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Transparency and corruption: Measuring real transparency by a new index

Alina Mungiu-Pippidi

Hertie School, The Governance University, Berlin, Germany

Abstract

Despite the salience of transparency in policy and democracy debates a global measurement of transparency has always been missing. In its absence, measuring the impact of transparency on accountability and corruption for a large number of countries has been difficult, with scholars using more or less adequate proxies. This paper introduces a new measurement of real transparency—the T-index—using 14 *de facto* components, based on direct observations of official websites in 129 countries and five *de jure* components, based on the transparency laws and conventions adopted. The resulting index is a measurement with very good internal and external validity and moderate precision. The paper argues that *de facto* transparency must be considered alongside *de jure* (legal) transparency if we are to judge the impact (or lack of) transparency against accountability and corruption, as a large implementation gap exists, in particular in poor countries, between legal commitments and real transparency. The T-index has significant impact on both perception and objective indicators of corruption, including perceived change in corruption over time as measured by the Global Corruption Barometer. An analysis of outliers shows that high transparency alone is not sufficient to achieve control of corruption, especially in countries with low human development and poor rule of law, although transparency is a robust predictor of corruption with GDP controls. The data with all sources is available for download as T-index 2022 dataset: DOI 10.5281/zenodo.7225627 and an interactive webpage developed for updates is available at www.corruptionrisk.org/transparency.

Keywords: corruption, e-government, freedom of information, index, transparency.

1. Introduction

Over recent decades, transparency has turned from a cause promoted by civil societies across the world into a universal benchmark of modern governance, formally endorsed by most of the world's governments and promoted by intergovernmental organizations. According to Freedominfo.org (2022), 119 countries had adopted freedom of information (FOI) regulation. Transparency features prominently in the United Nations Convention against Corruption (UNCAC, 2003) and is mentioned explicitly in the "outcome targets" list of United Nations Sustainable Development Goal 16 as "developing effective, accountable and transparent institutions"; and "ensuring public access to information," and is clearly implicit in its other targets. The UNCAC, ratified by over 190 party states by 2022, includes a clear requirement for international transparency under "preventive measures," one of the five areas included in the treaty. The Convention's Article 1 specifies an obligation on all state parties to govern on the basis of transparency, which it goes on to spell out as a key principle of public sector organization and function (Article 7, Section 1a), as well as of other crucial matters such as political finance (Article 3), conflict of interest prevention (Article 4), public procurement (Article 9, Section 1), public finance management (Article 9, Sections 2 and 3), and public reporting and proactive disclosure of information, including on policy formulation (Article 10). Transparency is expressed as crucial too in matters of ownership of private entities (Article 12, Section 2c) and any information enabling oversight and "the freedom to seek, receive, publish and disseminate information concerning corruption" (Article 13, Section 1d). At its creation in 1993 the first international NGO to assume the task of advocating against corruption received the title, "Transparency International," further branding transparency in relation to anticorruption. In 2011, US President Obama

Correspondence: Alina Mungiu-Pippidi, Hertie School, The Governance University, Berlin, Germany.
Email: pippidi@hertie-school.org

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launched an Open Government Partnership to enhance transparency, accountability, and public participation in government. By 2022, 78 countries and 76 local jurisdictions had joined, alongside thousands of civil society organizations.

Transparency has indeed long been credited with the power to improve virtuous behavior. In 1932, US Judge Louis Brandeis summarized the chief reason succinctly: "sunlight is said to be the best of disinfectants; electric light the most efficient policeman" (Brandeis, 20 December 1913). However, there is very little scientific evidence for the long-presumed relationship between corruption and transparency. While transparency has spread around the world in the past three decades, corruption perception has not gone down. Transparency International (2021) reports an unchanged global average of corruption perception for the 10th year in a row, at just 43 out of a possible 100 points, with 131 countries having made no significant progress against corruption in the last decade and two-thirds of countries scoring below 50. Cases persist such as those of Mexico, India, Brazil, and Ukraine, countries which have resorted to unprecedented investment to make public all demographic, administrative, public procurement, judicial, and electoral data, but perceptions of corruption remain among their citizenries. Perhaps transparency is *necessary*, but not *sufficient* to curb corruption in general, or perhaps current *levels* of transparency are simply not yet sufficient to curb corruption? Or both? Are more transparent governments indeed better at controlling corruption? The chief obstacle to a convincing test of this relationship has been the absence so far of direct and fact-based measurements of both corruption and transparency, with most tests based on experiments with mixed results from which it is hard to generalize (Kosack & Fung, 2014; Porumbescu et al., 2021). Moreover, it is often difficult to evaluate the evidence across the literature due to *different conceptualizations* of transparency and the subsequent *absence of sound and precise operationalizations*, which make measurements difficult to execute or validate (Bauhr & Grimes, 2017). However, the rise of the Internet and the digitalization of government offer exciting new opportunities for direct measurement of transparency to enable more representative tests.

This paper aims to introduce a new measurement of *computer-mediated transparency* based on direct observation of 129 countries and to test it in relation to measurements of corruption, in order to try to offer a clear answer to the question, "*does more transparency lead to increased control of corruption?*" In Section 2, we review both the theoretical and empirical literature on the link between transparency and corruption and introduce our concepts; in Section 3, we discuss the theoretical mechanisms by which transparency impacts control of corruption, therefore bridging models of control of corruption with models of transparency and explaining our research design. In Section 4, we operationalize our classifications of transparency as *de jure* and *de facto* transparency and present our new measurements, as well as their internal and external validation tests (in relation to other transparency measures). Section 5 presents and discusses the results and further external validation tests in relation to corruption indicators. Section 6 concludes.

2. Government transparency as a public integrity tool

From the time of the Enlightenment, transparency has gradually risen to assume the status of a solid principle of governance. Sweden's Freedom of the Press Act of 1766, which established the right to access public information and publish it, created a historic benchmark which today is emulated by over a hundred countries ("The World's First Freedom of Information Act," 2006). In 1781, the French Finance Minister Jacques Necker (1781) published for the first time the *Compte rendu au roi*, thus initiating a new norm in the form of transparency of public expenditure. Around 1800, Jeremy Bentham was the first to theorize political transparency as a deterrent to corruption and stressed its crucial importance (Hood, 2010).

The more recent career of transparency as an enabler of public integrity took off only after 1989 and the spread of democratization after the fall of Communism. One stream of contemporary literature, considering government transparency to reflect a society's broad culture, emerged from the discussion of high trust-based societies versus low trust-based societies and Nordic exceptionalism. In their discussion on Italian regions, Putnam et al. (1993) found important differences in transparency between North and South. A school of thought, therefore, grew which examines transparency as a specifically cultural feature of societies: a norm, and a historically acquired practice. Nongovernment actors such as the Open Society Institute and Transparency International, which since 1989 have been responsible for pushing transparency to the forefront of the debate on the quality of

government, draw on related, although quite distinct, anti-totalitarian literature. The French philosopher Henri Bergson (1935) had already described a historical continuum reaching from the primitive and collectivistic closed society to the individualistic, rational, and inclusive open society. Karl Popper (2020) developed further the concept of "open society" in the 20th century. This mainly normative literature places transparency in the same bracket as government openness and fairness, elevating it to the level of a human right. A third stream of literature has built on the economic institutionalist literature as part of the extended so called Washington consensus, which stresses the importance of "institutions," defined as norms and practices constraining actors' actions (Djankov et al., 2003; Glaeser et al., 2004; Kaufmann & Bellver, 2005) and stresses that transparency is certainly instrumental in reaching goals such as effective government and control of corruption, or accountability. A fourth stream of academic literature analyzes transparency neutrally, examining its relationship with other dimensions of governance, from parallel or complementary to actually contrarian, creating trade-offs (Hood, 2010; Hood & Heald, 2006; Johnston, 2019). A review by Ball (2009) suggests that three different meanings underpin the streams of literature on government transparency: one has it as virtually indistinguishable from accountability, a public value embraced by society to counter corruption, second it is synonymous with open decision-making by governments and nonprofits (raising concerns for secrecy and privacy), and third, as a complex tool of good governance in programs, policies, organizations, and nations (the World Bank and the OECD approach). Kosack and Fung (2014) tried to map this complexity by creating a matrix to divide the principles of transparency, on one side between government and market actors and end users, and on the other between citizens and consumers.

Fung (2013, p. 185) also introduced "democratic transparency" as a concept and the principles that should guide it. These are availability (the citizens need the information to protect their interests), proportionality (the need to disclose information to the public proportional to the potential threat), accessibility (the format should enable understanding), and actionability (the citizens and the organizations should be able to act upon the information). Building on the concept of government transparency as the disclosure of data which provides citizens and other public stakeholders with the information needed for judging the propriety and effectiveness of the conduct of the government (Bovens, 2007), this paper defines transparency as the availability and accessibility of the public information required to deter corruption and enable public accountability in a society. This definition acknowledges that to a great extent corruption is deterred not by oversight actions by the state necessarily, but by the capacity of every individual to defend himself from being abused and discriminated against, hence the "democratic" transparency. Corruption in a democracy often results in discrimination, as few states can dispose of such unlimited resources that favors granted to certain individuals or companies would not result in the deprivation of others equally deserving (Rothstein & Teorell, 2008; Warren, 2004). Government transparency should thus offer to the public reliable, relevant, and timely information about the activities of the government to enable it to defend itself from discrimination resulting from favoritism and abuse of power (either due to connections or monetary inducements).

The most common legal instrument of government transparency is "freedom of information" which acknowledges the right of citizens to request information, and the obligation of governments to either provide that information or explain why they will not (Roberts, 2008). Government transparency is multifold, with different types applying to different parts of the policy cycle (Grimmelikhuijsen & Kasymova, 2015; Meijer, 2013). Finally, in the age of the Internet and e-government, transparency often becomes computer-mediated, as the wide availability of smartphones raises access to unprecedented levels (Lourenço, 2015; Margetts, 2011). Smartphones, broadband Internet, and e-government have together managed to remove at least some of the barriers preventing access to information (Buckland, 1991). Technology is thus credited with enabling transparency (Bertot et al., 2010; Elbahnasawy, 2014; Gurin, 2014; Starke et al., 2016; Sturges, 2004), although there remain problems of Internet access and Internet literacy, making their joint contribution heavily dependent on development. Kossow (2020) provides a review of the vast empirical literature on the Internet and e-government's contributions to good governance: findings are generally positive. A separate stream of empirical literature has assessed the association of FOI (considering not only the existence of any particular legislation but its age and comprehensiveness) with progress on corruption. That literature shows certain initial optimistic findings (Islam, 2006), but the more FOI expands to more countries, the more its effects seem to dwindle, so much so that in some cases they might even be reversed (Costa, 2013; Vadlamannati & Cooray, 2017). FOI laws seem to be more effective when they operate

in a strong civil society environment (Kossow & Kukutschka, 2017; Mungiu-Pippidi & Dadašov, 2017). The performance of transparency seems to improve if instead of the existence of FOI regulation, the UN e-government index which measures online service provision (e-services) and openness (e-participation) is used as the proxy for transparency (Andersen, 2009; Elbahnasawy, 2014; Kim, 2018; Park & Kim, 2020; Starke et al., 2016). Press freedom seems to be another enabling factor for FOI besides the rule of law (Costa, 2013; Vadlamannati & Cooray, 2017). Other proxies alongside this widely used UN survey are experts scores, for instance, *fiscal transparency* (Chen & Neshkova, 2020; Montes & Luna, 2021; Mungiu-Pippidi & Dadašov, 2016), *transparency of policymaking* from the Global Competitiveness Survey (Lindstedt & Naurin, 2010), the *Quality of Government Institute* expert survey transparency measurement (Bauhr & Grimes, 2017), or sector measurements, for instance, transparency in publishing natural resources or public procurement. In meta-studies, Chen and Ganapati (2021) and Cucciniello et al. (2017) report that evidence exists of a weak impact on subjective, rather than objective indicators of corruption, especially for fiscal and e-transparency. However, reports exist too of manipulation of transparency resulting in negative effects (Johnston, 2019), or of transparency leading to a decline of trust in government, even when corruption is actually decreasing (Brusca et al., 2018).

On top of such quantitative studies, there is rich evidence from experimental and case studies; their definitions of transparency and the sectors they survey vary, so their findings are equally diverse. Peisakhin and Pinto (2010), for instance, found in a field experiment in India that the new FOI law was almost as effective as bribery in helping the poor to secure access to a basic public service. Two frequently cited studies from Uganda (Björkman & Svensson, 2010; Reinikka & Svensson, 2011) reported the positive results of transparency on outcomes in public health and education services (by some integrity-enhancing mechanism). Many people have attempted to emulate those experiments, but their findings have been less promising (de Renzio & Wehner, 2017; Kosack & Fung, 2014; Porumbescu et al., 2021). Despite reports of many successful experiments over the years, Uganda's national governance indicators have to date not improved, so it becomes apparent how difficult it is to generalize from controlled settings, and even from limited natural experiments (in one city or sector) and extrapolate to the macro level of an entire government and society.

The poor specificity of measurements at the national level may be not only a technical matter but might hide a conceptual problem. As Stefan Voigt (2013) argues, to assess whether institutions matter, one needs a conceptual distinction between institutions and non-institutions, for otherwise proving the importance of institutions becomes impossible. The solution, proposed originally by Douglass North (1993:4), is to distinguish between organizations (such as an information Ombudsman) and institutions (such as formal and informal rules regarding transparency). Furthermore, Guillermo O'Donnell (1996, p. 42) highlighted that "In many countries of the global East and South, there is an old and deep split between the *pays reel* and the *pays legal*." So, a real separation can exist between formal (*de jure*) laws and informal (*de facto*) rules of the game. Gutmann and Voigt (2020) reported this gap for rule of law (only a poor correlation exists between formal rules [constitutional arrangements] and informal norms [independence of the judiciary or lack of]). Mungiu-Pippidi and Dadašov (2017) also found an implementation gap when anticorruption was concerned (the most corrupt countries have the most comprehensive anticorruption legislation). Is it possible, then, that the situation concerning transparency may be similar and that the observed weak effect of FOI law in many countries can be explained by an implementation gap? To test the impact of transparency on corruption, two sets of measurements are therefore needed: one for *de jure* transparency and the other for *de facto*.

3. How does transparency impact corruption? Our research design

Crime opportunity theorists argue that offenders make rational choices and thus commit crimes when the ratio between opportunity and penalty makes crime profitable (Becker, 1968). The situation with public corruption is broadly similar: countries vary in significant ways in the matter of opportunities for and constraints on corrupt behavior; in other words, institutional contexts vary enormously (Johnston, 2005; Shah & Huther, 1999). The factors informing such differences between national institutional contexts form the object of a vast literature (for comprehensive reviews, see Escresa & Picci, 2020; Treisman, 2007). They fall roughly into two categories, also mentioned by UNCAC: the enablers (opportunities or resources for corruption) versus disablers (constraints to corruption). The extent to which the latter balance the former determines if a society manages to constrain

corrupt behavior and enforce public integrity as the norm or the opposite situation occurs, where the government systematically distributes public resources by favoritism (Mungiu-Pippidi, 2015, pp. 83–129). The factors creating opportunity are power asymmetry or discretion (Klitgaard, 1988) on the one hand, and on the other, material resources like proceeds from natural resources and public money that can be used discretionarily (Leite & Weidmann, 1999; Mauro, 1998). The capacity to deter corrupt behavior (the credible threat of a penalty) comes from both the horizontal accountability agencies (the judiciary and controllers)—assuming they are truly autonomous from both government and private interests—and free and plural media and civil society (Brunetti & Weder, 2003; Mungiu-Pippidi, 2015). Figure 1 pictures the model of corruption as an equilibrium between enablers and disablers.

How does transparency affect that model? Transparency is influential on both sides of the control of corruption equilibrium. Transparency automatically decreases resources for corruption, as it eliminates the monopoly of information that has inherent value for officials to exploit for rent, or which is conducive to other rents (Klitgaard, 1988; Stiglitz, 2003). One of the first major landmarks in actionable corruption measurements was the World Bank *Public Expenditure Tracking Survey*, which tracked money for education from central budget allocations down to the smallest school: once any such allocation is public (fiscal transparency) no more special surveys are needed, as it becomes far more difficult for embezzlers to make money disappear on the way to its intended recipient, as all parties along its course can monitor it (Sundet, 2008). Similar logic led to the establishment of a transparency system related to the extractive industry. The publication of government data, from basic demographic and property data to health or environment data, ends the monopoly over such information and enables citizens both to pursue their daily interests with reduced costs (and frees them from any need to actually solicit such information) and control their government. Transparency can thus reduce power asymmetries and opportunities for rent seeking and can improve access to public services.

On the side of constraints, transparency enables collective action, facilitates mass protests, and empowers citizens (Hollyer et al., 2015). Transparency helps magistrates, auditors, journalists, and ordinary citizens to assemble information, at low cost, against potential abuse of public office; to diagnose questionable practices and run advocacy campaigns. If investigations of corruption and subsequent trials are held in public, it is more difficult to hush them up. Media reports of corruption scandals can prompt the judiciary to act even against less tangible officials in a state; and citizens and NGOs can themselves use public information to rally feeling and action against corrupt behavior, by bringing lawsuits or voting corrupt actors out of office. Figure 2 sums up the model.

The evidence shows that transparency works as a substitute for effective rule of law in countries where public integrity has not yet become the dominant norm (Peisakhin & Pinto, 2010 for FOI use in India; Mungiu-Pippidi & Dadašov, 2017 for financial disclosures). If citizens cannot rely on the autonomy and fairness of law enforcement, judiciary, and the bureaucracy, they need to take action themselves as principals to control defective

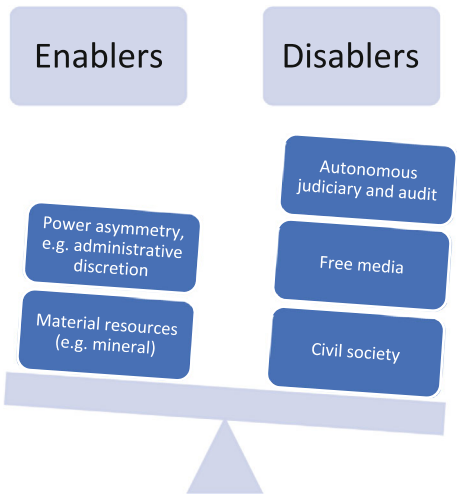

FIGURE 1 The causal framework of corruption. *Source*: Adapted after Mungiu-Pippidi (2015)

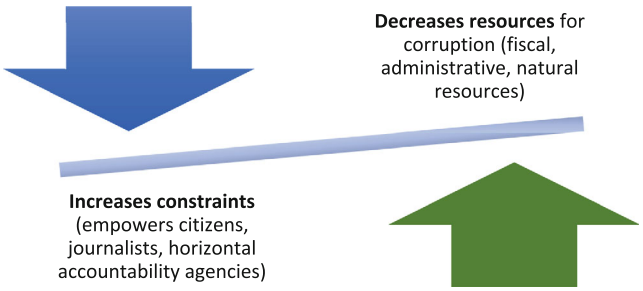

FIGURE 2 How does transparency impact corruption?

agents. Transparency enables both access to public services at grassroots level, and oversight of them. Similarly, by enabling citizens to help themselves and reduce gatekeeping of public services, government digitalization in corrupt countries has developed as a substitute for incomplete or failed reforms of the civil service or public administration (Kossow, 2020).

Building on these theoretical and empirical models, this paper addresses the general question if transparency is in sufficient quantity, as well as a sufficient factor to deter corruption and these questions and research objectives:

1 Given that the generalization of legal transparency has apparently not led to an improvement of the corruption perception globally (according to Transparency International, 2021) we hypothesize that the practice of democratic transparency may demand more than the simple ratification of treaties and adoption of laws. It may be that an "implementation gap" exists between the legal (*de jure*) and *de facto* computer-mediated government transparency (Hypothesis 1), which should become apparent if we measure the two dimensions.
2 We further hypothesize that the different information resources that a government should share transparently to enable real transparency are both directly observable and conceptually related in a latent variable (Hypothesis 2). They could then be captured by a single index (the T-Index) following separate direct observations.

We, thus, aim to measure *de jure* and *de facto* transparency and relate them to each another to achieve a measurement of real, not just legal transparency, and run internal and external validation tests of the new index (T-Index).

3 We further hypothesize that "real" transparency and in particular the implementation gaps between laws and practices should be consistent with the level of development proxied in the Human Development Index (HDI), as computer-mediated government transparency needs an infrastructure requiring both material and human resources.
4 Finally, with the obvious limitation that a new index, regardless how sound, cannot be used retrospectively, a measure of real transparency is the first step toward answering the more complex question if transparency is either a necessary or a sufficient factor to deter corruption. By mapping real transparency around the world, we can establish benchmarks and assess to what extent sufficient transparency exists to empower public integrity and how much is still missing. According to mainstream theory, high values on the resulting index should, therefore, be associated with less corruption across all possible corruption indicators (subjective and objective).

4. A measurement of both legal and real transparency

4.1. Current measurements

So far, transparency at the national level has been measured mostly by proxies, with the E-government Survey and the FOI-based measures being the most used. Despite their differences, the two measures belong to the legal or *de jure* category (the existence of laws instituting FOI or the existence of specific obligations and provisions to that effect). The UN survey measures e-government (ITC government infrastructure, as well as the human

capital), and "e-participation" (e-information sharing, e-consultation and e-decision making) consists of self-reports by governments through the METEP questionnaire (United Nations 2014) which is based on regulation and organization (laws and decisions). The attempts to measure *real* transparency have come mostly by sector, for instance in the form of statistical data available to the World Bank by Hollyer et al. (2014), or based on data from the pharmaceutical sector, party finance, and public procurement. Such measurements have the advantage of specificity and actionability. The European Commission's Public Procurement Scoreboard (European Commission, n.d.), for instance, publishes permanently the transparency of bidding processes for each EU member state, thus offering both benchmarks and policy warnings.[1] Several case studies from countries draw on the numbers of FOI requests in each and an analysis of how their governments handled them. But comprehensive measurements of real (*de facto*) transparency are not easy to come by in a comparative format at the national level. The existence of any such measurement would bring important advantages for public policy and good governance and would allow the establishment of benchmarks of transparency to be established, thus creating incentives for countries to progress. Finally, it would allow policy-relevant research, as the resulting measurement can be tested both in relation to legal (*de jure*) transparency and to the curbing of corruption.

4.2. The selection of components

A legal transparency measurement is uncomplicated: it can build on national transparency legislation as well as on international commitments. For instance, the website europam.eu from the European Research Centre for Anti-Corruption and State-Building. (n.d.) assesses the comprehensiveness of transparency legislation, giving a score which allows both ranking of the country and institutional specificity—in other words, what is included in or omitted from a law. Unfortunately, that is possible for only 35 of Europe's countries and does not present a straightforward correlation between more comprehensive legislation and a better outcome (more transparency). Is the existence of an Ombudsman for Information, for instance, a guarantee that a country is more transparent? The most transparent countries in the world, for example the Scandinavian ones, the United States, or Canada have no such Ombudsman, although more recent FOI acts have included an Ombudsman organization as a guarantee of better FOI implementation. Besides FOI, other relevant rules and conventions with key transparency provisions are international: for instance, the UNCAC (includes a chapter) or the Anti-Money Laundering Convention. Countries pledge transparency when joining the intergovernmental Open Government Partnership or when signing various regional trade treaties or initiatives. National regulation and international commitments can be built into a scale of *de jure* (legal) transparency.

The measurement of *de facto* transparency at the national level is, of course, more difficult. The only way to assess *de facto* transparency is to directly observe the existence of such public data, its accessibility and coverage: in other words, *the practice of transparency rather than just the legal provision of it*. But what specific information should be monitored, given that the universe of unclassified corruption-relevant information that governments should share is practically infinite? The answer has already been given in the main by the UNCAC and the SDG 16, which list the basic requirements for both control of corruption and transparency (Mugellini et al., 2021).

In line with the theoretical institutional framework, a measurement should capture both *de jure* and *de facto* aspects, the formal and the informal institution of transparency, and all rules and practices. Table 1 shows the list of essential indicators to prevent corruption and abuse of office for both categories.[2] All the elements required by UNCAC are captured in the *de facto* index, apart from nonuniversal categories, which might decrease country coverage too much if they were included (e.g. websites which disclose party finances, important only for democracies). Although that list covers the essentials of the data that a government can share to enable public participation in anticorruption, the list could grow endlessly, as transparency is not a finite concept. Environment data, food safety data, health and education data, and various kinds of archival data might all prove important to preventing corruption in one situation or another, even if UNCAC does not make explicit reference to them. However, assessing financial and public procurement transparency ensures coverage of the highest-risk areas while preserving the feasibility of a large country coverage. The *de facto* T-Index thus has 14 dimensions, which cover the main administrative, judicial and anticorruption areas.[3] Coverage is limited to the countries covered by the most comparable indicators needed for the validation and analysis of this measurement: originally there were 130 cases, of which Afghanistan was dropped after the change of regime in the fall of 2021. The documentation

TABLE 1 Components of T-Index *de jure* and *de facto* dimensions

De jure transparency (laws and treaties)
UNCAC ratification
Membership to Open Government Partnership (OGP)
FOI act present in national legislation
Adhesion to region or scope limited conventions or initiatives including transparency provisions
Part of the Financial Action Task Force against Money Laundering or other anti-money laundering initiative.
De facto transparency (open, free and comprehensive data)
Online information about Supreme Courts' hearing schedules and agenda, enabling participation in public sessions
Online Supreme Courts' decisions with motivations in sentencing (including abuse of service or corruption sentences)
Online searchable database of legislation (official gazette or legal repository)
Online detailed publication of past expenditure (from the previous fiscal year)
Online detailed publication of current public expenditure (budget tracker)
Online public procurement portal including tender announcements and award notices
Online disclosure of international aid (ODA) allocation (either as recipient or donor, or both)
Online disclosure of existing mining concessions
Online disclosure of building permits at least for the country's capital city
Online searchable land register with ownership information for all properties
Online searchable register of commerce with public shareholder information
Online disclosure of financial declarations for public officials
Online disclosure of conflict-of-interest declarations for public officials
Online reports of the Supreme Audit Institution (at least an annual report) offering detailed information on audit results

and review of the 14 *de facto* (1820 data points) and five *de jure* items took 18 months, so a directly observed measurement does not come cheap. The reference link to each observed website can be published as a hyperlink on the public webpage of the index, so that any error or change can be corrected by feedback from the general public as well as from officials, thereby avoiding the kind of problems that the World Bank experienced with the Doing Business indicator in 2021.[4]

4.3. Aggregation and validation

Once the indicators relevant to corruption are identified for both those dimensions, they can be aggregated into a meaningful composite indicator under a fitness-for-purpose principle (OECD, 2008). How should they be weighted to create the composite indicator, and by what criteria? The total repertory represents the basic transparency menu for preventing corruption, with each category having its separate theoretical importance which cannot be statistically tested against the whole. Equal weighting is the most common scheme used in the development of composite indicators (Bandura, 2008; OECD, 2008). We assign equal weights to aggregate components into an index of qualitative variation IQV (Agresti & Agresti, 1978). The availability of the 14 resources in full is considered the *de facto* target for our concept of transparency, and each component adds up equally to fulfill it to 100%, which is the equivalent of the maximum score of 14 points. The same logic is applied to the *de jure* and the total T-Index scores. A country's T-Index score represents the percentage to which the target (19 items) is fulfilled. The resulting index is then a combination of a rule-based and an outcome-based measurement, designed to eliminate the reported problem of an implementation gap (Kaufmann & Kraay, 2008, pp. 5–8).

The pairwise correlation between the *de facto* and *de jure* indicators returns a Pearson coefficient of 0.66, showing a strong and statistically significant correlation (at the 95% confidence level), with the difference indicating the presumed implementation gap. The general pattern displayed by the transparency gap metric sheds further light on which side of the scale the imbalance lies: *de jure* transparency outperforms *de facto* transparency by a mean value of roughly 26 points on the 100-point scale. Indeed, fulfillment in the *de jure* dimension is higher than in the *de facto* dimension for 124 out of the 129 countries for which the T-Index was computed. As Figure 3 shows, the differences across regions are highly significant. Sub-Saharan Africa and MENA have the lowest real transparency in the world (33 to 32 degree of fulfillment), although SSA has far a larger implementation gap (28 to 38, respectively). Europe & Central Asia has the smallest gap (74 for *de jure* and 59 for *de facto*), with

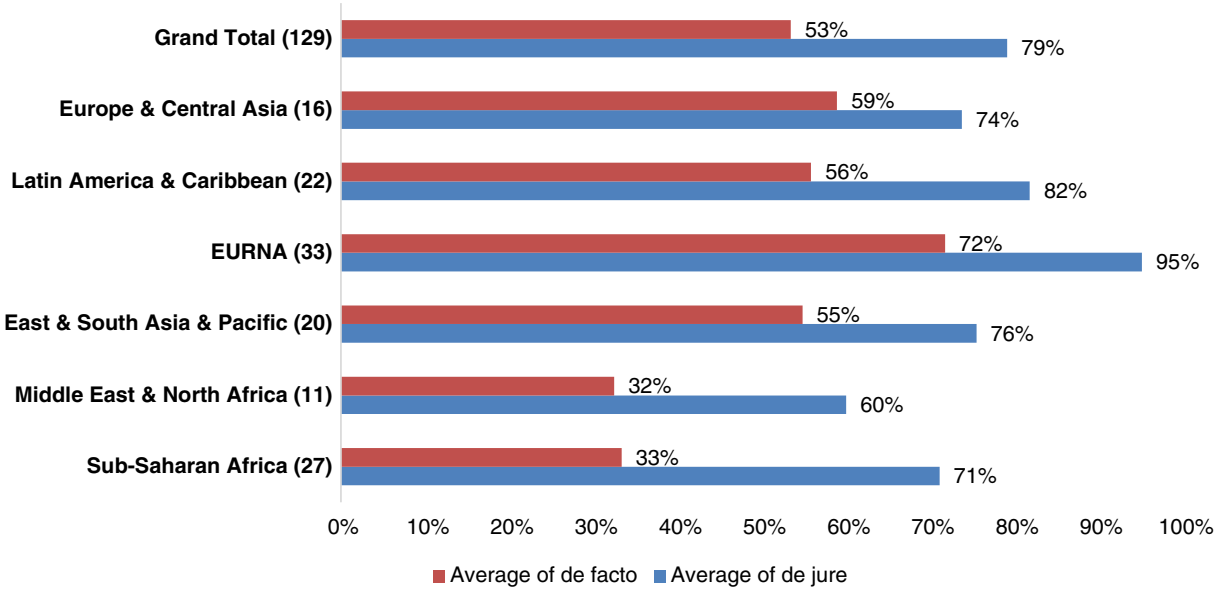

FIGURE 3 *De facto* and *de jure* transparency by region. *Source*: www.corruptionrisk.org; Regions' classification according to the World Bank

TABLE 2 Pairwise correlations of T-Index and indicators of transparency and enablers

Related variables	Pearson coefficients
UN Online Services, $N = 128$	0.69*
UN E-Participation Index (2020), $N = 127$	0.71*
Budget transparency 2019 Fraction of Open Budget Index and IPI, $N = 114$	0.66*
Freedom of the press 2020 Reporters without Borders (RWB), $N = 129$	0.52*
HDI, $N = 129$	0.64*

*95% statistical significance; T-Index total score (0–100). *Source*: T-Index dataset 2022. United Nations 2020; Reporters without Borders 2020; IPI, 2019 for budget transparency; United Nations Development for HDI.

Europe and North America showing the highest fulfillment, although still with a gap (95 *de jure*/72 *de facto*). The Eastern Europe and Central Asia region is closely comparable with Latin America on real transparency- (59 and 56 respectively) but its implementation gap is halved (15 compared with 26). Finally, de jure transparency predicts in a bivariate regression only 41% of the variation of the *de facto* transparency. According to our hypothesis 1, which is therefore confirmed, a "transparency implementation gap" exists with 79% of countries fulfilling the *de jure* transparency criteria, but only 53% fulfilling the *de facto* criteria. The global average score for the *de facto* component is 7.5 (out of total 14) and 11.4 (of 19) for the total T-index (*de jure* and *de facto* aggregated).

Various combinations of individual indicators cluster better than others, so subcomponents could be built for administrative or judicial transparency, but the total *de facto* index outperforms every other grouping with a Cronbach Alfa indicator of 84%, so it can stand alone as an index. An index including both *de jure* and *de facto* is also highly internally consistent with a Cronbach Alfa of 85%, but the five *de jure* components only reach a Cronbach Alfa of 62% by themselves. Our second hypothesis is thus confirmed: a latent variable exists and is captured by the index.

As earlier discussed in this paper, there are few fact-based transparency measurements at the national level against which to validate the T-Index. Table 2 shows those with the largest coverage. The T-Index correlates at 71% with the e-participation component of the UN E-Government Development Index (United Nations 2020) which measures transparency as feedback and consultation offered by government websites, at 69% with the same Online Services UN survey component which measures digitalization of public services, and at 66% with

Budget Transparency, a 12-item fraction of Open Budget Index used as a component of the Index of Public Integrity (IPI, 2019). The T-Index, therefore, has very good internal and external validity, being internally consistent without sacrificing any component of theoretical and actionable importance and displaying a very high correlation with the other transparency measurements, although the concepts do not fully overlap. While in principle further components may be added to the index, robustness tests performed with different versions indicated that further additions or removals were unlikely to change much of the internal validity of the T-Index. Its two limitations are its trichotomous coding (none, partial, complete fulfillment), by which the "partial" scale could be refined for greater accuracy if features like accessibility were separated from coverage; and its feasibility. Direct observation of websites in so many languages on a permanent basis is not cost-free and is in fact the main justification of the trichotomous scoring instead of a more refined scale as prescribed by the Open Government Partnership (2022).

As predicted by the third hypothesis, the resulting index is strongly associated in a linear regression model with the HDI, on behalf of its *de facto* component. The implementation of transparency requires both a certain level of national income and a good level of education (both components of HDI). SSA and MENA, the regions that include the poorest countries lead in the implementation gap. The hypothesized implementation gap is therefore to an important extent dependent on development, although development is not the only factor.

5. Transparency and corruption: Results and discussion

Once a real transparency index exists, it is possible to address the question of whether there is sufficient transparency for citizens to act as principals against corruption. This paper avoids complex statistical models, which would be plagued by severe reverse causality and endogeneity problems, seeing how closely corruption, transparency, and democracy correlate and how obscure many of their indicators are. Figure 4 shows the relationship between corruption and transparency using the *Corruption Perception Index* (CPI) aggregate indicator and the T-Index. The best transparency performers in the Asia-Pacific region are South Korea, New Zealand, and

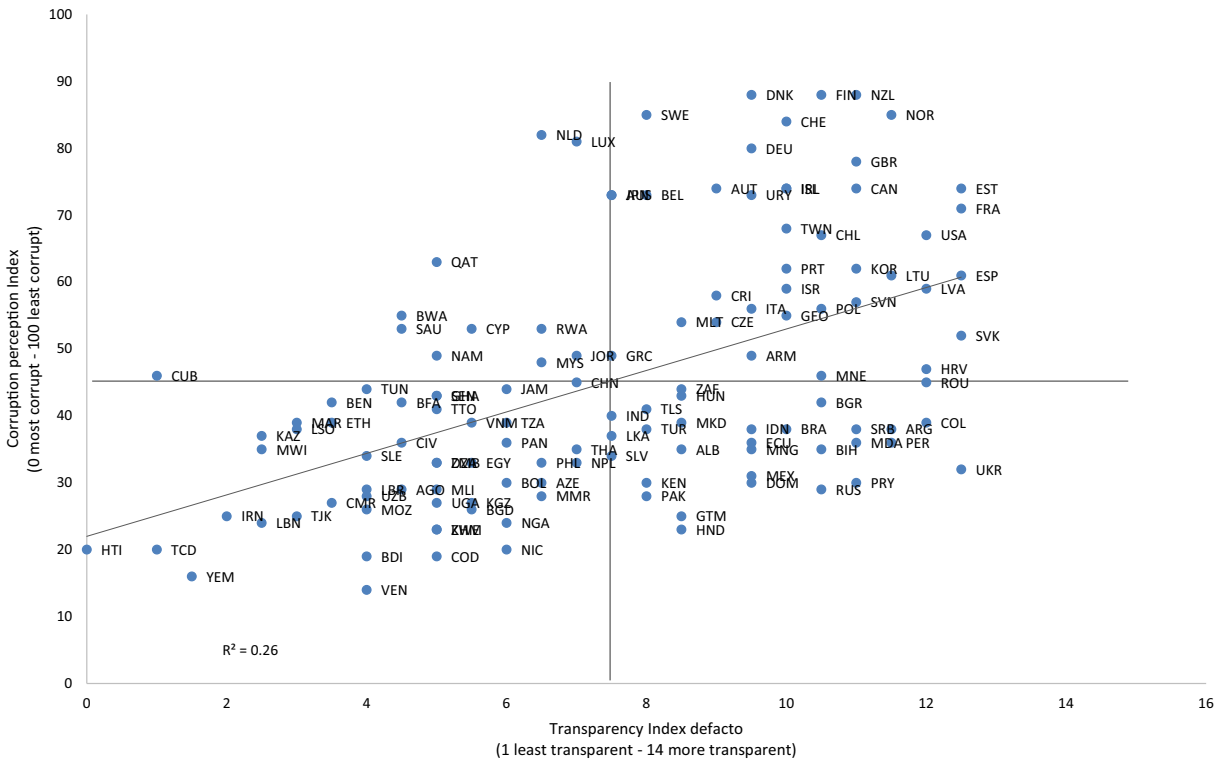

FIGURE 4 The association transparency-corruption. *Source*: Corruption Perception Index 2021 by Transparency International and T-Index 2022 dataset

Taiwan, all of which also control corruption very well, while the countries in LAC that lead in transparency, like Columbia, Argentina, or Peru are *not* leaders in anticorruption. Uruguay is the most consistent LAC case, ranking highly in both. Of all regions, MENA has the lowest fulfillment. Israel, and to some extent Jordan are the only exceptions, with even Tunisia, still ranked as more democratic than its neighbors, seriously underperforming. South Africa and Kenya are transparency leaders, with relatively good anticorruption performers (in the SSA context) Botswana and Rwanda underachieving on transparency. As MENA and SSA have both high corruption and low transparency they drive the transparency-corruption association strongly. Both the most and the least developed group of countries support the intuitive association of low corruption with high transparency, although some middle-income cases exist with high transparency and moderate to high corruption (see Fig. 4, right-hand low quadrant) in Latin America and Eastern Europe. Such outliers, for instance Columbia, Peru, Argentina, Ukraine, or North Macedonia have been at the forefront of the recent global effort to promote transparency (concretely, these are either EU or OECD candidates). However, most such cases are in the right-hand lower quadrant of Figure 4, with India, Russia and Pakistan. The upper right-hand quadrant of high transparency and good control of corruption includes exclusively liberal democracies (aside from the United States and European cases, Uruguay, South Korea, and Taiwan are in this group); for the rest, however, authoritarian regimes are spread across all the other three quadrants, with some (like Russia) appearing more transparent than their political regime or corruption level would predict.

The metric of fulfillment by region also has a story to tell (see Fig. 5). For example, transparency of the law and judiciary has been spreading fast. Countries increasingly publish Court sentences and hearing schedules. Across Latin America, the live streaming of Court sessions has become more popular as an approach to increase the integrity and accountability of the judicial process. In about half the countries, National Auditors (Controllers) are meeting UNCAC requirements by publishing annual reports on corruption. The efforts of the donor community to make aid transparent have also borne fruit, with most countries complying fully. E-procurement portals and mining concessions websites have also proliferated, but they are still missing in precisely

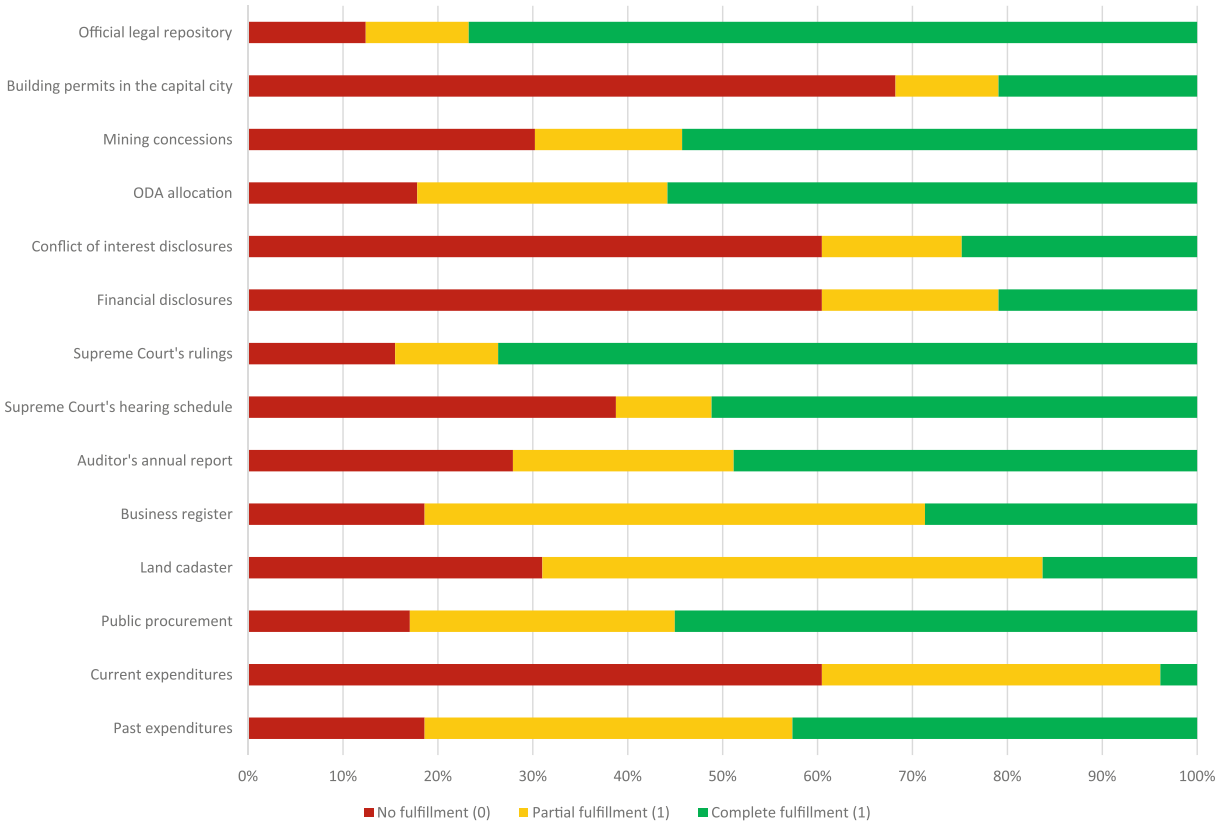

FIGURE 5 *De facto* transparency by tools. $N = 129$. *Source*: T-Index 2022 dataset

the countries where it would be most needed to prevent corruption. The situation worsens when it comes to fiscal transparency, especially for current as opposed to past tracking of public expenditure and the transparency of ownership of businesses or land—most countries with corruption problems have very low fulfillment on such items. A paradoxical situation exists for direct oversight tools to prevent corruption among officials, with only a small minority of countries publicly disclosing the assets and conflicts of interest of their officials. However, and with certain exceptions, those are neither the richest, nor the most democratic (where privacy concerns are often raised against such disclosures), but rather countries like Ukraine, with corruption problems and high external conditionality that needed to take extreme steps. Finally, few countries publish construction permits online, although among the references in the database some superb benchmarks exist (for instance, the city of Paris where an application map shows both approvals granted and those denied), although corruption in relation to building permits is, according to the Global Corruption Barometer (Transparency International 2020) and other surveys a truly universal problem.

Further tests using the T-Index from this point on must overcome two problems. The first, of course, is the fact that the measurement is new, meaning that it will be some years before it can be used in a longitudinal impact test. The second is the absence of a universally acknowledged corruption measurement that is specific, fact-based and *allows effective tracing of corruption over time* at the national level. There are no corruption indicators available for the convergence validity tests of the T-Index free of controversy. The most known are the aggregate indicators (averages or principal components extracted from multiple individual expert scores) by Transparency's International (CPI) or by The World Bank (like Control of Corruption [CoC]), which use mostly the same individual sources, so have a great overlap. Some scholars have criticized such indicators for the lack of an underpinning theory of what corruption at the national level is (Galtung, 2006; Langbein & Knack, 2008; Thomas, 2010). For instance, how do various corruption phenomena observable in a country (e.g. political corruption; corruption in procurement; bribery in health services) relate to one another so that they can be quantified in one national measurement (Andersson & Heywood, 2009)? Another criticism is directed toward the use of non-transparent "expert scores" for components—for instance, Economist Intelligence Unit's or the regional development banks' political risk estimates, with low consistency across countries (Razafindrakoto & Roubaud, 2010). Newer indicators exist compared to aggregate scores, which have never been meant to measure more than perception or the reputation of countries (Lambsdorff, 2005, 2006). For instance, the *Varieties of Democracy* (V-Dem) Project is a new judgment-based expert score designed by academics, so better grounded in theory (Coppedge et al., 2021; Schlenkrich, 2021). The Index for Public Integrity (IPI, 2015-2021) draws on the literature on determinants of corruption (Mungiu-Pippidi & Dadašov, 2016), extracting by principal component analysis one index from administrative burden, trade openness, fiscal transparency, e-citizens, press freedom and judicial independence. While the index is based on a theory arguing that corruption is an equilibrium between enablers (resources) and disablers (constraints), it stops short of being fully fact-based because two components are also expert scores (press freedom by Freedom House and judicial independence by World Economic Forum, see IPI, 2019). As shown in Table 3, newer and older indexes strongly correlate, validating one another (Mugellini et al., 2021; Mungiu-Pippidi & Dadašov, 2016). Finally, aggregate corruption indicators have also met with criticism due to their imprecise time lag (Razafindrakoto & Roubaud, 2010; Treisman, 2007, p. 220). Among surveys, the Global Corruption Barometer (GCB), which is the largest periodical corruption survey with global coverage, includes only one question about change: "Over the past year, has the level of corruption in this

Table 3 Pairwise correlations of T-Index and indicators of corruption

Measurements	T-Index	CPI	CoC	IPI	V-Dem
(1) Transparency T-Index	1.000				
(2) Corruption perception index CPI 2021	0.529*	1.000			
(3) Control of corruption CoC 2021	0.515*	0.993*	1.000		
(4) Index of public integrity 2019 ($N = 114$)	0.692*	0.864*	0.859*	1.000	
(5) Corruption V-Dem 2021	−0.528*	−0.897*	−0.894*	−0.742*	1.000

Note: $N = 128$ unless otherwise indicated. * $p > 0.05$. *Source*: Transparency International (2022), Coppedge et al. (2021) for V-Dem, IPI (2015-2021), Transparency International (2020). World Bank 2021 and T-Index 2022 dataset.

country increased, decreased, or stayed the same?" (Transparency International 2020). By aggregating answers of "increased somewhat" and "increased a lot," an indicator of perceived change in national-level corruption can be built in order to associate it with the new transparency measure.

As expected, the association between the T-Index and corruption perception indicators (Transparency International's CPI, the World Bank's CoC indicator (World Bank 2021), and V-Dem's corruption measure, scaled inversely to the other two) is statistically significant between higher transparency and lower corruption (see Table 3), but the Pearson coefficient is only at 51%–53% due to the many outliers (see Fig. 4). The Global Corruption Barometer indicator (corruption perceived as increasing vs. decreasing) is also significant and sizable at 39%, and robust when the development indicator life expectancy is added as control. The relation is intuitive, with countries with higher transparency having fewer people who perceive that corruption has increased. The most fact-based corruption indicator, the IPI has the strongest association with transparency, explainable in part because both indexes include budget transparency (from different sources and differently computed[5]). The association between transparency and corruption remains constant across all indicators, although it is not consistent across different income groups (GDP-PPP), with the strongest relationship on behalf of the lowest income group. However, when GDP-PPP is introduced as a control in a linear relationship model, both components of the T-Index and the total index remain significantly robust (see Appendix 1).

While these correlations further validate the T-Index, causation remains a puzzle. The GCB trend question about whether people perceive corruption as increasing or decreasing over time is practically the only corruption *change* indicator at a national level from which the impact of transparency can be studied. Figure 6 illustrates the bivariate association of those two variables. Certain countries in the upper right-hand quadrant overlap with the outliers from the CPI graph (Fig. 4): Argentina, Bulgaria, Columbia, Kenya, Peru, Honduras, and Guatemala are countries where the relatively high transparency levels do not match the citizens' perception that corruption is increasing. On the opposite end, the Baltic States and Slovakia, and to some extent also some Balkan countries

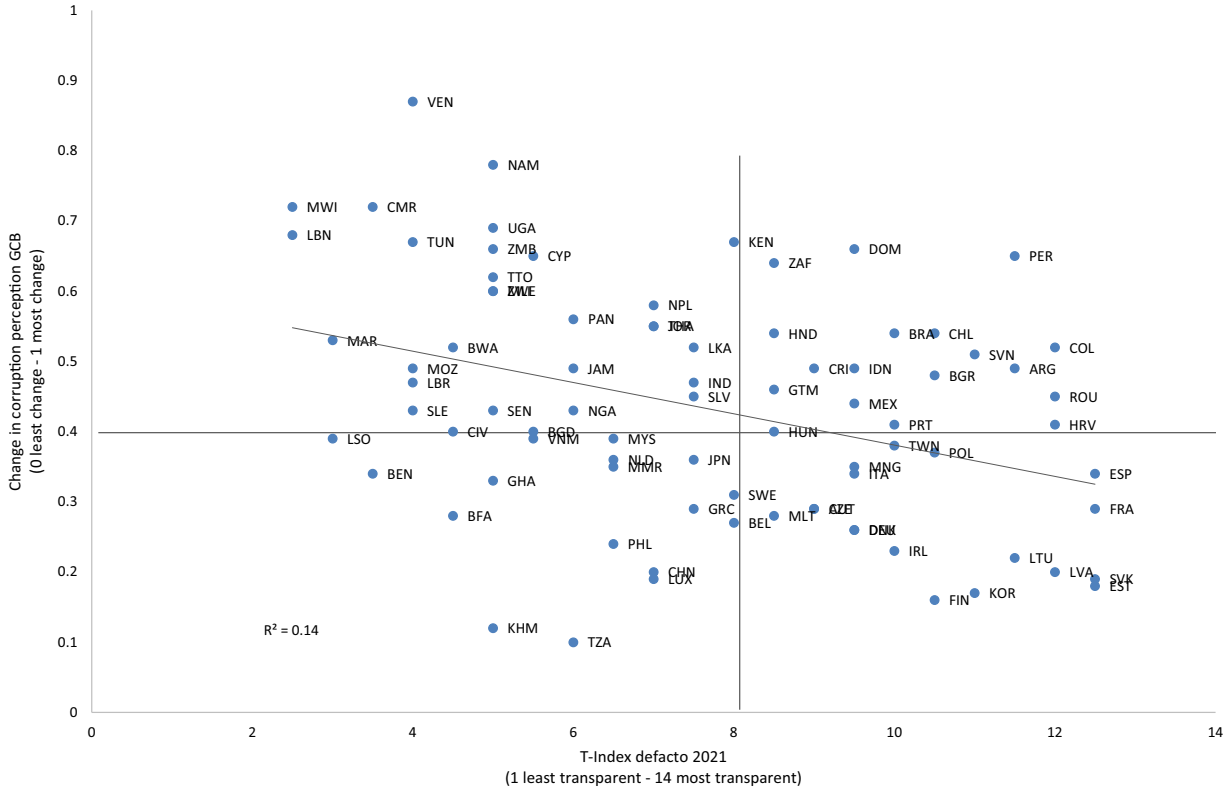

FIGURE 6 The bivariate association between transparency and perceived change in corruption. T-Index *de facto* coded 1-14; Transparency International 2022. Perceived change "Over the last year, has corruption increased, decreased or stayed the same," aggregated "Increased a lot" and "mostly increased" national responses T-index 2022 dataset.

enjoy high transparency and more positive perceptions of trends of corruption: their transparency seems to deliver better value, although they are also young democracies.

A closer look using the *Index for Public Integrity* (IPI, 2015-2021; Mungiu-Pippidi & Dadašov, 2016), which reunites widely tested corruption determinants, sheds further light on those two groups of countries. The negative outliers—the group of countries which both experts and citizens agree do not control corruption well and which despite high transparency are not improving—share some important common features. They are all electoral democracies, where contested and free elections are held regularly under conditions of relative fairness and where incumbent governments do lose elections. The Latin American cases (Peru, Columbia, Argentina) they score very low on judicial independence (under 4, on the 1–10 scale), and have not managed to improve for the past decade, despite progressing in other areas. All these countries have made reforms over a number of years due to some external conditionality, but the core power of politicians over the judiciary is still unbroken, hence the gap between high transparency and high perceptions of corruption. In fact, they fall behind the world average only in judicial independence. The same is true of Bulgaria (7 on the IPI), which is above the regional average for transparency and reduction of administrative burden but lags seriously in judicial independence and press freedom. Moreover, many of Bulgaria's reforms have been driven by external conditionality, being subjected by the European Union to a mechanism of cooperation and verification on rule of law. Judicial independence (as well as freedom of the press) is closely associated with both transparency and corruption. This is the case of all usual determinants of an explanatory model for corruption—hence, the difficulty of building a multivariate regression model with controls for the most common determinants (such as freedom of the press, judicial independence, or e-citizens) that is not plagued by endogeneity, collinearity and reverse causality problems. A two-stage least square regression using judicial independence as an instrument (arguing that it is a stronger determinant of corruption, and it only affects transparency indirectly) shows a strong reciprocal causality. The models are not reproduced here due to these limitations.

Another group of under-achievers in corruption despite relative high transparency are countries like Indonesia, Kenya, and Central American countries, which perform better on judicial independence but experience very low e-citizenship (a proxy for collective action capacity made of Internet household connection and social media users by country, see Mungiu-Pippidi & Dadašov, 2016) but have other rule of law issues. Both Indonesia and Kenya have made significant and consistent progress in the IPI components in recent years, while Guatemala and Honduras are less consistent, with infiltration of government by organized crime and violence. While transparency has always helped and can still help—and these countries are still a long way from the limits of what transparency reforms can achieve—transparency cannot by itself succeed against organized crime and violence. That is the situation in South Africa, too. The only democracy to achieve a good perception of corruption without much transparency seems to be Botswana, long time ranked by CPI as the only achiever in Sub-Saharan Africa, but less of a performer, and certainly a backslider, in IPI since 2015. By contrast, authoritarian countries—except for Qatar—are consistently low on transparency and high on corruption. UAE is not captured in the database.

The examination of separate determinants of corruption, rather than just perception indicators, thus indicates what enables or hinders transparency, as well as why the IPI and the T-Index are so closely associated. Computer-mediated transparency alone cannot deliver in an environment with low human development and few e-citizens, where the population lives without economic autonomy and basic security and has little Internet access. Many countries which, driven by the desire to improve their reputation sufficiently to join either the EU or OECD, have improved their transparency and engaged in additional anticorruption reforms show progress signs by objective indicators (although perceptions lag still). Others, however, are hindered by lack of security, poor judicial independence, and the lack of a critical mass of e-citizens.

6. Contributions and limitations of the new T-Index

This research contributes to the study of transparency in three ways. First, it introduces the distinction between *de jure* and *de facto* transparency and shows that an implementation gap exists between the two, with the practice of transparency lagging behind legal commitments. The gap varies across continents and is to a great extent dependent on development. Second, the documentation of 129 countries has produced a new government transparency index based on direct observation, with very good internal and external validity—although only

moderate precision. This index can be transparently published with every component linked to a public webpage to enable feedback and updating through crowdsourcing, thus promoting the practices of transparent governance indicators. Third, the paper theorizes the mechanism by which transparency deters corruption and shows that transparency is significantly and robustly associated with both subjective and objective indicators of corruption, but that transparency is insufficient on two counts. First, because those countries most in need of it simply do not yet enjoy enough transparency, and second, because a sizable minority of cases exist that despite recent high levels of transparency have not so far achieved good control of corruption. However, with only one outlier, transparency is associated with good control of corruption, indicating that transparency is necessary but not sufficient to lead to better control of corruption.

The new T-Index captures the state of digital government transparency for the purpose of accountability and anticorruption as of December 2021. Although its existence enables more tests in the future, this indicator's first limitation is its novelty—it cannot be used in a panel analysis. Ideally, ongoing efforts in the meantime to generate objective corruption measurements sensitive to change will also generate better dependent variables for analyzing corruption over time.[6] While this paper reaches its conclusions largely by a qualitative path, the endogeneity of transparency to corruption indicators and the imprecise and lagging character of corruption expert scores could hardly have offered a solid quantitative alternative even at the cross-sectional level.

Further limitations of the T-Index arise from the lack of refinement of its scale and its restriction to only the original UNCAC notion of transparency for accountability. Nevertheless, a trade-off exists between coverage and sustainability to be considered for the further refinement of the T-Index. As it is, the index captures both the main areas of government transparency and the private sector indirectly, as it includes information on mining concessions, registers of commerce, land properties, and public procurement.

Besides its academic contribution, the T-Index can serve an actionable purpose. It creates clear benchmarks in the field of government transparency, giving visibility to best practices and exposing implementation gaps. More importantly, by capturing real—instead of merely legal—transparency, this novel T-Index with its disaggregated components offers a roadmap to practitioners and activists in the field of government transparency, and to their international donors. The T-Index points the finger to where advocacy efforts should be targeted, and infrastructure built to enable real transparency.

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Data availability statement

The data that support the findings of this study are openly available at T-index 2022 dataset: DOI 10.5281/zenodo.7225627

Endnotes

[1] https://single-market-scoreboard.ec.europa.eu/policy_areas/public-procurement_en.

[2] This item draws on a few treaties and initiatives which are either regionally or sector limited, such as OECD Convention on Combating Bribery of Foreign Public Officials in International Business (1999) Transactions; World Trade Organization

Agreement on Government Procurement (GPA); Comprehensive and Progressive Agreement for Trans-Pacific Partnership CPATPP; Membership to Extractive Industry Transparency Initiative (EITI). Other trade treaties, which do not have provisions for extensive transparency are not included. The adhesion to of these conventions and treaties grants the maximum 1 point score; a score of 0 is granted in the country does not participate in *any* of these initiatives.

[3] We code our observations of *de facto* transparency in a trichotomous way as follows: the resource is publicly and freely accessible with all essential information—criteria satisfied in full (1 point); the resource exists, but information is either partial (in content or coverage) or access is restricted in some way (e.g., payment required, only certain categories of users can access)—criteria satisfied in part (0.5 point); the resource does not exist or is clearly insufficient in substance to enable citizens in any meaningful way (e.g., available data is too general or outdated)—criteria not fulfilled (0 points).

[4] For the integrity of *Doing Business* indicators, see https://www.washingtonpost.com/politics/2021/09/20/theres-deeper-story-behind-world-banks-ratings-scandal/. Last accessed 10 June 2022.

[5] The T-index has two items on budget transparency based on the current existence of websites with past and current itemized public expenditures. The IPI uses 12 questions from the Open Budget Index questionnaire which refer to procedures of publicizing in a readable format the budget draft and final copy.

[6] Efforts are under way by various groups after a commitment by G20 to generate objective measurements of corruption http://www.publicnow.com/view/76190A3982566A0A82BF1273F63273CF52C6688D.

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Appendix 1. Transparency as a predictor of corruption with control for income

	Corruption perception index (0 least–100 most)			Control of corruption (1 least–10 most)			Index of public integrity (1 least–10 most)			V-DEM (0 most–1 least)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Transparency index total (0 least–19 most)	0.885***			0.0968***			0.256***			−0.0196***		
	(0.275)			(0.0335)			(0.0227)			(0.00548)		
Transparency index de facto (0 least–14 most)		1.009***			0.107**			0.305***			−0.0224***	
		(0.344)			(0.0418)			(0.0287)			(0.00685)	
Transparency index de jure (0 least–5 most)			2.638***			0.311***			0.599***			−0.0580***
			(0.941)			(0.114)			(0.0960)			(0.0188)
GDP–PPP	0.000657***	0.000665***	0.000683***	7.52e-05***	7.62e-05***	7.75e-05***	3.95e-05***	4.11e-05***	4.93e-05***	−8.37e-06***	−8.54e-06***	−8.94e-06***
	(4.96e-05)	(4.97e-05)	(4.77e-05)	(6.03e-06)	(6.03e-06)	(5.75e-06)	(3.86e-06)	(3.94e-06)	(4.64e-06)	(9.87e-07)	(9.88e-07)	(9.50e-07)
Constant	21.11***	23.53***	20.27***	2.203***	2.486***	2.029***	2.405***	3.030***	2.788***	0.856***	0.803***	0.873***
	(3.005)	(2.512)	(3.645)	(0.365)	(0.305)	(0.440)	(0.251)	(0.213)	(0.377)	(0.0597)	(0.0500)	(0.0727)
Observations	125	125	125	125	125	125	112	112	112	125	125	125
R-squared	0.699	0.695	0.694	0.671	0.666	0.669	0.801	0.788	0.683	0.538	0.531	0.527

Legend : Standard errors in parentheses.

* $p < 0.1$;

** $p < 0.05$;

*** $p < 0.01$. *Source*: World Bank 2021; Transparency International 2021; T-index 2022 dataset.