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## Measuring Control of Corruption by a New Index of Public Integrity

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## 1. Abstract

While the last twenty years saw the invention of corruption rankings, allowing comparison over countries and the shaming of corrupt governments, such measurements are largely based on perceptions of experts, lacking both specificity and transparency. New research, based on a comprehensive theory of governance defined as the set of formal and informal institutions determining who gets what in a given context, allows more specific and objective, although indirect measurements of control of corruption. Such measurements focus on the institutional framework which empowers public integrity and eliminates many current anticorruption tools, while validating others. Most importantly, it provides a broader specific context which can empower reforms based on evidence and a clear measure to determine status and progress of corruption control.<sup>1</sup>

**Keywords:** corruption, public integrity, measurement, anticorruption policy

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## **2. Why the CPI and other corruption perception indexes are limited as policy guidelines**

One day in October 2015, the Prime Minister of Moldova, a splinter Republic from former USSR with four million inhabitants decided to sack of head of the national anticorruption centre CNA, soon after this agency had arrested his party boss, a former Prime Minister himself. So far a common gesture- heads of anticorruption agencies are frequently dismissed especially if they take their job seriously and arrest top people- but Prime Minister Valeriu Strelet was most inventive in his motivation. He claimed that he had the top anticorruption job reshuffled because Moldova regressed in the Corruption Perception Index (CPI) of Transparency International (TI) compared to the previous year.<sup>2</sup>

The first catch is that due to methodological issues, the CPI could not be used to compare across time until very recently. TI itself warns readers about this (largely without result) on its website (Transparency International 2012). Despite some recent repairs of methodology its safest use is to simply compare across countries. The second catch is that there is no way of knowing exactly why Moldova regressed that year. Just as with the World Bank's Control of Corruption indicator (WGI), the CPI only aggregates subjective assessments of national corruption, the exact components of which are hard to decipher since their scores were normalized. In other words, these indexes are an attempt to build objective measures through the statistical aggregation of multiple subjective evaluations. While the exercise manages to create a reasonable framework for comparing across countries, as we have argued elsewhere (ACR 2013, Mungiu-Pippidi 2015), the index remains obscure as to what the country has done right or wrong or even who has done something right or wrong, as trends within a government or a society are not necessarily unitary.

The head of an anticorruption agency can therefore not be hold accountable and sacked for not managing to improve the ranking of his country on such opaque and imprecise data. The only thing the CPI can tell us about Moldova that year is that the level of corruption was still worse than Estonia but probably better than Azerbaijan. It is difficult, however, to be sure of the latter, as a

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<sup>2</sup><http://protv.md/stiri/actualitate/moldova-mai-corupta-in-2015-decat-in-2014-indicele-de-perceptie---1337721.html>; <http://www.mediafax.ro/externe/premierul-republicii-moldova-a-initiat-procedura-pentru-demiterea-procurorului-sef-anticoruptie-14850525>

billion euros was reported stolen from the main Moldovan banks that year despite them being under the supervision of the National Bank and the International Monetary Fund (IMF) ..

It becomes clear then what seems to be missing from the index that Prime Minister Strelt quotes. First, a more transparent methodology would allow to trace evolution from one year to another, while keeping the capacity to compare across countries. Second, more concreteness and specificity would permit to observe the area where the evolution does or does not take place, e.g. the judiciary, the administration, etc. Tracing down trends to specific developments or sectors would bring great value for policy action, especially since we know that formal developments, like the adoption of legislation, do not necessarily have an impact and but that corruption can be found in different practices (Lambsdorff 2008).

To sum up, the major concerns on the aggregate perception indicators can be synthesized as follows:

- Lack of validity of underlying theoretical concepts and of a unitary theory on corruption and governance. The WGI and TI measurements are not based on a thoroughly systematized concept as they rely on various sources with different definitions. That is, instead of having an explicit common definition, they are defined implicitly by the available surveys, which are used for their construction (Knack 2006, Voigt 2009). Although the construction of the WGI index is based on the (unobserved) component analysis which extracts the common factor out of different sources, thereby making the index comparable across countries, the aggregate index cannot naturally distinguish between particular frames of corruption by original sources, constraining also its usefulness for policy purposes.<sup>3</sup> The index developers themselves acknowledge this potential limitation (Kaufmann et al. 2007b).
- Lagging nature of indicators. As noted by Knack (2006) and Hawken and Munck (2009), changes in the assessments of governance might reflect corrections of errors done in the past. Notable example in this context is the worsening of Control of Corruption scores in Greece, Spain, Italy, and Portugal in the aftermath of the recent financial and fiscal crisis which might have resulted from a reassessment of the governance context in the individual data sources. Another related example is the behaviour of the perception indicators which

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<sup>3</sup> The construction of the CPI is, by contrast, based on simple averaging, which makes the problem of aggregation of different concepts even more severe.

showed corruption in Indonesia to be falling until the 1997 financial crisis and rising after the crisis (Hawken and Munck 2009).<sup>4</sup>

- Non-actionable nature of such aggregates. Previous two points imply that the possibility to use this indicator for guiding policymakers and thus to monitor the effectiveness of any anticorruption policy is very limited. Moreover, until very recently the methodology of CPI, has not even allowed for comparison across years even with limitations. Theoretically, the methodology of the WGI allows for comparison over time; in practice, however, Control of Corruption scores exhibit large time persistence. Therefore these indicators can even be harmful for policymakers since their insensitivity to change might give the wrong feedback about the potential outcome of the corresponding reforms (Galtung 2006).

While criticism towards these indexes can be found in plenty, attempts to either replace them or improve on them have been less frequent. The purpose of this study is to build on the state of the art in corruption studies, in particular the work of Bretton Woods institutions (Tanzi 1994; Mauro 1995; Kaufmann et al. 1999; Huther and Shah 2000; Kaufmann et al. 2011) and ours (Mungiu-Pippidi 2006; 2014; 2015), to develop and validate a new construct of control of corruption. According to Nunnally and Bernstein (1994: 86-87), three major aspects of construct validation need to be considered: (1) specifying the domain of observables related to the construct; (2) determining the extent to which observables tend to measure the same thing from empirical research and statistical analyses; and (3) performing subsequent individual difference studies and/or experiments to determine the extent to which supposed measures of the construct are consistent “best guesses” about the construct. In accordance to this strategy, we undertook the following steps:

1. We carefully reviewed all separate items associated with control of corruption in econometric literature, identified correlations between them and grouped them into related categories.
2. We defined and adopted the categories based on the theory offered by Mungiu-Pippidi (2006). It sees the control of corruption as a continuum that ranges from absolute particularism (all allocation of public resources and goods in a society is based on some particular connection between the power holders who authorize the allocation and the receiving party) to absolute ethical universalism (allocation is impartial and impersonal, based on equality). In corrupt societies, transactions based on particularism constitute a majority, while in less corrupt ones ethical universalism become the norm and particularism

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<sup>4</sup> However, Kaufmann et al. (2007b) do not find systematic evidence that proves this argument.

the exception. Rather than normatively identifying a benchmark of good governance we that a society's position on this continuum is an equilibrium determined by the resources that facilitate the spoiling of the state and the constraints that prevent such an occurrence (Mungiu-Pippidi 2015, ch. 4).

3. We tested the resources vs. constraints model described above and found it valid at national level on a panel of 119-153 countries in time series, with some foreseeable limitations due to the subjective nature of dependent variables (CPI, CoC and Global Corruption Barometer survey item "Most officials are corrupt") and the linkage between variables in the model. This is reported in Mungiu-Pippidi 2015 (chapter 4).
4. Further on, we selected a single proxy from each category of variables (on grounds of their effectiveness as determinants, policy relevance and availability of continuous documentation in the public domain as open data) and rebuilt the model with these determinants or pairs of them (one for resources and one for constraints) showing that the interaction multiplies their effect and the equilibrium is thus a result of both.
5. We then engage in the construction of the scale by correlating one item per category and extracting a principal component, which we label as "Index of Public Integrity". We then classify countries on the index and each of the components and result with a global ranking of public integrity.
6. We validate the construct by correlating it with other corruption and development indicators.

The result is an indirect way of capturing the national level of control of corruption which we infer from our own statistical exercises and fully based on institutional factors empirically proven to be significantly associated with effective control of corruption.

The selected factors capture the following elements: the degree of the *judicial independence*, the extent of *administrative discretion*, the level of *trade openness*, the degree of *budget transparency*, the *endowment of citizens with electronic means* which can be used to supervise government and/or associate among themselves, and the degree of *free media*. We identify for almost each objective indicators. In addition to their separate significant association with control of corruption, we also show how possible interactions of these factors might create control of corruption. These factors are thus supposed to reflect the complex mechanisms between transparency and accountability on one side and limited resources for discretionary power on the other, in order to establish a national framework for public integrity. In the next step, we therefore combine them into one single indicator. By doing so, we rely on the observation that these factors are mutually correlated to a certain extent and extract the common component, which we label as the overall **Index of Public Integrity (IPI)**.

The IPI covers 105 countries and explains more than 75% of cross-national variation of control of corruption as measured by the corresponding World Bank indicator. Furthermore, it correlates highly with some other popular corruption measurements. Unlike those measurements, however, the Index of Public Integrity allows to trace back a country's performance to specific actionable components that can help policy makers identify reform areas for improvement. Although the IPI is strongly correlated with the development level of countries, its variation cannot be mainly explained by the income differences between the countries, which means that it is leaving sufficient room for policy action. Moreover, with exception of the Western societies, which unsurprisingly show on average the highest scores on the public integrity scale, the mean IPI values of other regions do not differ significantly across them. This additionally suggests that policies that can promote better control of corruption are not bounded by the geographical differences across countries.

The next section introduces the categories at the basis of IPI and their theoretical foundation. Section 3 then offers the updated statistical evidence at the basis of our construct and the results of the validation test attempted so far. Section 4 presents the construction of IPI and the global distribution of the scores. Section 5 concludes with the possibilities opened for each country to design its own evidence-based good governance strategy.

### **3. Control of corruption as equilibrium point on a governance continuum**

The academic field has been mostly divided between *micro-theoretical* models, which dominantly conceptualize corruption from the principal-agent perspective, and *macro-empirical* models at the country level, with insufficient communication across disciplines. A bridge, however, is both possible and necessary. Below, we briefly summarize the two perspectives and present a framework that aims to unify an equilibrium theory of control of corruption at macro level.

The ***micro based*** *principal-agent* framework explains corruption as the result of an agent, usually a bureaucrat, who abuses his public office and thereby betrays the principal's interest, typically a top-level policy-maker, for his own individual gain. An important underlying assumption behind this approach is the existence of information asymmetry that prevents the principal to effectively monitor and control the agent's behavior. In other words, corruption at the individual level is attributed, as are other criminal activities (see e.g., Becker 1968), to individuals' weighting of the expected costs and benefits of their actions in a given context. This approach was formalized by Klitgaard (1988) in

his well-known formula that explains corruption as a function of monopoly power over a good or service, the discretion to decide who receives it, and the degree of accountability of public authorities.

The principal-agent framework has become a dominant approach to explain corruption and its consequences. For example, in their seminal paper Shleifer and Vishny (1993) take the principal agent problem as given and analyse how corrupt activities among bureaucrats, in form of accepting bribes, arise depending on the types of public services they provide and the organizational structure of the administrations. Acemoglu and Verdier (2000) ask how the ability of a government to control and punish its bureaucrats feeds back into corruption and misallocation of resources; and Ades and Di Tella (1999) look at the (bureaucrats') incentives to become more corrupt when economic rents are high. As summarized by Aidt (2003), corruption in the public sector is therefore mainly the result of three factors: Discretionary power of the relevant public officials, economic rents and weak administrative institutions.

Consequently, the design of the most anti-corruption policies in developing countries has largely followed the principal-agent framework (Persson et al. 2013). For example, Huther and Shah (2000) developed an evaluation framework for the World Bank's anti-corruption programs that was based on the incentives for opportunistic behaviour by public officials. Effective anti-corruption programs should accordingly aim at "reducing the number of transactions involving public officials, reducing the scope for gains from each transaction, increasing the probability of paying a penalty, or increasing the penalty from corrupt behaviour" (Huther and Shah 2000, p. 3). Moreover, the principal-agent framework implies that the implementation of the resulting anti-corruption policies not only requires the existence of a non-corrupt principal, but also that only some specific and mostly incremental institutional changes are necessary in order to curb and prevent corruption (Rothstein 2011).

This is the background of the policy approach centered on repression of corruption as deviation from a norm. In fact, the international anti-corruption community and inter-governmental organizations developed and promoted a number of must-have specific anti-corruption policy instruments and legal standards, which have been subsequently adopted *en masse* by countries. The establishment of an anti-corruption agency (ACA) has been one of the most prominent recommendations in this context. Arguments that the ACAs are as likely to be affected by the same problems as any other public sector institution failed to convince donors and governments (Doig et al. 2006) and by 2008, 98 countries had already adopted an ACA by the OECD categorization. Scholars found, however,

that countries which adopted an ACA had not progressed more than countries which did not (Mungiu-Pippidi et al. 2011), especially in countries which had not historically attained rule of law, with weak conventional law enforcement bodies (e.g., police, courts, attorney-general offices), even if in some isolated cases the agencies themselves managed to be very active.

This lack of impact of ACAs points to the crucial problem of addressing corruption from a principal-agent perspective: How realistic is it to insulate an agency from domestic politics to make it an objective and effective principal? Why would governments in countries where particularism remains the rule of the game want to change a status quo which is so profitable for their rents and empower truly independent, well-trained and equipped anti-corruption agencies to fight against themselves, and not use against political opponents? Accordingly, after gathering some experience, reports have started to warn that ACAs should not be created without a “systematic assessment of the local (political) context” (USAID 2006: 5). Other related studies also suggest that the success of the anti-corruption efforts, which are based on legal instruments and constraints alone, has been very limited around the world (see, e.g., Fjeldstad and Isaksen 2008; Johnsen et al. 2012; Persson et al. 2013). Furthermore, as documented by Global Integrity, countries with the best legal equipment are far from being the least corrupt.<sup>5</sup>

To conclude, the principal agent model does not work except at the individual level- in other words, when corruption is an exception and the broader norm is ethical universalism. For the rest, which means for most of the developing world, the approach is not helpful because it ignores context: where particularism is the norm, predatory elites largely control also law enforcement and civil service and people are not equal before the law. Designing ‘incentives’ for individuals to be less corrupt, as this school of thought conceives anti-corruption has not worked so far as societies can hardly offer more to the elites which already hijacked their natural resources and public budget and spoil them for their own profit.

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<sup>5</sup> The last relatively large scale Global Integrity report was produced in 2011. Since then the organization has been struggling to continue its work. Reports and further information can be accessed here: <https://www.globalintegrity.org/global-report/what-is-gi-report/>. See also Lambsdorff (2008) for an assessment of the gap between anti-corruption legal framework and the actual practice; and a related joint study on the implementation gap by the Center for International Private Enterprise and Global Integrity: [http://www.cipe.org/sites/default/files/publication-docs/GI%20CIPE\\_Implementation%20Gap\\_for%20web.pdf](http://www.cipe.org/sites/default/files/publication-docs/GI%20CIPE_Implementation%20Gap_for%20web.pdf)

At a **macro level**, the dominant model of control of corruption resulting from cross-country empirical literature oscillates between two broad categories of factors: i) structural and cultural factors (population, legacies, religion, past regimes, development); ii) current politics, policy and constitutional factors. We operate for our index mainly with some key factors from the latter category as the relevance of the first set of factors for any meaningful policy is quite restricted. (See, e.g., Svensson 2005; Seldadyo and De Haan 2006; Treisman 2007; Mungiu-Pippidi et al. 2011 for more extensive surveys). We do believe that the first set of factors can be considered as determinants of the second, and is therefore included indirectly. We can consider that the entire history of a country is conducive to its present quality of governance, but we do not see any reason to consider this as other than a context control, which still allows human agency in any given society to plan and implement actions for better governance, even if with widely varied chances of success (Johnston 2012).

The summary of a country's social and economic history is embodied in the variable known as *level* of development – best proxied by the Human Development Index which, in addition to the income level, comprises measurements of education and life expectancy (Norris and Zinnbauer 2002; Mungiu-Pippidi et al. 2011; Mungiu-Pippidi 2014). It should also be noted that despite the determinism of human development for the quality of governance, at least two fifths of the variation remains unexplained, with impressive overachievers (countries which control corruption far better than predicted by their HDI, like Chile, Botswana, Scandinavian countries) and under-achievers (countries which do far worse than they should, like Venezuela, Zimbabwe, Russia, most Central Asian countries). While the consensus seems to bend towards those who claim that development does not occur when predatory elites are in charge and spoil resources without restraint, what Acemoglu and Robinson (2012) call “extractive institutions”, there is also broad consensus on the complex causality of this relation (Bardhan 1997).<sup>6</sup>

The association between corruption and political development is equally complex. Montinola and Jackman (2002) and Treisman (2007) find a significant nonlinear relationship between democracy and corruption noting that this is potentially driven by older and consolidated democracies. The

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<sup>6</sup>Treisman (2007) shows that the significant relationship between income levels and corruption also holds using historical GDP per capita data as an instrument for its current realization. Other strand of literature focuses on the growth and corruption nexus where the causality might be reversed with high corruption reducing long-term growth rates (see, e.g., Mauro 1995; Aidt et al. 2008).

association of the extent of corruption with more specific democratic institutions, such as protection of personal autonomy (measured by the data from the Freedom House) or with the physical rights integrity index (a measure of basic political rights by Cingranelli and Richards 1999) seem to be more robust and strong (Mungiu-Pippidi 2014; 2015; ch. 4). In other words, what matters to a democracy in terms of control of corruption is not elections as one-time mechanisms for selecting between candidates, but rather the permanent capacity to ensure that whoever is elected respects individual rights, autonomy, and voice (Persson and Tabellini 2003).

The control of corruption explanation thus cuts across economic and political development and seems to reside largely in the area of modernization theory. Societies which do not fulfill the basic requirements of economic and political modernization, such as literacy, economic individual autonomy and some balance of power between rulers and the ruled do not manage to control corruption and their states remain in the grip of private interest (Mungiu-Pippidi 2015). Control of corruption is indeed significantly associated with most of these components of modernity. Low life expectancy, rural residence, and low average schooling (in descending order of explanatory power) all significantly increase the likelihood that a country will be corrupt. But individual education does not discriminate between corrupt and non-corrupt behavior (Mungiu-Pippidi 2015), the significance of education as a predictor of national corruption must be elsewhere, in something that educated individuals as a group can perform, which would explain why countries with more educated people perform better. And this action aggregated in time seems to be the essential factor, otherwise when testing the impact of aggregate years of schooling at 1900 on control of corruption we should not find a staggering 70 percent explanatory power (Uslaner and Rothstein 2012), which indicates a long, complex determinism of the current governance regime. It also explains why governance evolution is so incremental and path dependent.

Political factors and institutional arrangements tested in the literature are plenty, but few are robust in time series and a large country panel (Persson and Tabellini 2004). Scholars found a positive impact of *press and media freedom* (Brunetti and Weder 2003; Kalenborn and Lessmann 2013). *Judicial independence* has been often reported to significantly affect the extent of corruption (e.g., Ali and Isse 2003, Herzfeld and Weiss 2003, Damania et al. 2004). This factor belongs to a larger cluster of factors actually measuring executive constraints, the capacity of a society to constrain government action, which seem influential in most tests. Mixed results exist for political competition - in our large time series sample we found no consistent evidence on competition, electoral systems or state organization, although many contradictory reports exist.

Significant policy factors impact control of corruption, though they are fewer and some in another area than we would expect them. Robust evidence points to a positive relationship between the *degree of economic freedom as well as openness* (in particular, trade) and effective control of corruption. The argument behind these findings is that less regulation of economic activities (both internal and with the rest of the world) create less room for administrative discretion and thereby reduce the possibilities for rent-seeking. The room for corrupt activities is potentially also reduced by the higher level of economic competition resulting from less restricted bureaucratic regularities. Studies that analyse this link using various measurements of the extent of regulations and economic liberalization are, for example, Ades and Di Tella (1999), Treisman (2000), Park (2003), Gurgur and Shah (2005), Sequeira (2013), Badinger and Nindl (2014).

*Transparency tools* and access to information are assumed to prevent the discretionary use of administrative power and, correspondingly, are documented to be negatively related to the national level of corruption (e.g., Islam 2006, DiRienzo et al. 2007). In this context, recent works focus on the ability of new information technologies to promote transparency and social accountability thereby providing better governance. For example, Elbahnasawy (2014) shows that e-government services significantly improve control of corruption.

While individual determinants tested are far more in the literature, we argue that the equilibrium described in micro studies, between crime and punishment (Becker 1968) translates into the macro world by a categorization of factors as either opportunities (resources) or constraints (costs) (Huther and Shah 2010; Mungiu-Pippidi et al. 2011; Mungiu-Pippidi 2014; 2015, ch. 4). We can reunite these important and disparate findings from the literature on causes of corruption under a unitary concept of control of corruption that we can observe, explain and measure. We believe that evidence shows the existence of an underlying 'governance' concept of the World Governance Indicators (Kaufmann et al. 2007a; 2011; Langbein and Knack 2010), but we see in this an opportunity rather than a ground for disputes. An underlying concept of governance order is in line with the classic political sociology on corruption and clientelism, from Weber to Eisenstadt. On the basis of Mungiu-Pippidi's definition of governance as a set of formal and informal rules determining who gets what in a given society, we describe corruption as an equilibrium determined by the public resources available for spoiling by the government and its clients and the constraints that the rest of the society can inflict to prevent such an occurrence, an equilibrium strongly influenced by the degree of human development of a society rather than a specific form of state organization. The outcome of the existing equilibrium is the norm in social allocation (more or less particularism in government transactions) which can be observed and measured (how many of government

contracts are given to favorite firms, for instance, see ACR 2013; 2014; 2015). But the equilibrium itself is best described by its causal framework, not its consequences, the balance between opportunities and constraints, itself strongly determined by the position and history of a given country.

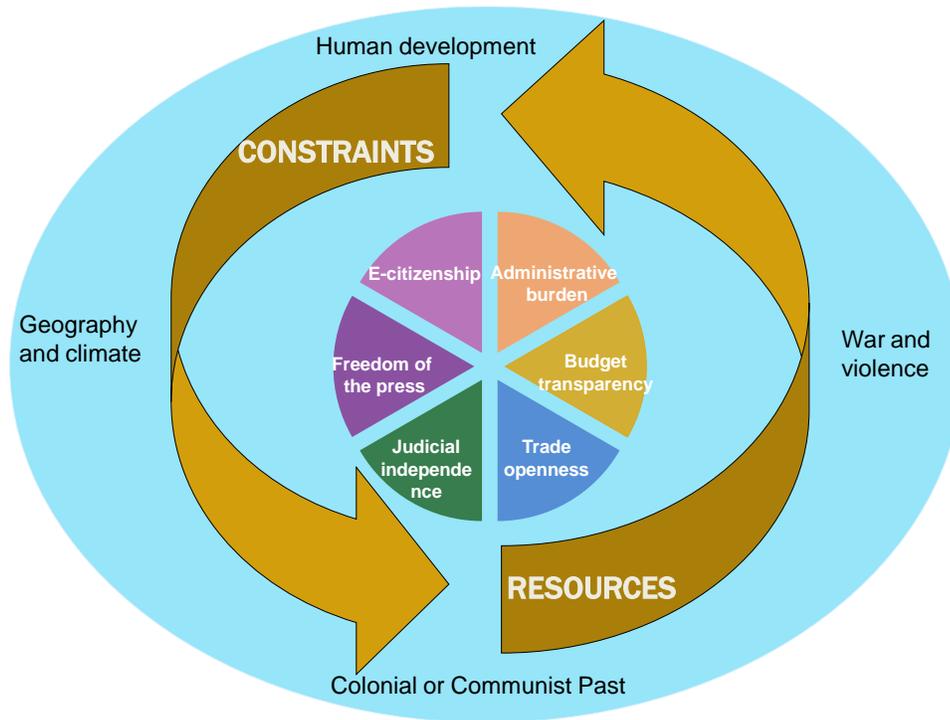
Mirroring to some extent the micro, individual-level theoretical approaches, we then define optimal control of corruption as the capacity of a society to constrain corrupt behaviour in order to enforce the norm of individual integrity in public service and politics and to uphold a state which is free from the capture of particular interests. A state's degree of corruption is then an equilibrium between its *collective resources and constraints*. Resources in this concept are by no means restricted to pure material ones but also comprise opportunities resulting from power discretion. Opportunities are thus a mixture of resources and the discretion to allow them to be used for rent creation. Constraints, on the other hand, have to be seen as societal constraints allowing truly independent limitation of the power to spoil public resources that lies in the hands of those endowed with superior authority and that generates uneven and particularistic access to public rents, with the resulting privilege and discrimination. Collective constraints therefore result from of an independent, impartial and effective judiciary system (legal constraints) as well as an active and autonomous civil society and free and independent media (normative constraints). A graphic model is provided in Figure 1 with structural factors as background (themselves highly inter-related) and the more immediate political and policy factors illustrated as resources versus constraints. A more synthetic expression is this:

Control of Corruption

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Constraints (Legal + Normative) – Opportunities (Power discretion + Material resources)

**Figure 1. Structural and Policy Determinants of the Control of Corruption**



Under opportunities or *resources* we find:

- Discretionary power resources due not only to monopoly, but also to privileged access under power arrangements other than monopoly or oligopoly – for example, status groups, negative social capital networks, social orders, cartels, and so on. Red tape or poor regulation provides authorities with undue power discretion. Violence or economic inequality are major sources of power inequality. The acceptance of differences in power status in a society was described by social psychologist Geert Hofstede as *power distance*. Its measurement is closely associated with control of corruption (Mungiu-Pippidi 2015).
- Material resources, such as natural resources, public sector jobs, or the funds available for discretionary distribution such as external aid, subsidies, and any other public resources which can be turned into spoils or generate rents.

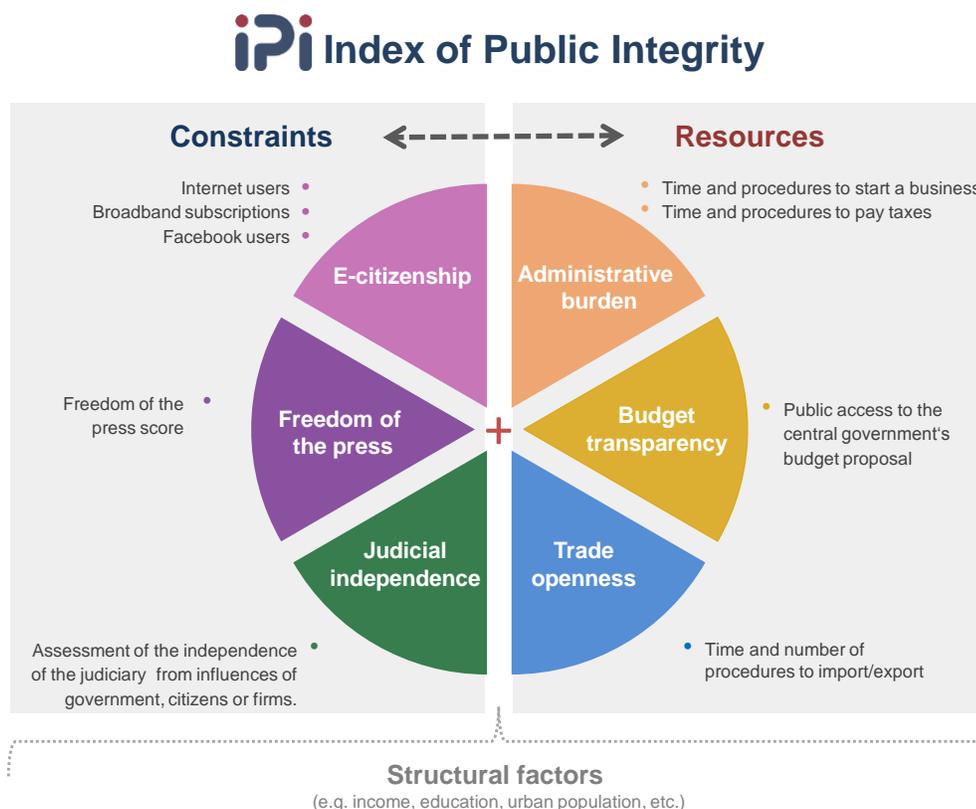
Under *constraints* we describe:

- Executive constraints which presume an autonomous, accountable, and effective judiciary, an effective judiciary review of legislation and an autonomous basis for horizontal accountability more generally (such as Courts or audit agencies)
- Normative constraints, which imply that existing societal norms endorse ethical universalism and permanently and effectively monitor deviations from that norm (through public opinion, media, civil society, critical citizens/voters, etc.). For effective sanctions we need a population of autonomous and critical citizens capable of collective action, not a mass of citizens merely conforming to the corrupt rules of the game (Norris and Zinnbauer 2002).

Structural factors determine both resources and constraints, which also interact greatly. A satisfactory disaggregation of this framework by statistical means is not possible. But we do argue that sufficient robust evidence exists to prove this causal framework, which actually shows that governance should be understood as a complex path model, not in terms on one exogenous dependent variable versus the rest. By selecting only the most robust and actionable element per category, we arrive at the inner circle from the two figures above, divided into six areas, three roughly covering constraints: electronic empowerment of citizens (e-citizens), judicial independence and freedom of the media, and three covering opportunities, with red tape as proxy for power discretion, trade openness for economic rents and budget transparency capturing both material resources and power discretion. A more detailed translation into de facto indicators can be found in Figure 2, which shows the constructed components. As argued elsewhere, we include judicial independence because it makes both historical and policy sense to conceive that the judicial elite is able to check on the bureaucratic and political elite due to its independent selection and career, and we do not include independence of civil service because we consider it part of the dependent variable (the government), beyond the absence of trustworthy data on it (Mungiu-Pippidi 2015, ch. 3).

Figure 2. Index of Public Integrity by category and indicators

Figure 2. Index of Public Integrity by Category and Indicators



#### 4. Tests and validation

The validity of the “equilibrium model” was tested employing cross-sectional as well as panel data analysis and using various measures of corruption as well as different proxies for the explanatory variables (Mungiu-Pippidi et al. 2011; Mungiu-Pippidi 2014; 2015, ch. 4). These proxies have been generally already tested in related empirical literature as argued above. However, instead of testing disparate causes of corruption, the “equilibrium model” proposes a framework that puts all of them in a certain context thereby offering a meaningful and comprehensive theoretical model of control of corruption. The balance between factors can be the result of different combinations between resources and constraints, and the sub-optimal equilibria with poor control of corruption are frequent. Behind the model, the historical evolution of a country provides the explanatory background of why the balance was set one way or another. If a country has managed to reach the

optimal balance where control of corruption works, with Norway being one example, it is unlikely the discovery of natural resources will affect it negatively. But if governance is poor when such resources are available, their existence will further subvert the possibility that a powerless society will constrain those who manipulate such resources to increase their advantage. The model cuts across state and society, suggesting that formal institutions which constrain rulers are a consequence of the society's normative constraints, and not the other way around.

Relying on our theoretical framework and on the evidence from other studies discussed in the previous section, we present here a basic regression model to illustrate the main significant components of control of corruption for a sample of 105 countries. Table 1 shows simple OLS regression results that test the relationship between the WGI' measure on Control of Corruption and different indicators, which capture various dimensions of collective constraints and resources. The selection of these particular indicators can certainly be debated and there is no claim for completeness. However, this selection is an outcome of a long decision and research process that needed to take into account the problem of data availability for each of the variables (in terms of both country coverage and regular updates), objectivity and thus actionability of the measures, and their consistency with the theoretical framework as well as corresponding empirical literature. All regressions additionally control for the level of socio-economic development measured by the Human Development Index (HDI).<sup>7</sup> The results show that each of the variables is significantly associated with control of corruption. Accordingly, these factors can be summarized as follows:

1. *Red tape.* Excessive administrative and regulatory burden open the doors for discretionary implementation and non-compliance, resulting in a high risk of corruption. Captured by the number of procedures and time needed to start a business and pay corporate taxes from the World Bank's Doing Business dataset, our measure of red tape or **administrative burden** therefore refers to the extent of bureaucratic regulations of *domestic* entrepreneurial activities, and is indeed significantly and strongly associated with control of corruption (Model 1). Note that a high value for this indicator means a *low* degree of administrative burden.
2. *Trade barriers.* Although being correlated, the extent of regulations covering a country's *external* economic activities does not overlap with the extent of bureaucratic regulations of *domestic* entrepreneurial activities. However, we obtain the same relationship between

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<sup>7</sup> All the results presented in Table 1 also statistically hold when we use alternative measures of corruption such as, for example, CPI from Transparency International or the ICRG corruption scores.

control of corruption and *de jure* **trade openness** (Model 2). Open countries can control corruption better, eliminating room for discretion at the level of administrative trade barriers and thus allowing free competition. The measure combines the average number of procedures and time for exporting and importing using data from the Doing Business datasets.

3. *Transparent Budget*. **Budget transparency** measures the extent and the quality of public accessibility of the executive's budget proposal in order to provide a control mechanism for discretionary public spending. The component is based on selected questions, which are used for the Open Budget Survey provided by the International Budget Partnership. Note that this measure does not fully correspond to the Open Budget Index but captures some of its key concepts. Its significant association with control of corruption is shown in Model 3.
4. *A non-corrupt and independent judiciary*. Impartiality and independence of the overall judiciary system constitute legal constraints and thus are key elements of an effective control of corruption. The indicator on **judicial independence** from the Global Competitiveness Database developed by the World Economic Forum strongly and positively correlates with control of corruption (Model 4).
5. *Electronic empowerment of citizens*. **E-citizenship** (Model 5) captures the endowment of citizens to use online tools and social media and thus exercise social accountability. Evidence exists that internet media in general and social networks in particular are indispensable components of citizen empowerment. The component is constructed by combining the number of broadband subscriptions and internet users with the share of Facebook users relative to the population. The data stems from the International Telecommunication Union and Internet World Stats.
6. *Free Media*. Transparency tools work best if they are implemented in a society with an overall strong capacity and environment for collective action. Free media serves as an important monitoring indicator for democratic institutions, public accountability and good government and thus lays the ground for such an environment. The indicator on **Freedom of the Press** measures the degree of media independence thereby capturing the national legal, political and economic environment in which print, broadcast, and internet-based media operate, and is unsurprisingly significantly associated with better control of corruption (Model 6). The measure stems from Freedom House.

Red tape, trade barriers and budget opacity (variables 1-3) measure the extent of bureaucratic regulations and lack of transparency capturing thereby potential resources for administrative power

discretion. Variables 4-6 look at the capacity of the society to develop autonomous constraints in the form of autonomous magistrates and journalists as well as engaged citizens. Despite selecting the most relevant variables which also have the largest possible coverage, the country sample comprises 105 countries relatively evenly covering every region in the world. The raw data for most components stems from 2015. The data sources enable us to produce these components at least every second year, thus offering the possibility to record changes over time. Most importantly, all variables except *judicial independence* are either based on hard data or result from an evaluation of clearly defined and very specific questionnaires. For example, our index on *budget transparency* is based on a 14-item detailed questionnaire taken from the Open Budget Survey. The questions mainly refer to the scope and the form of information on different types of government expenditures presented in the *Executives' Budget Proposal (EBP)*.<sup>8</sup> Similarly, primary data for *freedom of press* results from 23 questions and 132 subquestions which are in turn divided into three categories of the legal, the political, and the economic environment in which the local media operates so the score can be attributed to very specific details. Only our measure of *judicial independence* is an outcome of an expert assessment of a single question compiled by the World Economic Forum (WEF). However, objective measures of judiciary independence, which significantly explain its *de facto* performance, are available for too few countries as yet.<sup>9</sup> More detailed description of the six components with respective data sources is provided in Table A4.

Our empirical results from Table 1 imply that *each* component partially affects the level of control of corruption. From a theoretical point of view, the “equilibrium model” should not be understood in

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<sup>8</sup> The entire Open Budget Survey consists of 109 questions covering beyond the Executives' Budget Proposal (EBP) also other documents of a budgetary process. We focused on the EBP because it is one of the most important policy documents that a country issues each year, for it is through the budget that governments translate many of their key policy goals into action, and because a score based on the EBP explains most of the variation of the overall Open Budget Index. For more information see Table A4 and <http://integrity-index.org>.

<sup>9</sup> See, e.g., Melton and Ginsburg 2012 on the relationship between *de jure* and *de facto* judicial independence. Furthermore, the so-called Rule of Law Index (<http://worldjusticeproject.org/rule-of-law-index>) provides an alternative and more comprehensive assessment of the *de facto* judiciary system. We decided to use the WEF indicator because it highly correlates with the Rule of Index ( $r \approx 0.80$ ) and covers far more countries in our sample.

terms of separate variables but rather more generally as a complex mechanism with certain interdependencies and interactions between resources and constraints as well as within groups of similar factors. For example, negative consequences of discretionary power resources are likely to be amplified in an environment with weak legal and normative constraints. By contrast, resources used for investments in social and physical infrastructure can contribute to the improvement of governance once sufficient transparency and accountability mechanisms to control these investments are established. On the other hand, a policy targeted at strengthening normative constraints, for example, via improving transparency tools, is likely to be more effective if it is implemented in an environment with a sufficient mass of critical and active civil society or open and free media, which can effectively monitor the consequences resulting from improved transparency.

As Mungiu-Pippidi (2014; 2015, ch. 4) thus argues, a very complex “path model” would be needed to do full justice to relationships between resources and constraints and the development factors behind them. A few parsimonious regressions (Table 2) offer some examples for the empirical relevance of interaction mechanisms. In model 1 we interact the index on *administrative burden* with *judicial independence* to capture the interdependencies between opportunities, which may arise from administrative discretion, and legal constraints. Indeed, once the interaction term is included, the individual coefficients of *judicial independence* and *administrative burden* become insignificant but the interaction itself is significantly positive: less bureaucratic burden together with impartial and independent legal system result in better control of corruption. The marginal effect of *administrative burden* is significantly positive, too. This implies that even for a given (sample average) degree of judicial independence, administrative reforms targeting at deregulation of entrepreneurial activities improve control of corruption. We get similar relationships when looking at the interaction between *budget transparency* and *freedom of the press* to capture another potential link in the balance between resources and constraints (Model 2). According to these results, the positive effects of the transparency tools to control corruption are stronger if they meet an environment of free and independent media. Finally, we illustrate interdependencies within the cluster of normative constraints by interacting *E-citizenship* with *freedom of the press* and obtain, as expected, significantly positive impact (Model 3). Note that the marginal effect of both budget transparency and E-citizenship are significant, too.

**Table 1. Control of Corruption and its Determinants**

	(1)	(2)	(3)	(4)	(5)	(6)
HDI	3.873*** (7.80)	2.973*** (5.48)	4.431*** (9.15)	2.436*** (7.25)	-0.291 (-0.25)	3.031*** (8.03)
Administrative Burden	0.162*** (4.26)					
Trade Openness		0.188*** (5.56)				
Budget Transparency			0.051* (1.74)			
Judicial Independence				0.329*** (14.74)		
E-Citizenship					0.312*** (4.22)	
Freedom of the Press						0.194*** (7.91)
Constant	-4.087*** (-11.84)	-3.470*** (-10.32)	-3.560*** (-9.10)	-3.576*** (-16.19)	-1.442** (-2.82)	-3.310*** (-12.11)
Countries	105	105	105	105	105	105
Adj. R-squared	0.549	0.581	0.511	0.831	0.584	0.68

OLS regressions. The dependent variable is the WGI Control of Corruption 2014. *t* statistics in parentheses \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ . Robust std. err. are used.

**Table 2. Control of corruption and Interaction of its Determinants**

	(1)	(2)	(3)
HDI	1.989*** (0.000)	-0.397 (0.704)	1.068 (0.281)
Administrative Burden	-0.099 (0.102)		
Judicial Independence	0.012 (0.917)		
Administrative Burden x Judicial Independence	0.037*** (0.006)		
ME Administrative Burden	0.101*** (0.005)		
Budget Transparency		-0.126** (0.044)	
E-Citizenship		0.056 (0.643)	-0.110 (0.326)
Budget Transparency x E-Citizenship		0.035** (0.010)	
ME Budget Transparency		0.053** (0.077)	
Freedom of the Press			-0.061 (0.382)
E-Citizenship x Freedom of the Press			0.040*** (0.001)
ME E-Citizenship			0.118*

			(0.100)
Constant	-2.381***	-0.478	-1.219*
	(0.000)	(0.488)	(0.058)
Countries	105	105	105
Adj. R-squared	0.845	0.632	0.742

OLS regressions. The dependent variable is the WGI Control of Corruption 2014.  $p$  values in parentheses: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust std. err. are used. *ME* stands for the average marginal effect calculated with the Delta-method.

## 5. Index of Public Integrity

From individual components and the evidence of interaction we move on to build our composite Index of Public Integrity (IPI). Its construction is very straight forward. To obtain the components used in Table 1, we first standardize the raw data to equalize the mean values and standard variations of the respective variables thereby making their units comparable. That is, the so-called *z-scores* with zero means and unit variance for every variable are constructed to avoid that the composite index (IPI) strongly depends on the component with greatest dispersion. In case that a component consists of sub-components, the same procedure is applied at the disaggregated level and then a simple mean of the *z-scores* of the sub-components is built to obtain the values of the respective component. For example, the measure of *administrative burden* is a simple mean of *z-scores* of number of procedures and time to start business and pay corporative taxes. In the next step, the standardized values of each component are normalized to be in range between 1 and 10 using the min-max-transformation, and making sure that for each component higher values imply better respective institutional dimension.

In combing the components into a single index, the natural question of a proper aggregation and weighting method arises. The relevance of possible interaction mechanisms between the variables might suggest that a kind of geometric aggregation, which multiplicatively link the individual components, can be adapted. Obviously, this method would then neglect the isolated importance of an individual component implying a quite strong assumption given the empirical evidence for the significant partial effects of certain variables. Besides, we cannot empirically prove the relevance of all possible interactions, and even theoretically these mechanisms need to be further elaborated.

Choosing weights for the components on its turn is to a certain degree always normative and requires some arbitrariness.

To deal with both challenges – aggregation and weighting - in our context, we explore the statistical observation that all six components show some positive significant correlation among them (Table A1) and use principal component analysis (PCA) to derive the overall IPI. The PCA retrieves the common latent factor(s) that our six components jointly share thereby using the factor loadings of each variable for the corresponding individual weights. As a result, the first principal component explains around 56 % of the variation in the data that consists of 105 quite heterogeneous countries and is the only one with an eigenvalue of larger than one (Table A2). Moreover, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows that only one component (the *budget transparency index*) slightly falls below 0.7, a value that commonly assumed to be an upper bound for mediocre variables. All other indices have KMO values close to or larger than 0.8 indicating meritorious variables (Table A3). These statistical results confirm the notion that the usage of the first principal component to retrieve the data for the IPI can be justified. It should also be noted, however, that using an arithmetic mean with equal weighting as an aggregation method yields a value that correlates with the the first princal component at 99%. Hence, for the sake of simplicity, transparency, and better visualization of the composition of the IPI the simple aggregation to build the IPI can be even more appropriate. In fact, our research team has used this method to develop an online interactive tool that visualizes the IPI and the component scores providing various options for country comparisons as well as additional material including the full dataset. The tool is under construction yet and will be available on <http://integrity-index.org>.

The strong and positive relationship between the Index of Public Integrity and Control of Corruption is illustrated in Figure 3, which also reveals that more than 75 % of the variation in control of corruption across 105 countries can be explained by the IPI. Note that the values for the IPI have been normalized to range between 1 and 10. The IPI is not only highly correlated with the World Bank's measure on Control of Corruption (which is not surprising given the selection process of the components) but with several other corruption indicators (Table 3) including CPI, the ICRG's corruption risk, and a more specific expert assessment on the extent of diversion of public funds.

**Table 3. Correlations between the Index of Public Integrity (IPI) and Other Corruption Indicators**

	WGI Control of Corruption 2014	ICRG Corruption 2014	TI Corruption Perception Index 2014	WEF Diversion of Public Funds 2014
Correlation Coefficients	0.880	0.830	0.891	0.701
Countries	105	94	105	101

Correlations are significant at  $p < 0.01$ .<sup>10</sup>

**Figure 3. The Index of Public Integrity (IPI) and Control of Corruption**

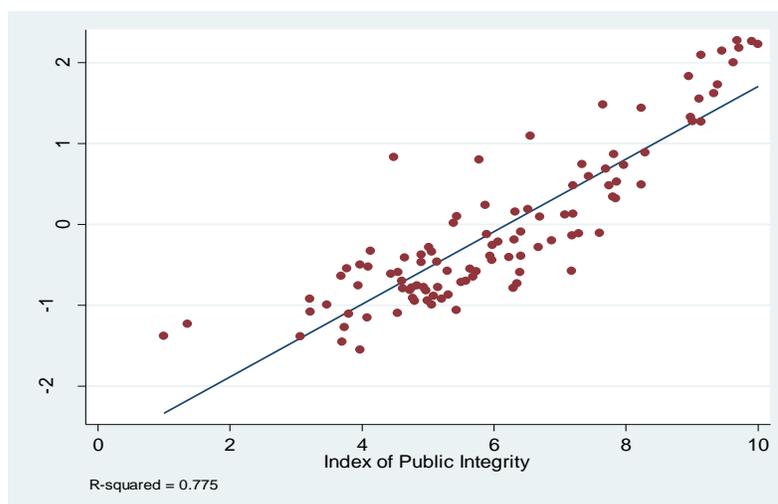
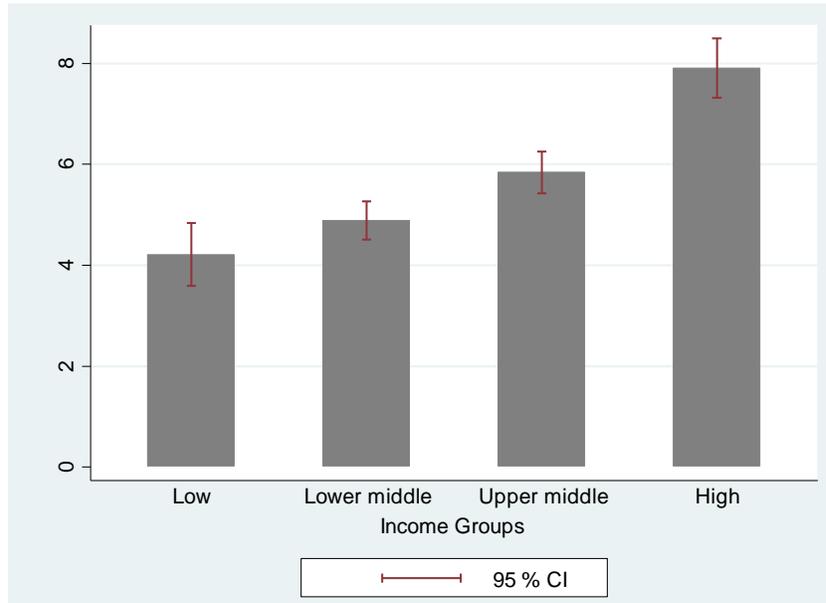


Figure 4 displays the mean values of the IPI among the four income groups of countries according to the World Bank's classification. Not surprisingly, high income countries exhibit on average highest IPI scores while the countries in the lowest income group perform worst on the public integrity scale. The mean values between the three income groups do not differ strongly suggesting that differences in IPI cannot be purely attributed to the differences in the income level. The strong correlation between the IPI and the level of socio-economic development (measured by the HDI) is

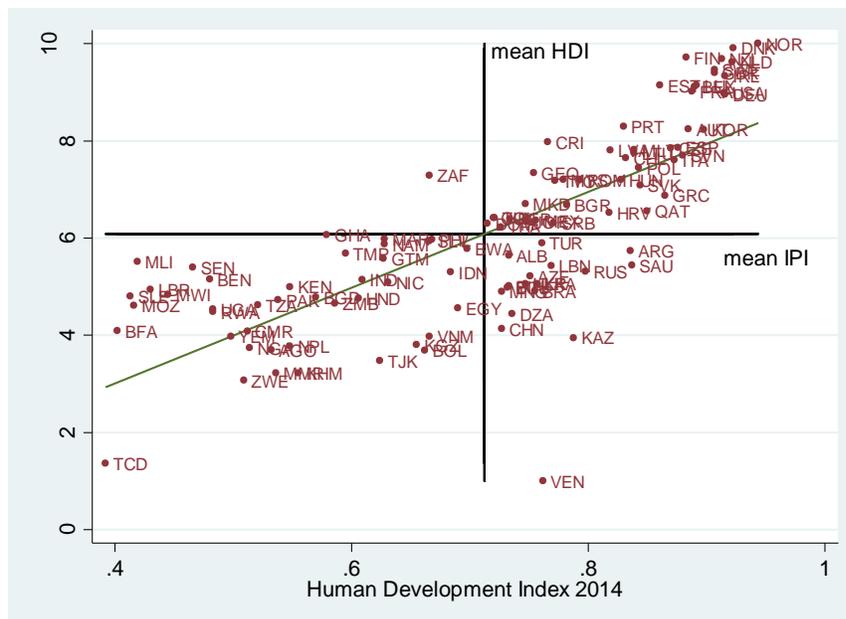
<sup>10</sup> Note that the TI's, ICRG's, and WEF's indices are scaled in a way that higher values imply less corruption.

also illustrated in Figure 5 verifying the general positive association between good governance and modernization. However, the relationship additionally shows that some countries perform better on the public integrity capacity relative to their development level (e.g., Scandinavian countries or Mali), and some others have a lot room for improvement (e.g., Venezuela or Kazakhstan).

**Figure 4. Means of the Index of Public Integrity by Income Groups**

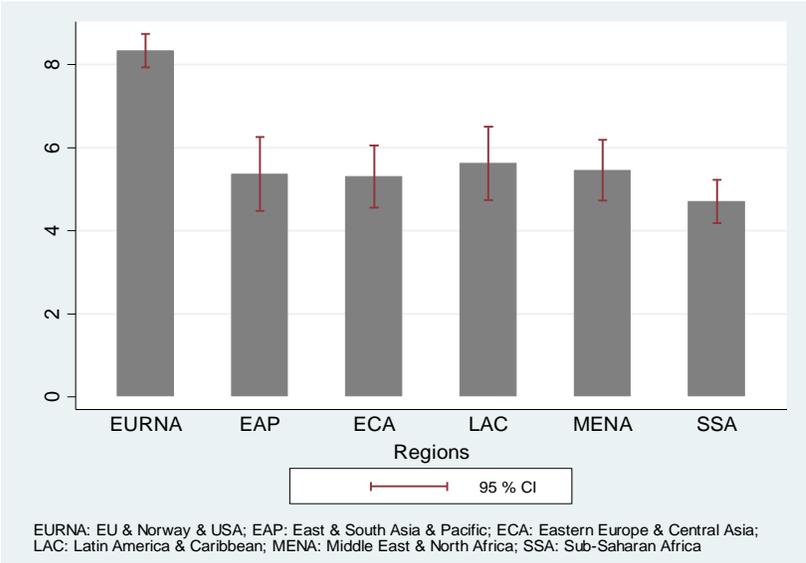


**Figure 5. Index of the Public Integrity and Human Development Index**

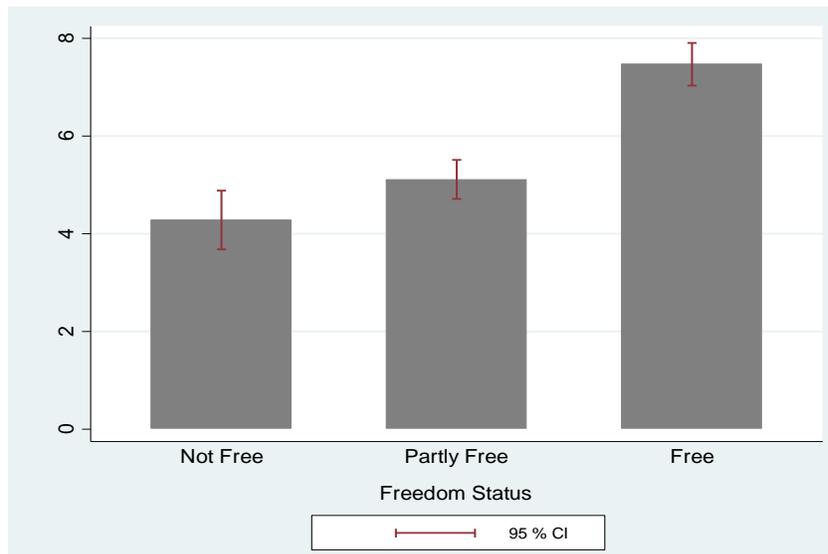


When looking at the geographical distribution of the mean values of the IPI, only the region that includes the European countries and the USA clearly shows the highest scores while the IPI does not significantly differ on average across other regions (Figure 6). Finally, in Figure 7 we illustrate the average values of the IPI dividing the sample into three categories using the Freedom House classification of a political system: free, partly free, and not free. Unsurprisingly, the IPI scores are the highest in the most democratic states and the lowest in the most autocratic ones, yet the difference being not so large between the two groups of countries which are classified as partly and not free, respectively.

**Figure 6. Means of the Index of Public Integrity by Regions**



**Figure 7. Means of the Index of Public Integrity by Freedom Status**



## 6. How does IPI help?

In this paper we presented an alternative approach of how to capture and measure the national level of control of corruption. We operationalized the components of control of corruption as an equilibrium by mostly objective and actionable data and showed their statistical relationships. We then combined these variables into one single measure – the **Index of Public Integrity (IPI)** – that can be used to assess national levels of control of corruption. To aggregate the components, we relied on the observation that they are mutually correlated and used principal component analysis to retrieve the common factor. The resulting IPI is highly correlated with other popular corruption measurements including those, which are based on actual corrupt activities. Moreover, the distribution of the mean IPI scores among different global regions, income classes, and political systems indicates that these factors might be related to but do not constrain a country's capacity to establish effective control of corruption.

The underlying data for the IPI is also employed to construct an interactive online tool that is available on <http://integrity-index.org>. It offers various options to assess and compare national level public integrity using both the aggregate and the components scores. In particular, this web tool enables the users to observe the performance of countries in certain income groups and different regions as well as to select and compare countries of individual interest. Moreover, it provides specific information on each of 105 countries which, in addition to the IPI related data and contains

data on key socio-economic country characteristics. It is therefore a comprehensive tool for an analysis of national capacity to control corruption. The current version of the IPI employs most currently available data, but the original data sources enable us to produce the measure at least for every second year offering the possibility to monitor changes over time.

However, some limitations of the IPI also have to be. Most of them lie in the original data sources. For example, more specific data on judicial independence, which also has proven impact, would certainly increase the actionability of our measurement. Yet the construction of theoretically and empirically valid indicators in this area remains challenging (see, e.g. Ríos-Figueroa and Staton 2014). We are also missing a good measure of associativity around the world, for which we try to compensate by including Facebook users as a proxy for collective action empowerment for citizens. According to the recent research project on global digital activism conducted at the University of Washington<sup>11</sup>, social networks are the most widely used digital media application in activism campaigns around the world. “The most dominant platform across all categories is Facebook, since 99 percent of all the campaigns that used social networks used that application” (Edwards et al. 2013, p. 12).

The second limitation is more conceptual in nature. While the six areas are the most actionable and most effective areas, selected after the elimination as non-significant of the usual suspects - thickness of anticorruption legislation or the existence of an anticorruption agency or an Ombudsman - they do come with one caveat. They are highly dependent on development: civil society and e-citizens in particular. However, we chose to use the electronic citizenship proxy rather than just an enlightened citizens proxy (for instance, newspaper readers), though they are both very significant because electronic empowerment is a contemporary phenomenon, where donor organizations are able to act. Unfortunately, this is no longer the case with newspaper readership. One Internet café in every village is thus a direct contribution to anticorruption, and many donors might be more tempted to do that than engage in open political anticorruption.

From a national perspective, as opposed to a donor perspective, the index is also the first place to start to design a good governance strategy. Countries can check how they do, compared to their region and, for instance, a benchmark country that they aspire to. Based on this they will be able to design strategies to catch up. The index should not, of course, be interpreted narrowly, although the

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<sup>11</sup> <http://digital-activism.org/about/about-the-project/>

improvement of these indicators should be the primary target. Broadly speaking, the strategies should envisage an improvement of the entire area, and not just the indicator.

For instance, if a country does badly on **red tape** it should not only ease registering a business and reducing the time to pay taxes, although we found those to be most effective and the place to start de-bureaucratization. Countries showing a high score on the red tape component frequently have regulations meant only to create legal privileges, and those should all be replaced. As a ground rule, every regulation which will end up in discriminatory implementation should be avoided, as it is likely to increase corruption.

Next, having **transparent budgets**, publishing them in time and allowing budget consultation are crucial steps for sound government. Digitalization has helped sound financial management a lot, and even poor countries can have transparent budgets - a school budget posted on the door of a school or a hospital, if not on a website is a tremendous step forward for accountable public services. All procurement budgets and contracts should be posted by all government agencies and companies. There are few better ways to expose and prevent government favoritism.

**Third, enabling free trade is important.** Burdensome procedures at the borders are key obstacles for both importing and exporting. Benefits of open trade policies frequently fail to materialize because weaknesses in customs administration keep transaction costs high. Reducing trade barriers and reforms of the custom service are enablers of competition, which reduce corruption, creating a virtuous circle. Such reforms include simplified procedures and selective controls, better use of technology and enhanced transparency and partnerships with the private sector: best practices already exist.<sup>12</sup>

Fourth, social accountability exercised by a general population of autonomous and critical citizens can amplify the effects of transparency in combating corruption. Digital citizens are empowered citizens. For instance, the existence of a freedom of information law (or of financial disclosures for public officials) is not in itself a significant determinant of good governance, but becomes significant when combined with an active civil society (or freedom of the media, for financial disclosures), because its activity (information requests, litigations) helps the law enact real transparency. Apart the indicator that we propose countries can check when available on the closely related usage of E-government services, which captures the actual demand for e-government and transparency by the

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<sup>12</sup> <http://www1.worldbank.org/prem/PREMNotes/premnote67.pdf>

general population. What we measure is the potential: practical tools are digital whistleblowing (as Xnet in Spain, with secure mailboxes asking for citizen leaks on corrupt activity, see Bankia case), digital monitoring (extensive publication of public contract data leads to free auditing by interested parties, see project DIGIWHIST.eu), digital activism (as watchdogs organizations such as CleanRomania, which offers an e-template to report corrupt activity to the anticorruption prosecuting office with 14 000 monthly users in 2015<sup>13</sup>), digital consultation, evaluation and audit of public services. Digital tools are powerful. They largely explain why Estonia, a new EU Member State is ranked sixth in Europe<sup>14</sup>. When they are missing, due to extreme poverty, they can be replaced with more traditional transparency means serving the same purpose (school budget posted on school door, including voluntary contributions from parents). Poor countries are catching up fast and even in these societies Facebook or its equivalents provide a tool to mobilize people if needed.

**The fifth factor, freedom of the press** also requires strategies from both governments and civil society. It is a considerable achievement for the government not to repress the press, but this achievement alone is insufficient: in corrupt countries the media also tends to be corrupt and its business model, including advertising, is often centered on white or black PR (blackmail) and not purely on information. Traditional media needs sound investors, transparent private and government ownership as well as transparent advertising from both private and government sources. It requires impartial audience measurements, civil courts able to defend individuals from libel and blackmail. These are all difficult conditions to satisfy in difficult environments. New media is increasingly a better alternative, easier to fund and distribute. Both in repressed environments and in highly corrupt, but not violent ones, charities and international donors have a lot of work to do in helping investigative journalists to be able make their work visible. Bravery in journalism seems to exist everywhere, but sometimes it needs servers or broadcasting stations outside the country to be able to disclose top level corruption.

Finally, **the sixth factor, independence of the judiciary** is the one where a lot of work is generally done with meagre results; there is no organization recipe on how to create effective and accountable magistrates. Some cases, like Ukraine, have received a lot of investment from the side of donor, with poor results. In others - like Ghana - judges and clerks remain so poorly paid that any assistance does not bring much progress. Each country has a different tradition and strategies of creating and

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<sup>13</sup> [www.romaniacurata.ro](http://www.romaniacurata.ro)

<sup>14</sup> <https://www.government.nl/documents/reports/2016/01/18/integrity-in-international-perspective>

empowering an accountable magistracy have to be national. However, a few contemporary successes, as in Botswana, Estonia and Romania do exist,. These cases off different quality but all lessons to be learned. We cite these three cases because of their very different backgrounds, proving that not one factor - for instance, common law- is responsible for progress. The World Justice Project and American Bar Association have developed great micro tools and intervention instruments, but the bottom line seems to be that people are essential: What is needed is a reservoir of sound people, from law schools, the legal profession, and even from the diaspora. The Estonian lesson, the most successful in Eastern Europe, is one relying on the replacing of an entire judiciary with Soviet habits. Many of the anticorruption tools needed by these magistrates are ineffective and countries which adopt them do not seem to progress more than those which do. The bare essential remains some clear private-public separation enshrined in law, for instance conflict of interest legislation and rules against nepotism.

Most of the anticorruption strategies in the last years have been driven by the promotion of specific legal instruments, generally overestimating the power of formal rules and institutions to preserve clean politics or encourage whistleblowing. The results of these policies tend to confirm an old Latin saying that warns that the most corrupt republic is the one with the most laws. With both the Index of Public Integrity and the corresponding online tool we hope to contribute to more evidence based political debate on the mechanisms that bring about effective and sustainable good governance, although we are the first to acknowledge the imperfection of our work.

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## Appendix

Table A1. Correlations between the Components of the Index of Public Integrity

Indices	Judicial Independence	Administrative Burden	Trade Openness	Budget Transparency	E-Citizenship	Freedom of the Press
Judicial Independence	1.00					
Administrative Burden	0.472*	1.00				
Trade Openness	0.505*	0.442*	1.00			
Budget Transparency	0.223+	0.386*	0.371*	1.00		
E-Citizenship	0.545*	0.466*	0.721*	0.282*	1.00	
Freedom of the Press	0.542*	0.359*	0.612*	0.508*	0.601*	1.00

\* significant at  $p < 0.01$ ; + significant at  $p < 0.05$ ; number of observations: 105

Table A2. Results of the Principal Component Analysis

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.39	2.54	0.56	0.56
Comp2	0.85	0.16	0.14	0.70
Comp3	0.69	0.17	0.11	0.82
Comp4	0.52	0.22	0.09	0.90
Comp5	0.30	0.04	0.05	0.95

Comp6	0.26	0.04	1.00
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Number of observations: 105

Table A3. Kaiser-Meyer-Olkin measure of sampling adequacy

Indices	KMO
Administrative Burden	0.80
Trade Openness	0.82
Budget Transparency	0.68
Judicial Independence	0.82
E-Citizenship	0.80
Freedom of the Press	0.78
Overall	0.79

Table A4. Variables and Sources

Component	Variables and Measurement	Sources for raw data
Administrative Burden	<p>Simple mean of standardized values of:</p> <ul style="list-style-type: none"> <li>• number of procedures required to start up a business</li> <li>• time needed to start up a business</li> <li>• number of tax payments per year</li> <li>• time to pay taxes</li> </ul> <p>This value has then been transformed to be in range between 1 and 10 with 10 implying the <i>lowest</i> administrative burden.</p>	Doing Business Dataset 2016, World Bank
Trade Openness	Simple mean of standardized values of:	Doing Business Dataset 2015, World Bank

	<ul style="list-style-type: none"> <li>• total number of documents required to export and import</li> <li>• time for exporting and importing</li> </ul> <p>This value has then been transformed to be in range between 1 and 10 with 10 implying the highest trade openness.</p>	Bank
Judicial Independence	<p>“judicial independence” indicator from the Executive Opinion Survey that asks the question “To what extent is the judiciary in your country independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent].</p> <p>The indicator has been standardized and transformed to be in range between 1 and 10 with 10 implying the highest judicial independence.</p>	Global Competitiveness Dataset 2015-2016, World Economic Forum
Budget Transparency	<p>Simple mean value of the scores resulting from 14 specific questions that cover transparency of the Executive’s Budget Proposal. This value has then been standardized and transformed to be in range between 1 and 10 with 10 implying the highest budget transparency.</p>	Open Budget Survey 2015, International Budget Partnership and own data*
E-Citizenship	<p>Simple mean of standardized values of the:</p> <ul style="list-style-type: none"> <li>• Fixed broadband subscriptions (% population)</li> <li>• Internet users (% population)</li> <li>• Facebook users (% population)</li> </ul> <p>This value has then been transformed to be in range between 1 and 10 with 10 implying the</p>	<p>First two measures: ICT Dataset 2015; International Telecommunication Union</p> <p>Third measure: Internet World Stats</p>

	highest score for E-Citizenship.	2015
Freedom of the Press	Freedom of the Press score that has then been standardized and transformed to be in range between 1 and 10 with 10 implying the highest freedom of the press.	Freedom of the Press Dataset 2015; Freedom House

\*The *budget transparency* score is based on the coding the questions number 1-7,9,15,19,33,35,37,53 from the Open Budget Questionnaire 2015. Using the same questions, our research team collected data for 12 EU member states, which are not covered in the Open Budget Survey: Austria, Belgium, Denmark, Estonia, Finland, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta and Netherlands.