6.17	6.30	4.07	6.58	6.16	6.32	4.81	4.52	4.36	4.42	4.41
SI	2.91	3.16	3.11	4.07	3.41	3.59	3.55	4.81	4.29	4.55	4.50	4.41
SK	3.01	3.13	3.11	4.07	3.75	3.72	3.72	4.81	4.03	4.24	4.20	4.41
UK	4.17	4.37	4.26	4.07	5.29	5.66	5.45	4.81	3.25	3.28	3.26	4.41
	Trust in the police				**Trust in the government**				**Trust in the local (municipal) authorities**			
AT	7.06	6.89	6.92	5.81	5.22	4.63	4.74	4.09	6.16	6.57	6.50	5.12
BE	5.40	6.02	5.84	5.81	4.69	4.36	4.46	4.09	5.77	6.19	6.07	5.12
BG	3.57	4.29	4.22	5.81	3.43	3.47	3.47	4.09	3.53	3.92	3.88	5.12
CY	4.75	4.40	4.58	5.81	3.67	3.60	3.64	4.09	5.37	4.65	5.03	5.12
CZ	5.33	5.01	5.10	5.81	3.77	3.07	3.27	4.09	5.18	5.60	5.49	5.12
DE	6.65	6.82	6.75	5.81	4.80	4.95	4.89	4.09	5.59	6.12	5.92	5.12
DK	7.76	7.83	7.81	5.81	6.40	5.41	5.71	4.09	6.87	6.41	6.55	5.12
EE	6.39	6.40	6.40	5.81	4.26	4.61	4.45	4.09	5.20	5.66	5.46	5.12
ES	5.97	6.17	6.07	5.81	3.62	3.71	3.67	4.09	4.55	5.25	4.91	5.12
FI	8.23	8.01	8.11	5.81	6.48	5.98	6.21	4.09	6.24	6.11	6.17	5.12
FR	5.72	5.79	5.75	5.81	4.17	3.83	4.02	4.09	5.90	6.22	6.04	5.12
GR	4.26	4.73	4.47	5.81	1.90	2.25	2.06	4.09	3.47	3.44	3.46	5.12
HR	4.51	4.71	4.65	5.81	3.41	3.31	3.34	4.09	3.29	3.37	3.35	5.12
HU	5.30	4.96	5.04	5.81	3.86	3.44	3.55	4.09	5.08	4.56	4.69	5.12
IE	6.26	6.85	6.40	5.81	3.66	4.10	3.76	4.09	5.20	5.47	5.26	5.12
IS	7.88	7.99	7.92	5.81	4.26	4.08	4.20	4.09	5.07	5.95	5.36	5.12
IT	5.87	5.64	5.72	5.81	2.97	3.02	3.00	4.09	4.10	4.12	4.11	5.12
LU	6.56	6.46	6.48	5.81	6.72	6.48	6.52	4.09	7.03	6.58	6.66	5.12
LV	4.88	4.93	4.91	5.81	3.06	3.04	3.05	4.09	4.88	5.33	5.15	5.12
MT	6.25	6.30	6.27	5.81	4.95	5.01	4.98	4.09	5.40	5.42	5.41	5.12
NL	6.42	6.57	6.50	5.81	5.30	5.47	5.39	4.09	5.82	5.99	5.91	5.12
PL	4.99	5.26	5.17	5.81	3.47	3.42	3.44	4.09	4.21	4.65	4.51	5.12
PT	5.39	5.67	5.50	5.81	3.26	3.14	3.21	4.09	4.72	5.39	4.98	5.12

RO	4.50	4.54	4.52	5.81	2.68	2.43	2.55	4.09	4.34	5.22	4.82	5.12
SE	6.65	6.74	6.71	5.81	6.24	5.86	6.01	4.09	5.92	5.88	5.89	5.12
SI	4.98	5.01	5.00	5.81	3.04	2.77	2.83	4.09	3.74	4.53	4.36	5.12
SK	4.77	4.71	4.72	5.81	2.96	3.21	3.17	4.09	4.03	5.29	5.08	5.12
UK	6.38	6.65	6.50	5.81	4.21	4.54	4.36	4.09	5.22	5.54	5.36	5.12

Source: own computations based on the European Quality of Life Survey 2012.

In the data set all indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the institutional trust. As our aim was to construct a composite indicator measuring the level of institutional trust in (1) cities and (2) towns, suburbs and rural areas (Index of Institutional Trust (IIT)), we performed the data consistency check using data aggregated at the (1) cities and (2) towns, suburbs and rural areas (i.e. data presented in Table 3). Because we assume that the ITI is more formative than reflective in nature, implying that the variables chosen form the index rather than reflect the existence of the institutional trust, after analysing the correlation matrix, principal component analysis (PCA) was employed. The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at the 0.01 significance level (Table 4). The results of the PCA confirm the one-dimensionality of the IIT (see Table 5). The KMO amounted to 0.848, the first eigenvalue amounted to 4.883, the first principal component explained 81.39 % of the variance observed in the six indicators and all loadings related to the first principal component were positive.

Table 4. Correlation matrix — Index of Institutional Trust

	Q28a	**Q28b**	**Q28c**	**Q28d**	**Q28e**	**Q28f**		**Correlation with IIT**	**Importance (rescaled to unity sum r^2)**
Q28a	1.000							0.962	0.19
Q28b	0.927*	1.000						0.968	0.19
Q28c	0.627*	0.620*	1.000					0.733	0.11
Q28d	0.805*	0.904*	0.577*	1.000				0.895	0.16
Q28e	0.967*	0.889*	0.621*	0.764*	1.000			0.940	0.18
Q28f	0.810*	0.823*	0.721*	0.732*	0.781*	1.000		0.890	0.16

* significant at 0.01

Source: own computations based on the European Quality of Life Survey 2012

Table 5. The PCA results — Index of institutional trust

Variable	Communalities	Loadings of the first PC
Q28a	.915	.956
Q28b	.923	.961
Q28c	.573	.757
Q28d	.789	.888
Q28e	.874	.935
Q28f	.809	.900
KMO 0.848		
Eigenvalues 4.883.543.285.209.054.027		
Variance explained by the first principal component 81.39 %		

* Communality should be at least 0.5; KMO should be at least 0.5.

Source: own computations based on the European Quality of Life Survey 2012.

Having confirmed one-dimensionality of the institutional trust concept, in the following step, we aggregated variables into the IIT. We used the arithmetic average with equal weights. The scores of the IIT and the ranks presented in Table 6 and illustrated in Figure 8.

Table 6. Index of Institutional Trust — Country, cities and towns, suburbs and rural areas scores

Country	Cities	Towns, suburbs and rural areas	Country
GR	2.910	3.149	3.020
HR	3.480	3.516	3.505
BG	3.224	3.578	3.539
RO	3.643	3.694	3.671
SI	3.728	3.935	3.891
SK	3.759	4.049	4.000
IT	4.035	4.011	4.020
LV	3.985	4.077	4.041
HU	4.362	3.956	4.060
PL	4.042	4.125	4.099
CY	4.344	3.987	4.178
PT	4.174	4.245	4.202
CZ	4.600	4.271	4.363
IE	4.598	4.774	4.638
ES	4.553	4.722	4.639
UK	4.754	5.007	4.863
FR	5.024	4.844	4.945
EE	4.982	5.163	5.084
MT	5.122	5.110	5.116
BE	5.072	5.149	5.126

IS	5.367	5.472	5.402
DE	5.504	5.704	5.626
AT	6.023	5.587	5.671
NL	5.701	5.735	5.719
SE	6.066	5.861	5.941
LU	6.372	6.135	6.175
FI	6.664	6.293	6.457
DK	6.872	6.394	6.537

Source: own computations based on the European Quality of Life Survey 2012.

With respect to within-country variability of the institutional trust, it is noticeable that in general the level of this phenomenon is not diversified (see also Figures 2-8). However, in Denmark, Austria, Hungary, Finland, Cyprus, Bulgaria and the Czech Republic the recorded differences are the highest and always in favour of cities. The only exception to this reasoning is Bulgaria, where institutional trust is higher in towns, suburbs and rural areas than in cities.

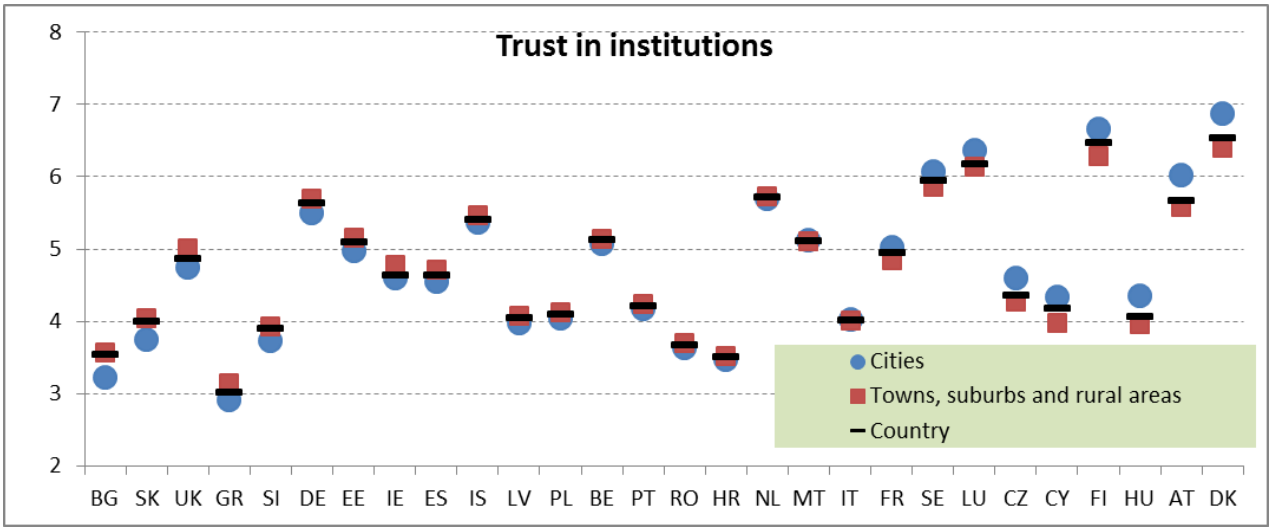

Figure 8. Index of Institutional Trust in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

To verify if the IIT is statistically well balanced, we calculated the correlation coefficients between the variables and the IIT (see Table 4, column Correlation with IIT). The importance of each variable comprised in the IIT is presented in Table 4 (column Importance). As can be seen in Table 4, the IIT is well balanced with one exception. Variable Q28c corresponding to trust to the press slightly stands out, implying its influence on the IIT is almost half less than the remaining variables.

Finally, to assess the robustness of the IIT with regard to the normative assumption related to the compensability and importance of variables, which was made during the conceptualisation step, we performed uncertainty analysis. The aim of this analysis was to measure the overall variation in IIT scores and ranks resulting from the uncertainty linked to the assumptions made.

As can be noticed in Figure 9, the median simulated scores are almost as the reference scores. The same applies to IIT ranks (Figure 10). The median simulated ranks are almost as the reference ranks. Then, the length of the confidence intervals computed as (median – 5^{th} percentile; median + 95^{th} percentile) is negligible with respect to both scores and ranks. These results show that the IIT is robust to the methodological assumptions made during the construction process.

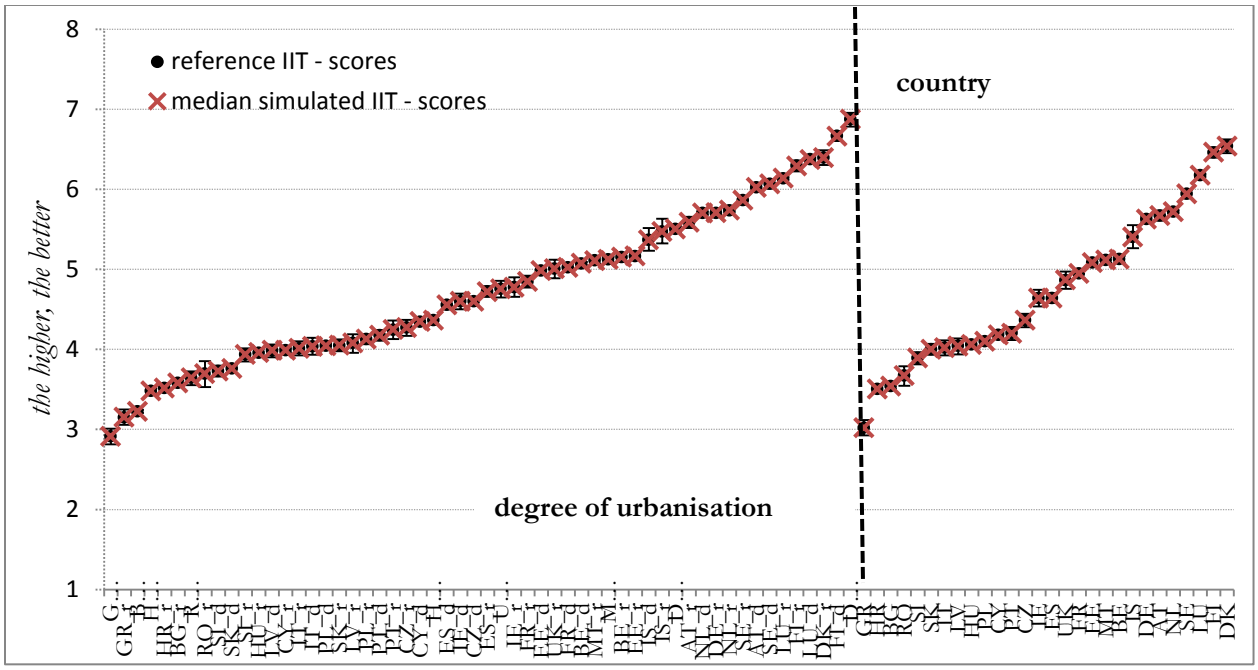

Figure 9. Uncertainty analysis — Index of Institutional Trust scores.
Source: own computations based on the European Quality of Life Survey 2012.

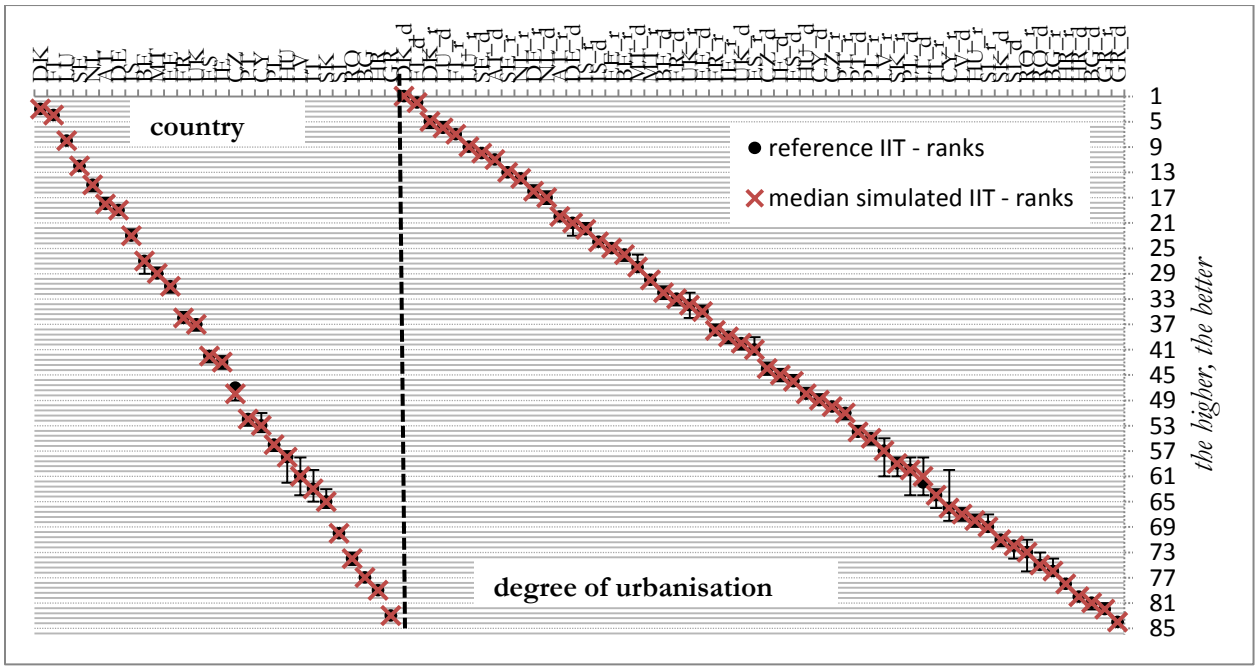

Figure 10. Uncertainty analysis — Index of Institutional Trust ranks.
Source: own computations based on the European Quality Life Survey 2012.

5.4. Quality of public service

Quality of public service is measured using data from seven questions (measured on a scale from 1 — 'very poor quality' to 10 — 'very high quality') presented in Table 7. The questions describe quality of the following public service: health services, education system, public transport, child-care services, long-term care service, social or municipal housing, state pension system.

Table 7. Questions measuring quality of public service

Label	Question
Quality of public service	
Q53a	Health services/How would you rate the quality of each of the following public services?
Q53b	Education system/How would you rate the quality of each of the following public services?
Q53c	Public transport/How would you rate the quality of each of the following public services?
Q53d	Child-care services/How would you rate the quality of each of the following public services?
Q53e	Long-term care services/How would you rate the quality of each of the following public services?
Q53f	Social/municipal housing/How would you rate the quality of each of the following public services?
Q53g	State pension system/How would you rate the quality of each of the following public services?

The perceived level of quality of each of the enumerated above public services in each of the analysed country with respect to (1) country level as well as (2) cities and (3) towns, suburbs and rural areas is presented in Figure 11-17 and in Table 8. Due to an unsatisfactory response rate (see Table A1 in the Appendix) the estimates related to the quality of child-care services (q28d), long-term care services (q28e), social/municipal housing (q28f) and state pension system (q28g) should be treated with caution.

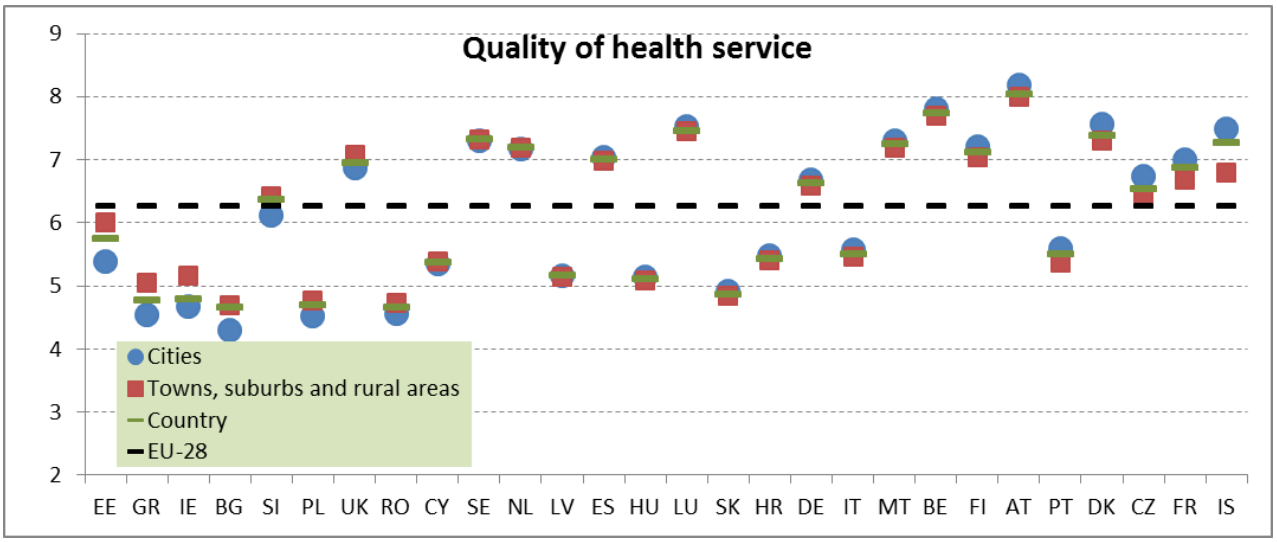

Figure 11. Quality of health service in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

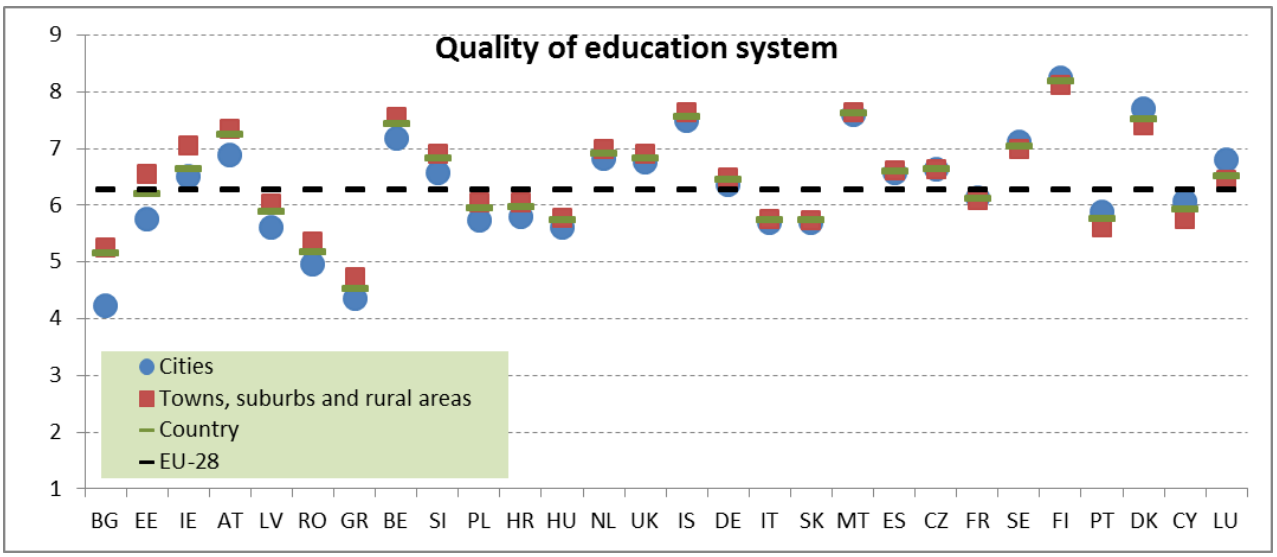

Figure 12. Quality of education system in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

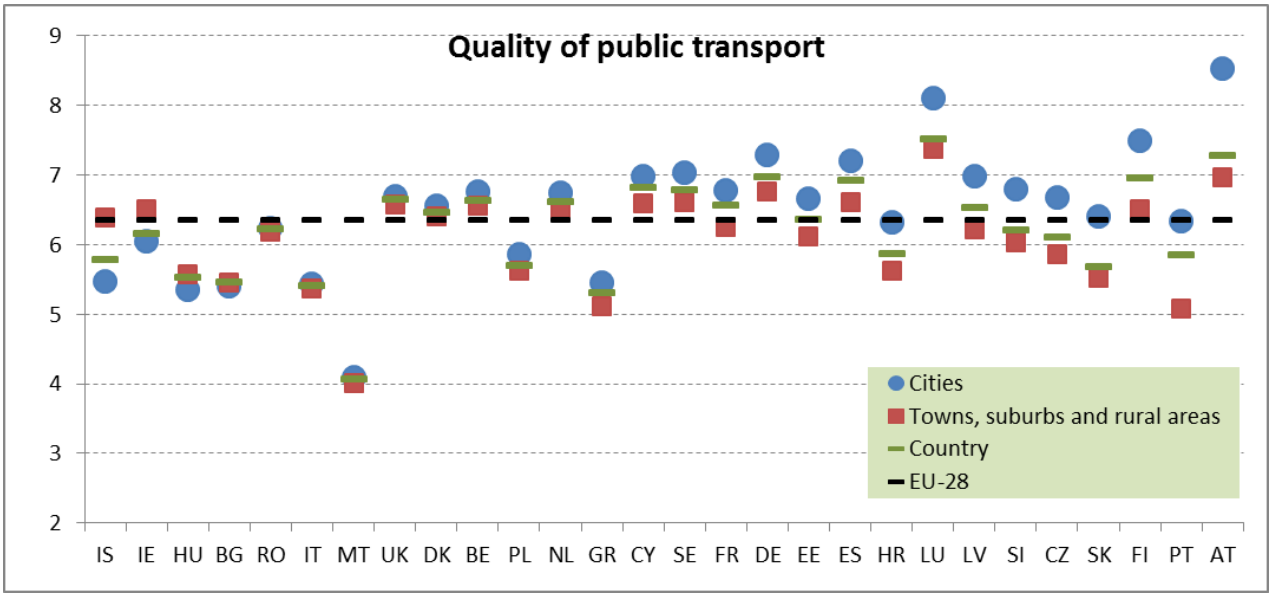

Figure 13. Quality of public transport in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

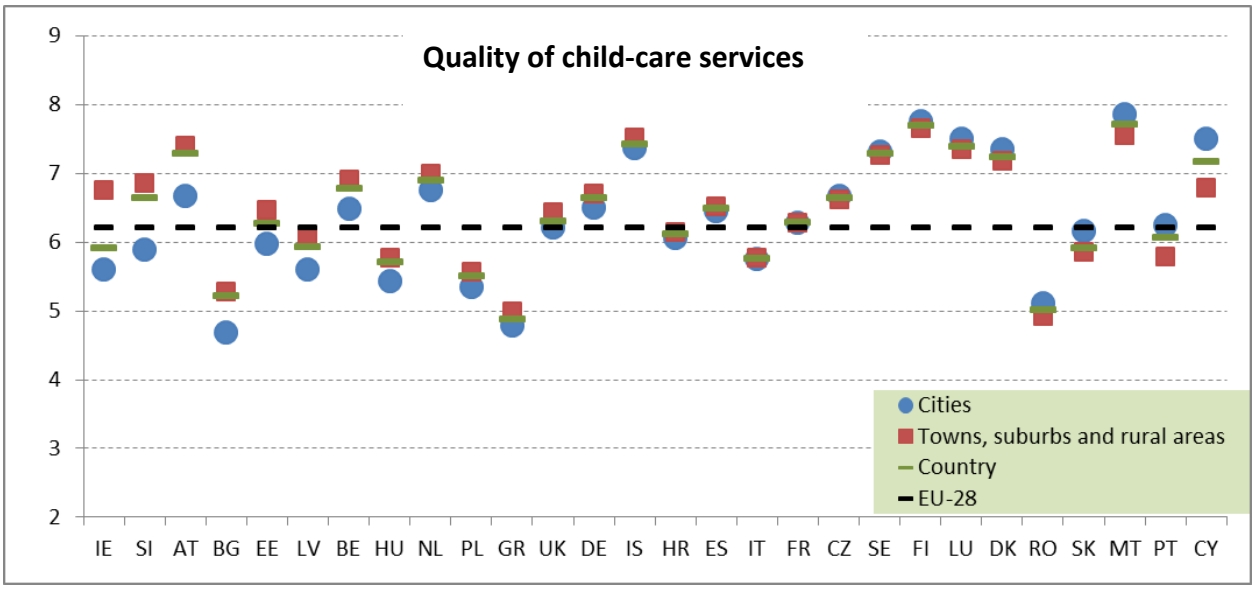

Figure 14. Quality of child-care services in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

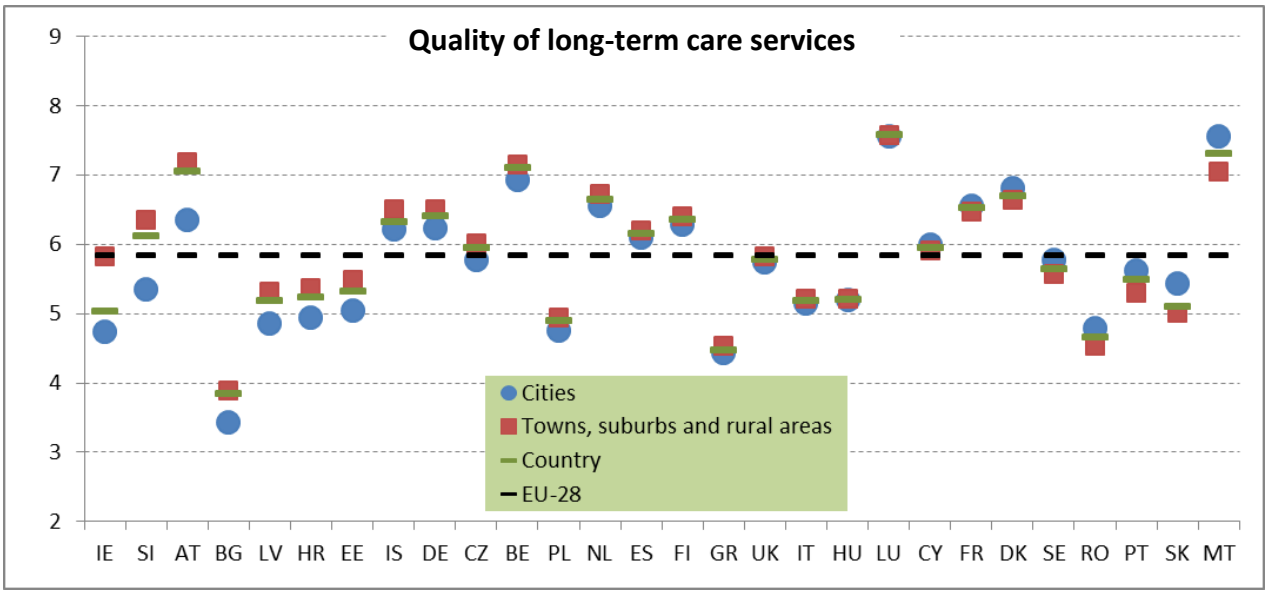

Figure 15. Quality of long-term care services in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

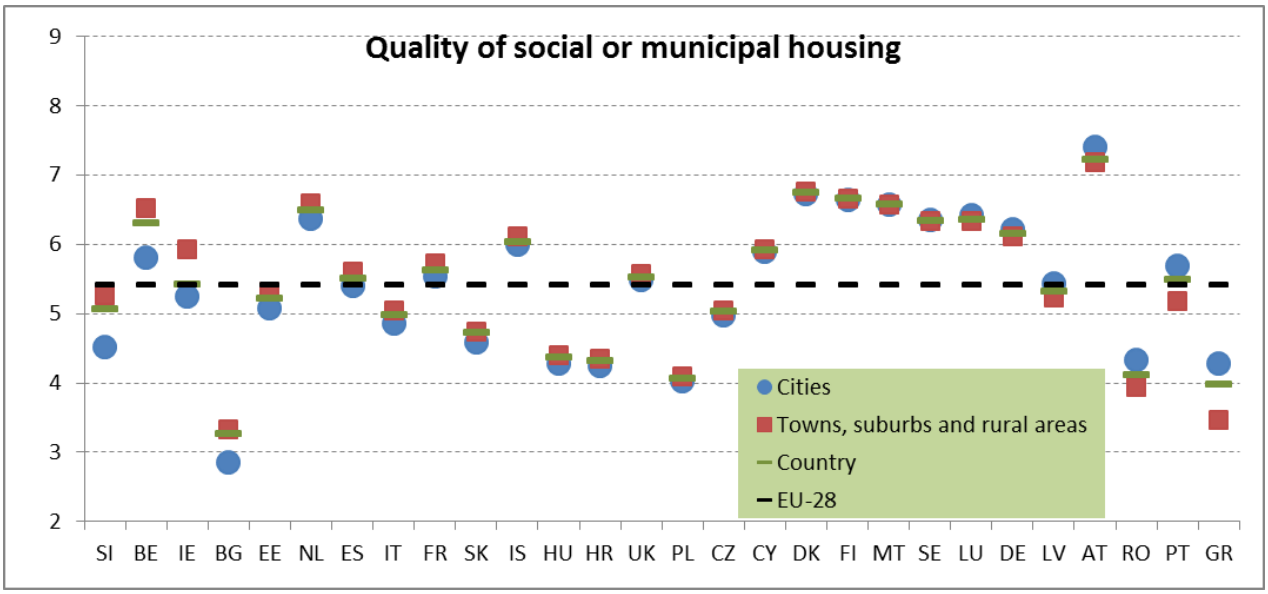

Figure 16. Quality of social or municipal housing in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European quality of life survey 2012.

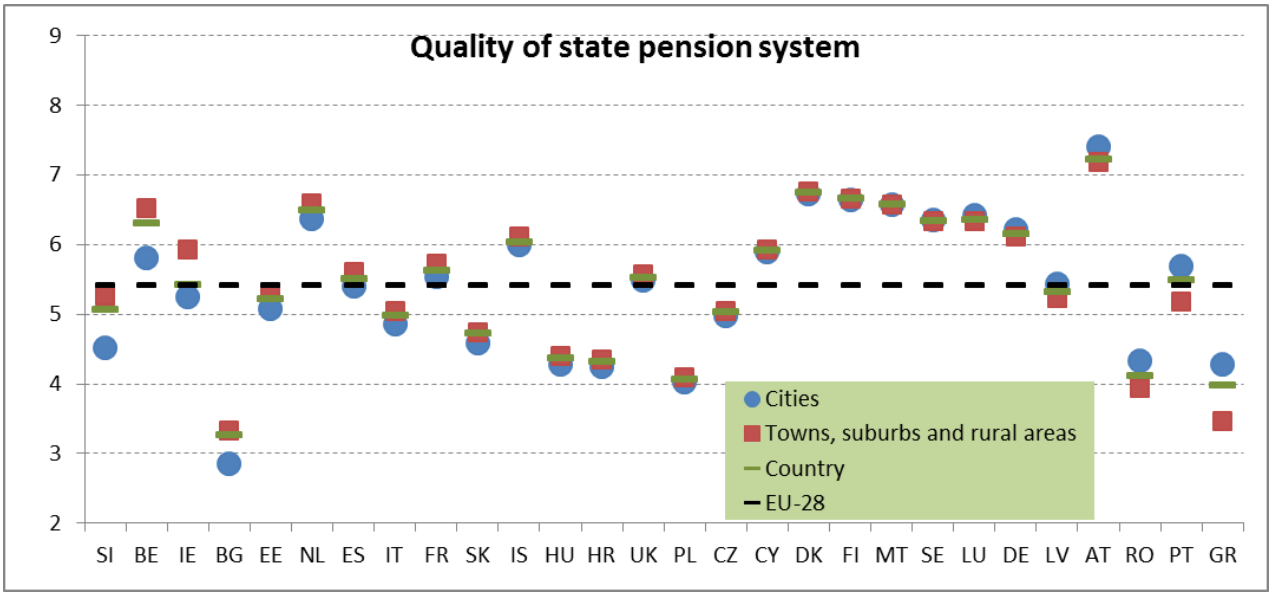

Figure 17. Quality of state pension system in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European quality of life survey 2012.

Table 8. Perceived level of quality of public services in European countries with respect to cities and towns, suburbs and rural areas.

Country	Cities	Towns, suburbs and rural areas	Country	EU-28	Cities	Towns, suburbs and rural areas	Country	EU-28	Cities	Towns, suburbs and rural areas	Country	EU-28
	Quality of health services				Quality of education system				Quality of public transport			
AT	8.19	8.00	8.04	6.27	6.88	7.34	7.25	6.28	8.52	6.97	7.27	6.35
BE	7.82	7.70	7.73	6.27	7.18	7.55	7.44	6.28	6.77	6.56	6.62	6.35
BG	4.29	4.70	4.65	6.27	4.23	5.26	5.15	6.28	5.40	5.45	5.45	6.35
CY	5.35	5.38	5.37	6.27	6.08	5.75	5.92	6.28	6.99	6.60	6.81	6.35
CZ	6.74	6.44	6.53	6.27	6.64	6.65	6.64	6.28	6.67	5.87	6.09	6.35
DE	6.69	6.59	6.63	6.27	6.37	6.50	6.45	6.28	7.28	6.76	6.96	6.35
DK	7.57	7.31	7.38	6.27	7.71	7.42	7.51	6.28	6.56	6.40	6.45	6.35
EE	5.39	6.01	5.74	6.27	5.77	6.55	6.20	6.28	6.65	6.11	6.35	6.35
ES	7.03	6.98	7.00	6.27	6.58	6.61	6.59	6.28	7.19	6.61	6.91	6.35
FI	7.21	7.04	7.11	6.27	8.26	8.11	8.18	6.28	7.49	6.50	6.94	6.35
FR	7.00	6.68	6.86	6.27	6.14	6.09	6.12	6.28	6.77	6.25	6.55	6.35
GR	4.54	5.04	4.77	6.27	4.35	4.72	4.52	6.28	5.45	5.11	5.29	6.35
HR	5.49	5.40	5.43	6.27	5.79	6.05	5.97	6.28	6.32	5.63	5.85	6.35
HU	5.15	5.09	5.10	6.27	5.61	5.78	5.74	6.28	5.35	5.58	5.52	6.35
IE	4.68	5.16	4.79	6.27	6.51	7.06	6.64	6.28	6.04	6.51	6.15	6.35
IS	7.49	6.79	7.26	6.27	7.50	7.64	7.55	6.28	5.46	6.38	5.77	6.35
IT	5.57	5.47	5.51	6.27	5.70	5.75	5.73	6.28	5.44	5.37	5.39	6.35
LU	7.52	7.44	7.46	6.27	6.80	6.46	6.51	6.28	8.10	7.37	7.51	6.35
LV	5.17	5.14	5.15	6.27	5.62	6.04	5.87	6.28	6.98	6.22	6.52	6.35
MT	7.31	7.20	7.25	6.27	7.60	7.64	7.62	6.28	4.09	4.02	4.06	6.35
NL	7.17	7.19	7.18	6.27	6.83	6.99	6.91	6.28	6.74	6.49	6.61	6.35
PL	4.52	4.77	4.69	6.27	5.75	6.04	5.95	6.28	5.87	5.62	5.70	6.35

PT	5.58	5.37	5.50	6.27	5.88	5.60	5.77	6.28	6.33	5.08	5.85	6.35
RO	4.57	4.73	4.66	6.27	4.96	5.36	5.17	6.28	6.23	6.19	6.21	6.35
SE	7.30	7.33	7.31	6.27	7.12	6.99	7.04	6.28	7.03	6.61	6.78	6.35
SI	6.13	6.42	6.36	6.27	6.58	6.90	6.83	6.28	6.80	6.03	6.20	6.35
SK	4.93	4.84	4.86	6.27	5.70	5.74	5.73	6.28	6.40	5.52	5.67	6.35
UK	6.86	7.07	6.95	6.27	6.76	6.91	6.82	6.28	6.69	6.57	6.64	6.35
	Quality of child-care services				**Quality of long-term care services**				**Quality of social municipal housing**			
AT	6.68	7.40	7.28	6.21	6.34	7.18	7.05	5.84	7.40	7.18	7.22	5.42
BE	6.48	6.91	6.78	6.21	6.93	7.15	7.09	5.84	5.80	6.52	6.31	5.42
BG	4.68	5.29	5.22	6.21	3.44	3.89	3.84	5.84	2.86	3.33	3.26	5.42
CY	7.51	6.80	7.16	6.21	5.99	5.91	5.95	5.84	5.89	5.92	5.90	5.42
CZ	6.67	6.63	6.64	6.21	5.77	6.02	5.95	5.84	4.98	5.04	5.03	5.42
DE	6.51	6.72	6.64	6.21	6.23	6.50	6.40	5.84	6.21	6.12	6.15	5.42
DK	7.36	7.19	7.24	6.21	6.81	6.64	6.70	5.84	6.72	6.76	6.75	5.42
EE	5.97	6.47	6.26	6.21	5.05	5.48	5.31	5.84	5.08	5.32	5.21	5.42
ES	6.46	6.51	6.49	6.21	6.10	6.21	6.15	5.84	5.40	5.60	5.50	5.42
FI	7.77	7.65	7.70	6.21	6.29	6.39	6.35	5.84	6.63	6.67	6.65	5.42
FR	6.28	6.28	6.28	6.21	6.56	6.47	6.52	5.84	5.54	5.73	5.62	5.42
GR	4.78	5.00	4.87	6.21	4.43	4.53	4.47	5.84	4.28	3.47	3.97	5.42
HR	6.06	6.14	6.11	6.21	4.94	5.37	5.24	5.84	4.25	4.34	4.31	5.42
HU	5.44	5.78	5.70	6.21	5.19	5.21	5.20	5.84	4.29	4.39	4.37	5.42
IE	5.61	6.77	5.92	6.21	4.75	5.82	5.03	5.84	5.25	5.92	5.42	5.42
IS	7.36	7.53	7.42	6.21	6.22	6.51	6.32	5.84	6.00	6.11	6.04	5.42
IT	5.75	5.77	5.76	6.21	5.15	5.21	5.18	5.84	4.86	5.05	4.98	5.42
LU	7.51	7.36	7.38	6.21	7.56	7.57	7.57	5.84	6.42	6.34	6.35	5.42
LV	5.61	6.09	5.92	6.21	4.86	5.31	5.18	5.84	5.44	5.24	5.31	5.42
MT	7.87	7.55	7.71	6.21	7.56	7.04	7.30	5.84	6.57	6.57	6.57	5.42
NL	6.75	7.00	6.89	6.21	6.55	6.72	6.64	5.84	6.37	6.58	6.48	5.42
PL	5.35	5.58	5.50	6.21	4.76	4.95	4.89	5.84	4.02	4.09	4.07	5.42
PT	6.24	5.79	6.06	6.21	5.62	5.30	5.48	5.84	5.69	5.17	5.48	5.42
RO	5.11	4.93	5.01	6.21	4.80	4.53	4.65	5.84	4.33	3.93	4.11	5.42

SE	7.32	7.26	7.28	6.21	5.77	5.58	5.64	5.84	6.35	6.33	6.34	5.42
SI	5.89	6.87	6.65	6.21	5.35	6.35	6.12	5.84	4.51	5.27	5.07	5.42
SK	6.16	5.86	5.91	6.21	5.43	5.01	5.09	5.84	4.59	4.75	4.72	5.42
UK	6.22	6.43	6.31	6.21	5.74	5.83	5.78	5.84	5.49	5.58	5.52	5.42
	Quality of state pension system											
AT	6.66	6.15	4.83	6.24								
BE	5.85	5.84	4.83	5.84								
BG	2.88	2.89	4.83	2.89								
CY	3.82	4.88	4.83	4.30								
CZ	4.19	4.14	4.83	4.15								
DE	5.23	5.27	4.83	5.25								
DK	6.35	6.35	4.83	6.35								
EE	3.65	4.15	4.83	3.93								
ES	5.45	5.18	4.83	5.31								
FI	6.87	6.57	4.83	6.70								
FR	5.12	4.83	4.83	4.99								
GR	3.14	3.31	4.83	3.22								
HR	3.46	3.92	4.83	3.78								
HU	3.90	3.74	4.83	3.78								
IE	5.29	5.60	4.83	5.36								
IS	5.45	5.19	4.83	5.36								
IT	4.72	4.72	4.83	4.72								
LU	7.30	7.59	4.83	7.55								
LV	3.44	3.37	4.83	3.40								
MT	7.30	7.18	4.83	7.24								
NL	6.62	6.66	4.83	6.64								
PL	3.31	3.44	4.83	3.40								
PT	3.98	3.80	4.83	3.91								
RO	4.47	3.87	4.83	4.14								
SE	5.52	5.20	4.83	5.32								
SI	3.58	4.17	4.83	4.04								

SK	3.96	3.54	4.83	3.61								
UK	5.03	5.13	4.83	5.07								

Source: own computations based on the European Quality of Life Survey 2012.

Due to low response rate (see Table A1 in the Appendix) we decided to exclude from the further analyses questions related to the quality of child-care services (q28d), long-term care services (q28e), social/municipal housing (q28f) and state pension system (q28g). Missing data regarding the above enumerated services might reflect lack of item relevance to residents who did not rely on these services and therefore had no opinions about them. As a consequence the CI will comprise questions related to the quality of health services, education system and public transport. Three remaining indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the quality of public service concept. As our aim was to construct a composite indicator measuring the level of quality of public service in (1) cities and (2) towns, suburbs and rural areas (Index of Quality of Public Service (IQPS)), we performed the data consistency check using data aggregated at the (1) cities and (2) towns, suburbs and rural areas (i.e. data presented in Table 8). Because we assume that the IQPS is more formative than reflective in nature, after analysing the correlation matrix, principal component analysis (PCA) was used.

The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at either 0.05 or 0.01 significance level (

Table 9). The results of the PCA confirm the one-dimensionality of the IQPS (see Table 10). The KMO amounted to 0.540, the first eigenvalue amounted to 2.065, the first principal component explained 68.83 % of the variance observed in the seven indicators and all loadings related to the first principal component were positive.

Table 9. Correlation matrix — Index of Quality of Public Service

	Q58a	Q58b	Q58c		Correlation with IQPS	Importance (rescaled to unity sum r^2)
Q58a	1.000				0.935	0.38
Q58b	0.815**	1.000			0.863	0.35
Q58c	0.442**	0.286*	1.000		0.666	0.27

* significant at 0.05; ** significant at 0.01

Source: own computations based on the European Quality of Life Survey 2012.

Table 10. PCA — Index of Quality of Public Service

Variable	Communalities	Loadings of the first PC
Q58a	.883	.940
Q58b	.788	.888
Q58c	.393	.627
KMO 0.540		
Eigenvalues 2.065.768.167		
Variance explained by the first principal component 68.83 %		

Source: own computations based on the European Quality of Life Survey 2012.

Having confirmed one-dimensionality of the quality of public service concept, in the following step, we aggregated variables into the IQPS. We again used arithmetic average with equal weights. The scores of the IQPS are presented in Table 11 and illustrated in Figure 18.

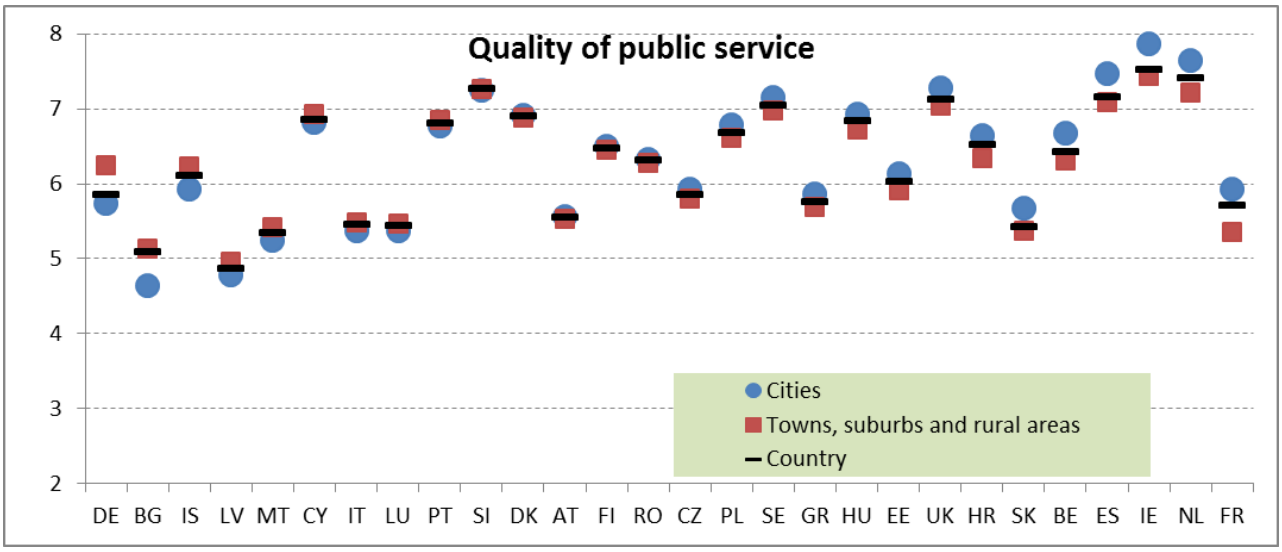

Figure 18. Index of Quality of Public Service in European (1) countries, (2) cities, and (3) towns, suburbs and rural areas — sorted according to the differences between (2) cities, and (3) towns, suburbs and rural areas with worse city performance on the left end and better city performance on the right.

Source: own computations based on the European Quality of Life Survey 2012.

With respect to within-country variability of the quality of public service, it is noticeable that there are countries in which we observe almost no differences in the level of this phenomenon (middle part of Figure 18). However, there are also countries in which considerable differences with respect to the quality of public service are observed. To these we can include France, the Netherlands, Ireland, Spain and Belgium in which cities performed better than other areas. In Denmark and Bulgaria, the quality of public service is considerably better in towns, suburbs and rural areas.

Table 11. Index of Quality of Public Service — Country, cities and towns, suburbs and rural areas scores

Country label	Cities	Towns, suburbs and rural areas	Country
LV	4.778	4.958	4.861
BG	4.642	5.139	5.085
MT	5.252	5.425	5.346
SK	5.673	5.369	5.421
LU	5.379	5.475	5.444
IT	5.368	5.482	5.453
AT	5.569	5.530	5.545
FR	5.931	5.352	5.706
GR	5.868	5.695	5.750
CZ	5.922	5.800	5.850
DE	5.744	6.243	5.858
EE	6.139	5.910	6.031
IS	5.937	6.224	6.098
RO	6.333	6.283	6.308
BE	6.684	6.318	6.420
FI	6.500	6.452	6.465
HR	6.639	6.342	6.513
PL	6.781	6.616	6.681
PT	6.772	6.849	6.806
HU	6.935	6.731	6.834
CY	6.820	6.937	6.859
DK	6.914	6.888	6.902
SE	7.149	6.975	7.043
UK	7.279	7.043	7.116
ES	7.474	7.091	7.159
SI	7.255	7.271	7.266
NL	7.651	7.218	7.413
IE	7.864	7.437	7.520

Source: own computations based on the European Quality of Life Survey 2012.

To verify if the IQPS is statistically balanced, we calculated the correlation coefficients between the variables and the IQPS (see

Table 9, column Correlation with IQPS). The importance of each variable comprised in the IQPS is presented in Table 9 (column Importance). As can be seen, the IQPS is well balanced with one

exception. Variable Q58c corresponding to quality of public transport stands out, implying that its influence on the IQPS is almost lower than the remaining two variables.

Finally, to assess the robustness of the IQPS with regard to the normative assumption related to the compensability and importance of variables, which was made during the conceptualisation step, we performed uncertainty analysis. The aim of this analysis was to measure the overall variation in IQPS scores and ranks resulting from the uncertainty linked to the assumptions made (see Figure 19 and Figure 20).

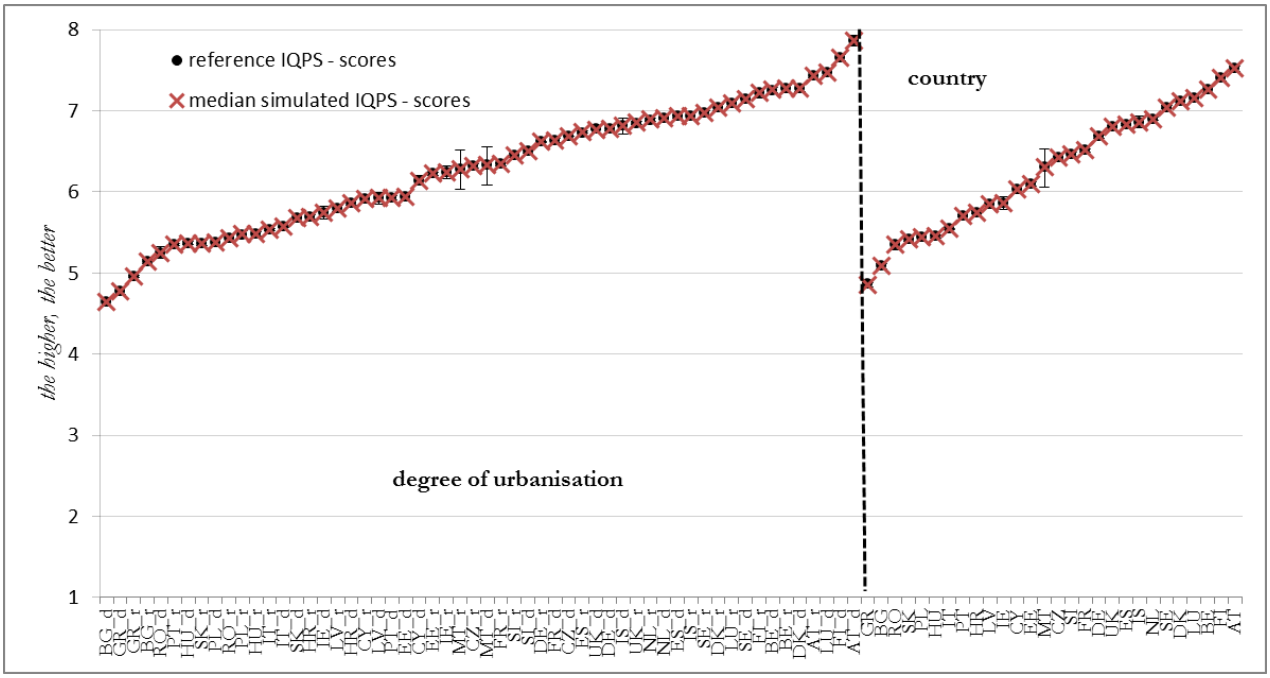

Figure 19. Uncertainty analysis — Index of Quality of Public Service scores.
Source: own computations based on the European Quality of Life Survey 2012.

The same as in the case of the IIT also in the case of the IPQS the median simulated scores are almost as the reference scores. The same applies to IPQS ranks. The median simulated ranks are almost as the reference ranks. Then, the length of the confidence intervals computed as (median – 5th percentile; median + 95th percentile) is negligible with respect to both scores and ranks. These

results show that the IPQS is robust to the methodological assumptions made during the construction process.

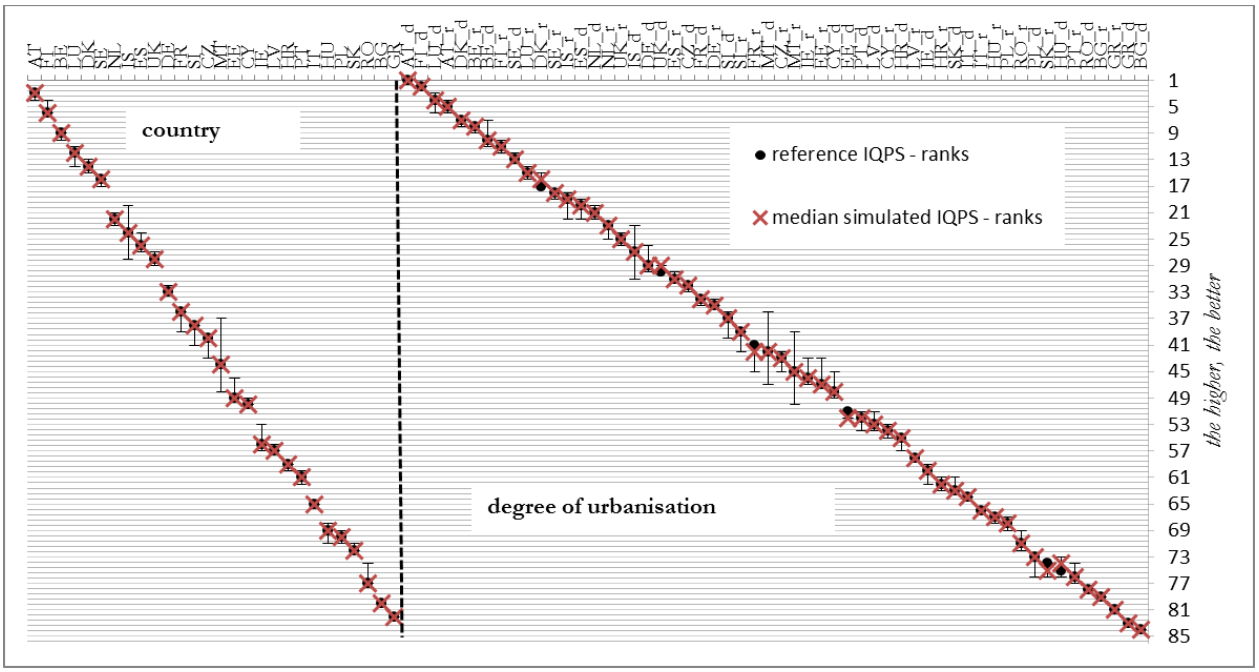

Figure 20. Uncertainty analysis — Index of Quality of Public Service ranks.

Source: own computations based on the European Quality of Life Survey 2012

In general, the correlation analyses and the PCA showed that both concepts, namely the institutional trust measured by the Index of the Institutional Trust and the quality of public service measured by the Index of Quality of Public Service, are one-dimensional. In addition, almost equal principal components loadings and importance imply that applying an equal weighting scheme, the one we applied, was valid.

6. Trust, attitude towards free-riding and quality of governance in the EU cities

6.1. Polish cities

6.1.1. Polish Social Diagnosis survey

The Social Diagnosis survey ([5]) is aimed at providing comparable and reliable data on living conditions and quality of life quality of life in Poland. The survey is based on panel research and investigates households and their members aged 16 and above using two separate questionnaires — for a household and individual. Provided that the weights are used (different for cross-sectional and panel data), the survey is representative with respect to NUTS2, gender, age, education, social and professional status, marital status, household size, place of residence, main source of income, and household type (established on the basis of the number of families and biological family type). Upon completion of the fieldwork, the total number of households interviewed was 12,387 in 2011 and 12,355 in 2013, which resulted in 26,453 and 26,307 individuals surveyed in 2011 and 2013 (Czapinski 2011). We identified the Social Diagnosis survey as the only one among country-specific household surveys providing us with not only city identifier but also with sufficient sample size at the city level. We recall, however, that due to sampling strategy these city samples are not fully representative with respect to other descriptive characteristics of citizens. The sample sizes per city and the number of 'don't know' answers as well as refusals referring to each analysed question are presented in the Appendix in Table A2.

Based on data from the Social Diagnosis Survey, we measure two phenomena: generalised trust and attitude towards free-riding using two last waves (2011 and 2013) of the survey to increase precision. Generalised trust is measured with a single question and attitude towards free-riding is measured

([5]) http://www.diagnoza.com/

with a composite indicator, i.e. Index of Free-Riding computed as the arithmetic average with equal weighting. The aim is to show variability of the phenomena in the 27 of the largest Polish cities.

6.1.2. General trust in Polish cities

In order to measure general trust in Polish cities, answers to the following question were analysed: 'Generally, do you believe that you can trust most people, or do you think you can never be too careful?' Possible answers were following: '(1) you can trust most people and (2) you can never be too careful'. We compared the situation in Polish cities using percentages of people who claimed that most people can be trusted (Table 12 and Figure 21).

The results show that people living in Torun, Wroclaw and Ruda Slaska trust other people the most and habitants of Jaworzno trust other people the least (measured by the percentage of people who trust others). Among the highest scoring cities are the capital Warsaw and Cracow.

Table 12. Percentages of people who claim that most people can be trusted, by city

City	You can trust most people	You can never be too careful	Difficult to say
Bialystok	10.5 %	81.4 %	8.2 %
Bielsko-Biala	17.2 %	74.3 %	8.4 %
Bydgoszcz	15.4 %	75.8 %	8.8 %
Czestochowa	10.3 %	86.0 %	3.7 %
Gdansk	15.1 %	75.8 %	9.1 %
Gdynia	16.6 %	76.0 %	7.4 %
Gliwice	10.6 %	84.6 %	4.8 %
Gorzow Wielkopolski	10.0 %	82.1 %	7.9 %
Jaworzno	1.0 %	93.8 %	5.3 %
Katowice	15.0 %	75.1 %	9.9 %
Kielce	12.9 %	76.8 %	10.3 %
Krakow	19.6 %	71.8 %	8.6 %
Lodz	9.5 %	81.6 %	8.9 %
Lublin	13.4 %	79.3 %	7.3 %
Olsztyn	17.8 %	68.9 %	13.3 %
Opole	14.4 %	81.0 %	4.6 %
Poznan	14.2 %	79.2 %	6.6 %
Radom	9.0 %	83.6 %	7.4 %
Ruda Slaska	19.6 %	73.4 %	7.0 %
Sosnowiec	11.3 %	74.9 %	13.8 %
Szczecin	14.9 %	75.1 %	10.0 %
Torun	20.3 %	74.3 %	5.4 %
Walbrzych	7.0 %	81.1 %	11.9 %
Warszawa	18.3 %	74.2 %	7.5 %
Wloclawek	15.3 %	69.7 %	15.0 %
Wroclaw	20.3 %	73.0 %	6.7 %
Zabrze	17.4 %	78.6 %	4.1 %
Poland	**12.8 %**	**77.2 %**	**10.0 %**
Min	1.0 %	69.7 %	
Max	20.3 %	93.8 %	

Source: own computation based on the Social Diagnosis survey 2013 and 2011.

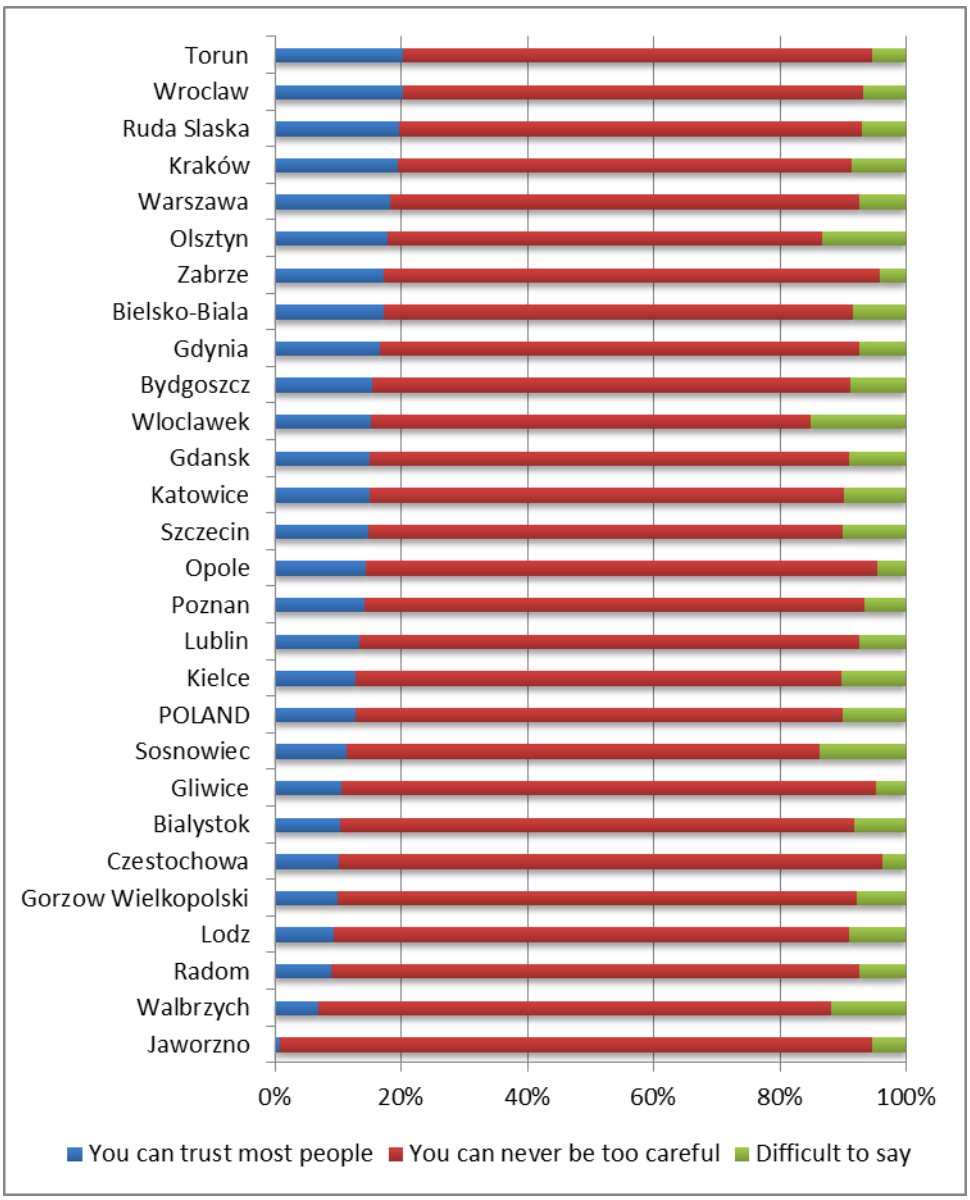

Figure 21. Percentages of people who claim that most people can be trusted, by city.

Source: own computation based on the Social Diagnosis survey 2013 and 2011.

6.1.3. Attitude towards free-riding in Polish cities

In order to construct the Index of Free-Riding five indicators were used. They are percentages of people who, in a given city, care 'to some extent' and who 'care very much' that certain free-riding

activities are not acceptable. The list of activities that were assessed is presented in Table 13 and the percentages of people who care are presented in Table 14.

Table 13. Questions measuring attitude towards free-riding

Label	Question
FR1	Someone pays lower taxes than he/she should
FR2	Someone avoids paying the fares for public transport (e.g. buses, trains)
FR3	Someone unjustly draws unemployment benefit
FR4	Someone unjustly receives disability benefits (on the grounds of being unable to work)
FR5	Someone files an insurance claim under false pretences

Table 14. Percentage of people who in a given city care 'to some extent' and who 'care very much'.

	someone pays lower taxes than he/she should	someone avoids paying the fares for public transport (e.g. buses, trains)	someone unjustly draws unemployment benefit	someone unjustly receives disability benefits (on the grounds of being unable to work)	someone files an insurance claim under false pretences	Index of Free-Riding
Bialystok	49.3 %	49.5 %	59.8 %	61.4 %	55.1 %	55.03
Bielsko-Biala	50.5 %	53.6 %	55.5 %	53.6 %	53.0 %	53.23
Bydgoszcz	50.3 %	43.7 %	55.5 %	60.3 %	56.6 %	53.27
Czestochowa	47.8 %	45.5 %	53.3 %	57.8 %	53.1 %	51.52
Gdansk	55.0 %	48.7 %	62.5 %	65.8 %	59.9 %	58.36
Gdynia	51.8 %	47.1 %	60.7 %	68.2 %	65.3 %	58.62
Gliwice	44.0 %	49.2 %	62.0 %	64.8 %	60.4 %	56.06
Gorzow Wielkopolski	47.1 %	52.9 %	62.6 %	62.4 %	58.5 %	56.71
Jaworzno	55.7 %	33.6 %	64.0 %	67.8 %	61.3 %	56.48
Katowice	50.6 %	57.0 %	66.9 %	68.2 %	66.6 %	61.84
Kielce	56.9 %	57.2 %	58.9 %	64.1 %	62.4 %	59.91
Krakow	57.2 %	53.9 %	61.8 %	63.6 %	63.2 %	59.93
Lodz	39.3 %	37.2 %	46.0 %	50.3 %	45.2 %	43.61
Lublin	52.8 %	52.1 %	66.4 %	70.1 %	65.5 %	61.37
Olsztyn	42.1 %	42.3 %	51.6 %	50.9 %	45.4 %	46.45
Opole	65.3 %	55.9 %	70.9 %	66.5 %	61.0 %	63.91
Poznan	55.1 %	48.6 %	66.9 %	65.1 %	65.4 %	60.23
Radom	44.3 %	43.9 %	54.3 %	57.5 %	52.9 %	50.59
Ruda Slaska	50.3 %	52.4 %	62.5 %	56.5 %	54.7 %	55.27
Sosnowiec	41.4 %	45.8 %	55.4 %	52.5 %	52.5 %	49.51

Szczecin	44.4 %	41.5 %	58.6 %	60.4 %	54.3 %	51.82
Torun	59.9 %	53.4 %	64.1 %	64.2 %	58.3 %	60.00
Walbrzych	37.0 %	49.2 %	47.0 %	64.1 %	38.0 %	40.32
Warszawa	60.4 %	54.2 %	67.5 %	68.8 %	66.6 %	47.07
Wloclawek	40.9 %	31.0 %	42.7 %	47.0 %	40.1 %	63.50
Wroclaw	53.9 %	46.1 %	63.9 %	62.8 %	59.2 %	57.18
Zabrze	45.8 %	40.3 %	51.4 %	51.3 %	51.9 %	48.16
Poland	**43.2 %**	**40.8 %**	**51.7 %**	**52.1 %**	**49.0 %**	**47.38**
min	37.0 %	31.0 %	42.7 %	47.0 %	38.0 %	
max	65.3 %	57.2 %	70.9 %	70.1 %	66.6 %	

Source: own computation based on the Social Diagnosis 2013 and 2011

Estimates for Poland are computed from a nationwide sample with the use of proper weights

In the data set all indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data by measuring the attitude towards free-riding. As our aim was to construct a composite indicator to measure the level of civic moralities in Polish cities (Index of Free-Riding [IFR]), we performed a data consistency check using data aggregated at the cities level (i.e. data presented in Table 14). Because we assume that the ICM is more formative than reflective in nature, after analysing the correlation matrix, principal component analysis (PCA) was used.

Table 15. Correlation matrix — Index of Free-Riding

	FR1	FR2	FR3	FR4	FR5		Correlation with IFR	**Importance (rescaled to unity sum r^2)**
FR1	1.000						0.867	0.20
FR2	0.538*	1.000					0.748	0.15
FR3	0.811*	0.630*	1.000				0.951	0.24
FR4	0.644*	0.553*	0.799*	1.000			0.862	0.19
FR5	0.772*	0.554*	0.894*	0.776*	1.000		0.923	0.22

* significant at 0.01.

Source: own computation based on the Social Diagnosis survey 2013 and 2011.

The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at the 0.01 significance level (Table 15). The results of the PCA confirm the one-dimensionality of the IFR (see Table 16). The KMO amounted to 0.869, the first eigenvalue amounted to 3.814, the first principal component explained 76.27 % of the variance observed in the five indicators and all loadings related to the first principal component were positive.

Table 16. PCA — Index of Free-Riding

Variable	Communalities	Loadings of the first PC
FR1	.753	.926
FR2	.537	.901
FR3	.912	.468
FR4	.755	.926
FR5	.857	.934
KMO 0.869		
Eigenvalues 3.814.544.356.191.095		
Variance explained by the first principal component 76.27 %		

Source: own computation based on the Social Diagnosis survey 2013 and 2011

In general, the correlation table and the PCA show that the attitude towards the free-riding concept is coherent. Then, the balanced contribution of the variables to the IFR scores justifies the application of the equal weighting scheme.

Having confirmed one-dimensionality of the attitude towards the free-riding concept, in the following step, we aggregated variables into the IFR. We again used an arithmetic average with equal weights. The scores of the IFR are presented in Table 14, column IFR and illustrated in Figure 22).

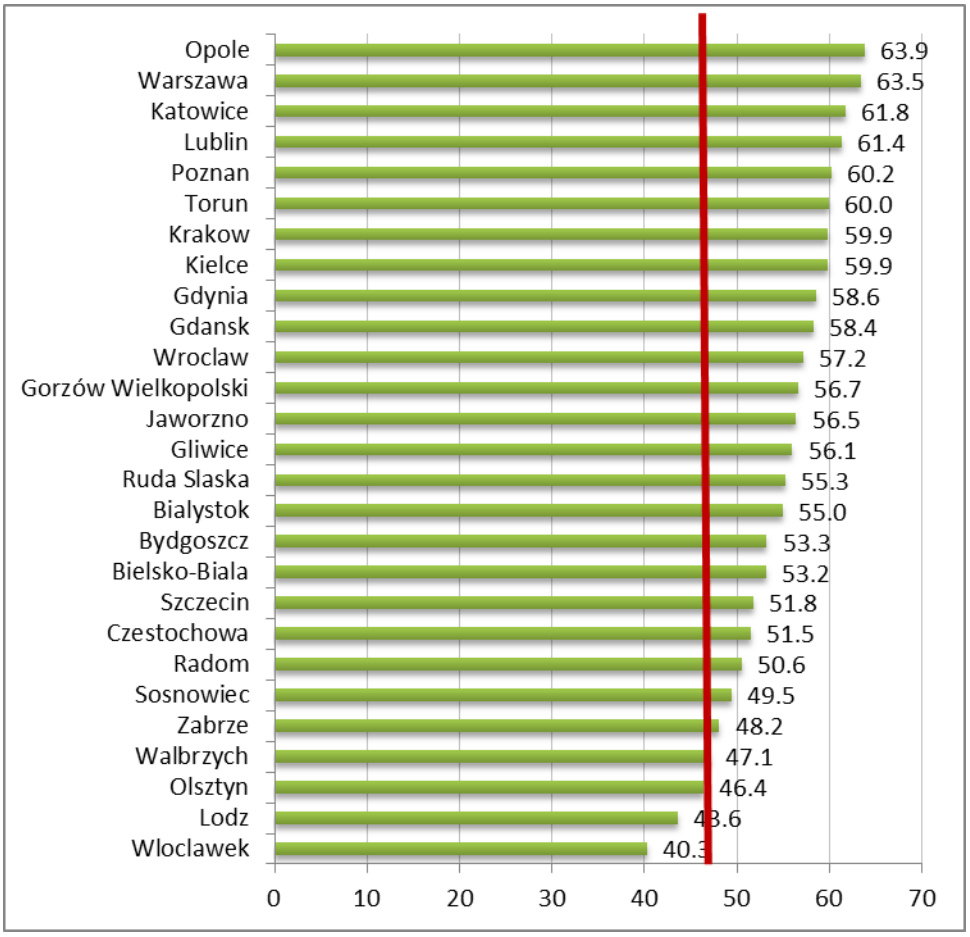

Figure 22. Index of Free-Riding, Polish cities.
Estimate for Poland is computed from the nation-wide sample with the use of proper weights

Source: own computation based on the Social Diagnosis survey 2013 and 2011.

As can be seen, the places that scored best with respect to attitude towards freeloading are: Opole, Warsaw, Katowice, Lublin and Poznan, who all scored at least 60.0 in the IFR. The worst scoring — below the country average 47.27 — are Wloclawek, Lodz, Olsztyn and Walbrzych.

To verify if the IFR is statistically well balanced, we calculated the correlation coefficients between the variables and the IFR (see Table 15, column Correlation with ICM). The importance of each variable comprised in the IFR is presented in Table 15, (column Importance). As can be seen, the IFR is not perfectly balanced but the contribution the variables provide to the IFR is still acceptable.

Nevertheless, the variable that contributes the least to the IFR is FR2. This variable relates to free-riding with respect to the fares for public transport, which, in turn, reflects far more minor infraction than the other questions (i.e. the monetary gain is very small compared to the other questions). The variables which contribute the most are: FR3 and FR5, which relate to unjust drawing of unemployment benefit and filing an insurance claim under false pretences, respectively.

Finally, to assess the robustness of the IFR with regard to the normative assumption related to the compensability and importance of variables, which was made during the conceptualisation step, we performed uncertainty analysis. The aim of this analysis was to measure the overall variation in IFR scores and ranks resulting from the uncertainty linked to the assumptions — about the aggregation method and the aggregation weights — made. Thanks to this, the final scores and ranks are presented with uncertainty expressed by the error terms (5th and 95th percentiles) (see Figure 23 and Figure 24).

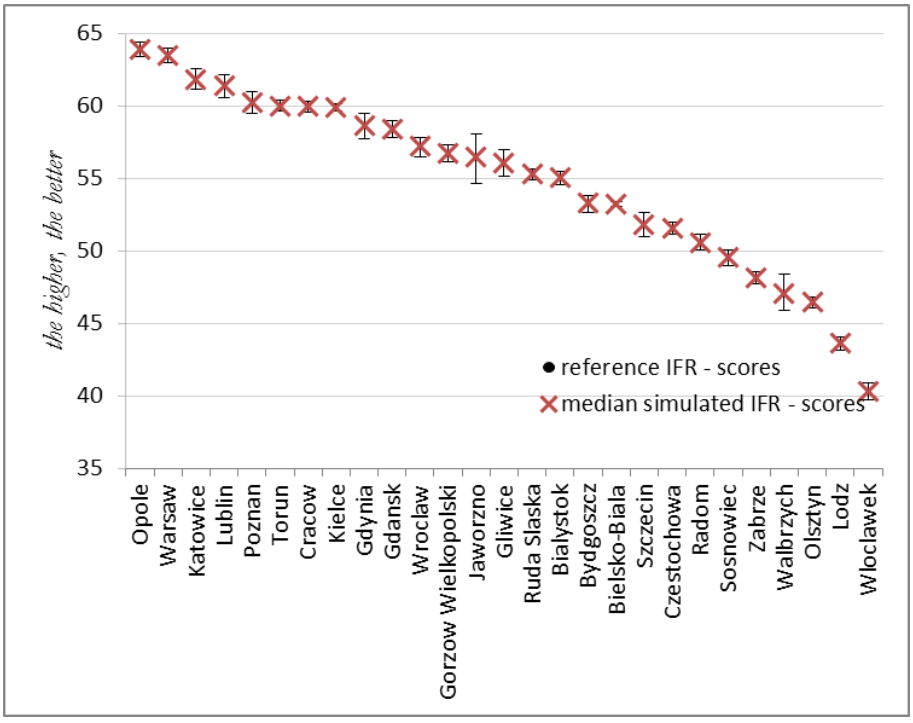

Figure 23. Uncertainty analysis — Index of Free-Riding scores.
Source: own computation based on the Social Diagnosis survey 2013 and 2011.

In the case of the IFR, the median simulated scores are almost the same as the reference scores. The same applies to the IFR ranks. The median simulated ranks are almost always equal to the reference ranks. The maximum difference observed amounts to 1 position and relates to Kielce. Then, the length of the confidence intervals computed as (median – 5th percentile; median + 95th percentile) is negligible with respect to scores. The highest length was recorded for Jaworzno and Walbrzych. In the case of ranks, the lengths of the confidence intervals are more diversified with a maximum of five positions — again for Jaworzno. These results show that the IFR scores are robust in terms of the methodological assumptions made during the construction process. The IFR ranks are slightly less robust but still at the acceptable level.

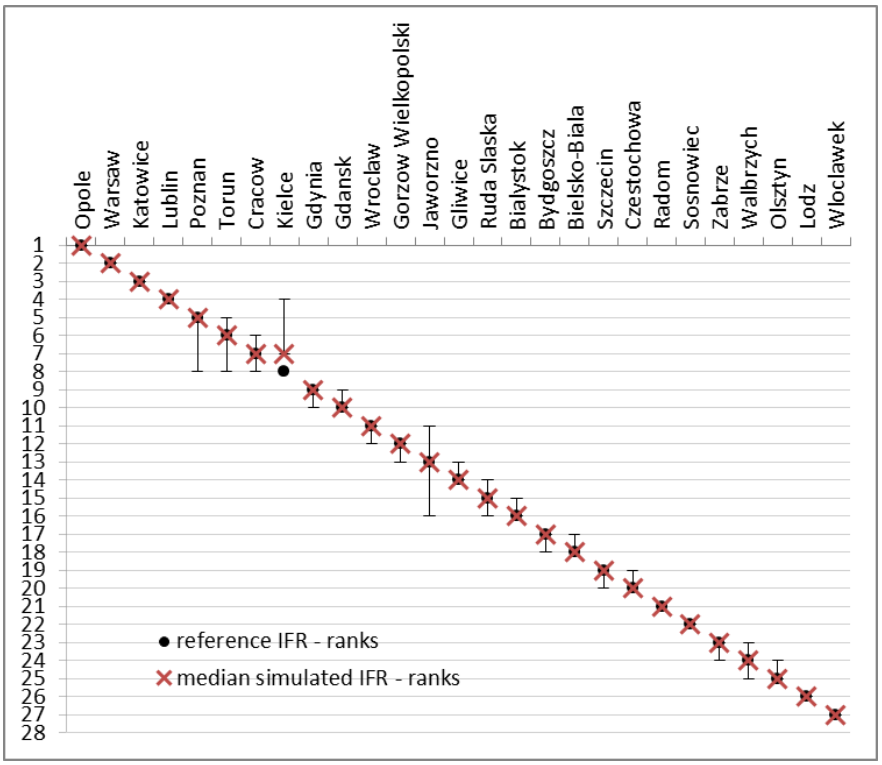

Figure 24. Uncertainty analysis — Index of Free-Riding ranks.
Source: own computation based on the Social Diagnosis survey 2013 and 2011.

6.2. European cities

6.2.1. World Justice Project — The General Population Poll

In the World Justice Project (WJP) two data sources are used — the General Population Poll (GPP) and the qualified respondent's questionnaire. In our project, we use data from the former and that is why we devote the following section to it.

The GPP was aimed at providing information on the experiences and perceptions of ordinary people about their dealings with the government, the police and the courts. It covered issues related to the openness and accountability of the state, the extent of corruption and the magnitude of common crimes to which the general public is exposed (Botero & Ponce 2010; The World Justice Project 2014).

The data we use were carried out in 2011-2013. In each country a probability sample of 1,000 respondents was drawn from three largest cities in a way to ensure representativeness (with respect to basic demographic features) of population in the country. This type of sampling procedure give us a unique opportunity to delve into the city specific circumstances related to the quality of institutions and local governance. We are aware, however, of the limitations of our approach. Although the data are originally representative at the country level and as such are presented in the WJP Rule of Law Index, we use them to investigate phenomena at city level. Although with this approach we cannot provide fully representative results, it should be noted that this is the best achievable solution at the time being, with which we can still enrich our knowledge about institutions-related phenomena in the urban perspective. Nevertheless, to overcome this issue, we verified the usefulness of data in city analysis focusing mainly on the sample sizes and accuracy of the estimates. We considered also application of the small area estimation technique but in our study

its application seemed hardly feasible. Nonetheless, for further research calculation based on the pooled (more than one wave) data set can be considered as a practical and feasible solution.

Based on data from the Rule of Law project, we propose to construct composite indicators (CI) related to:

1. law enforcement (conducted by institution and by citizens)
2. institutional trust
3. corruption
4. paying bribes
5. performance of local government.

6.2.2. Law enforcement — Institutions and citizens

In order to construct the Index of Law Enforcement eight indicators were used. These questions can be answered using one of four answer categories: very likely, likely, unlikely and very unlikely. The list of questions that were assessed is presented in Table 17.

Table 17. Questions measuring law enforcement

Label	Question
q9a	Please assume that one day the president decides to adopt a policy that is clearly against the [COUNTRY's] constitution: How likely is the national congress/parliament to be able to stop the president's illegal actions?
q9b	Please assume that one day the president decides to adopt a policy that is clearly against the [COUNTRY's] constitution: How likely are the courts to be able to stop the president's illegal actions?
q10a	Assume that a government officer makes a decision that is clearly illegal and unfair, and people complain against this decision before the judges. In practice, how likely is that the judges will be able to stop the illegal decision?
q12a	If someone commits a homicide in your neighbourhood, how likely is that the criminal is prosecuted and convicted?
q12b	If a government officer is found unlawfully issuing a government license for personal benefit, how likely is this officer to lose his job?
q12c	If a police chief is found taking money from a criminal organization, such as a drug cartel or an arms smuggler, how likely is this officer to be sent to jail?
q13a	Think about business owners engaging in small operations (e.g. selling food in a small establishment). How likely do you think it is that these people would be fined if they engage in the business operation without the required documentation?
q13b	Think about business owners engaging in small operations (e.g. selling food in a small establishment). How likely do you think it is that these people would be fined if they do not register to pay taxes when they should?

In order to assess the city-level law enforcement, the percentages of people who in a given city claim that certain behaviour is 'likely' or 'very likely' are computed (see Table 18).

Table 18. Percentages of people who in a given city claim that certain behaviour is 'likely' or 'very likely'

City	q9a	q9b	q10a	q12a	q12b	q12c	q13a	q13b
	the President decides to adopt a policy that is clearly against the [COUNTRY] Constitution: It is likely or very likely that the national congress/parliament will be able to stop the President's illegal actions	the President decides to adopt a policy that is clearly against the [COUNTRY] Constitution: It is likely or very likely that the courts will be able to stop the President's illegal actions	a government officer makes a decision that is clearly illegal and unfair, and people complain against this decision before the judges. It is likely or very likely that the judges are able to stop the illegal decision	If someone commits a homicide in your neighbourhood, it is likely or very likely that the criminal is prosecuted and convicted	If a government officer is found unlawfully issuing a government license for personal benefit, it is likely or very likely that this officer will lose his job?	If a police chief is found taking money from a criminal organization, such as a drug cartel or an arms smuggler, it is likely or very likely that this officer will be sent to jail?	It is likely or very likely that business owners engaging in small operations (for example, selling food in a small establishment) would be fined if they engage in the business operation without the required documentation	It is likely or very likely that business owners engaging in small operations (for example, selling food in a small establishment) would be fined if they do not register to pay taxes when they should
Belgium_Antwerp	78 %	68 %	70 %	93 %	46 %	55 %	79 %	77 %
Belgium_Charleroi	68 %	60 %	67 %	89 %	58 %	65 %	67 %	79 %
Belgium_Ghent	83 %	67 %	74 %	96 %	53 %	61 %	79 %	77 %
Bulgaria_Plovdiv	58 %	51 %	38 %	86 %	35 %	26 %	87 %	86 %
Bulgaria_Sofia	61 %	46 %	40 %	65 %	30 %	16 %	85 %	85 %

Bulgaria_Varna	88 %	83 %	72 %	96 %	55 %	27 %	98 %	99 %
Croatia_Rijeka	26 %	37 %	19 %	97 %	39 %	42 %	82 %	78 %
Croatia_Split	37 %	45 %	15 %	99 %	39 %	49 %	78 %	75 %
Croatia_Zagreb	37 %	38 %	23 %	97 %	43 %	50 %	83 %	79 %
Czech Republic_Brno	73 %	71 %	56 %	94 %	45 %	46 %	85 %	85 %
Czech Republic_Ostrava	65 %	55 %	49 %	94 %	36 %	45 %	88 %	91 %
Czech Republic_Prague	65 %	62 %	54 %	93 %	41 %	46 %	83 %	82 %
Denmark_Aarhus	89 %	83 %	83 %	96 %	83 %	84 %	83 %	83 %
Denmark_Copenhagen	91 %	87 %	82 %	98 %	83 %	82 %	89 %	90 %
Denmark_Odense	90 %	83 %	83 %	97 %	82 %	84 %	87 %	87 %
Estonia_Tallinn	75 %	77 %	77 %	95 %	73 %	72 %	89 %	87 %
Estonia_Tartu	83 %	83 %	81 %	94 %	81 %	80 %	90 %	85 %
Finland_Helsinki	81 %	77 %	77 %	95 %	71 %	74 %	83 %	80 %
Finland_Tampere	82 %	70 %	69 %	92 %	64 %	63 %	81 %	81 %
Finland_Turku	84 %	80 %	76 %	95 %	60 %	73 %	83 %	83 %
France_Lyon	67 %	43 %	70 %	95 %	62 %	75 %	65 %	82 %
France_Marseille	64 %	36 %	58 %	90 %	57 %	62 %	67 %	81 %
France_Paris	67 %	45 %	69 %	89 %	61 %	69 %	62 %	81 %
Germany_Berlin	71 %	69 %	74 %	92 %	49 %	63 %	69 %	83 %
Germany_Hamburg	79 %	76 %	75 %	94 %	58 %	71 %	68 %	82 %
Germany_Munich	77 %	72 %	75 %	94 %	59 %	67 %	75 %	81 %
Greece_Athens	40 %	41 %	51 %	89 %	47 %	46 %	91 %	92 %
Greece_Patras	38 %	38 %	51 %	91 %	48 %	43 %	94 %	97 %
Greece_Salonica	41 %	42 %	50 %	91 %	48 %	46 %	94 %	95 %
Hungary_Budapest	59 %	81 %	86 %	97 %	69 %	77 %	93 %	94 %
Hungary_Debrecen	60 %	59 %	58 %	98 %	92 %	93 %	82 %	91 %
Italy_Milan	60 %	58 %	67 %	90 %	52 %	69 %	76 %	69 %
Italy_Naples	57 %	54 %	60 %	86 %	41 %	56 %	81 %	74 %
Italy_Rome	55 %	53 %	61 %	93 %	42 %	66 %	80 %	75 %
Netherlands_Amsterdam	82 %	75 %	80 %	91 %	65 %	69 %	78 %	77 %
Netherlands_Rotterdam	79 %	74 %	76 %	92 %	68 %	69 %	80 %	77 %
Netherlands_The Hague	82 %	77 %	83 %	94 %	68 %	68 %	78 %	79 %
Norway_Bergen	85 %	78 %	88 %	96 %	79 %	82 %	80 %	88 %
Norway_Oslo	90 %	84 %	87 %	95 %	80 %	85 %	84 %	87 %
Norway_Trondheim	84 %	78 %	84 %	97 %	72 %	80 %	85 %	88 %
Poland_Cracow	56 %	64 %	74 %	94 %	70 %	46 %	87 %	84 %
Poland_Lodz	83 %	81 %	79 %	97 %	57 %	49 %	85 %	77 %

Poland_Warsaw	65 %	71 %	63 %	95 %	63 %	67 %	91 %	93 %
Portugal_Braga	62 %	50 %	61 %	96 %	39 %	61 %	85 %	82 %
Portugal_Lisbon	62 %	49 %	51 %	92 %	40 %	60 %	89 %	88 %
Portugal_Porto	67 %	51 %	57 %	94 %	43 %	57 %	89 %	86 %
Romania_Bucharest	50 %	54 %	63 %	90 %	68 %	50 %	87 %	90 %
Romania_Cluj-Napoca	47 %	53 %	66 %	92 %	69 %	51 %	85 %	92 %
Romania_Timisoara	49 %	51 %	64 %	89 %	68 %	46 %	88 %	88 %
Slovenia_Ljubljana	53 %	51 %	50 %	63 %	37 %	24 %	44 %	48 %
Slovenia_Maribor	54 %	42 %	54 %	67 %	39 %	31 %	40 %	46 %
Spain_Barcelona	48 %	47 %	48 %	93 %	33 %	44 %	81 %	82 %
Spain_Madrid	47 %	53 %	50 %	93 %	39 %	54 %	80 %	80 %
Spain_Valencia	53 %	51 %	44 %	92 %	36 %	51 %	83 %	83 %
Sweden_Goteborg	67 %	71 %	74 %	84 %	61 %	64 %	78 %	83 %
Sweden_Malmo	71 %	72 %	80 %	80 %	61 %	62 %	73 %	80 %
Sweden_Stockholm	73 %	72 %	73 %	89 %	67 %	70 %	81 %	82 %
United Kingdom_London	73 %	72 %	72 %	86 %	66 %	70 %	78 %	73 %
Min	26 %	36 %	15 %	63 %	30 %	16 %	40 %	46 %
Max	91 %	87 %	88 %	99 %	92 %	93 %	98 %	99 %

Source: own computations based on data from the World Justice Project.

In the data set, all indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the law enforcement concept. As our aim was to construct a composite indicator measuring the level of law enforcement in European cities, we performed a data consistency check using data aggregated at the cities level (i.e. based on the data presented in Table 18). We analysed the correlation matrix and then we conducted a principal component analysis (PCA).

Table 19. Correlation matrix — Law enforcement

	q9a	q9b	q10a	q12a	q12b	q12c	q13a	q13b
q9a	1							
q9b	0.855**	1						
q10a	0.808**	0.811**	1					
q12a	0.198	0.302*	0.183	1				
q12b	0.569**	0.664**	0.744**	0.358**	1			
q12c	0.552**	0.564**	0.657**	0.530**	0.765**	1		
q13a	0.010	0.210	0.023	0.573**	0.164	0.065	1	
q13b	0.063	0.171	0.142	0.569**	0.397*	0.191	0.827**	1

** significant at 0.01, * significant at 0.05.

Source: own computations based on data from the World Justice Project.

The analysis of the correlation matrix showed that only some variables are correlated positively and significantly at either the 0.01 or 0.05 significance level (Table 19). It implied that one-dimensional structure of the law enforcement concept may not be confirmed. Then, the results of the PCA show that with the chosen set of data, the construction of a one-dimensional composite indicator is not valid. It is clearly indicated by the two eigenvalues exceeding 1 and by the fact that the amount of variance explained by the first principal component amounts to only 51.7 % (see Table 20).

Nevertheless, the KMO is satisfactory (0.711). The analysis of the pattern of loadings (see Table 20) enables us to draw a conclusion about two-dimensional structure of the law enforcement concept. It appears that the first principal component is related to variables q9a, q9b, q10a, q12b and q12c, whereas the second principal component is associated with variables q21a, q13a and q13b. It seems that the first principal component measures the law enforcement with respect to institutions and the second principal component measures the law enforcement with respect to actions taken by citizens. Therefore, we decided to compute two composites corresponding to two principal components, namely Index of Law Enforcement with respect to institutions (ILE-I) and Index of Law Enforcement with respect to citizens (ILE-C).

Table 20. PCA — Law enforcement

Variable	**Communalities**	**Loadings of the first PC**	**Loadings of the second PC**
q9a	.786	**.801**	-.380
q9b	.802	**.868**	-.222
q10a	.864	**.858**	-.356
q12a	.671	.560	**.598**
q12b	.740	**.855**	-.099
q12c	.673	**.813**	-.108
q13a	.849	.343	**.855**
q13b	.841	.427	**.811**
KMO 0.711			
Eigenvalues 4.137 2.089.747.468.209.139.134.078			
Variance explained by the first principal component 51.71 %			
Variance explained by the second principal component 26.12 %			

Source: own computations based on data from the World Justice Project.

Having established the two-dimensional structure of the law enforcement concept, in the following step, we aggregated variables into the ILE-I and ILE-C. We use the arithmetic average with equal weights. The scores of the ILE-I and ILE-C interpretation are presented in Section 6.2.7 in Table 39.

To verify if the ILE-I and the ILE-C are statistically well balanced, we calculated the correlation coefficients between the variables populating each composite and the composite itself and the importance of each variable comprised in the framework (Table 21). As can be seen, the ILE-I is very well balanced, which implies equal contribution of the variables the composite. Regarding the ILE-C, it is clear that the contribution of the q12a variable is considerably lower compared to the contribution of the remaining two variables.

Table 21. Law enforcement — Variable importance

Variable	**Correlation with the composite indicator**	**Importance (r^2 rescaled to unity sum)**
ILE-I		
q9a	0.86	0.20
q9b	0.89	0.21
q10a	0.92	0.23
q12b	0.86	0.19
q12c	0.82	0.18
ILE-C		
q12a	0.77	0.26
q13a	0.93	0.38
q13b	0.92	0.37

Source: own computations based on data from the World Justice Project.

6.2.3. Trust

With respect to trust, we decided to measure generalised trust and institutional trust separately, which is in line with the literature. General trust is measured using data from the question: how much trust do you have in people living in this country? (q17a). The possible answer categories were: a lot, some, a little and no, trust. The level of general trust (GT) in European countries is expressed as the percentages of citizens claiming that they have a lot or some trust in people living in the country (Table 22).

Table 22. Percentages of people who in a given city have a lot or some trust in other people

City	q17a
	a lot or some trust in people living in the country
Belgium_Antwerp	72 %
Belgium_Charleroi	56 %
Belgium_Ghent	76 %
Bulgaria_Plovdiv	75 %
Bulgaria_Sofia	65 %
Bulgaria_Varna	89 %
Croatia_Rijeka	64 %
Croatia_Split	57 %
Croatia_Zagreb	64 %
Czech Republic_Brno	76 %
Czech Republic_Ostrava	65 %
Czech Republic_Prague	64 %
Denmark_Aarhus	90 %
Denmark_Copenhagen	90 %
Denmark_Odense	88 %
Estonia_Tallinn	69 %
Estonia_Tartu	77 %
Finland_Helsinki	91 %
Finland_Tampere	89 %
Finland_Turku	89 %
France_Lyon	57 %
France_Marseille	52 %
France_Paris	57 %
Germany_Berlin	68 %
Germany_Hamburg	68 %
Germany_Munich	71 %
Greece_Athens	77 %
Greece_Patras	81 %
Greece_Salonica	82 %
Hungary_Budapest	89 %
Hungary_Debrecen	95 %
Italy_Milan	71 %
Italy_Naples	57 %
Italy_Rome	63 %
Netherlands_Amsterdam	65 %
Netherlands_Rotterdam	56 %
Netherlands_The Hague	67 %
Norway_Bergen	89 %
Norway_Oslo	85 %
Norway_Trondheim	87 %
Poland_Cracow	62 %
Poland_Lodz	80 %
Poland_Warsaw	71 %

Portugal_Braga	90 %
Portugal_Lisbon	79 %
Portugal_Porto	80 %
Romania_Bucharest	67 %
Romania_Cluj-Napoca	69 %
Romania_Timisoara	66 %
Slovenia_Ljubljana	77 %
Slovenia_Maribor	76 %
Spain_Barcelona	80 %
Spain_Madrid	80 %
Spain_Valencia	79 %
Sweden_Goteborg	86 %
Sweden_Malmo	80 %
Sweden_Stockholm	88 %
United Kingdom_London	66 %
Min	52 %
Max	95 %

Source: own computations based on data from the World Justice Project.

In order to measure institutional trust, four indicators were used. These questions can be answered using one of four answer categories: a lot, some, a little, or no, trust. The list of questions that were assessed is presented in Table 23.

Table 23. Questions measuring institutional trust.

Label	Question
q17b	How much trust do you have in officers working in the local government?
q17c	How much trust do you have in officers working in the national government?
q17d	How much trust do you have in the police?
q17e	How much trust do you have in the courts?

In order to assess city-level institutional trust, the percentages of people who in a given city claim to have a lot or some trust in a certain institution are computed (see Table 24).

Table 24. Percentages of people who have a lot or some trust in certain institution

City	a lot or some trust in in officers working in the local government	a lot or some trust in officers working in the national government	a lot or some trust in the police	a lot or some trust in the courts
Belgium_Antwerp	66 %	57 %	69 %	52 %
Belgium_Charleroi	39 %	33 %	63 %	52 %
Belgium_Ghent	67 %	61 %	70 %	54 %
Bulgaria_Plovdiv	35 %	22 %	39 %	33 %
Bulgaria_Sofia	30 %	20 %	31 %	25 %
Bulgaria_Varna	54 %	49 %	70 %	63 %
Croatia_Rijeka	18 %	14 %	46 %	24 %
Croatia_Split	17 %	10 %	37 %	19 %
Croatia_Zagreb	19 %	15 %	38 %	23 %
Czech Republic_Brno	43 %	22 %	58 %	58 %
Czech Republic_Ostrava	38 %	23 %	59 %	50 %
Czech Republic_Prague	43 %	26 %	59 %	50 %
Denmark_Aarhus	65 %	48 %	83 %	84 %
Denmark_Copenhagen	62 %	51 %	79 %	81 %
Denmark_Odense	66 %	42 %	83 %	78 %
Estonia_Tallinn	42 %	42 %	75 %	71 %
Estonia_Tartu	63 %	50 %	80 %	76 %
Finland_Helsinki	75 %	71 %	88 %	79 %
Finland_Tampere	75 %	63 %	91 %	77 %
Finland_Turku	67 %	63 %	86 %	77 %
France_Lyon	55 %	40 %	63 %	50 %
France_Marseille	32 %	24 %	54 %	45 %
France_Paris	46 %	35 %	59 %	52 %
Germany_Berlin	37 %	26 %	61 %	56 %
Germany_Hamburg	40 %	33 %	65 %	61 %
Germany_Munich	40 %	33 %	62 %	61 %
Greece_Athens	41 %	34 %	56 %	58 %
Greece_Patras	57 %	43 %	64 %	71 %
Greece_Salonica	48 %	35 %	61 %	63 %
Hungary_Budapest	75 %	64 %	71 %	80 %
Hungary_Debrecen	89 %	87 %	92 %	92 %
Italy_Milan	44 %	34 %	77 %	62 %
Italy_Naples	33 %	30 %	54 %	59 %
Italy_Rome	31 %	28 %	68 %	63 %
Netherlands_Amsterdam	49 %	42 %	60 %	66 %
Netherlands_Rotterdam	46 %	42 %	59 %	64 %
Netherlands_The Hague	55 %	46 %	64 %	64 %
Norway_Bergen	77 %	74 %	83 %	82 %
Norway_Oslo	74 %	73 %	81 %	81 %
Norway_Trondheim	70 %	68 %	76 %	78 %

Poland_Cracow	29 %	18 %	36 %	34 %
Poland_Lodz	22 %	19 %	50 %	39 %
Poland_Warsaw	41 %	33 %	52 %	45 %
Portugal_Braga	54 %	36 %	72 %	52 %
Portugal_Lisbon	46 %	28 %	71 %	50 %
Portugal_Porto	45 %	27 %	64 %	48 %
Romania_Bucharest	39 %	35 %	50 %	42 %
Romania_Cluj-Napoca	37 %	38 %	47 %	44 %
Romania_Timisoara	43 %	40 %	53 %	48 %
Slovenia_Ljubljana	33 %	28 %	23 %	48 %
Slovenia_Maribor	30 %	17 %	22 %	48 %
Spain_Barcelona	42 %	25 %	62 %	41 %
Spain_Madrid	40 %	33 %	66 %	41 %
Spain_Valencia	46 %	37 %	74 %	50 %
Sweden_Goteborg	58 %	59 %	75 %	70 %
Sweden_Malmo	56 %	54 %	75 %	68 %
Sweden_Stockholm	63 %	62 %	71 %	69 %
United Kingdom_London	49 %	40 %	59 %	60 %
Min	17 %	10 %	22 %	19 %
Max	89 %	87 %	92 %	92 %

Source: own computations based on data from the World Justice Project.

In the data set, all trust related indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the institutional trust concept. As our aim was to construct a composite indicator measuring the level of institutional trust in European cities (Index of Institutional Trust 2 (IIT2)), we performed a data consistency check using data aggregated at the cities level (i.e. based on the data presented in Table 24). We analysed the correlation matrix and then we conducted a principal component analysis (PCA).

Table 25. Correlation matrix — institutional trust

	q17b	q17c	q17d	q17e		**Correlation with the composite indicator**	**Importance (r^2 rescaled to unity sum)**
q17b	1					0.963	0.26

q17c	0.941**	1				0.947	0.25
q17d	0.819**	0.776**	1			0.907	0.24
q17e	0.847**	0.827**	0.813**	1		0.931	0.25

** significant at 0.01, * significant at 0.05.

Source: own computations based on data from the World Justice Project.

The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at the 0.01 significance level (

Table 25). The results of the PCA confirm the one-dimensionality of the trust concept (see Table 26). The KMO amounted to 0.821, the first eigenvalue amounted to 3.513, the first principal component explained 87.83 % of the variance observed in the five indicators and all loadings related to the first principal component were positive. This implies that one-dimensional structure of the trust concept is confirmed.

Table 26. PCA — Institutional trust

Variable	**Communalities**	**Loadings of the first PC** **Loadings of the second PC**
q17b	.929	.964
q17c	.897	.947
q17d	.823	.907
q17e	.865	.930
KMO 0.821		
Eigenvalues 3.513 0.256 0.175 0.056		
Variance explained by the first principal component 87.83 %		

Source: own computations based on data from the World Justice Project.

Having established the one-dimensional structure of the trust concept, in the following step, we aggregated variables using an arithmetic average with equal nominal weights into the ITT2. The scores of the ITT2 and IT are presented in Table 39.

In the next step, to verify if the IT is statistically well balanced, we calculated the correlation coefficients between the variables populating the composite and the composite itself and the

importance of each variable comprised in the framework (Table 25). As can be seen, the IT is sufficiently well balanced, which implies equal contribution of the variables to the composite. The only exception to this reasoning is q17a variable, which contributes slightly less compared to other variables populating the framework.

6.2.4. Perception of corruption

In order to construct the Index of Corruption five indicators were used. These questions can be answered using one of four answer categories: a lot, some, a little, or no trust. The list of questions that were assessed is presented in Table 27.

Table 27. Questions measuring the perception of corruption

Label	Question
q18a	How many of the officers working in the national government in [COUNTRY] do you think are involved in corrupt practices?
q18b	How many of the officers working in the local government do you think are involved in corrupt practices?
q18c	How many of members of parliament/congress in [COUNTRY] do you think are involved in corrupt practices?
q18d	How many of judges and magistrates in [COUNTRY] do you think are involved in corrupt practices?
q18e	How many of the officers working in the police in [COUNTRY] do you think are involved in corrupt practices?

In order to assess the city-level corruption, the percentages of people who in a given city claim that a lot or some people can be involved in corrupt practice are computed (see Table 28).

Table 28. Percentages of people who in a given city claim that a lot or some people can be involved in corrupt practice

City	q18a	q18b	q18c	q18d	q18e

	A lot or some officers working in the national government can be involved in corrupt practice	A lot or some officers working in the local government can be involved in corrupt practice	A lot or some members of parliament/congress can be involved in corrupt practice	A lot or some judges and magistrates can be involved in corrupt practice	A lot or some officers working in the police can be involved in corrupt practice
Belgium_Antwerp	8 %	8 %	27 %	18 %	11 %
Belgium_Charleroi	25 %	22 %	31 %	18 %	16 %
Belgium_Ghent	6 %	6 %	20 %	13 %	6 %
Bulgaria_Plovdiv	63 %	68 %	80 %	55 %	59 %
Bulgaria_Sofia	69 %	67 %	81 %	76 %	67 %
Bulgaria_Varna	27 %	27 %	38 %	17 %	11 %
Croatia_Rijeka	73 %	70 %	71 %	28 %	40 %
Croatia_Split	73 %	66 %	68 %	38 %	47 %
Croatia_Zagreb	76 %	73 %	77 %	33 %	48 %
Czech Republic_Brno	28 %	47 %	65 %	28 %	26 %
Czech Republic_Ostrava	24 %	46 %	67 %	32 %	27 %
Czech Republic_Prague	28 %	44 %	63 %	30 %	27 %
Denmark_Aarhus	7 %	9 %	10 %	9 %	8 %
Denmark_Copenhagen	6 %	6 %	9 %	5 %	6 %
Denmark_Odense	7 %	4 %	8 %	6 %	5 %
Estonia_Tallinn	26 %	26 %	29 %	14 %	11 %
Estonia_Tartu	17 %	19 %	26 %	14 %	8 %
Finland_Helsinki	10 %	11 %	21 %	10 %	7 %
Finland_Tampere	12 %	12 %	26 %	12 %	8 %
Finland_Turku	13 %	17 %	26 %	10 %	7 %
France_Lyon	28 %	15 %	37 %	16 %	15 %
France_Marseille	36 %	36 %	43 %	18 %	22 %
France_Paris	30 %	23 %	36 %	21 %	20 %
Germany_Berlin	29 %	25 %	29 %	15 %	11 %
Germany_Hamburg	26 %	22 %	28 %	15 %	13 %
Germany_Munich	28 %	24 %	34 %	20 %	16 %
Greece_Athens	29 %	33 %	58 %	30 %	26 %
Greece_Patras	24 %	19 %	53 %	26 %	22 %
Greece_Salonica	29 %	30 %	51 %	27 %	22 %

Hungary_Budapest	15 %	11 %	29 %	8 %	17 %
Hungary_Debrecen	6 %	6 %	15 %	1 %	2 %
Italy_Milan	27 %	32 %	56 %	27 %	16 %
Italy_Naples	45 %	49 %	69 %	35 %	31 %
Italy_Rome	37 %	40 %	62 %	29 %	19 %
Netherlands_Amsterdam	14 %	14 %	16 %	13 %	12 %
Netherlands_Rotterdam	11 %	12 %	17 %	10 %	10 %
Netherlands_The Hague	11 %	12 %	13 %	9 %	10 %
Norway_Bergen	7 %	9 %	7 %	6 %	7 %
Norway_Oslo	7 %	8 %	9 %	7 %	8 %
Norway_Trondheim	7 %	8 %	8 %	8 %	9 %
Poland_Cracow	76 %	75 %	63 %	34 %	40 %
Poland_Lodz	77 %	68 %	68 %	16 %	39 %
Poland_Warsaw	60 %	56 %	58 %	29 %	42 %
Portugal_Braga	41 %	27 %	50 %	27 %	20 %
Portugal_Lisbon	37 %	30 %	47 %	30 %	18 %
Portugal_Porto	43 %	32 %	53 %	35 %	25 %
Romania_Bucharest	55 %	50 %	53 %	37 %	33 %
Romania_Cluj-Napoca	54 %	50 %	60 %	32 %	36 %
Romania_Timisoara	51 %	54 %	61 %	32 %	36 %
Slovenia_Ljubljana	59 %	59 %	34 %	24 %	65 %
Slovenia_Maribor	62 %	63 %	41 %	24 %	64 %
Spain_Barcelona	33 %	29 %	50 %	29 %	19 %
Spain_Madrid	31 %	28 %	50 %	28 %	19 %
Spain_Valencia	36 %	33 %	56 %	27 %	18 %
Sweden_Goteborg	13 %	16 %	20 %	14 %	12 %
Sweden_Malmo	13 %	12 %	16 %	13 %	12 %
Sweden_Stockholm	9 %	13 %	14 %	12 %	10 %
United Kingdom_London	21 %	19 %	31 %	19 %	18 %
Min	6 %	4 %	7 %	1 %	2 %
Max	77 %	75 %	81 %	76 %	67 %

Source: own computations based on data from the World Justice Project.

In the data set, all indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the trust concept. As our aim was to construct a composite indicator measuring the level of corruption in European cities (Index of Corruption (IC)), we performed a data consistency check using data aggregated at the cities level (i.e. based on the data presented in Table 28). We analysed the correlation matrix and

then we conducted the principal component analysis (PCA). Our criteria for component extraction were based on the Keiser-Mayer-Olkin statistic (KMO), which was expected to be above 0.5; the Keiser criterion (i.e. only one eigenvalue above 1); the amount of variance explained and the pattern of principal component loadings.

Table 29. Correlation matrix — corruption

	q18a	q18b	q18c	q18d	q18e		**Correlation with the composite indicator**	**Importance (r^2 rescaled to unity sum)**
q18a	1						0.96	0.21
q18b	0.959**	1					0.97	0.22
q18c	0.826**	0.868**	1				0.93	0.20
q18d	0.736**	0.765**	0.863**	1			0.87	0.18
q18e	0.887**	0.909**	0.742**	0.776**	1		0.92	0.20

** significant at 0.01, * significant at 0.05.

Source: own computations based on data from the World Justice Project.

The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at the 0.01 significance level (Table 29). The results of the PCA confirm the one-dimensionality of the corruption concept (see Table 30). The KMO amounted to 0.748, the first eigenvalue amounted to 4.336, the first principal component explained 82.72 % of the variance observed in the five indicators, and all loadings related to the first principal component were positive. It implies that one-dimensional structure of the trust concept is confirmed.

Table 30. PCA — Corruption.

Variable	**Communalities**	**Loadings of the first PC**
q18a	.600	.949
q18b	.927	.969
q18c	.877	.922
q18d	.799	.886
q18e	.840	.928
KMO 0.748		
Eigenvalues 4.336 0.373 0.202 0.061 0.027		
Variance explained by the first principal component 86.72 %		

Source: own computations based on data from the World Justice Project.

Having established one-dimensional structure of the corruption concept, in the following step, we aggregated variables into the IC. To this end, we again employed the arithmetic average with equal weights. The scores of the IC are presented in Table 39.

In the next step, to verify if the IC is statistically well balanced, we calculated the correlation coefficients between the variables populating the composite and the composite itself and the importance of each variable comprised in the framework (Table 29). As can be seen, the IC is very well balanced which implies equal contribution of the variables the composite.

6.2.5. Perception of paying bribes

In order to construct the Index of Paying Bribes (IPB), five indicators were used. These questions can be answered using one out of two answer categories: yes or no. The list of questions that were assessed is presented in Table 31.

Table 31. Questions measuring the perception of paying bribes.

Label	Question
q36a	Do people in your neighbourhood have to pay a bribe or other inducements to register their ownership title in a piece of land or house?
q36b	Do people in your neighbourhood have to pay a bribe or other inducements to obtain a driver's license?
q36c	Do people in your neighbourhood have to pay a bribe or other inducements to be admitted to a public school?
q36d	Do people in your neighbourhood have to pay a bribe or other inducements to be treated in a public hospital?
q36e	Do people in your neighbourhood have to pay a bribe or other inducements to receive the services of the police?

In order to assess the city-level perception of paying bribes, the percentages of people who in a given city agree that people in their neighbourhood have to pay a bribe or other inducements are computed (see Table 32).

Table 32. Percentages of people who in a given city agree that people in their neighbourhood have to pay a bribe or other inducements

City	q36a	q36b	q36c	q36d	q36e
	people have to pay a bribe or other inducements to register their ownership title in a piece of land or house	people have to pay a bribe or other inducements to obtain a driver's license	people have to pay a bribe or other inducements to be admitted to a public school	people have to pay a bribe or other inducements to be treated in a public hospital	people have to pay a bribe or other inducements to receive the services of the police
Belgium_Antwerp	2 %	3 %	2 %	1 %	1 %
Belgium_Charleroi	8 %	10 %	4 %	5 %	5 %
Belgium_Ghent	4 %	3 %	3 %	2 %	1 %
Bulgaria_Plovdiv	41 %	55 %	33 %	50 %	30 %
Bulgaria_Sofia	50 %	62 %	35 %	51 %	35 %
Bulgaria_Varna	40 %	46 %	18 %	42 %	26 %
Croatia_Rijeka	42 %	65 %	41 %	23 %	26 %
Croatia_Split	38 %	53 %	34 %	29 %	20 %
Croatia_Zagreb	35 %	38 %	28 %	26 %	23 %
Czech Republic_Brno	8 %	6 %	9 %	13 %	5 %
Czech Republic_Ostrava	11 %	7 %	10 %	20 %	13 %
Czech Republic_Prague	7 %	10 %	10 %	16 %	8 %
Denmark_Aarhus	10 %	10 %	8 %	8 %	9 %
Denmark_Copenhagen	6 %	5 %	3 %	4 %	5 %
Denmark_Odense	5 %	1 %	4 %	4 %	4 %
Estonia_Tallinn	5 %	12 %	12 %	18 %	9 %
Estonia_Tartu	1 %	4 %	5 %	16 %	7 %
Finland_Helsinki	11 %	6 %	9 %	8 %	9 %
Finland_Tampere	11 %	7 %	9 %	8 %	9 %
Finland_Turku	6 %	5 %	6 %	4 %	8 %
France_Lyon	1 %	3 %	2 %	2 %	1 %
France_Marseille	7 %	9 %	6 %	3 %	5 %
France_Paris	6 %	8 %	5 %	5 %	4 %
Germany_Berlin	3 %	2 %	2 %	1 %	1 %
Germany_Hamburg	3 %	2 %	2 %	2 %	3 %
Germany_Munich	3 %	3 %	2 %	3 %	1 %
Greece_Athens	48 %	85 %	16 %	49 %	14 %
Greece_Patras	48 %	73 %	19 %	53 %	16 %
Greece_Salonica	54 %	87 %	14 %	38 %	17 %
Hungary_Budapest	0 %	1 %	1 %	40 %	2 %
Hungary_Debrecen	0 %	0 %	1 %	9 %	0 %
Italy_Milan	11 %	13 %	10 %	10 %	10 %
Italy_Naples	24 %	22 %	16 %	19 %	9 %
Italy_Rome	13 %	14 %	10 %	12 %	8 %
Netherlands_Amsterdam	6 %	8 %	3 %	2 %	2 %
Netherlands_Rotterdam	6 %	8 %	4 %	6 %	4 %
Netherlands_The Hague	5 %	11 %	5 %	4 %	1 %

Norway_Bergen	5 %	4 %	4 %	6 %	6 %
Norway_Oslo	2 %	2 %	2 %	4 %	5 %
Norway_Trondheim	5 %	4 %	6 %	6 %	6 %
Poland_Cracow	45 %	39 %	25 %	17 %	19 %
Poland_Lodz	38 %	34 %	28 %	22 %	22 %
Poland_Warsaw	30 %	43 %	32 %	11 %	26 %
Portugal_Braga	25 %	29 %	19 %	14 %	14 %
Portugal_Lisbon	16 %	12 %	10 %	9 %	9 %
Portugal_Porto	22 %	41 %	15 %	12 %	14 %
Romania_Bucharest	34 %	32 %	27 %	29 %	21 %
Romania_Cluj-Napoca	50 %	33 %	16 %	16 %	20 %
Romania_Timisoara	44 %	44 %	25 %	18 %	22 %
Slovenia_Ljubljana	53 %	50 %	25 %	18 %	48 %
Slovenia_Maribor	54 %	46 %	28 %	23 %	49 %
Spain_Barcelona	5 %	5 %	3 %	5 %	1 %
Spain_Madrid	6 %	7 %	5 %	3 %	3 %
Spain_Valencia	7 %	11 %	5 %	6 %	3 %
Sweden_Goteborg	4 %	5 %	1 %	3 %	1 %
Sweden_Malmo	2 %	2 %	0 %	1 %	2 %
Sweden_Stockholm	3 %	4 %	3 %	3 %	2 %
United Kingdom_London	7 %	6 %	6 %	5 %	5 %
Min	0 %	0 %	0 %	1 %	0 %
Max	54 %	87 %	41 %	53 %	49 %

Source: own computations based on data from the World Justice Project.

In the data set, all indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the trust concept. As our aim was to construct a composite indicator measuring the level of bribing in European cities (Index of Paying Bribes (IPB)), we performed data consistency check using data aggregated at the cities level (i.e. based on the data presented in Table 32). We analysed the correlation matrix and then we conducted the principal component analysis (PCA).

Table 33. Correlation matrix — Perception of paying bribes

	q36a	q36b	q36c	q36d	q36e		**Correlation with the composite indicator**	**Importance (r^2 rescaled to unity sum)**

q36a	1						0.97	0.23
q36b	0.929**	1					0.96	0.22
q36c	0.856**	0.798**	1				0.89	0.19
q36d	0.744**	0.805**	0.653**	1			0.84	0.17
q36e	0.873**	0.748**	0.866**	0.615**	1		0.87	0.19

** significant at 0.01, * significant at 0.05

Source: own computations based on data from the World Justice Project.

The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at the 0.01 significance level (Table 33). The results of the PCA confirm the one-dimensionality of the corruption concept (see Table 34). The KMO amounted to 0.801, the first eigenvalue amounted to 4.165, the first principal component explained 83.29 % of the variance observed in the five indicators, and all loadings related to the first principal component were positive. It implies that one-dimensional structure of the paying bribes concept is confirmed.

Table 34. PCA — Index of Paying Bribes

Variable	**Communalities**	**Loadings of the first PC**
q36a	.937	.968
q36b	.883	.940
q36c	.841	.917
q36d	.691	.831
q36e	.813	.902
KMO 0.801		
Eigenvalues 4.165 0.468 0.189 0.140 0.039		
Variance explained by the first principal component 83.29 %		

Source: own computations based on data from the World Justice Project.

Having established one-dimensional structure of the paying bribes concept, in the following step, we aggregated variables into the IPB. We used an arithmetic average. The scores of the IPB are presented in Table 39.

In the next step, to verify if the IPB is statistically well balanced, we calculated the correlation coefficients between the variables populating the composite and the composite itself and the importance of each variable comprised in the framework (Table 33). As can be seen, the IPB is well balanced, which implies equal contribution of the variables to the composite.

6.2.6. Local governance

In order to construct the Index of Local Governance six indicators were used. These questions can be answered using one out of four answer categories: very well, fairly well, fairly badly and very badly. The list of questions that were assessed is presented in Table 35.

Table 35. Questions measuring performance of the local government.

Label	Question
When talking to people about their local government, we often find important differences in how well local authorities perform their duties. Could you please tell us how well or badly you think your local government (Metropolitan, Municipal, or District administration) is performing in the following procedures?	
q15a	providing citizens information about the government expenditures
q15b	consulting traditional, civil, and community leaders before making decisions
q15c	providing information in plain language about people's legal rights, so that everybody can understand them
q15d	providing effective ways to make complaints about public services
q15e	providing effective ways to handle complaints against local government officials
q15f	responding to people's concerns about community matters

In order to assess the city-level performance of the local government, the percentages of people who in a given city claim that the local government performs very well or fairly well are computed (see Table 36).

Table 36. Percentages of people who in a given city claim that the local government performs very well or fairly well

City	q15a	q15b	q15c	q15d	q15e	q15f
	the local government performs very well or fairly well in providing citizens information about the government expenditures	the local government performs very well or fairly well in consulting traditional, civil, and community leaders before making decisions	the local government performs very well or fairly well in providing information in plain language about people's legal rights, so that everybody can understand them	the local government performs very well or fairly well in providing effective ways to make complaints about public services	the local government performs very well or fairly well in providing effective ways to handle complaints against local government officials	the local government performs very well or fairly well in responding to people's concerns about community matters
Belgium_Antwerp	39 %	37 %	38 %	45 %	32 %	46 %
Belgium_Charleroi	27 %	38 %	46 %	35 %	30 %	40 %
Belgium_Ghent	41 %	47 %	49 %	52 %	42 %	53 %
Bulgaria_Plovdiv	29 %	33 %	30 %	35 %	31 %	19 %
Bulgaria_Sofia	16 %	15 %	23 %	44 %	19 %	20 %
Bulgaria_Varna	54 %	59 %	63 %	44 %	35 %	45 %
Croatia_Rijeka	14 %	23 %	13 %	20 %	12 %	26 %
Croatia_Split	16 %	23 %	13 %	28 %	23 %	37 %
Croatia_Zagreb	16 %	26 %	15 %	26 %	22 %	38 %
Czech Republic_Brno	31 %	20 %	26 %	20 %	18 %	27 %
Czech Republic_Ostrava	34 %	16 %	34 %	25 %	19 %	25 %
Czech Republic_Prague	33 %	20 %	30 %	28 %	22 %	31 %
Denmark_Aarhus	63 %	62 %	43 %	54 %	49 %	49 %
Denmark_Copenhagen	57 %	64 %	46 %	48 %	44 %	47 %
Denmark_Odense	68 %	65 %	43 %	54 %	45 %	45 %
Estonia_Tallinn	29 %	25 %	32 %	35 %	24 %	36 %
Estonia_Tartu	41 %	44 %	40 %	48 %	34 %	58 %
Finland_Helsinki	55 %	40 %	39 %	42 %	37 %	39 %
Finland_Tampere	43 %	32 %	31 %	35 %	28 %	28 %
Finland_Turku	44 %	31 %	29 %	31 %	32 %	29 %
France_Lyon	38 %	47 %	47 %	40 %	34 %	46 %
France_Marseille	25 %	28 %	38 %	23 %	27 %	29 %
France_Paris	36 %	40 %	49 %	42 %	37 %	45 %
Germany_Berlin	38 %	32 %	32 %	36 %	28 %	46 %
Germany_Hamburg	41 %	44 %	32 %	37 %	34 %	49 %
Germany_Munich	52 %	53 %	43 %	45 %	35 %	58 %
Greece_Athens	13 %	16 %	14 %	15 %	15 %	17 %

Greece_Patras	17 %	24 %	25 %	17 %	22 %	24 %
Greece_Salonica	25 %	28 %	26 %	28 %	28 %	29 %
Hungary_Budapest	63 %	66 %	59 %	63 %	63 %	57 %
Hungary_Debrecen	85 %	88 %	86 %	87 %	83 %	79 %
Italy_Milan	44 %	42 %	42 %	39 %	34 %	39 %
Italy_Naples	36 %	30 %	29 %	30 %	28 %	29 %
Italy_Rome	26 %	27 %	29 %	31 %	25 %	25 %
Netherlands_Amsterdam	37 %	41 %	46 %	52 %	40 %	40 %
Netherlands_Rotterdam	32 %	40 %	37 %	52 %	39 %	38 %
Netherlands_The Hague	40 %	36 %	43 %	52 %	42 %	39 %
Norway_Bergen	56 %	53 %	49 %	42 %	42 %	43 %
Norway_Oslo	47 %	48 %	46 %	42 %	40 %	49 %
Norway_Trondheim	46 %	46 %	41 %	36 %	39 %	49 %
Poland_Cracow	29 %	8 %	34 %	32 %	16 %	31 %
Poland_Lodz	29 %	77 %	29 %	38 %	25 %	31 %
Poland_Warsaw	37 %	31 %	35 %	44 %	42 %	44 %
Portugal_Braga	52 %	48 %	54 %	57 %	50 %	57 %
Portugal_Lisbon	41 %	36 %	41 %	44 %	34 %	41 %
Portugal_Porto	46 %	40 %	46 %	49 %	37 %	48 %
Romania_Bucharest	28 %	32 %	34 %	33 %	20 %	32 %
Romania_Cluj-Napoca	31 %	34 %	34 %	35 %	18 %	28 %
Romania_Timisoara	33 %	38 %	36 %	39 %	19 %	30 %
Slovenia_Ljubljana	37 %	37 %	49 %	36 %	44 %	28 %
Slovenia_Maribor	39 %	48 %	49 %	34 %	37 %	28 %
Spain_Barcelona	40 %	42 %	46 %	49 %	37 %	43 %
Spain_Madrid	37 %	36 %	38 %	42 %	35 %	37 %
Spain_Valencia	35 %	34 %	37 %	38 %	34 %	37 %
Sweden_Goteborg	39 %	35 %	41 %	39 %	29 %	34 %
Sweden_Malmo	39 %	32 %	38 %	39 %	34 %	38 %
Sweden_Stockholm	51 %	37 %	46 %	44 %	36 %	38 %
United Kingdom_London	54 %	52 %	54 %	55 %	48 %	52 %
Min	13 %	8 %	13 %	15 %	12 %	17 %
Max	85 %	88 %	86 %	87 %	83 %	79 %

Source: own computations based on data from the World Justice Project.

In the data set, all indicators simultaneously satisfy the conditions skewness < 2 and kurtosis < 3.5 (Dybczyński 1980; Velasco & Verma 1998), which indicates lack of non-normal distribution and lack of outliers.

In the next step, we verified the underlying structure of the data measuring the performance of the local government concept. As our aim was to construct a composite indicator measuring the quality of the activity performed by the local government in European cities (Index of Local Governance

(ILG)), we performed a data consistency check using data aggregated at the cities level (i.e. based on the data presented in Table 36). As usual, we analysed the correlation matrix and then we conducted the principal component analysis (PCA).

Table 37. Correlation matrix — local governance

	q15a	q15b	q15c	q15d	q15e	q15f		**Correlation with the composite indicator**	**Importance (r^2 rescaled to unity sum)**
q15a	1							0.92	0.17
q15b	0.785**	1						0.89	0.16
q15c	0.814**	0.730**	1					0.86	0.15
q15d	0.793**	0.748**	0.811**	1				0.91	0.17
q15e	0.843**	0.784**	0.839**	0.873**	1			0.94	0.18
q15f	0.748**	0.714**	0.723**	0.798**	0.786**	1		0.87	0.16

** significant at 0.01, * significant at 0.05

Source: own computations based on data from the World Justice Project.

The analysis of the correlation matrix showed that all variables are correlated positively (as expected) and significantly at the 0.01 significance level (Table 37). The results of the PCA confirm the one-dimensionality of the corruption concept (see Table 38). The KMO amounted to 0.930, the first eigenvalue amounted to 4.934, the first principal component explained 82.23 % of the variance observed in the six indicators, and all loadings related to the first principal component were positive. It implies that one-dimensional structure of the local governance concept is confirmed.

Table 38. PCA — local governance

Variable	**Communalities**	**Loadings of the first PC**
q15a	.840	.917
q15b	.763	.874
q15c	.818	.904
q15d	.855	.925
q15e	.891	.944
q15f	.766	.875

KMO 0.930
Eigenvalues 4.934 0.306 0.285 0.192 0.167 0.115
Variance explained by the first principal component 82.23 %

Source: own computations based on data from the World Justice Project.

Having established one-dimensional structure of the local governance concept, in the following step, we aggregated variables into the ILG. We again used the arithmetic average with equal weights. The scores of the ILG are presented in Table 39.

In the next step, to verify if the ILG is statistically well balanced, we calculated the correlation coefficients between the variables populating the composite and the composite itself and the importance of each variable comprised in the framework (Table 37). As can be seen, the ILG is very well balanced which implies equal contribution of the variables to the composite.

6.2.7. Uncertainty analyses

In this section we present the results of the uncertainty analysis related to composites constructed with the data from the World Justice Project. In Figures 25-36 we present the scores and ranks as well as simulated median scores and median ranks associated with the error terms expressed by 5th and 95th percentiles presenting the uncertainty related to the estimates. It must be noted, however, that presented uncertainty relates to the method of aggregation and weighting scheme, only.

As can be seen, in general all composite indicators seem to be robust to the two normative assumptions related to the construction methods. This robustness is reflected by considerably narrow uncertainty intervals (difference between the 5th and 95th percentiles). Although, one can easily notice examples of relatively wider uncertainty intervals related to some city estimates (see, for example, Budapest and Tartu according to the Index of Bribing), these are singular cases resulting mostly from uneven performance of a city with respect to the variables populating the composite.

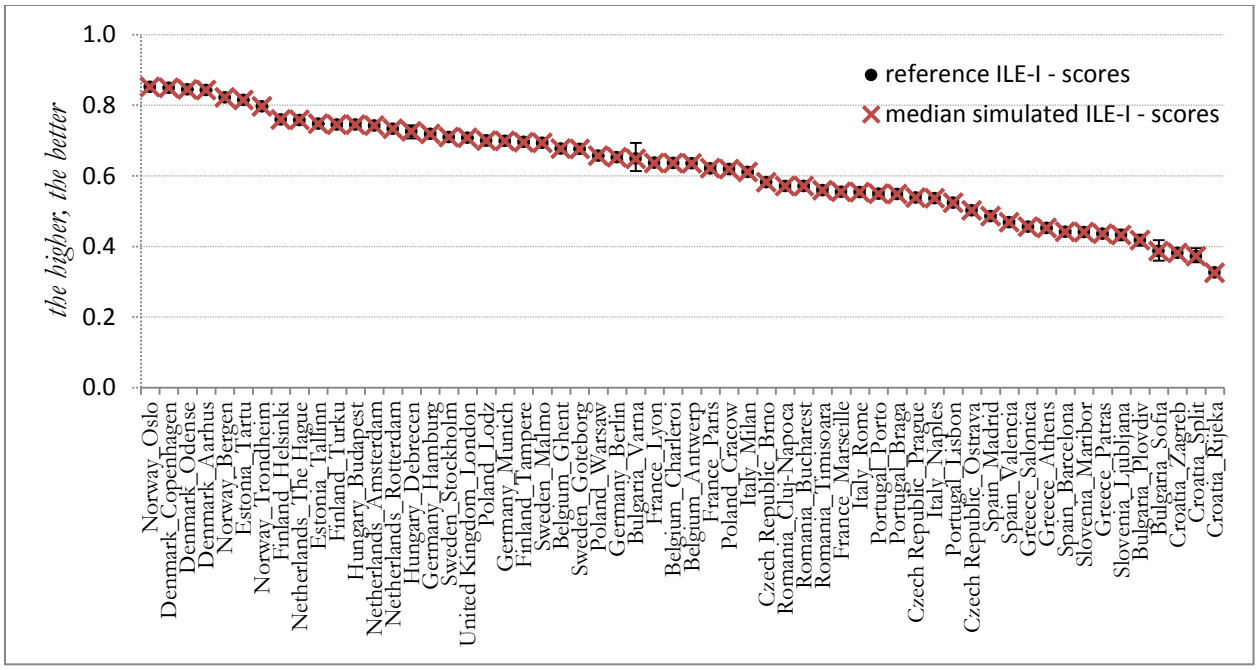

Figure 25. Uncertainty analysis — Index of Law Enforcement related to Institutions scores.

Source: own computations based on data from the World Justice Project.

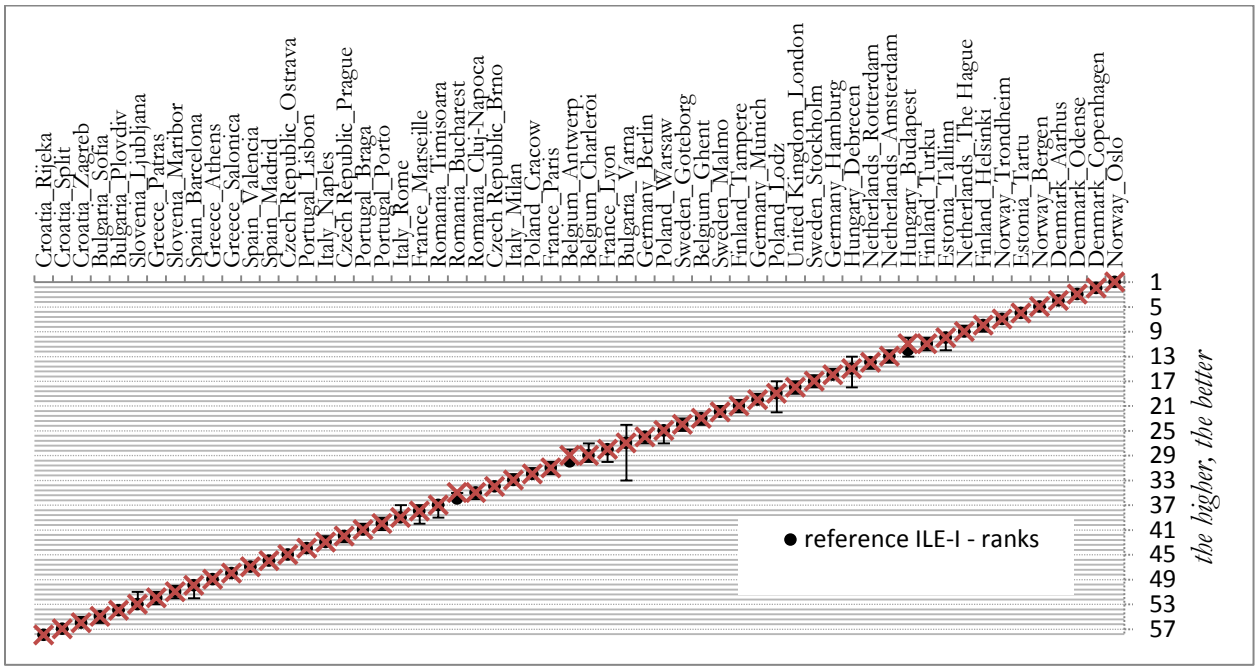

Figure 26. Uncertainty analysis — Index of Law Enforcement related to institutions ranks.

Source: own computations based on data from the World Justice Project.

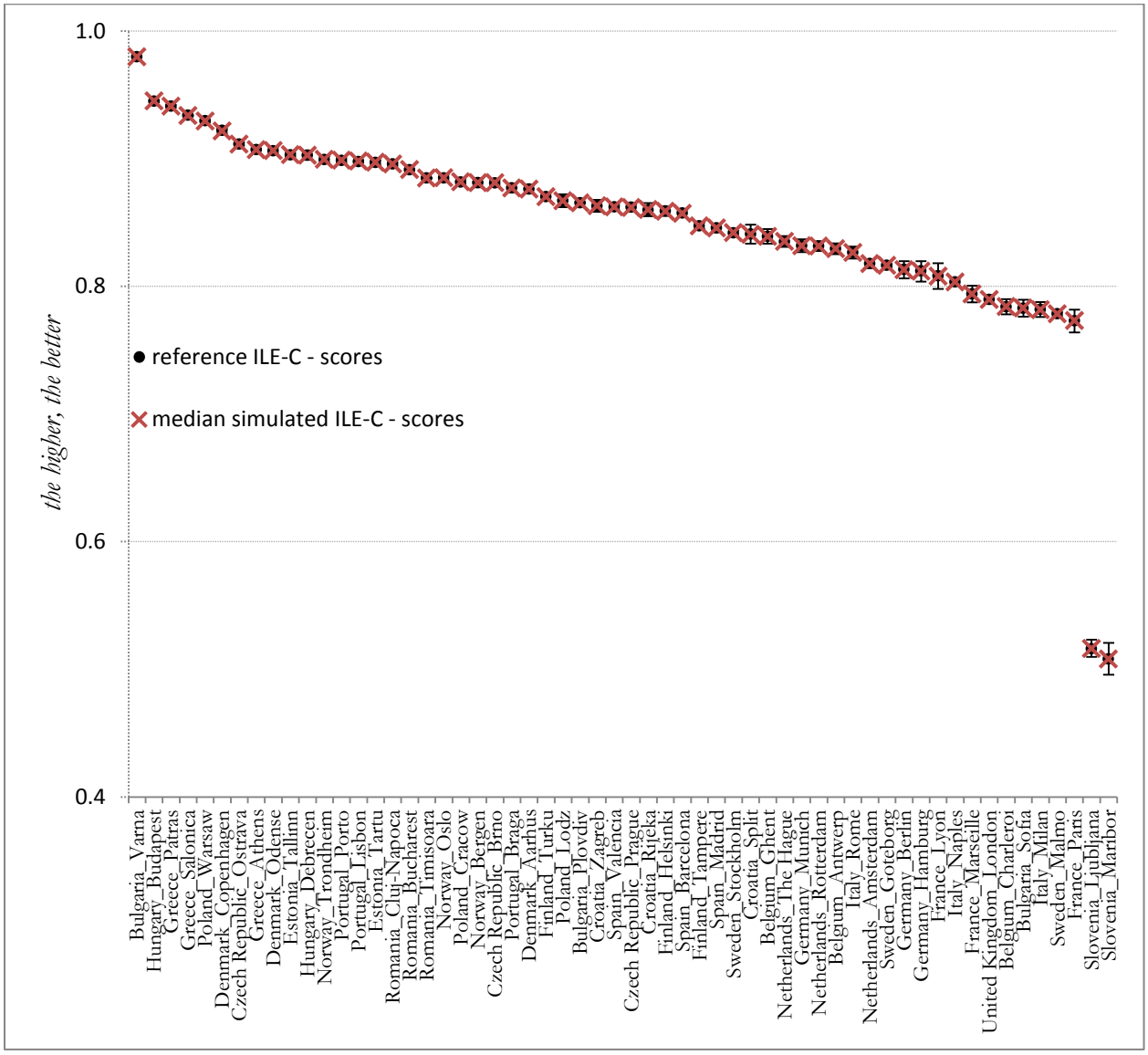

Figure 27. Uncertainty analysis — Index of Law Enforcement related to citizens scores.

Source: own computations based on data from *the World* Justice Project.

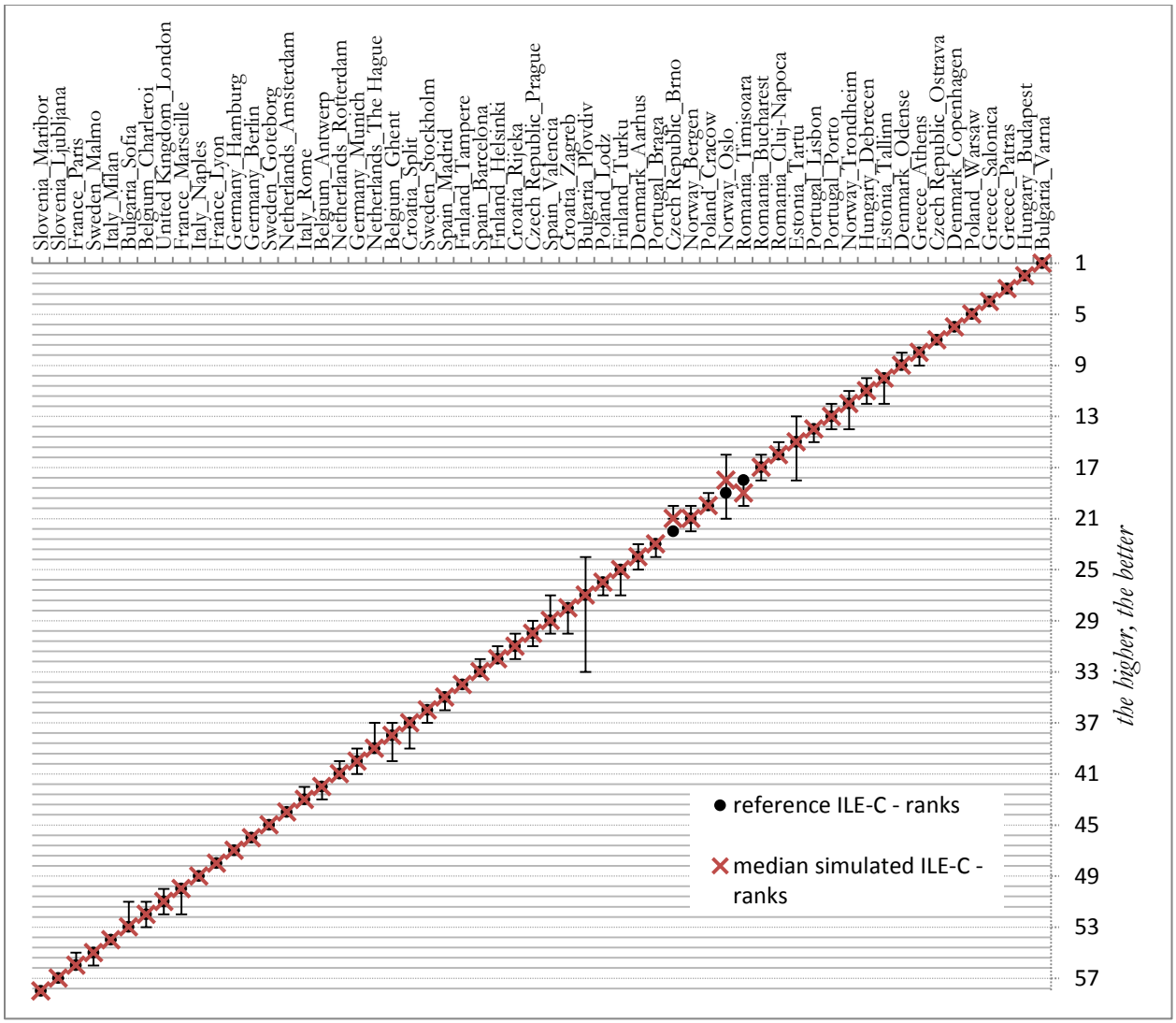

Figure 28. Uncertainty analysis — Index of Law Enforcement related to citizens ranks.

Source: own computations based on data from the World Justice Project.

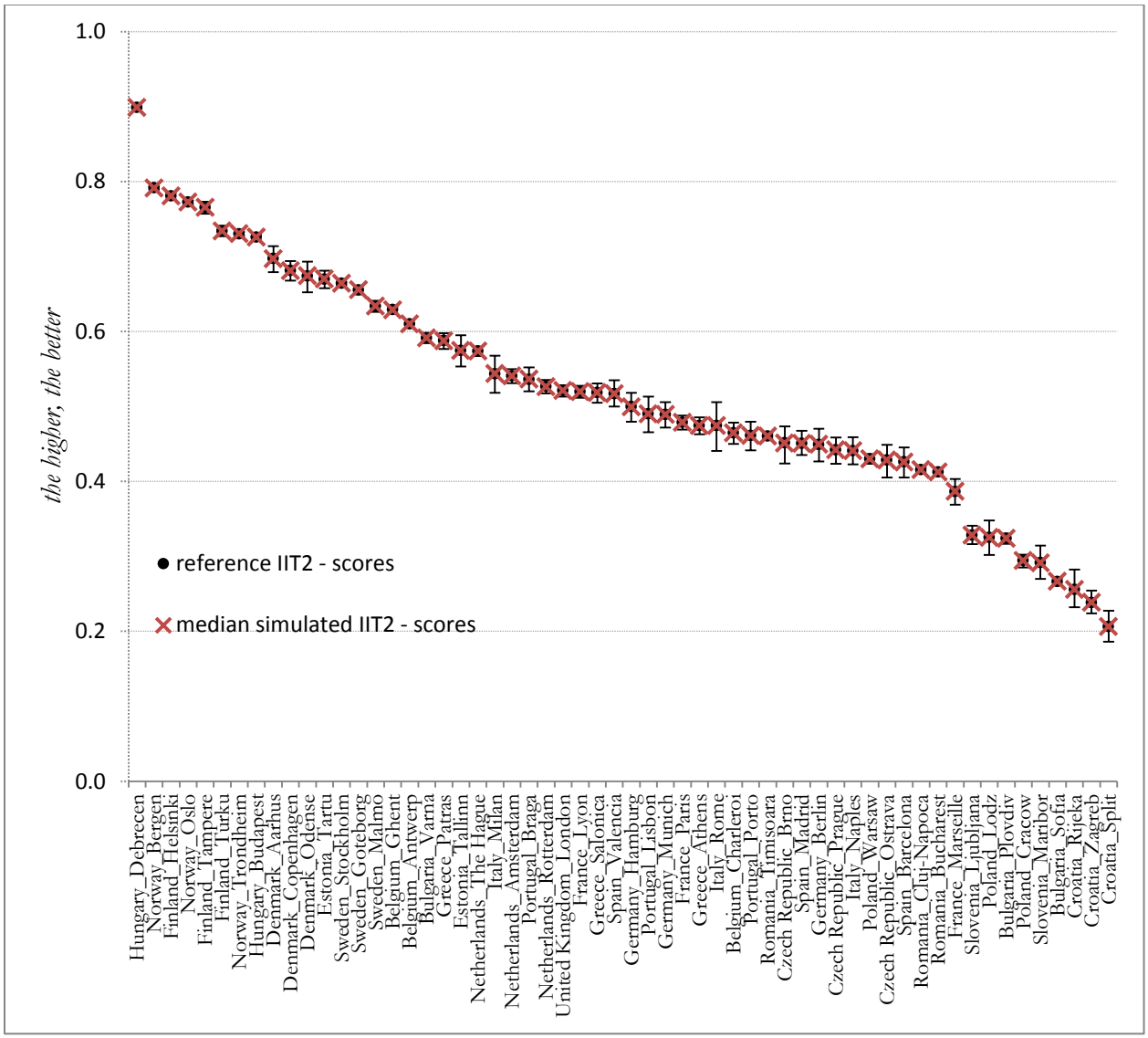

Figure 29. Uncertainty analysis — Index of Institutional Trust scores.

Source: own computations based on data from *the World* Justice Project.

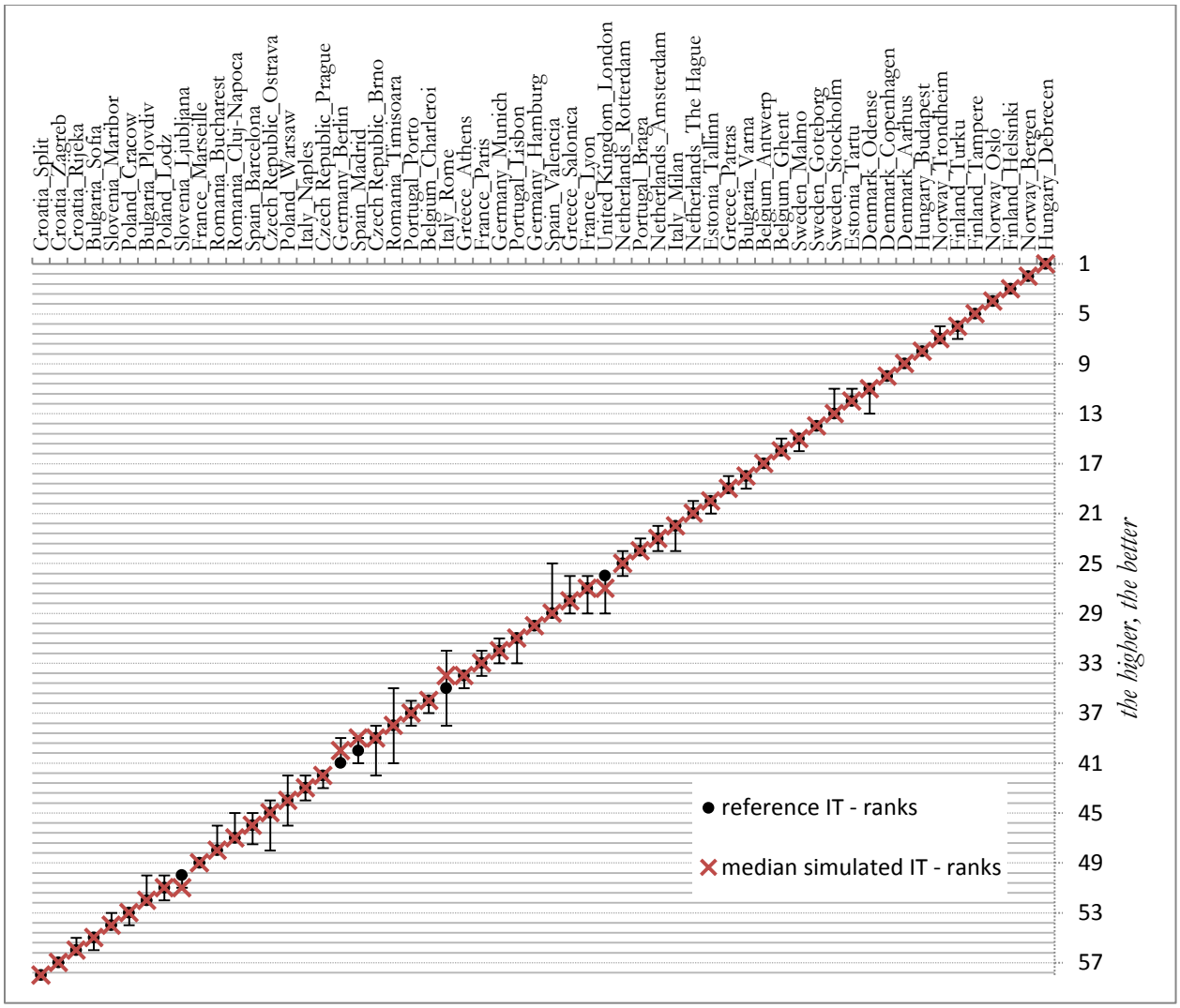

Figure 30. Uncertainty analysis — Index of Trust ranks.

Source: own computations based on data from the World Justice Project.

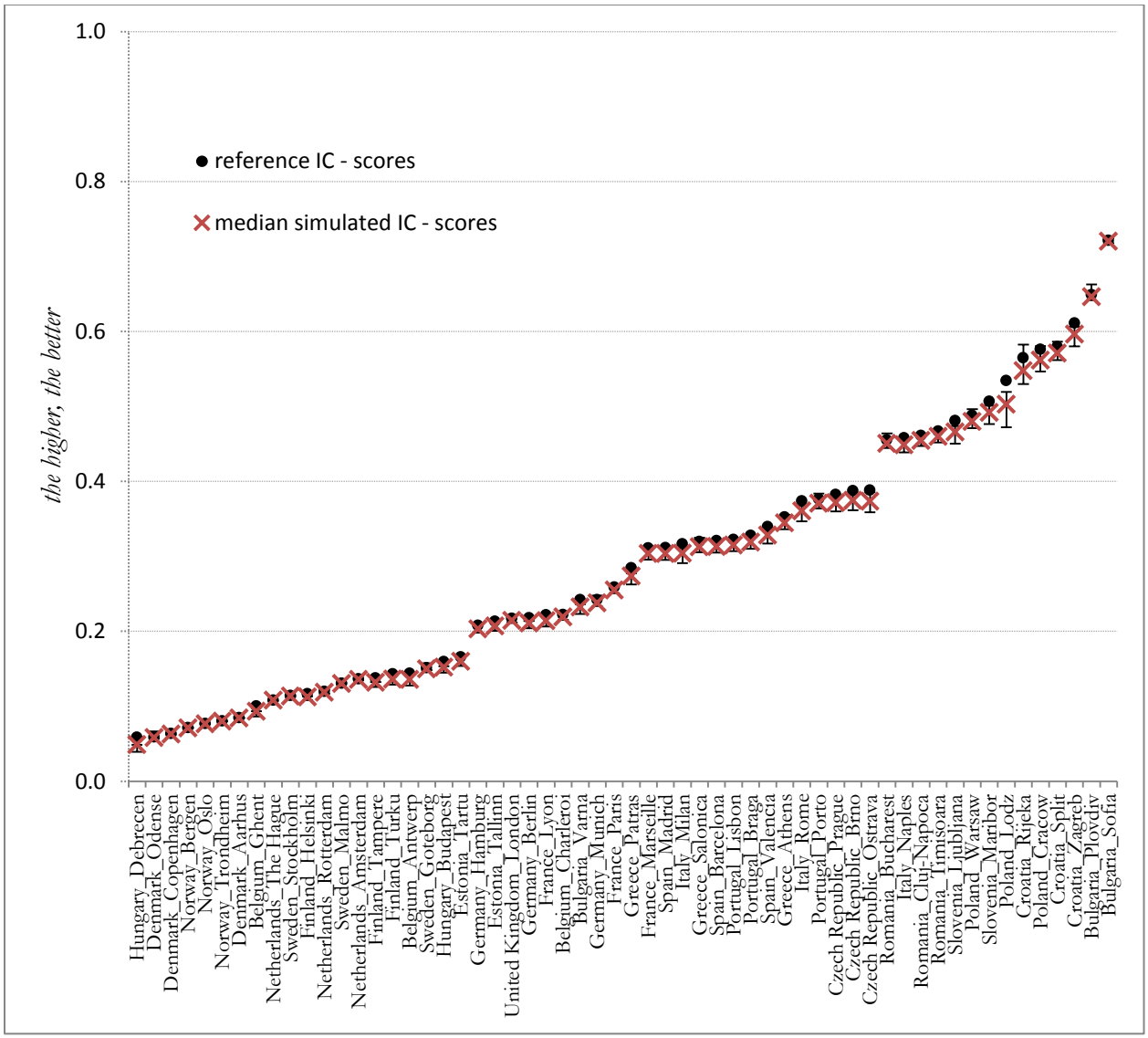

Figure 31. Uncertainty analysis — Index of Corruption scores.

Source: own computations based on data from the World Justice Project.

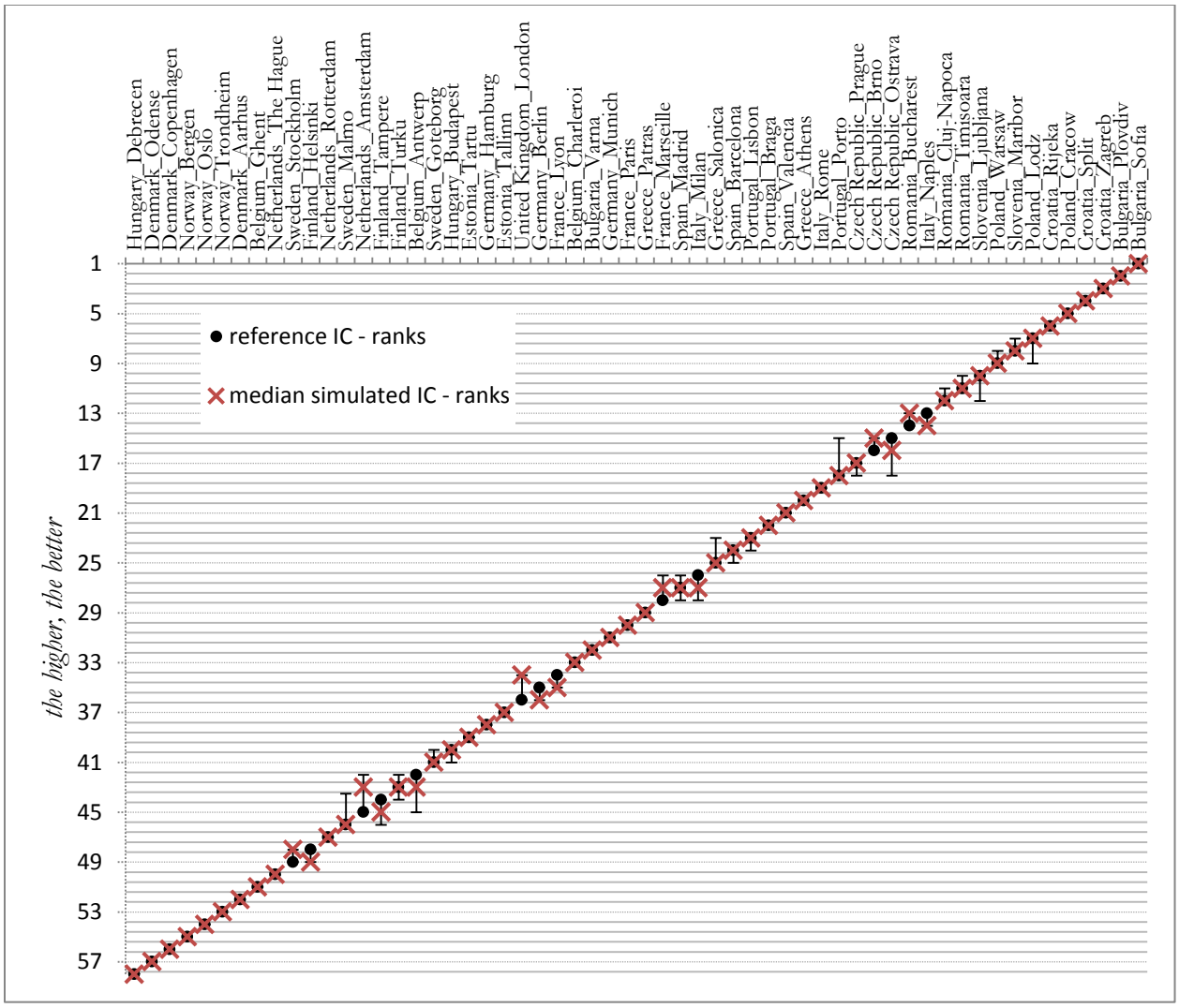

Figure 32. Uncertainty analysis — Index of Corruption ranks.

Source: own computations based on data from the World Justice Project.

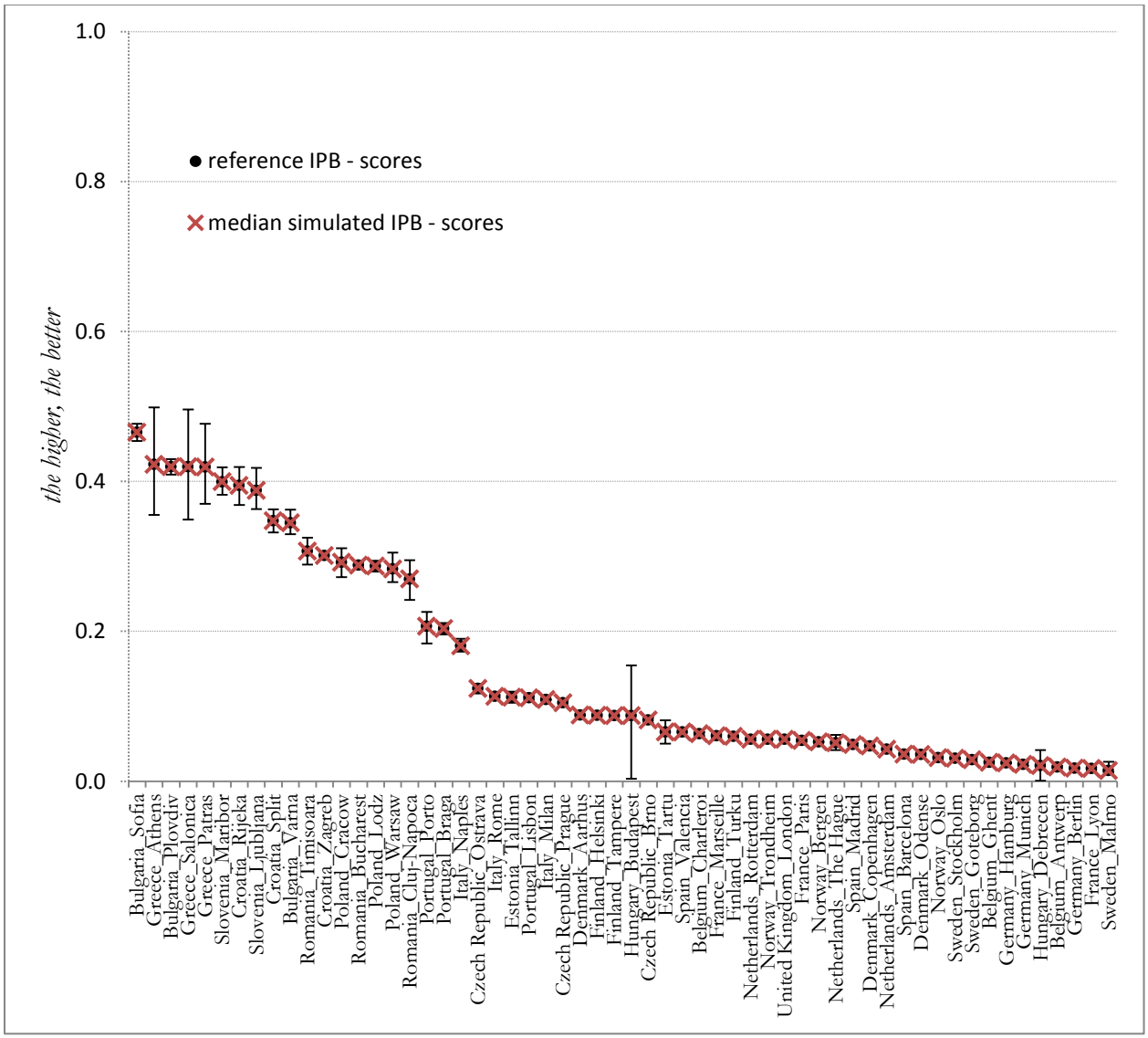

Figure 33. Uncertainty analysis — Index of Paying Bribes scores.

Source: own computations based on data from the World Justice Project.

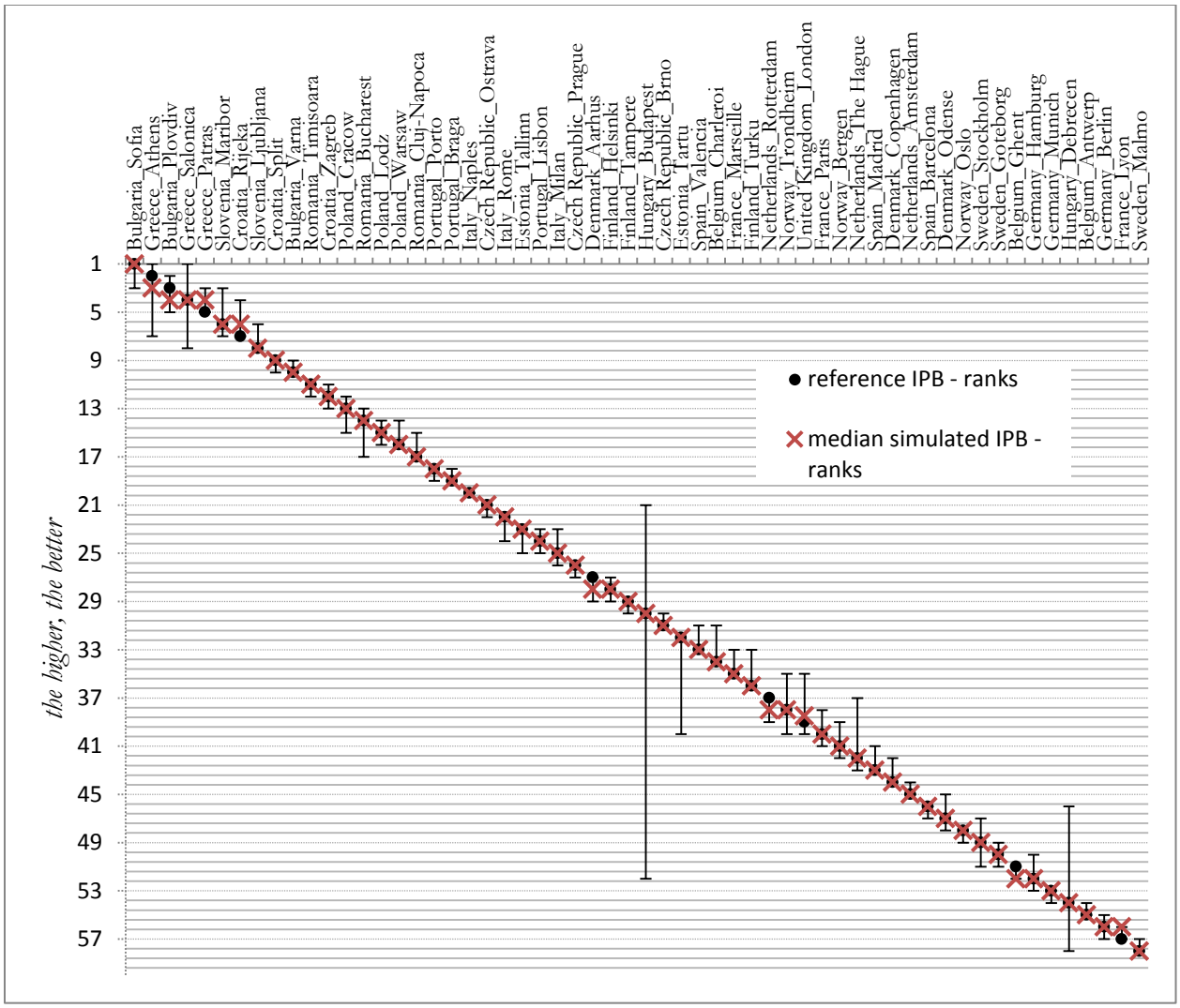

Figure 34. Uncertainty analysis — Index of Paying Bribes ranks.

Source: own computations based on data from the World Justice Project.

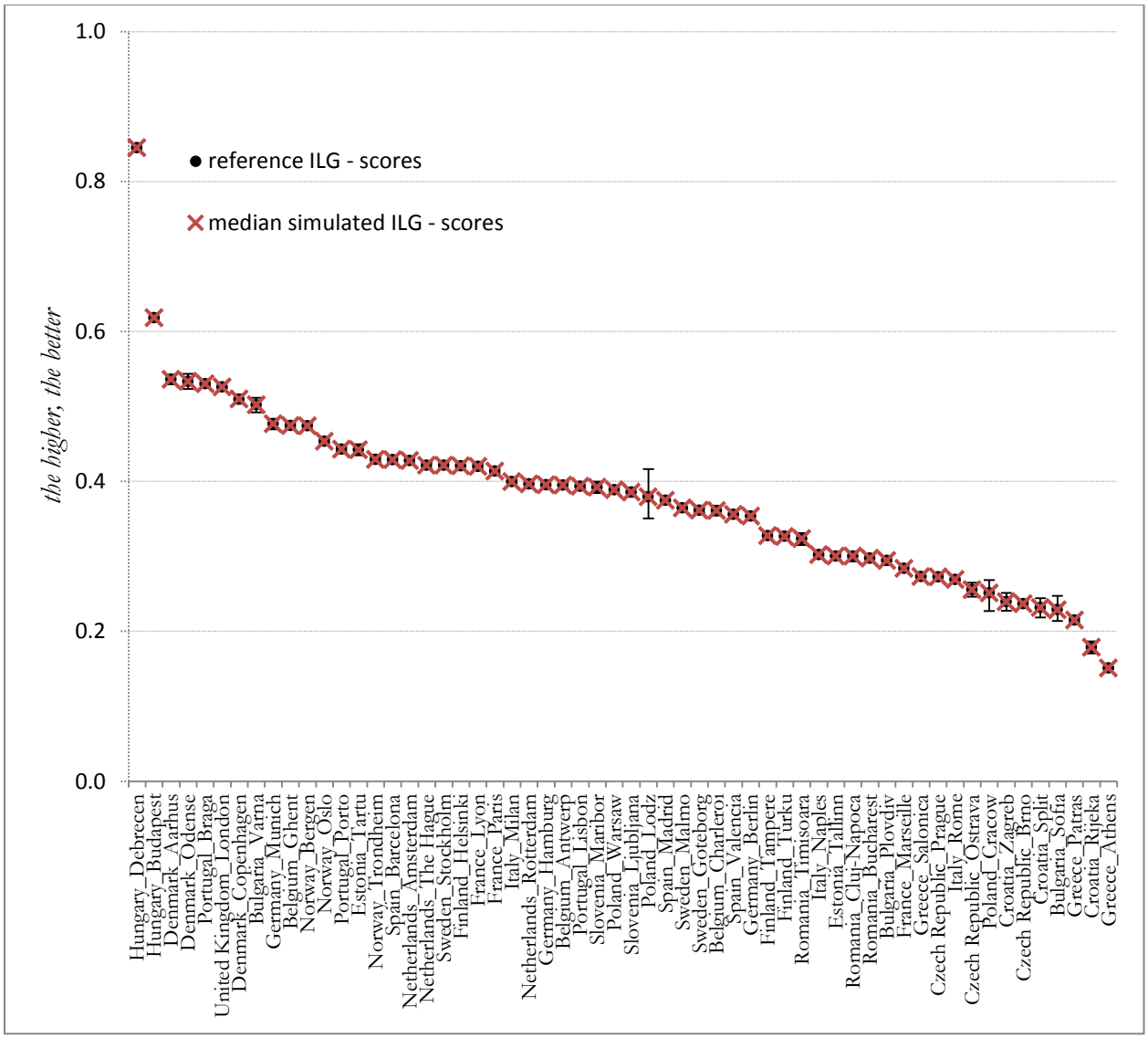

Figure 35. Uncertainty analysis — Index of Local Governance scores.

Source: own computations based on data from *the World* Justice Project.

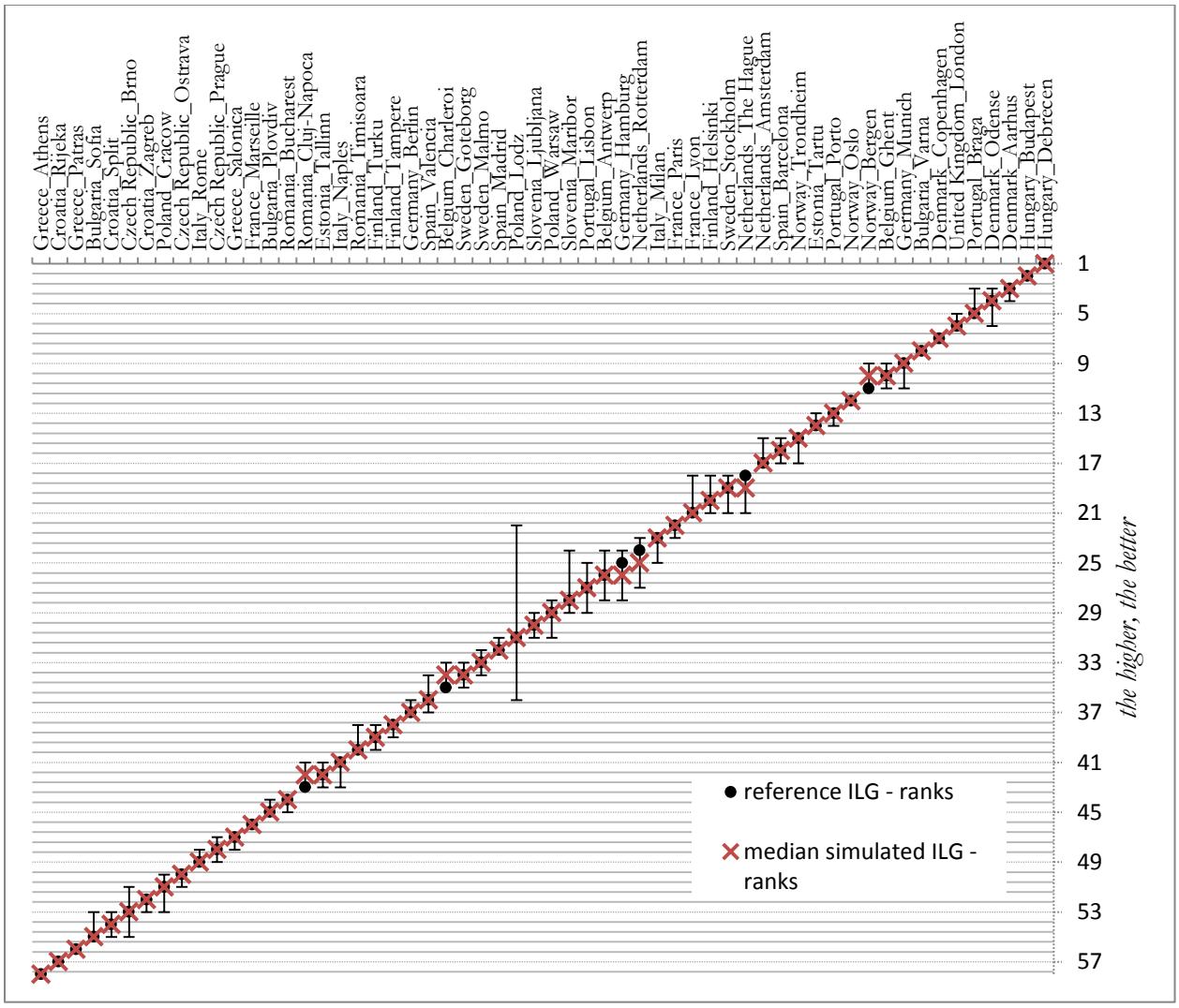

Figure 36. Uncertainty analysis — Index of Local Governance ranks.

Source: own computations based on data from the World Justice Project.

6.2.8. European cities in the perspective related to the trust and quality of governance

In order to present situation of the European cities with respect to indexes related to perception of law enforcement, trust, corruption, bribing and local governance globally in this section we present all constructed composites based on data from the World Justice Project (Table 39 and Figure 37-

Figure 43). In addition, we make an attempt to classify the cities into homogenous groups with respect to the composites.

Table 39. Performance of the European cities according to the ILE-I, ILE-C, GT, IIT2, IC, IPB and ILG

city	ILE-I	ILE-C	GT	ITT2	IC	IPB	ILG
Belgium_Antwerp	0.635	0.829	0.717	0.610	0.144	0.019	0.395
Belgium_Charleroi	0.636	0.784	0.563	0.465	0.222	0.063	0.361
Belgium_Ghent	0.677	0.839	0.760	0.629	0.100	0.025	0.474
Bulgaria_Plovdiv	0.417	0.865	0.753	0.324	0.649	0.419	0.294
Bulgaria_Sofia	0.386	0.783	0.648	0.266	0.721	0.465	0.229
Bulgaria_Varna	0.648	0.980	0.888	0.591	0.242	0.344	0.502
Croatia_Rijeka	0.325	0.860	0.640	0.256	0.565	0.395	0.179
Croatia_Split	0.372	0.841	0.573	0.206	0.580	0.347	0.231
Croatia_Zagreb	0.381	0.863	0.641	0.238	0.611	0.301	0.239
Czech Republic_Brno	0.581	0.881	0.757	0.451	0.387	0.081	0.237
Czech Republic_Ostrava	0.501	0.911	0.652	0.428	0.388	0.124	0.256
Czech Republic_Prague	0.538	0.862	0.644	0.442	0.382	0.105	0.272
Denmark_Aarhus	0.842	0.876	0.904	0.697	0.085	0.088	0.536
Denmark_Copenhagen	0.848	0.922	0.897	0.681	0.064	0.047	0.510
Denmark_Odense	0.845	0.906	0.877	0.674	0.059	0.035	0.533
Estonia_Tallinn	0.747	0.903	0.695	0.574	0.213	0.112	0.300
Estonia_Tartu	0.815	0.897	0.766	0.670	0.166	0.066	0.442
Finland_Helsinki	0.759	0.859	0.906	0.781	0.117	0.088	0.420
Finland_Tampere	0.695	0.847	0.894	0.765	0.137	0.087	0.327
Finland_Turku	0.745	0.870	0.890	0.734	0.143	0.060	0.326
France_Lyon	0.636	0.808	0.575	0.520	0.222	0.017	0.420
France_Marseille	0.554	0.794	0.519	0.386	0.311	0.060	0.284
France_Paris	0.621	0.773	0.574	0.479	0.259	0.054	0.413
Germany_Berlin	0.652	0.813	0.679	0.449	0.218	0.017	0.354
Germany_Hamburg	0.718	0.812	0.684	0.500	0.208	0.024	0.395
Germany_Munich	0.698	0.832	0.713	0.489	0.242	0.022	0.477
Greece_Athens	0.452	0.907	0.770	0.474	0.352	0.423	0.151
Greece_Patras	0.436	0.941	0.814	0.588	0.285	0.419	0.215
Greece_Salonica	0.455	0.934	0.817	0.518	0.320	0.419	0.273
Hungary_Budapest	0.744	0.945	0.893	0.726	0.160	0.087	0.618
Hungary_Debrecen	0.725	0.903	0.953	0.899	0.059	0.021	0.845
Italy_Milan	0.610	0.782	0.711	0.543	0.317	0.109	0.400
Italy_Naples	0.536	0.803	0.572	0.441	0.458	0.181	0.302
Italy_Rome	0.554	0.826	0.630	0.474	0.374	0.113	0.269
Netherlands_Amsterdam	0.741	0.818	0.647	0.540	0.136	0.042	0.428

Netherlands_Rotterdam	0.733	0.831	0.565	0.526	0.120	0.056	0.396
Netherlands_The Hague	0.758	0.835	0.671	0.574	0.108	0.051	0.421
Norway_Bergen	0.822	0.881	0.895	0.791	0.071	0.052	0.474
Norway_Oslo	0.851	0.885	0.854	0.773	0.077	0.031	0.453
Norway_Trondheim	0.796	0.899	0.870	0.730	0.080	0.056	0.429
Poland_Cracow	0.619	0.882	0.617	0.294	0.576	0.292	0.251
Poland_Lodz	0.699	0.867	0.799	0.325	0.534	0.287	0.379
Poland_Warsaw	0.657	0.929	0.714	0.430	0.488	0.283	0.389
Portugal_Braga	0.548	0.877	0.901	0.536	0.328	0.204	0.530
Portugal_Lisbon	0.524	0.898	0.795	0.490	0.322	0.111	0.393
Portugal_Porto	0.549	0.899	0.798	0.461	0.376	0.207	0.443
Romania_Bucharest	0.570	0.891	0.670	0.412	0.455	0.288	0.297
Romania_Cluj-Napoca	0.571	0.896	0.695	0.416	0.461	0.270	0.300
Romania_Timisoara	0.558	0.885	0.662	0.460	0.467	0.307	0.324
Slovenia_Ljubljana	0.432	0.516	0.768	0.328	0.481	0.388	0.385
Slovenia_Maribor	0.440	0.508	0.764	0.292	0.507	0.399	0.392
Spain_Barcelona	0.441	0.857	0.803	0.426	0.321	0.036	0.429
Spain_Madrid	0.485	0.846	0.800	0.451	0.312	0.049	0.374
Spain_Valencia	0.468	0.862	0.795	0.517	0.339	0.065	0.356
Sweden_Goteborg	0.676	0.816	0.860	0.655	0.151	0.028	0.361
Sweden_Malmo	0.693	0.778	0.803	0.634	0.131	0.014	0.365
Sweden_Stockholm	0.709	0.842	0.880	0.664	0.114	0.030	0.421
United Kingdom_London	0.707	0.790	0.660	0.521	0.217	0.056	0.526

Source: own computations based on data from the World Justice Project.

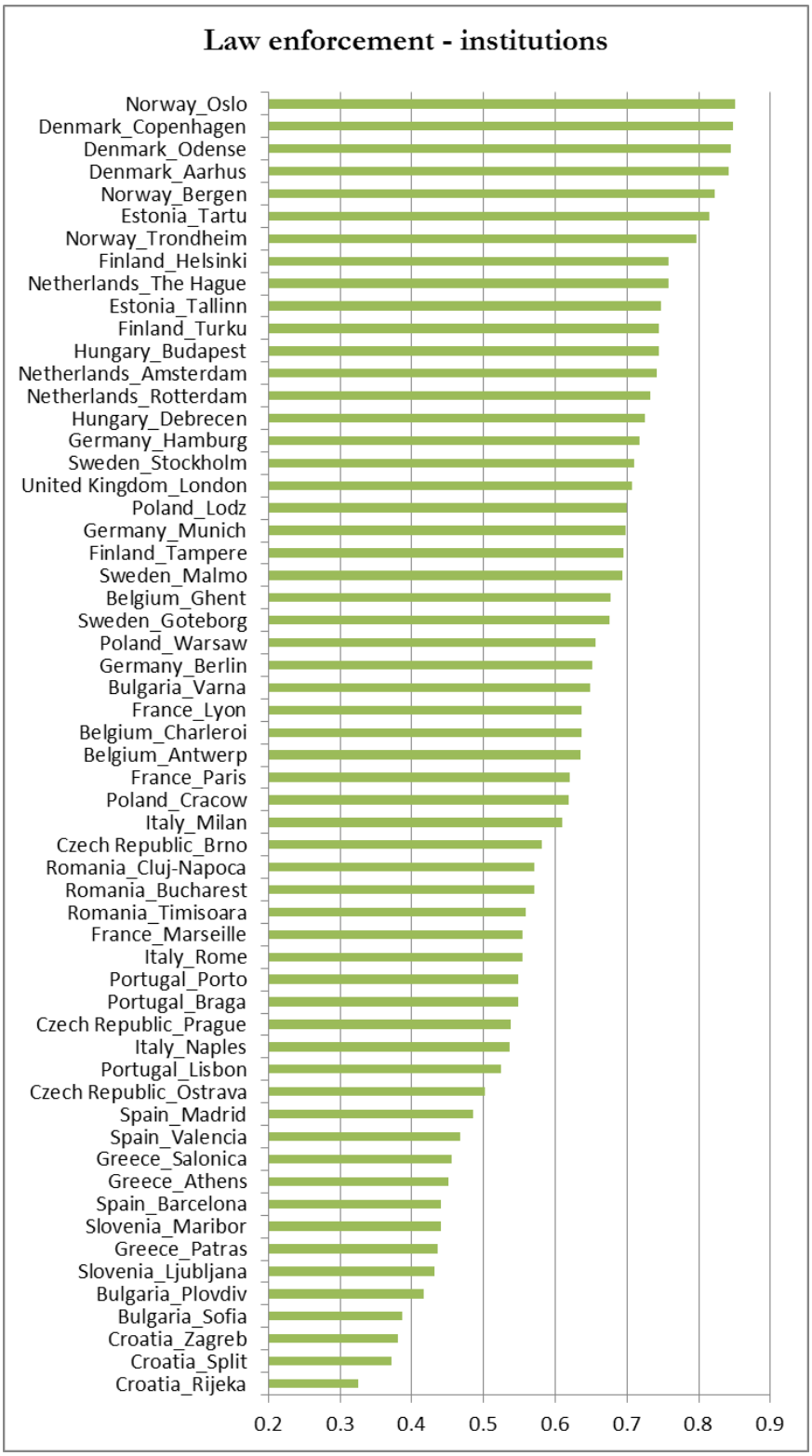

Figure 37. Index of Law Enforcement with respect to institutions.

Source: own computations based on data from the World Justice Project.

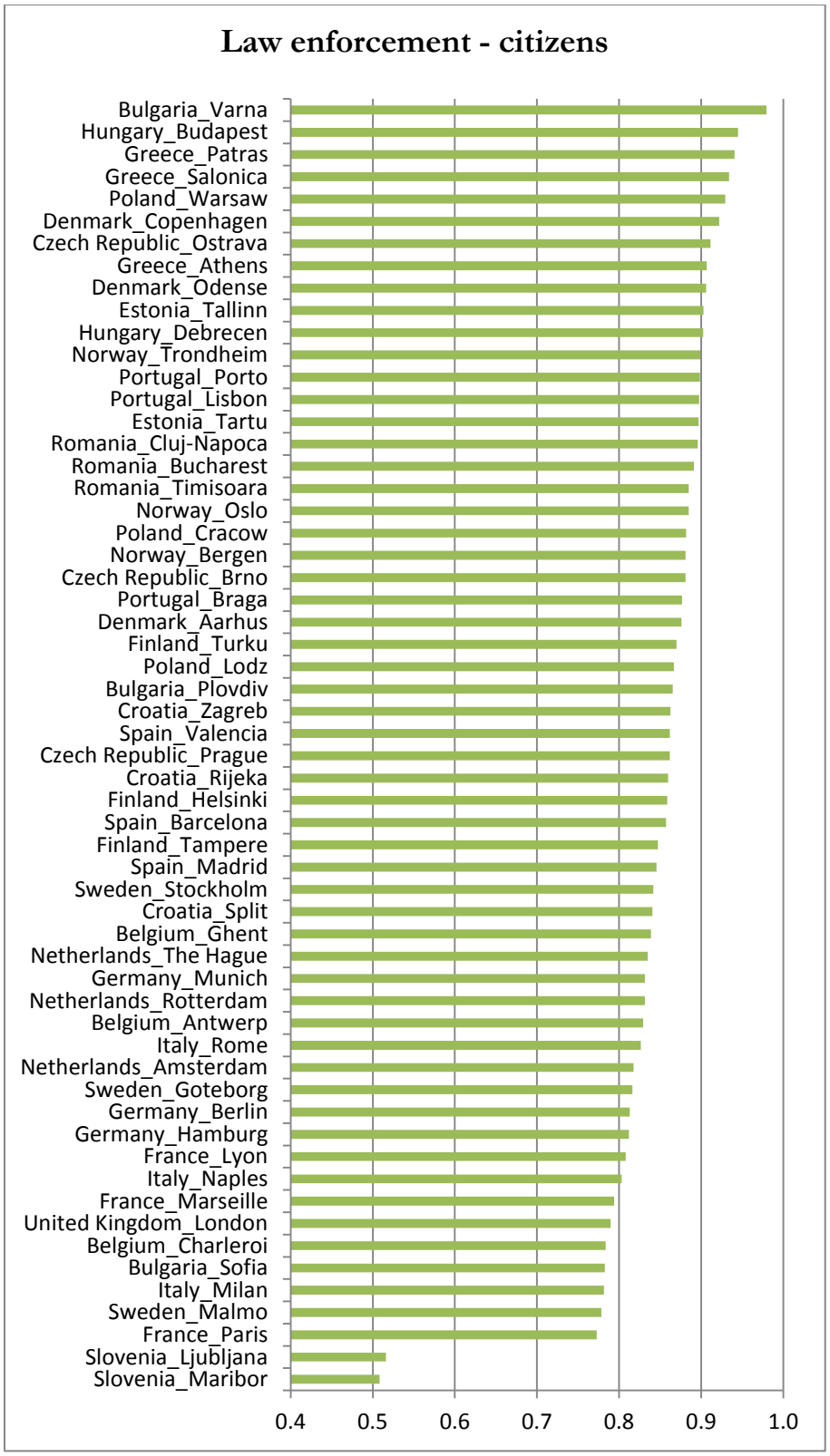

Figure 38. Index of Law Enforcement with respect to citizens.
Source: own computations based on data from the World Justice Project.

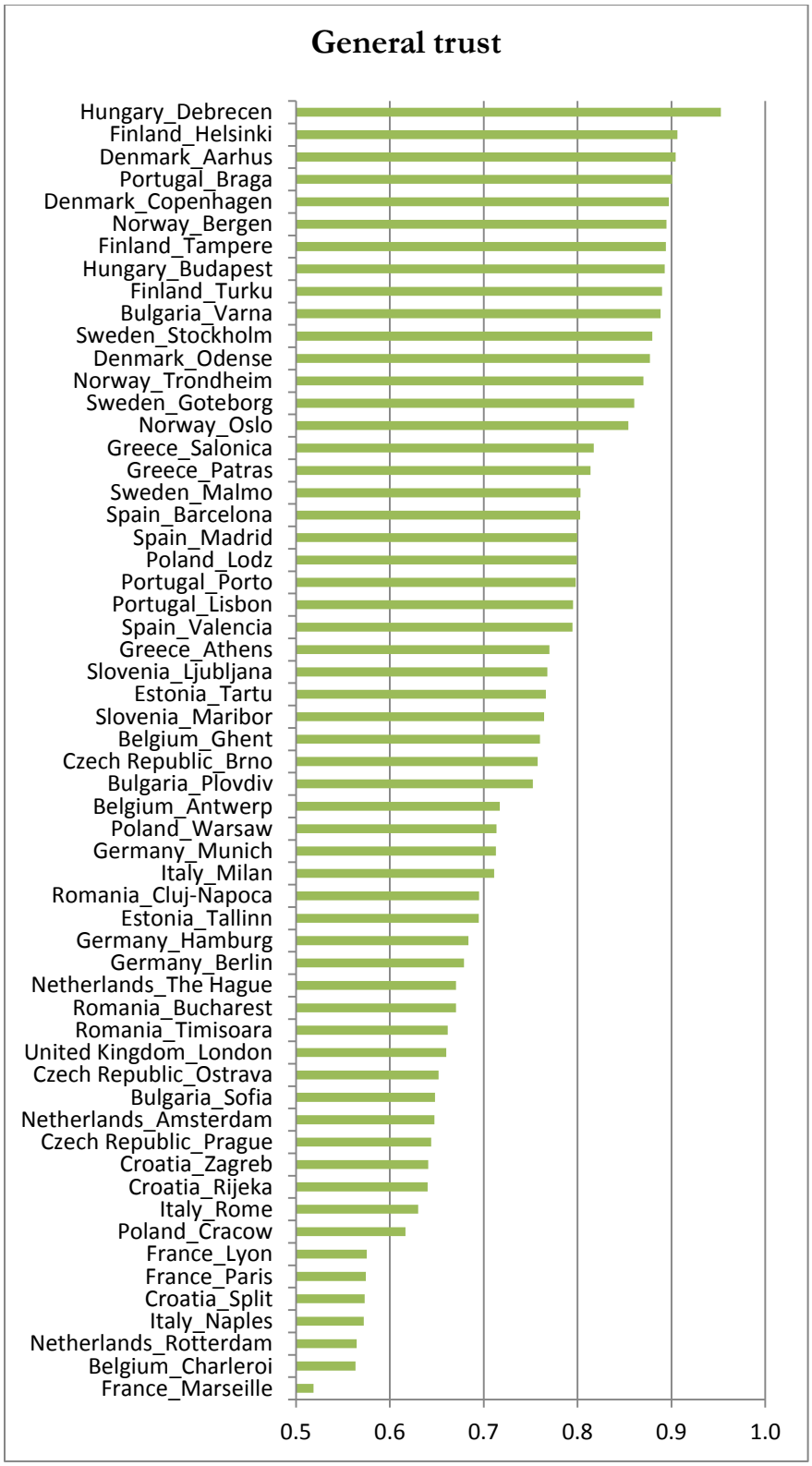

Figure 39. Generalised trust.

Source: own computations based on data from the World Justice Project.

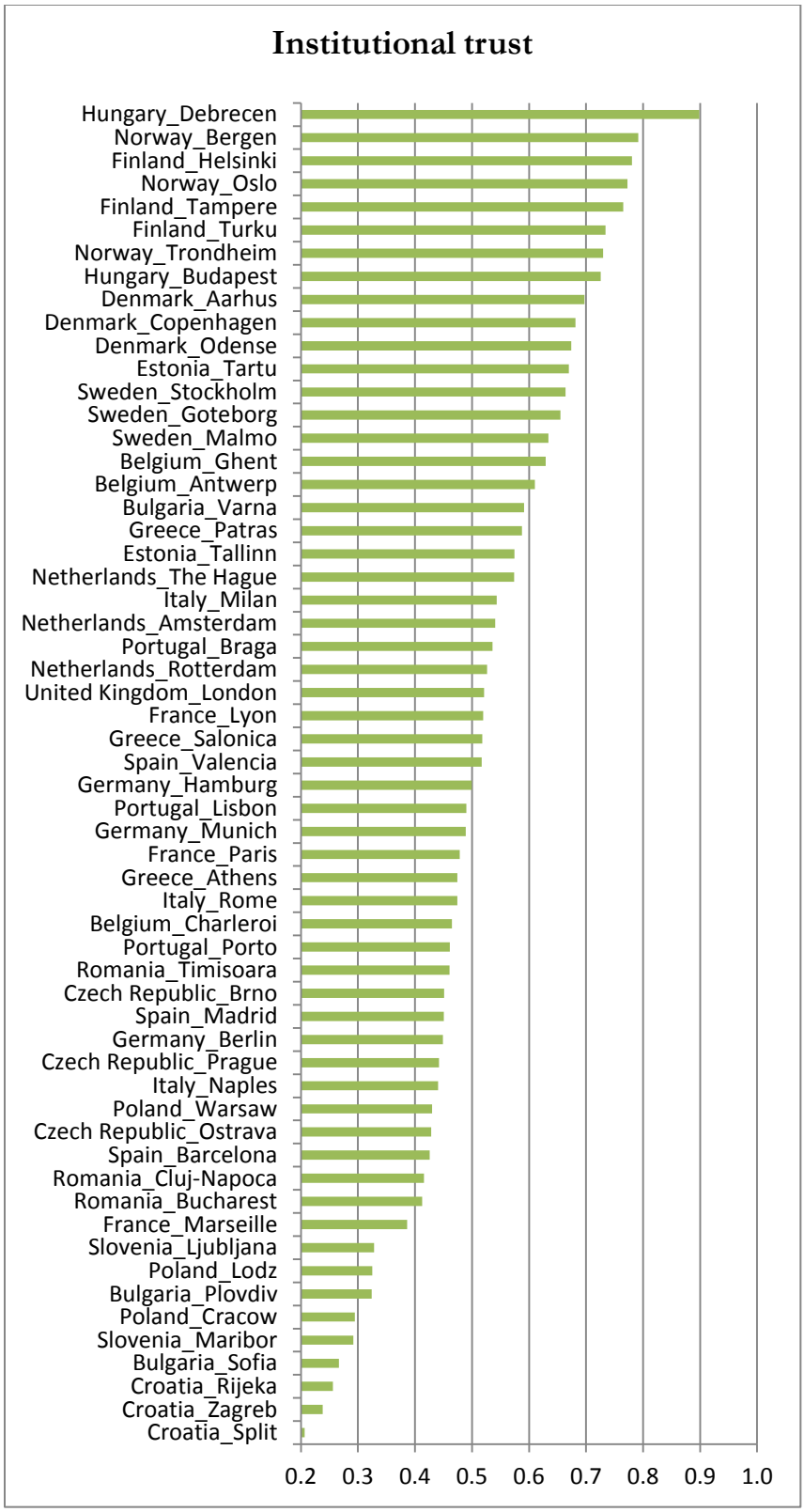

Figure 40. Index of Institutional Trust.

Source: own computations based on data from the World Justice Project.

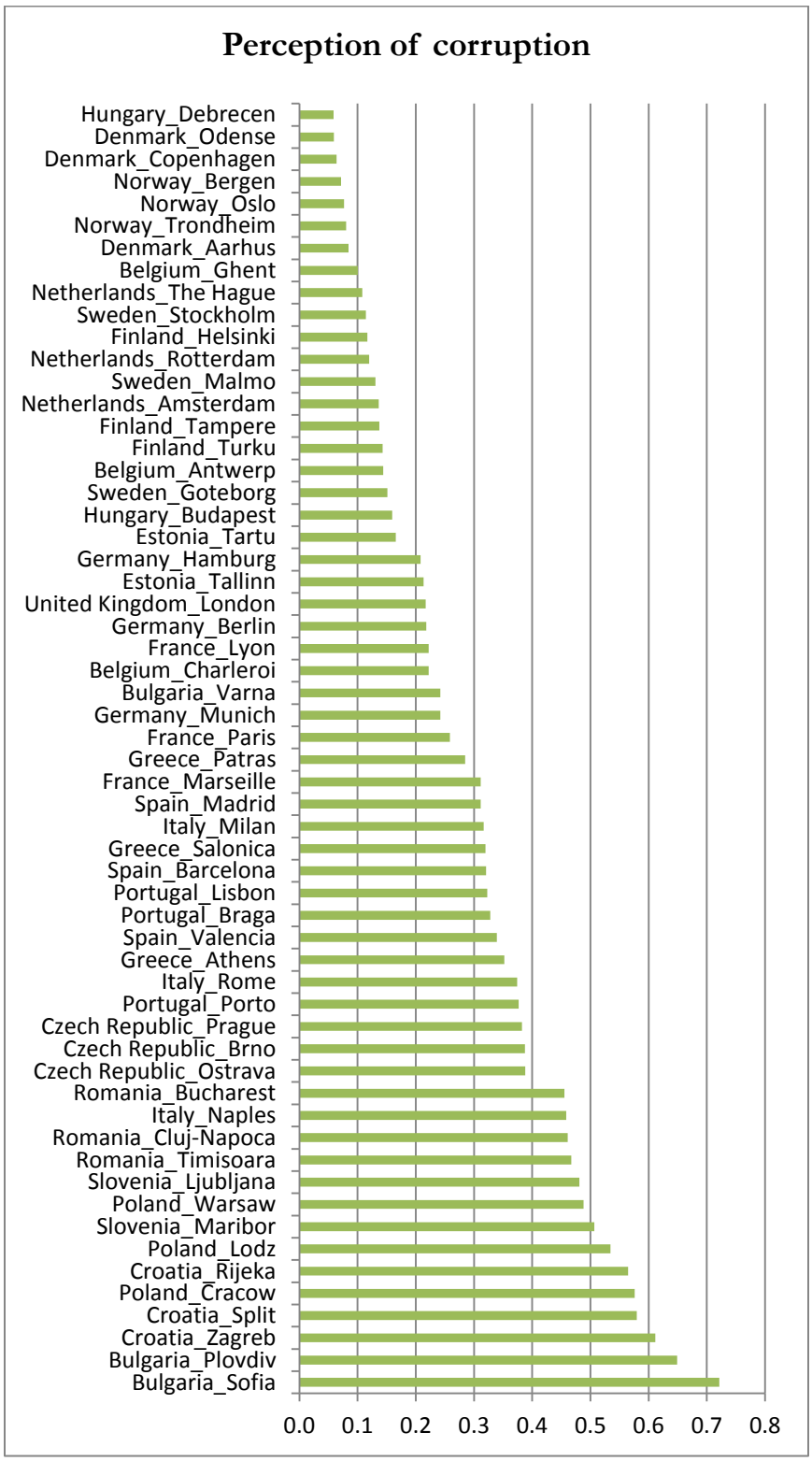

Figure 41. Index of Corruption.

Source: own computations based on data from the World Justice Project.

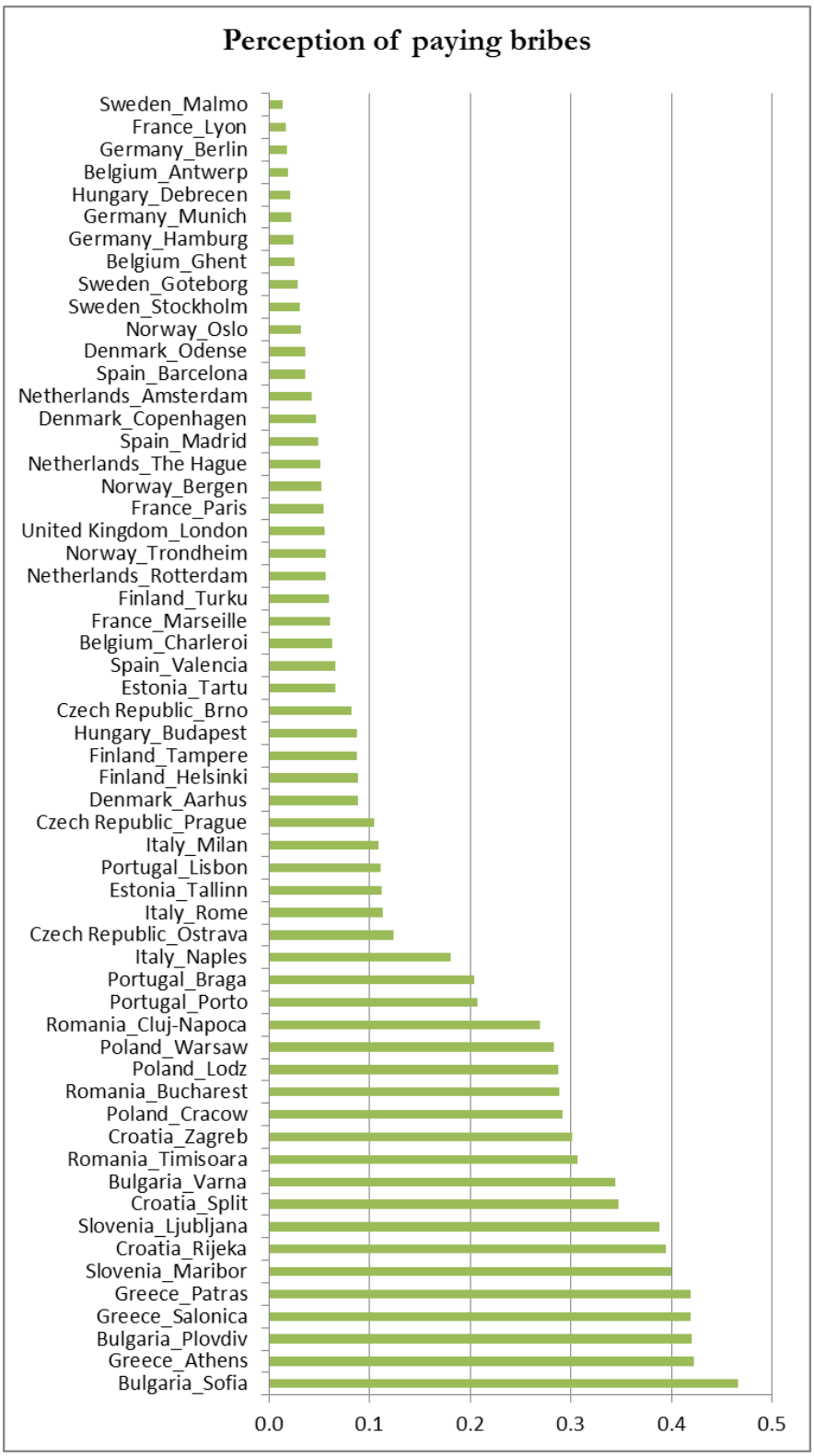

Figure 42. Index of Bribing.
Source: own computations based on data from the World Justice Project.

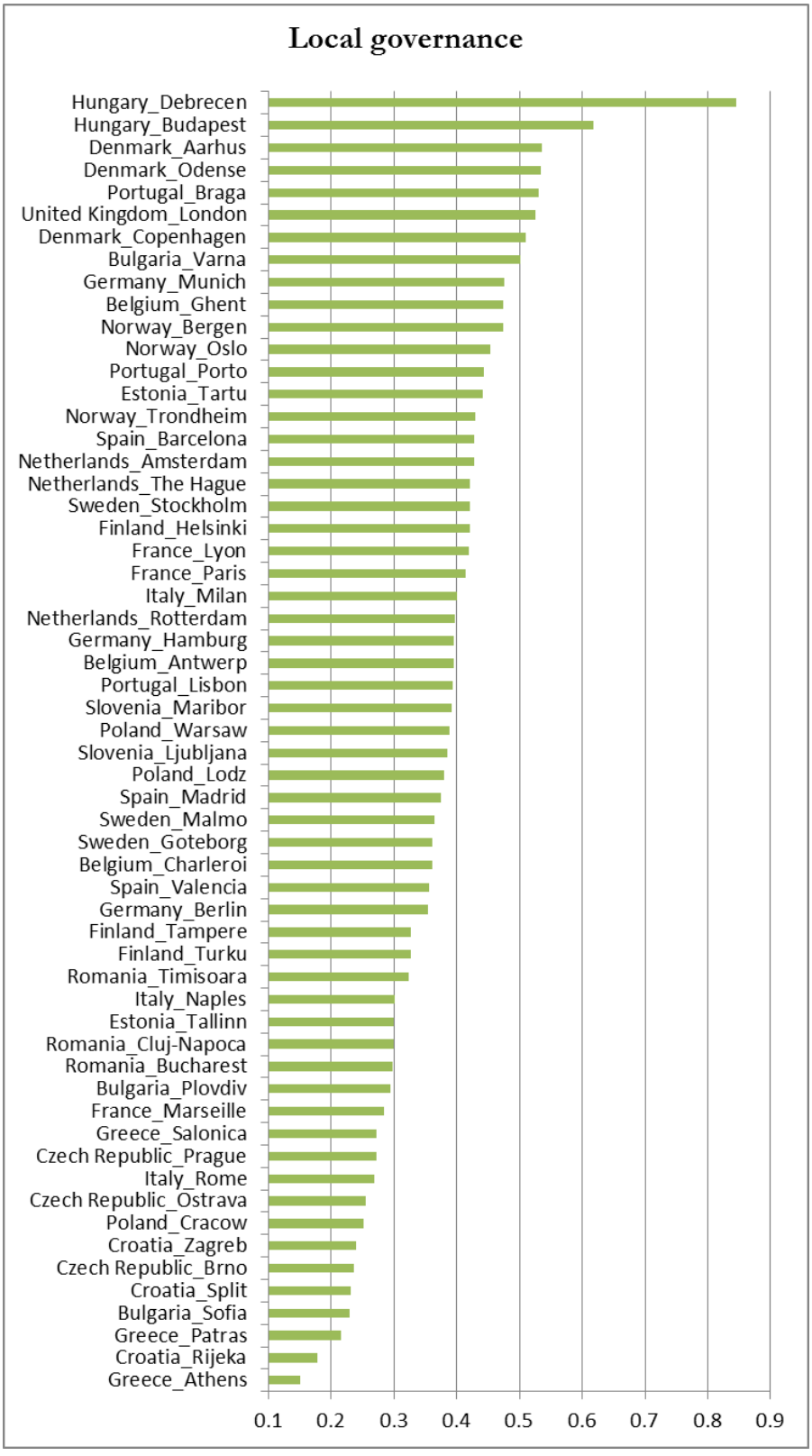

Figure 43. Index of Local Governance performance.
Source: own computations based on data from the World Justice Project.

In Table 40, we present descriptive statistics for all composites – ILE-I, ILE-C, GT, IIT2, IC, IPB and ILG. The theoretical range of all composites is [0, 1]. The most diversified indices are IIT2, IC and the ILG. The least diversified indices are GT, IPB and the ILE-C. We do not present the means because the presented composites are not directly comparable. However, from the analysis of skewness coefficient, we can see the most skewed (and negatively skewed) is ILE-C. It implies that most cities score below the average score of the ILE-C. Other negatively skewed composites are the ILE-I and GT but in these cases the strength of the skewness is negligible. In addition, it must be noted that IPB and ILG are moderately positively skewed which means that most cities score higher than the average score of IPB and ILG, respectively.

Additionally, in Table 41 we see that the constructed composites are mostly significantly correlated. As expected, the correlation between IPB and IC and other composites — due to the orientation — is negative. Then, the insignificant correlations or the weakest observed correlations we observe mostly between ILE-C and other composites, implying that if we want to create a higher order composite ILE-C should be excluded as probably measuring slightly different phenomenon than other composites.

Table 40. Descriptive statistics related to the ILE-I, ILE-C, GT, IIT2, IC, IPB and ILG

Index	Minimum	Maximum	Range	Skewness
ILE-I	0.33	0.85	0.53	-0.176
ILE-C	0.51	0.98	0.47	-2.584
GT	0.52	0.95	0.43	-0.076
IIT2	0.21	0.90	0.69	0.146
IC	0.06	0.72	0.66	0.531
IPB	0.01	0.47	0.45	0.891
ILG	0.15	0.85	0.69	1.009

Source: own computations based on data from the World Justice Project.

Table 41. Correlation matrix — ILE-I, ILE-C, GT, IIT2, IC, IPB and ILG

	ILE-I	ILE-C	GT	IIT2	IC	IPB	ILG
ILE-I	1.000						
ILE-C	0.233	1.000					
GT	0.378**	0.284*	1.000				
IIT2	0.772**	0.333*	0.677**	1.000			
IC	-0.809**	-0.187	-0.462**	-0.893**	1.000		
IPB	-0.680**	-0.061	-0.123	-0.607**	0.776**	1.000	
ILG	0.617**	0.058	0.514**	0.633**	-0.615**	-0.508**	1.000

** significant at 0.01, * significant at 0.05.

Source: own computations based on data from the World Justice Project.

To establish if it is possible to distinguish the groups of cities scoring always the best or always the worst, the K-mean clustering method (Magidson 2002) was applied. Because final grouping may depend on the choice of the classification method, we also performed classification with the hierarchical clustering with Ward's method and squared Euclidean distance. The obtained results were in 93 % cases (54 out of 58) overlapping, implying that the classification results are robust for the classification methods used. The classification results are presented in Figure 44 and in Table 42.

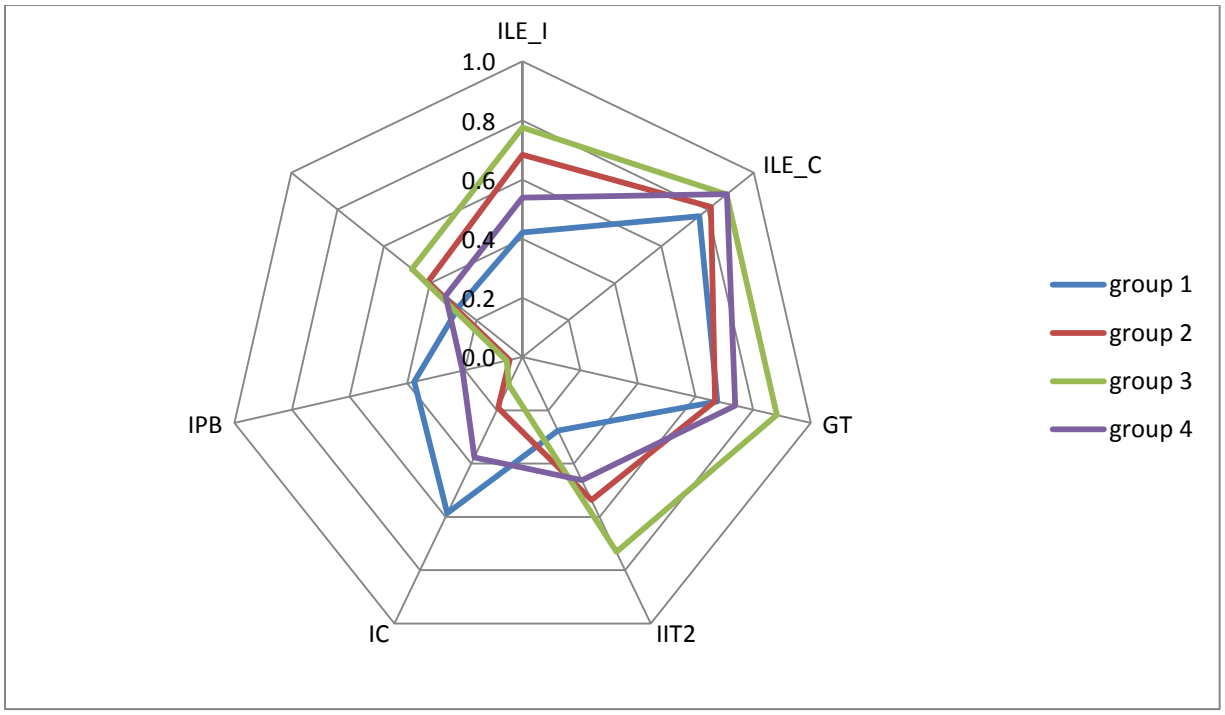

Figure 44. Classification of European cities with respect to ILE-I, ILE-C, GT, IIT2, IC, IPB and ILG

Source: own computations based on data from the World Justice Project.

Table 42. Classification of the European cities with respect to ILE-I, ILE-C, GT, IIT2, IC, IPB and ILG

	Group 1	Group 2	Group 3	Group 4
City	Plovdiv (BG)	Antwerp (BE)	Aarhus (DK)	Varna (BG)
	Sofia (BG)	Charleroi (BE)	Copenhagen (DK)	Brno (CZ)
	Rijeka (HR)	Ghent (BE)	Odense (DK)	Ostrava (CZ)
	Split (HR)	Tallinn (EE)	Tartu (EE)	Prague (CZ)
	Zagreb (HR)	Lyon (FR)	Helsinki (FI)	Marseille (FR)
	Cracow (PL)	Paris (FR)	Tampere (FI)	Athens (GR)
	Ljubljana (SI)	Berlin (DE)	Turku (FI)	Patras (GR)
	Maribor (SI)	Hamburg (DE)	Budapest (HU)	Salonica (GR)
		Munich (DE)	Debrecen (HU)	Rome (IT)
		Milan (IT)	Bergen (NO)	Naples (IT)
		Amsterdam (NL)	Oslo (NO)	Lodz (PL)
		Rotterdam (NL)	Trondheim (NO)	Warsaw (PL)
		The Hague (NL)	Goteborg (SE)	Braga (PT)
		Malmo (SE)	Stockholm (SE)	Lisbon (PT)
		London (UK)		Porto (PT)
				Bucharest (RO)
				Cluj-Napoca (RO)
				Timisoara (RO)
				Barcelona (ES)
				Madrid (ES)
				Valencia (ES)
ILE-I	0.421*	.684	0.777**	.539
ILE-C	0.765*	.815	0.882**	0.883**
GT	.676	0.668*	0.881**	.738
IIT2	0.275*	.537	0.731**	.463
IC	0.586*	.190	0.106**	.376
IPB	0.375*	0.045**	.055	.208
ILG	0.275*	.408	0.478**	.332

* the worst value; ** the best value
Source: own computations based on data from the World Justice Project.

We recall that the classification presented above was conducted with respect to seven criteria. In general, the four obtained city groupings differ significantly with respect to each of them. Detailed results of the comparison are presented in Table 42 ;group means was conducted using the Welch

test (a counterpart of the ANOVA when the homogeneity of variance cannot be assumed) and the Gomes-Howell test for post-hoc multiple comparisons are presented in the Appendix.

With regard to the group profiles, group 1 consists of cities that on average score the worst. This group comprises all Croatian and Slovenian cities and two out of three Bulgarian cities (Plovdiv and Sofia) and one Polish city (Cracow) included in the analysis. Not one Romanian city belongs to this group. This is an interesting finding because it is commonly found that Romanian and Bulgarian NUTS 1 and/or NUTS 2 regions or Romania and Bulgaria often perform similarly with respect to economic or social outcomes (see, for example, Annoni et al. 2012; Annoni & Weziak-Bialowolska 2014; Charron et al. 2014a; Weziak-Bialowolska & Dijkstra 2014; Weziak-Bialowolska 2014).

The best scoring group is Group 3. It included cities that on average score the best (in six out of seven analysed composites). This group comprises all Danish, Finish and Norwegian cities included in the analysis, one Estonian (Tartu), two Swedish (Goteborg and Stockholm) and two Hungarian (Budapest and Debrecen) cities.

Group 2 is on average the second best scoring group — it scores the second best in five out of seven analysed composites. However, this group scores the best with respect to the perception of paying bribes bribing — next to Group 3 and the worst with respect to general trust. This group comprises all Belgian, German, Dutch, and British cities included in the analysis and two Finish (Tampere and Turku), two French (Lyon and Paris) and one Italian (Milan), one Estonian (Tallinn) and one Swedish (Malmo) cities.

The second worst scoring group is Group 4. It scores the second worst with respect to four out of seven composites. However, this group appears also to be the best with respect to the law enforcement towards citizens, and the second best with respect to generalised trust. All Czech, Greek, Portuguese, Romanian and Spanish cities included in the analysis belong to this group,

together with two Polish cities (Lodz and Warsaw), one Bulgarian (Varna), one French (Marseille), and two Italian (Rome and Naples) cities.

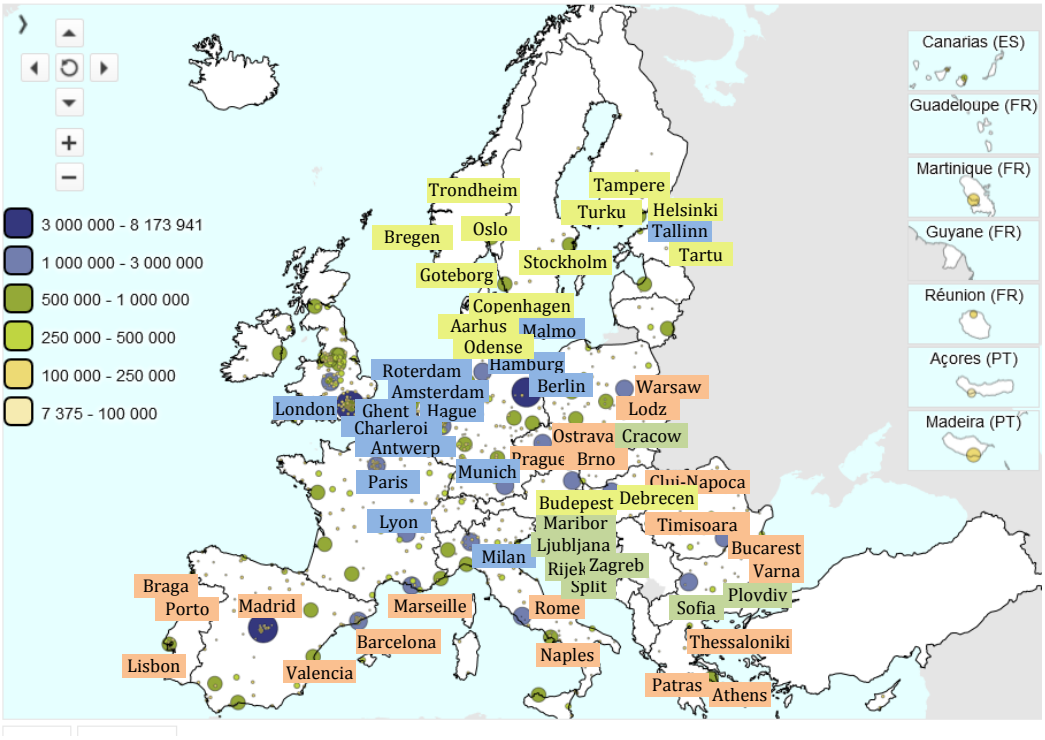

Figure 45. Map - classification of the European cities with respect to the ILE-I, ILE-C, IGT, IIT, IC, IPB and ILG (with the population size indicated)

Note: group 1 -green; group 2 – blue; group 3 - yellow; group 4 - orange;

Our study shows that there is a group of cities (in general situated in the Northern Europe and two Hungarian cities, i.e., Budapest and Debrecen) characterised by the best performance with respect to almost all criteria (six out of seven). There is also a group of cities that scores the worst in six out of seven criteria. To this group belong all Croatian and Slovenian cities and two out of three Bulgarian cities (Plovdiv and Sofia) and one Polish city (Cracow). The remaining two groups are particular. Second best scoring (on average) group comprises cities that score also the worst with respect to

generalised trust. These are mainly Western European cities. Second worst scoring group performs also the best with respect to the law enforcement towards citizens, and the second best with respect to the generalised trust. This group includes Eastern European but also all Southern European cities.

These results show that traditional diversification with respect to geographical location to Western, Northern, Southern and Western Europe is not necessarily correct while examining the institutions and local governance in city perspectives. Although the Western European and Northern European cities are well distinguishable and associated with the most favourable institutional conditions, cities in the Southern and Eastern part of Europe cannot be classified unequivocally based only on the geographical location.

7. Remarks on the generalised trust in Poland, Polish cities and Polish small towns, suburbs and rural areas

The generalised trust occurs in all three approaches are presented in this report. Therefore, it gives us an opportunity to compare the results obtained. However, this opportunity applies only to Poland, Polish cities and Polish small towns, suburbs and rural areas, which will be of interest in this section.

In Table 43, we collected all results related to the generalised trust presented in his report for Poland and we supplemented them with results based on two additional surveys, the European Social Surveys (ESS) and World Value Surveys (WVS). Both these surveys comprise questions on the generalised trust. We compare them by taking into account methodological differences in formulating question and answers as well as considering the area of application, i.e. country versus sub-national level of application.

What can be concluded from the analysis of Table 43 is as follows. First, the level of generalised trust in Poland measured based on the results from the EQLS and the ESS is similar, although the measurement scales differ slightly. Second, the level of the generalised trust measured in the Social Diagnosis and the WVS differ considerably, although the formulation of questions as well as answers are similar in both surveys. Third, the levels of generalised trust in the three biggest Polish cities (Warsaw, Cracow, Lodz) according to the data from the Justice Project is substantially higher than their counterparts calculated based on data from the Social Diagnosis. The differences do not seem to be negligible even when the dissimilarities in the wording of answers are taken into account.

To sum up, to decide which estimates are more accurate definitely requires more profound research. Unfortunately, this is beyond the scope of this project at the current stage.

Table 43. Level of generalised trust in areas in Poland.

Survey	**Area**	**Level (scale)**
EQLS	Country	4.79 [1-10]
EQLS	Cities	4.64 [1-10]
EQLS	Suburbs, small towns, rural areas	4.86 [1-10]
Social Diagnosis	Country	12.8 % (percentage of people who agree that 'You can trust most people')
Social Diagnosis	Warsaw	18.3 % (percentage of people who agree that 'You can trust most people')
Social Diagnosis	The lowest scoring city — Walbrzych	7.0 % (percentage of people who agree that 'You can trust most people')
Social Diagnosis	The highest scoring city — Wroclaw and Torun	20.3 % (percentage of people who agree that 'You can trust most people')
Social Diagnosis	Cracow	19.6 % (percentage of people who agree that 'You can trust most people')
Social	Lodz	9.5 % (percentage of people who agree that 'You can trust most people')
WJP	Cracow	62 % (percentage of people who have a lot or some trust in people leaving in the country)

WJP	Lodz	80 % (percentage of people who have a lot or some trust in people leaving in the country)
WJP	Warsaw	71 % (percentage of people who have a lot or some trust in people leaving in the country)
European Social Survey wave 6 (2012)	Country	4.09 [0-10]
World Value Survey wave 6 (2010-2014)	Country	22.8 % (percentage of people who agree that 'Most people can be trusted')

Source: own computations based on data from the World Justice Project, Social Diagnosis, European Quality of Life Survey, European Social Survey and World Value Survey.

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List of Figures

Appendix

Table A1. Sample size, number of 'don't know' answers and missing data per country — general trust, trust in institutions and quality of public service in the EQLS

Country	sample size	general trust		Q28a		Q28b		Q28c		Q28d		Q28e		Q28f	
		don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal
AT	1032	1	0	10	1	13	1	13	1	6	2	6	2	11	1
BE	1013	4	0	25	0	11	0	11	0	9	0	20	0	14	0
BG	1000	11	6	13	17	48	14	39	13	20	14	17	19	30	13
CY	1006	1	0	27	2	32	2	39	2	18	3	24	4	26	2
CZ	1012	0	0	19	7	14	6	5	3	6	4	14	7	14	4
DE	3055	8	4	61	16	47	13	18	11	23	8	33	18	50	12
DK	1024	1	1	13	1	25	1	7	0	6	0	12	3	17	0
EE	1002	4	0	27	3	72	2	23	0	22	0	20	2	34	1
ES	1512	5	1	71	5	41	2	42	4	13	2	26	4	20	2
FI	1020	2	0	8	0	7	1	7	0	3	0	5	1	14	0
FR	2270	14	2	50	3	12	3	11	3	7	5	13	5	10	3
GR	1004	0	4	10	2	25	0	20	0	5	1	9	7	9	4
HR	1001	14	2	17	7	16	6	11	3	12	2	18	6	17	6
HU	1024	4	1	18	14	29	5	14	5	17	4	18	12	25	4
IE	1051	1	0	21	1	23	0	9	0	4	1	10	0	33	0
IS	1000	5	0	5	2	6	0	7	1	1	0	4	2	12	3
IT	2250	6	3	21	12	25	7	30	3	13	3	12	16	26	7
LU	1005	5	2	100	4	50	2	19	2	13	0	56	1	35	3
LV	1009	6	0	23	5	79	2	23	1	47	0	23	2	39	2
MT	1001	7	2	86	11	95	6	62	3	24	3	42	11	56	6
NL	1008	1	0	31	1	14	0	12	0	6	0	11	1	24	1

PL	2262	8	1	63	4	91	1	46	2	39	5	40	6	64	6
PT	1013	4	0	36	0	39	0	32	0	9	0	25	0	21	0
RO	1542	27	0	33	4	86	2	64	2	41	0	36	5	44	3
SE	1007	4	0	11	3	17	0	12	1	7	0	17	1	17	1
SI	1008	2	1	13	1	14	0	9	0	20	0	12	0	11	1
SK	1000	5	9	10	6	22	5	19	5	11	4	18	8	19	9
UK	2252	18	2	63	2	65	1	28	2	17	1	30	2	43	1

		Q53a		**Q53b**		**Q53c**		**Q53d**		**Q53e**		**Q53f**		**Q53g**	
	sample size	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal	don't know	refusal
AT	1032	8	1	40	2	35	1	197	2	234	1	169	1	60	2
BE	1013	9	0	41	1	72	0	347	2	238	2	259	2	131	1
BG	1000	24	11	156	12	76	10	225	13	266	15	485	17	109	17
CY	1006	34	0	77	0	183	0	325	0	482	0	323	1	109	0
CZ	1012	1	1	48	0	14	1	114	2	186	4	245	3	65	0
DE	3055	14	1	144	8	70	7	567	31	875	40	970	52	181	15
DK	1024	16	1	81	0	64	0	214	2	220	2	239	1	129	3
EE	1002	31	1	104	2	76	0	467	0	514	1	524	0	116	1
ES	1512	12	1	127	1	94	2	519	4	497	5	505	5	202	3
FI	1020	7	0	25	0	29	1	171	5	143	6	190	2	90	1
FR	2270	15	0	80	1	196	0	723	0	529	0	428	4	160	1
GR	1004	8	1	62	1	39	1	246	20	309	20	333	25	44	0
HR	1001	18	0	42	0	56	1	124	2	128	2	218	4	48	0
HU	1024	7	1	103	6	94	4	373	9	417	10	371	8	109	7
IE	1051	18	0	52	1	56	0	447	1	376	0	336	0	281	0
IS	1000	8	0	19	0	76	1	198	2	200	1	329	1	201	6
IT	2250	14	3	98	5	180	4	351	8	525	9	411	5	120	5
LU	1005	23	1	158	1	73	0	443	1	457	1	580	2	280	1
LV	1009	42	1	165	0	70	0	401	3	551	6	421	5	116	0
MT	1001	20	0	78	0	126	0	381	0	383	0	479	0	308	0

NL	1008	6	0	89	2	103	0	490	1	230	1	238	0	189	1
PL	2262	35	2	192	2	130	1	486	3	777	7	709	4	205	2
PT	1013	8	0	84	0	60	0	264	0	289	1	340	0	93	0
RO	1542	37	1	102	1	199	2	543	1	650	5	629	7	582	7
SE	1007	7	0	77	0	38	0	278	0	273	1	260	0	176	1
SI	1008	7	0	38	1	78	2	193	6	187	6	295	4	52	1
SK	1000	15	1	122	4	50	1	207	6	292	9	283	7	82	14
UK	2252	25	2	260	2	249	2	1344	3	1008	2	886	2	597	3

Table A2. Sample size, number of 'don't know' answers and missing data per city — general trust and free-riding in the Social Diagnosis survey.

City	Sample size	general trust		FR1		FR2		FR3		FR4		FR5	
		difficult to say	refusal/missing data	difficult to say	refusal/missing data	difficult to say	refusal/missing data	difficult to say	refusal/missing data	difficult to say	refusal/missing data	it is difficult to say	refusal/missing data
Bialystok	402	33	1	22	2	21	3	25	3	30	3	33	3
Bielsko-Biala	382	32	0	25	0	21	0	22	0	34	0	24	0
Bydgoszcz	515	44	4	42	2	24	2	31	2	33	2	39	2
Cracow	1191	102	1	45	6	21	2	36	4	37	2	27	3
Czestochowa	324	12	0	15	0	12	0	13	0	16	0	25	0
Gdansk	707	64	2	41	0	29	0	47	0	47	0	51	0
Gdynia	266	20	0	21	0	15	0	17	0	21	0	21	0
Gliwice	239	11	0	13	4	8	1	8	1	14	1	14	1
Gorzow Wielkopolski	229	18	0	20	0	14	0	13	0	16	0	15	0
Jaworzno	305	16	0	15	0	13	0	13	0	13	0	14	0
Katowice	482	47	3	29	0	20	0	24	0	24	0	30	0
Kielce	293	30	0	29	0	21	0	36	0	28	0	27	0

Lodz	1194	106	2	49	2	33	2	47	2	45	2	54	2
Lublin	493	36	0	24	2	25	5	23	2	28	2	33	2
Olsztyn	282	37	0	17	2	16	2	16	2	21	2	24	2
Opole	169	8	0	5	0	6	0	9	0	11	0	10	0
Poznan	649	43	4	35	6	31	7	27	7	37	7	45	7
Radom	376	27	2	23	0	18	1	29	1	24	1	30	1
Ruda Slaska	215	15	0	31	2	19	2	20	2	28	2	32	2
Sosnowiec	326	45	1	39	0	25	0	39	2	30	0	29	0
Szczecin	586	58	0	28	0	23	0	28	0	37	0	51	0
Torun	295	16	3	5	0	6	0	7	0	9	0	23	0
Walbrzych	259	31	0	20	0	11	0	17	0	20	0	51	0
Warsaw	2415	179	9	86	8	70	8	81	5	120	5	88	5
Wloclawek	148	22	0	9	0	11	0	11	0	13	0	18	0
Wroclaw	945	63	5	33	4	19	4	19	4	41	4	53	2
Zabrze	190	8	2	11	1	2	1	6	1	8	1	5	1

Table A3. Sample sizes — World Justice Project — the General Population Poll

	q9a	**q9b**	**q10a**	**q12a**	**q12b**	**q12c**	**q13a**	**q13b**	**q17a**	**q18a**	**q18b**	**q18c**	
Belgium_Antwerp	497	500	511	524	515	511	521	509	523	482	486	500	
Belgium_Charleroi	187	184	196	203	199	198	195	198	197	180	179	179	
Belgium_Ghent	244	239	243	255	249	249	247	249	254	233	234	239	
Bulgaria_Plovdiv	188	187	189	193	196	197	197	197	198	198	199	198	
Bulgaria_Sofia	567	550	581	594	591	593	595	593	614	605	606	605	
Bulgaria_Varna	186	183	188	196	195	187	198	198	197	197	197	197	
Croatia_Rijeka	112	114	114	114	114	114	114	114	114	114	114	114	
Croatia_Split	148	155	155	155	155	156	157	157	157	157	157	157	
Croatia_Zagreb	707	723	725	728	719	718	726	726	727	729	729	729	
Czech Republic_Brno	196	197	197	196	198	196	203	202	202	202	202	200	

Czech Republic_Ostrava	175	178	176	179	181	175	181	180	181	178	178	180	
Czech Republic_Prague	587	586	584	594	596	595	608	602	601	595	597	599	
Denmark_Aarhus	293	293	293	293	293	293	293	293	293	293	293	293	
Denmark_Copenhagen	487	487	487	487	487	487	487	487	487	487	487	487	
Denmark_Odense	220	220	220	220	220	220	220	220	220	220	220	220	
Estonia_99. Other	158	157	156	162	157	160	162	158	161	143	143	151	
Estonia_Narva	11	11	11	10	11	11	11	11	10	11	10	11	
Estonia_Tallinn	521	524	525	528	525	524	530	527	534	500	493	492	
Estonia_Tartu	271	272	263	274	273	270	276	274	278	249	247	251	
Finland_Helsinki	555	555	555	555	555	555	555	555	555	555	555	555	
Finland_Tampere	227	227	227	227	227	227	227	227	227	227	227	227	
Finland_Turku	218	218	218	218	218	218	218	218	218	218	218	218	
France_Lyon	136	145	148	146	146	145	144	144	146	144	143	139	
France_Marseille	111	110	109	110	107	108	110	110	108	102	101	102	
France_Paris	692	696	701	699	692	695	689	692	698	662	659	658	
Germany_Berlin	472	472	468	477	478	481	476	483	486	464	463	455	
Germany_Hamburg	257	261	259	267	269	268	266	271	272	255	251	251	
Germany_Munich	197	195	201	199	202	198	201	204	202	194	194	193	
Greece_Athens	687	675	686	686	688	695	696	693	691	693	692	689	
Greece_Patras	101	102	102	101	102	100	102	102	102	102	101	102	
Greece_Salonica	194	194	195	196	196	198	197	197	197	197	196	196	
Hungary_Budapest	807	807	806	809	808	808	809	810	812	797	798	801	
Hungary_Debrecen	97	95	93	106	106	106	106	106	106	106	106	106	
Hungary_Miskolc	80	79	79	80	80	80	80	80	80	77	77	77	
Italy_99. Other	3	3	3	3	3	3	3	3	3	3	3	3	
Italy_Milan	262	257	255	262	260	255	261	261	263	255	257	256	
Italy_Naples	171	167	169	173	172	169	170	171	173	172	172	172	
Italy_Rome	511	508	504	515	510	505	513	512	519	506	508	506	
Netherlands_Amsterdam	377	374	376	383	386	388	393	389	397	377	376	374	
Netherlands_Rotterdam	314	316	313	316	313	311	315	313	324	297	299	296	
Netherlands_The Hague	241	234	241	241	238	239	243	242	252	226	227	223	

Norway_Bergen	215	205	212	224	215	214	213	217	228	214	212	208	
Norway_Oslo	545	525	530	546	531	543	545	549	569	535	537	521	
Norway_Trondheim	165	161	167	174	167	165	172	171	177	172	173	167	
Poland_Cracow	282	297	291	300	298	296	298	298	300	299	299	299	
Poland_Lodz	239	235	249	249	246	246	248	248	249	249	249	249	
Poland_Warsaw	434	434	441	451	444	448	451	445	447	449	449	449	
Portugal_Braga	111	111	111	111	111	111	111	111	111	111	111	111	
Portugal_Lisbon	498	498	498	498	498	498	498	498	498	498	498	498	
Portugal_Porto	391	391	391	391	391	391	391	391	391	391	391	391	
Romania_Bucharest	408	437	432	443	439	437	440	440	446	446	446	446	
Romania_Cluj-Napoca	261	277	274	282	277	279	281	281	282	282	282	282	
Romania_Timisoara	254	270	267	272	270	270	272	272	272	272	272	272	
Slovenia_Celje	81	81	81	81	81	81	81	81	80	80	80	80	
Slovenia_Ljubljana	673	673	673	673	673	673	673	673	672	659	659	662	
Slovenia_Maribor	246	246	246	246	246	246	246	246	246	241	242	242	
Spain_Barcelona	267	271	276	274	275	271	273	273	279	273	272	274	
Spain_Madrid	551	555	562	568	565	562	561	560	564	558	554	556	
Spain_Valencia	138	140	142	145	142	142	142	142	146	143	141	142	
Sweden_Goteborg	261	276	293	308	312	313	314	314	315	298	298	293	
Sweden_Malmo	161	169	182	185	184	189	186	189	193	184	187	184	
Sweden_Stockholm	410	415	454	453	462	464	455	462	474	452	452	448	
United Kingdom_Birmingham	82	80	81	79	82	83	80	81	85	81	82	83	
United Kingdom_Glasgow	67	65	67	62	65	65	66	66	66	65	65	67	
United Kingdom_London	751	747	764	770	770	769	771	777	806	753	755	760	
	q18d	**q18e**	**q36a**	**q36b**	**q36c**	**q36d**	**q36e**	**q15a**	**q15b**	**q15c**	**q15d**	**q15e**	**q15f**
Belgium_Antwerp	496	502	399	453	408	455	433	486	450	490	472	435	465
Belgium_Charleroi	180	183	145	167	160	172	169	184	169	194	187	173	181
Belgium_Ghent	239	240	197	224	197	218	221	230	223	234	232	222	228

Bulgaria_Plovdiv	198	196	170	180	173	189	165	189	166	192	167	162	193
Bulgaria_Sofia	604	604	426	481	486	508	454	471	414	491	495	469	485
Bulgaria_Varna	196	196	123	155	166	167	162	142	127	161	160	147	165
Croatia_Rijeka	114	114	86	95	92	87	85	110	111	112	108	108	111
Croatia_Split	157	157	116	133	127	124	119	150	149	152	149	151	152
Croatia_Zagreb	729	729	543	625	620	574	566	707	710	718	685	688	703
Czech Republic_Brno	196	197	176	184	185	182	181	184	183	187	182	179	182
Czech Republic_Ostrava	178	179	152	162	167	170	168	157	148	165	169	161	154
Czech Republic_Prague	589	599	526	544	543	547	537	536	511	557	543	538	533
Denmark_Aarhus	293	293	293	293	293	293	293	293	293	293	293	293	293
Denmark_Copenhagen	487	487	487	487	487	487	487	487	487	487	487	487	487
Denmark_Odense	220	220	220	220	220	220	220	220	220	220	220	220	220
Estonia_99. Other	150	147	152	156	149	145	152	142	134	139	132	128	139
Estonia_Narva	10	11	6	9	7	9	8	11	11	10	11	11	11
Estonia_Tallinn	479	498	433	460	437	454	458	459	410	468	431	400	457
Estonia_Tartu	245	252	241	248	237	251	260	211	194	231	215	191	221
Finland_Helsinki	555	555	555	555	555	555	555	555	555	555	555	555	555
Finland_Tampere	227	227	227	227	227	227	227	227	227	227	227	227	227
Finland_Turku	218	218	218	218	218	218	218	218	218	218	218	218	218
France_Lyon	140	143	115	117	118	124	120	133	113	141	134	125	131
France_Marseille	103	104	88	92	93	100	96	104	97	107	107	101	103
France_Paris	647	662	540	568	596	615	600	661	576	669	652	622	633
Germany_Berlin	456	460	406	443	450	457	462	432	381	427	416	409	425
Germany_Hamburg	250	252	229	244	237	239	240	230	211	230	230	222	225
Germany_Munich	193	192	168	183	179	181	183	182	168	185	179	174	180
Greece_Athens	685	688	644	687	653	682	665	660	619	656	636	630	660
Greece_Patras	102	102	102	101	95	101	101	96	96	97	93	94	96
Greece_Salonica	197	197	188	195	188	193	193	182	174	182	176	180	184
Hungary_Budapest	797	801	809	811	813	812	810	774	760	779	776	760	770
Hungary_Debrecen	105	105	106	106	106	106	106	105	106	105	106	105	105
Hungary_Miskolc	77	77	80	80	79	80	80	75	73	74	75	72	75

Italy_99. Other	3	3					1	3	3	3	3	3	3
Italy_Milan	255	250	213	216	223	231	231	245	236	253	250	243	244
Italy_Naples	174	173	166	170	170	171	162	161	167	168	164	167	164
Italy_Rome	509	502	408	436	438	435	447	494	472	501	496	486	491
Netherlands_Amsterdam	369	375	304	347	328	339	327	358	337	368	364	334	350
Netherlands_Rotterdam	296	301	265	290	283	289	282	297	280	307	301	285	295
Netherlands_The Hague	222	222	194	220	205	213	210	223	198	227	217	196	218
Norway_Bergen	214	216	187	201	202	201	204	206	188	208	201	189	194
Norway_Oslo	529	535	449	493	499	490	491	493	443	491	486	448	472
Norway_Trondheim	168	168	145	156	157	155	155	151	141	150	146	133	141
Poland_Cracow	297	300	241	241	275	249	285	291	281	297	288	286	286
Poland_Lodz	247	247	199	204	223	204	236	234	249	242	231	231	232
Poland_Warsaw	441	448	400	415	423	404	429	429	439	441	436	421	426
Portugal_Braga	111	111	111	111	111	111	111	111	111	111	111	111	111
Portugal_Lisbon	498	498	498	498	498	498	498	498	498	498	498	498	498
Portugal_Porto	391	391	391	391	391	391	391	391	391	391	391	391	391
Romania_Bucharest	446	446	349	373	403	390	413	423	426	438	417	415	416
Romania_Cluj-Napoca	282	282	210	215	266	239	270	271	273	276	267	265	265
Romania_Timisoara	272	272	216	226	257	238	256	260	262	266	262	258	256
Slovenia_Celje	80	80	80	81	81	81	81	81	81	81	81	81	81
Slovenia_Ljubljana	659	661	669	670	671	671	673	673	673	673	673	673	673
Slovenia_Maribor	240	242	246	246	246	246	246	246	246	246	246	246	246
Spain_Barcelona	268	270	220	243	231	238	240	267	265	272	272	266	269
Spain_Madrid	549	549	464	495	484	502	497	547	539	557	557	541	547
Spain_Valencia	138	137	121	132	128	130	129	142	133	140	141	140	141
Sweden_Goteborg	294	293	277	290	288	297	292	257	216	275	263	258	269
Sweden_Malmo	181	183	167	175	174	172	173	161	133	161	158	157	162
Sweden_Stockholm	434	447	419	437	428	445	434	405	323	405	398	382	382
United Kingdom_Birmingham	81	81	81	84	84	85	85	78	76	79	79	75	79
United	61	67	57	60	57	63	61	58	57	62	63	60	64

Kingdom_Glasgow													
United Kingdom_London	737	755	696	739	717	746	744	716	642	728	717	659	704

Table A4. Test of homogeneity of variance and the Welch test

Variables	**Test of Homogeneity of Variances**				**Robust Tests of Equality of Means — Welch test**			
	Levene Statistic	df1	df2	Sig.	Statistic[a]	df1	df2	Sig.
ILE_I	.319	3	54	.812	53.744	3	22.856	.000
ILE_C	15.594	3	54	.000	12.999	3	21.908	.000
GT	5.368	3	54	.003	42.667	3	23.329	.000
IIT2	.351	3	54	.788	127.510	3	25.778	.000
IC	1.438	3	54	.242	124.075	3	23.115	.000
IPB	19.002	3	54	.000	79.528	3	22.834	.000
ILG	2.042	3	54	.119	9.979	3	23.412	.000

a. Asymptotically F distributed.

Table A5. Multiple comparisons by the Games-Howell test

Dependent Variable	(I) QCL_1 Cluster Number of Case	(J) QCL_1 Cluster Number of Case	Mean Difference (I-J)	Std. Error	Sig.	95 % Confidence Interval	
						Lower Bound	Upper Bound
ILE_I	1	2	–.26263*	.03364	.000	–.3666	–.1586
		3	–.35507*	.03523	.000	–.4610	–.2491
		4	–.11779*	.03473	.027	–.2228	–.0127
	2	1	.26263*	.03364	.000	.1586	.3666
		3	–.09244*	.02095	.001	–.1501	–.0348
		4	.14485*	.02011	.000	.0905	.1992
	3	1	.35507*	.03523	.000	.2491	.4610
		2	.09244*	.02095	.001	.0348	.1501
		4	.23729*	.02266	.000	.1757	.2989
	4	1	.11779*	.03473	.027	.0127	.2228
		2	–.14485*	.02011	.000	–.1992	–.0905
		3	–.23729*	.02266	.000	–.2989	–.1757
ILE_C	1	2	–.05038	.05678	.812	–.2361	.1354
		3	–.11725	.05686	.249	–.3030	.0685
		4	–.11839	.05699	.244	–.3041	.0674
	2	1	.05038	.05678	.812	–.1354	.2361
		3	–.06687*	.01247	.000	–.1010	–.0327
		4	–.06801*	.01301	.000	–.1031	–.0329
	3	1	.11725	.05686	.249	–.0685	.3030
		2	.06687*	.01247	.000	.0327	.1010
		4	–.00114	.01336	1.000	–.0373	.0350
	4	1	.11839	.05699	.244	–.0674	.3041
		2	.06801*	.01301	.000	.0329	.1031
		3	.00114	.01336	1.000	–.0350	.0373
GT	1	2	.00770	.03251	.995	–.0868	.1022
		3	–.20586*	.02873	.000	–.2947	–.1170
		4	–.06236	.03440	.302	–.1602	.0355
	2	1	–.00770	.03251	.995	–.1022	.0868
		3	–.21356*	.02169	.000	–.2737	–.1534
		4	–.07006	.02878	.090	–.1478	.0077
	3	1	.20586*	.02873	.000	.1170	.2947
		2	.21356*	.02169	.000	.1534	.2737
		4	.14350*	.02443	.000	.0769	.2101
	4	1	.06236	.03440	.302	–.0355	.1602
		2	.07006	.02878	.090	–.0077	.1478
		3	–.14350*	.02443	.000	–.2101	–.0769
IIT2	1	2	–.26137*	.02107	.000	–.3207	–.2020
		3	–.45593*	.02327	.000	–.5212	–.3907
		4	–.18721*	.02025	.000	–.2441	–.1303
	2	1	.26137*	.02107	.000	.2020	.3207

		3	–.19456*	.02327	.000	–.2584	–.1307
		4	.07415*	.02025	.005	.0193	.1290
	3	1	.45593*	.02327	.000	.3907	.5212
		2	.19456*	.02327	.000	.1307	.2584
		4	.26871*	.02253	.000	.2070	.3304
	4	1	.18721*	.02025	.000	.1303	.2441
		2	–.07415*	.02025	.005	–.1290	–.0193
		3	–.26871*	.02253	.000	–.3304	–.2070
IC	1	2	.39578*	.03153	.000	.3025	.4891
		3	.48032*	.02895	.000	.3904	.5703
		4	.20996*	.03159	.000	.1168	.3031
	2	1	–.39578*	.03153	.000	–.4891	–.3025
		3	.08454*	.01949	.001	.0307	.1384
		4	–.18582*	.02323	.000	–.2487	–.1230
	3	1	–.48032*	.02895	.000	–.5703	–.3904
		2	–.08454*	.01949	.001	–.1384	–.0307
		4	–.27036*	.01960	.000	–.3235	–.2172
	4	1	–.20996*	.03159	.000	–.3031	–.1168
		2	.18582*	.02323	.000	.1230	.2487
		3	.27036*	.01960	.000	.2172	.3235
IB	1	2	.33035*	.02237	.000	.2608	.3999
		3	.32032*	.02186	.000	.2511	.3895
		4	.16737*	.03513	.000	.0710	.2638
	2	1	–.33035*	.02237	.000	–.3999	–.2608
		3	–.01003	.01047	.774	–.0387	.0187
		4	–.16298*	.02942	.000	–.2443	–.0816
	3	1	–.32032*	.02186	.000	–.3895	–.2511
		2	.01003	.01047	.774	–.0187	.0387
		4	–.15295*	.02904	.000	–.2335	–.0724
	4	1	–.16737*	.03513	.000	–.2638	–.0710
		2	.16298*	.02942	.000	.0816	.2443
		3	.15295*	.02904	.000	.0724	.2335
ILG	1	2	–.13333*	.03069	.005	–.2257	–.0410
		3	–.20321*	.04487	.001	–.3288	–.0776
		4	–.05714	.03412	.369	–.1550	.0407
	2	1	.13333*	.03069	.005	.0410	.2257
		3	–.06988	.03848	.300	–.1792	.0394
		4	.07619*	.02512	.023	.0082	.1442
	3	1	.20321*	.04487	.001	.0776	.3288
		2	.06988	.03848	.300	–.0394	.1792
		4	.14607*	.04126	.009	.0313	.2608
	4	1	.05714	.03412	.369	–.0407	.1550
		2	–.07619*	.02512	.023	–.1442	–.0082
		3	–.14607*	.04126	.009	–.2608	–.0313

*. The mean difference is significant at the 0.05 level.

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