

Opening Public Officials' Coffers: A Quantitative Analysis of the Impact of Financial Disclosure Regulation on National Corruption Levels

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Abstract Disclosure of income, assets and conflicts of interest can serve as powerful public accountability tools to draw attention to the abuse of public office, help prosecute corrupt offenders and create a culture of scrutiny in the public sector that deters corruption. Based on data of the World Bank's Public Accountability Mechanisms initiative, we present the first indicator that captures a country's financial disclosure in-law effort. By employing different panel data model specifications, we use this indicator to measure how the introduction of comprehensive financial disclosure systems impacted national corruption levels for 91 countries between 1996 and 2012. We present robust results that provide tentative evidence for a positive and significant relationship between a country's capacity to control for corruption and the expansion of financial disclosure legislation for the years following the enactment.

Keywords Corruption · Control of Corruption · Public Accountability · Financial Disclosure · Actionable Governance Indicators

Introduction

It came as a shock for the Vietnamese anticorruption community when, in 2014, the former government chief inspector Tran Van Truyen, once a leading figure in the national fight against corruption, was prosecuted for abusing his office to personally enrich himself and his family. His income and asset declarations revealed that he had used his position as a public official to appropriate real estate worth US\$10 million—a grave inconsistency for a person with a salary of a Vietnamese public official. Cases like this are relatively common across all levels of the public sector, which shows that disclosure requirements for income, assets and conflicts of interest can serve as powerful

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public accountability tools to help prosecute corrupt public officials and to create a culture of scrutiny in the public sector. It is for these reasons that over the last 20 years increasingly more international conventions urge countries to introduce laws and regulations on financial disclosure (FD) into their national legislation. These laws and regulations define which public officials have to disclose information, what they have to disclose, how often this has to be done, how verification of the disclosed information is ensured, how noncompliance is sanctioned and how much of the information is publicly available. However, despite their prominence, there is surprisingly little evidence on the true effectiveness of FD legislation on combating corruption. This is especially true for quantitative research. To make a contribution to closing the evidence gap and to answer the question of whether FD systems can serve as instruments to decrease national corruption levels, this paper introduces the first index that captures a country's FD in-law effort.

The paper is structured as follows: The first section explains the logic and ideal constitution of FD systems as a public accountability and anticorruption instrument. The second section is dedicated to the construction of the very first index that captures countries' FD in-law efforts, followed in section three by the first descriptive analysis of its development over time. In section four, we introduce an equilibrium model that helps to better conceptualise the nature of anticorruption instruments, such as FD legislation. This, in turn, informs the setup of the subsequent empirical model. Section five describes the employed data. Section six focuses on results of a panel fixed-effects model, which tests whether the existence of FD systems has an impact on corruption levels and discusses some limitations of the model. Section seven concludes the paper.

Analysing the indicators for FD in-law efforts, we observe that between 1996 and 2012 almost all countries in the sample experienced a sharp increase in FD laws and regulations independent of their level of development or region. The panel fixed-effects model indicates that FD systems have a lagged, positive effect on countries' ability to control for corruption after their enactment.

Power of Public Accountability: Financial Disclosure Systems as Anticorruption Instruments

In the late 1980s, corruption, understood as “the abuse of public office for private gain” (Kaufmann 1997: 114), found its way into public discourse when a massive wave of corruption scandals swept across modern Western democracies. Within a short period of time, this led to a number of international initiatives to combat corruption, which included the cooperation of international organisations, governments, civil society and nongovernmental organisations (NGOs) (De Sousa 2010). Surprisingly, despite the popularity of anticorruption interventions,¹ very little is known about their effectiveness (Johnson et al. 2012; Hanna et al. 2011). This is also true for FD systems that have evolved into a widely promoted anticorruption instrument since the mid-1990s (OECD 2011).

FD systems can be considered one element of public accountability, which in turn is understood as a mechanism ensuring that public officials in positions with power can “be held accountable in public for their acts and omissions, for their decisions, their policies, and their expenditures” (Bovens 2005: 182). The public can be an individual person or agency but can also include the electorate or entire population (ibid.). According to Bovens (2005), public accountability serves three purposes: first, to uphold democratic control; second, to improve performance in the public sector through institutional learning; and third and most importantly, to enhance integrity in public governance as a mechanism to control for corruption, abuse of power or nepotism. The latter

¹ For a detailed discussion of the different types of anticorruption interventions, see Johnson et al. (2012).

function of public accountability is significantly enhanced by national FD systems. These systems entail laws and regulations that regulate the disclosure of the most important aspects of public officials' financial background, especially with regard to their income, assets and potential conflicts of interest arising from their particular positions (World Bank 2012). This way, FD systems are intended to help monitor public officials' financial situations in order to increase transparency and accountability and thus deter corrupt interactions (Messick 2009).

According to the World Bank (WB), a FD system must comprise four complementary elements in order to be fully functional. The scope is understood as a definition of the items that must be disclosed, which public officials and those directly related to them are required to disclose and how often they must perform this duty. The second element is a monitoring regime that enables authorities to screen compliance with the submission of such disclosure statements and to verify their content. This must go hand in hand with the third element: a framework that allows for the enforcement of predefined sanctions in case of noncompliance with the filing regulations. The last element of a comprehensive FD system is the public availability of certain aspects of the disclosed information. This allows civil society and the public to join monitoring efforts and increases the credibility of the threat that public officials' abuse of office will be detected (Mukherjee and Gokcekus 2006).

FD systems are always country specific and serve two purposes. First, they aim to prevent the abuse of public office for private gain. For this purpose, FD systems need to clearly define potential conflicts of interests for public officials and establish guidelines of what situations to avoid, while reminding those officials that their behaviour is scrutinised and that credible prosecution threats exist. Second, FD systems must help detect violations and therefore help enforce anticorruption laws. If these two functions are properly fulfilled, FD systems can contribute to the emergence of a climate of integrity in the public administration and consequently decrease corruption in the long run (Burdescu et al. 2010a; WB 2012).

Likely owing to the holistic nature of FD systems, there is barely any research on its impact on national corruption levels. In the qualitative literature, one can distinguish between three types of publications on the topic: first, there are a small number of publications that give practical recommendations as to how to implement such systems and discuss related difficulties (Messick 2009; Burdescu et al. 2010a, 2010b; OECD 2011; WB 2012). Second, there are studies that exclusively focus on single elements of FD systems, such as conflict of interest (COI) regulations (Demmke et al. 2008) or public availability of information (Bauhr and Grimes 2014; WB 2012). Lastly, some authors concentrate on country case studies of FD systems (Vickerman 2009; WB 2013a). However, the extrapolation of their results to other countries remains questionable.

A somewhat similar situation can be observed when turning to quantitative research on the effectiveness of anticorruption laws and FD systems. In their metastudy on anticorruption interventions, Johnsen et al. note that only a few studies "provided an impact assessment of an anticorruption law" (2012: 13). However, a small number of studies have addressed the effectiveness of single elements of FD systems on corruption. Djankov et al. (2010) evaluate the correlation between the implementation of disclosure laws for members of parliament (MP) and governance. Tavares (2007) and Islam (2006), on the other hand, tested whether freedom of information (FOI) laws can help decrease corruption. However, the authors obtained mixed results regarding the correlation of FOI laws and corruption levels.

In sum, it becomes apparent that a holistic approach to capture the impact of FD systems on national corruption levels is missing. Therefore, this study is intended to contribute to filling this research gap. In line with the notion of FD systems as a pillar of public accountability, we assume that their transparency and accountability-enhancing nature contributes to a reduction

of corruption. Accordingly, our general hypothesis is as follows: The introduction of comprehensive financial disclosure regulation reduces national corruption levels.

Constructing an Index to Capture a Country's Financial Disclosure In-law Efforts

Literature dedicated to the construction and criticism of indices that attempt to capture corruption is extensive. However, attempts to construct indices that measure a country's anticorruption effort are scant at best. Very few authors have attempted to quantify anticorruption policies to allow for a cross-country analysis. Rouso and Steves (2007), for example, constructed an anticorruption intensity index that attempts to measure the extent and quality of a government's anticorruption activities based on the three dimensions: (i) integrated anticorruption programs, (ii) enactment of legislation, reducing incentives for corruption, and (iii) membership in international anticorruption coalitions and adoption of international anticorruption covenants. Each of these dimensions carries equal weight in the final index and is evaluated according to a number of subindicators that capture their comprehensiveness and to a lesser extent their quality. Using a cross-sectional model for 26 post-Communist transition countries, the authors examined the relationship between anticorruption intensity index scores and its dimensions and various lagged measures of corruption levels. However, they do not find a statistically significant correlation. Despite the merits of the comprehensive nature of their index, the unavailability of panel data and the small number of observations reduce the value of their index for research. In a less comprehensive way, Anderson and Gray (2006) look at the anticorruption effect of simplifying countries' tax policies. For that purpose, they use single elements of the Paying Taxes indicator, which is one of the WB's Doing Business indicators, and evaluate them against the frequency of bribes related to tax payments in post-Communist transition countries. In a cross-section analysis, they find a positive effect of decreasing the number of tax payments. However, this effect disappears once controlling for other relevant variables. Once more, the lack of a large sample and panel data considerably limits the applicability of their approach.

In order to address these shortcomings and advance the body of research around the attempts to make anticorruption policies measurable, while also scrutinising their true effect on corruption, we constructed an indicator that captures a country's FD in-law effort. For this purpose, we drew on the WB's Public Accountability Mechanism (PAM) data, which represents the most comprehensive collection of cross-country information on constitutional requirements, laws and codes of ethics regulating financial disclosure for public officials. The PAM initiative was launched in 2010 with the goal to "provide timely information and assistance to WB operational teams working on transparency and accountability issues" (WB 2013b: 2), with a particular focus on the fight against corruption in the public sector. For this purpose, the initiative provides freely accessible information on laws and other types of regulation that aim to enhance transparency and accountability in the public sector. The data set covers 91 countries across all continents, although some regions are more represented than others.² Graph 1 presents the country coverage of the WB's PAM initiative.³

Each PAM data set is based on a number of so-called Actionable Governance Indicators (AGI). AGIs were developed by the WB to measure narrowly defined subelements of governance, as opposed to broad categories, such as rule of law, that are often difficult to quantify. This way, AGIs

² See Graph 16 in "Appendix 1" for the PAM coverage of regional groups.

³ See "Appendix 2" for the list of the countries covered by the PAM initiative.

provide manageable information that can guide the actions of governments engaged in governance reforms (WB 2013b; see also Reid 2009). In the case of the PAM data set for FD, the AGIs capture the institutional arrangements or in-law efforts of a country to boost accountability and thus fight corruption by providing a discrete assessment (a simple yes or no response) of the existence of a specific FD law or regulation codified in a country's legal framework. In addition, data includes information on the precise enactment date. A particular AGI would, for instance, contain information on whether a country has a clearly defined regulation that obligates public servants to declare gifts they have received and when this regulation was enacted. Each country-data set entails the same structure and includes information on 174 AGIs, which allows for systematic cross-country comparisons.

Looking at data for FD, AGIs represent the most disaggregated data level. The first aggregation level is given by the type of public officials that are covered by the particular law or regulation captured by the AGI. This includes the categories head of state, ministers and cabinet members, members of the parliament, civil servants and spouses and children. The next higher aggregation level is given by the five components of FD systems introduced in section 1 above. These are disclosure items, filing frequency, sanctions, monitoring and oversight and public access to declarations. An illustration of the structure and hierarchy of the FD-PAM is given in Graph 2.⁴

In order to convert this qualitative data set into a systematic, numerical indicator that captures countries' FD in-law efforts, we followed three steps:

1. Values of 0 and 1 were assigned to all AGIs for each country. 1 was assigned when the indicator showed a "yes" (laws or regulations enacted) and 0 if otherwise. In addition, since AGIs also include information on the precise enactment date of the law or regulation, values of 0 and 1 were assigned under a time dimension up until 2012. Accordingly, prior to the enactment of a particular law, the assigned value is 0, the year the law was enacted, and in all of the following years the value is 1.
2. The second step consisted of aggregating the AGI up to the first aggregation level for every year. For this step, no a priori assumption was made regarding the relevance of specific AGIs for measuring the in-law efforts of the FD system. Thus, equal weight was attached to each of the 174 AGIs.
3. The last step consisted of aggregating the values from the second aggregation level to the PAM Financial Disclosure level. For defining weights, we applied a simple version of the item response theory, also called latent trait theory. Coming from psychometrics, this method does not assume the same difficulty across all items and thereby helps differentiate the loading of items into an indicator (DeMars 2010).⁵

The rationale behind the third step is that the enactment of a certain set of FD laws and regulations seems to be more politically challenging in comparison with other FD laws and

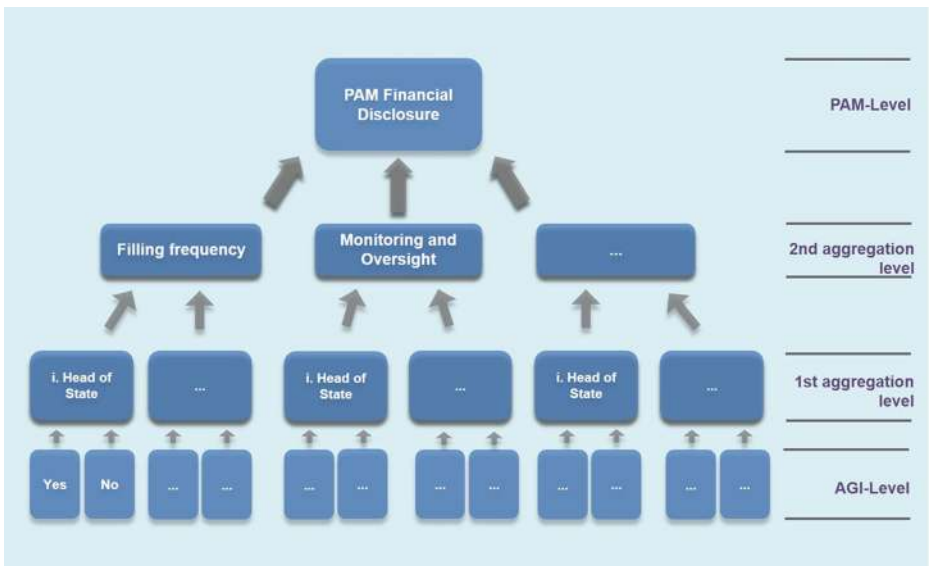
⁴ The Income and Asset Disclosure AGI is followed by an additional aggregation level after the AGI level. This category is structured as follows: a. Income and assets, b. Business activities and c. Public office mandate.

⁵ Weights for each of the five FD components on the second aggregation level were calculated by using the mean of the number of laws and regulations in place for this particular component across the entire sample, that is, across all countries and years. The values were then put into relation to the theoretical benchmark of "having all laws and regulations of this FD component in place," resulting in values between 0 and 1. Following the rationale that a lower number of laws and regulations within a particular component indicate a higher anticorruption effect of this component (as elaborated above), the calculated mean values had to be inverted so that the component featuring the lowest density of laws and regulations gets the largest weight. This was done by subtracting 1 and then multiplying by -1. Lastly, the latter calculated values were used proportionally as weights for aggregating the FD components into our country FD in-law effort indicator.



Graph 1 Country coverage. Countries included in the World Bank's PAM initiative. Source: Own graph. Map constructed using www.amcharts.com

regulations. We derive this assumption from the observation that across countries, there is a systematically higher density of laws and regulations for certain FD categories, such as monitoring and oversight, whereas other categories, such as public access to declarations are much less regulated. This pattern might be explained by the fact that FD laws and regulations must be designed, enacted and executed by the same set of public officials who are supposed to be scrutinised by them. Accordingly, it seems plausible that public officials might resist the



Graph 2 Structure and hierarchy of the financial disclosure Public Accountability Mechanism (PAM). Source: Own graph. Based on the PAM initiative data set

enactment of certain FD laws and regulations that drastically increase transparency, such as public access to declarations while accepting the enactment of FD elements that are less scrutinising. Following this assumption, we conclude that those FD laws and regulations that show a significantly lower enactment density across countries have a stronger anticorruption effect and will thus receive a larger weight in the indicator.⁶

As mentioned previously, the result of this approach is a continuous indicator that captures the FD in-law effort from all five elements of an FD system. Values of the indicator range from 0 to 1, where a country scores the value of 0 when no FD regulation is in place. Conversely, a country scores the value of 1 when laws and regulations in place cover every element of an FD system as defined by the WB's PAM framework.

Evolution of Financial Disclosure In-law Efforts from 1996 to 2012

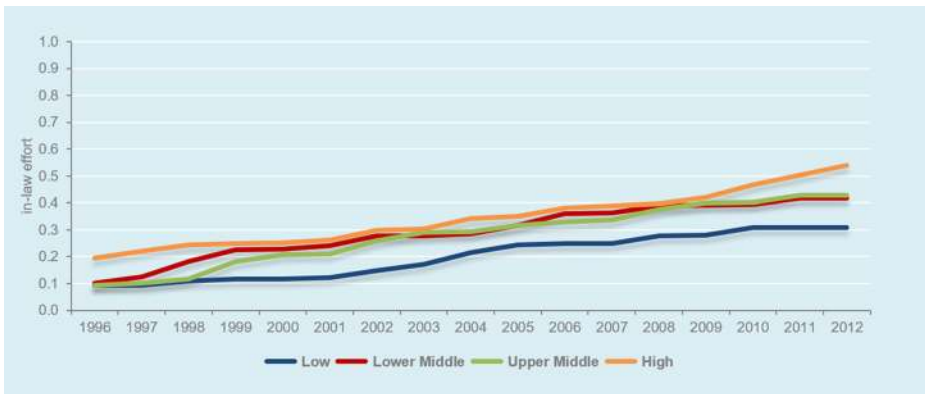
FD regulation has greatly expanded in recent years. This expansion has occurred across all country income groups, as can be seen in Graph 3. In 1996, high-income countries showed the largest FD in-law efforts, whereas the upper-middle, lower-middle and low-income countries had similarly low levels. By 2012, high-income countries remained as the leading group amongst the different groups of countries, with low-income countries coming in last.

From a different perspective, FD regulation has also increased considerably across different regions. As can be seen in Graph 4, all regions in the world increased their FD in-law efforts since the 1990s. By 2012, Eastern Europe and Central Asia were the leading regions. Conversely, by 2012 Sub-Saharan Africa was the region with the lowest FD in-law efforts. Interestingly, the advanced economies group⁷ did not increase their FD in-law efforts as rapidly as countries from other regions, and by the end of the period, this region was already falling behind Eastern Europe, Central Asia, Latin America and the Caribbean. This result stands in contrast to the results from grouping the countries by income, where high-income countries showed the biggest FD in-law efforts. This suggests that new high-income countries located mainly in Eastern Europe are the main drivers of this progress.

When sorting countries in the high-income group by gross national income (GNI) per capita purchasing power parity (PPP), we confirm that the largest contribution to the change in FD in-law effort within this group stems from the new high-income countries, geographically located in Eastern Europe (see Graph 5). According to Demmke et al. (2008), regulation density differs considerably among European Union (EU) member countries, with new member states having generally more regulation than older members do. This finding is in line with findings of the WB, pointing out that: "generally, countries with longer traditions of professionalisation in the civil service have narrower disclosure requirements and design their disclosure mechanisms to focus on the prevention of conflicts of interest" (2012: 9). Furthermore, this fact may be a reflection of fairly well-institutionalised codes of ethics and other monitoring and oversight mechanisms for public office holders in traditionally high-income (advanced) economies (ibid.).

⁶ Values we obtain deviate only slightly from the simple average method. As a robustness check, we tested our explanatory variable calculated with simpler averages on the empirical models introduced in the next section, since we wanted to check whether using a more elaborated version of our explanatory variable would have modified significantly our results. We observed no change in terms of sign and significance of the estimated coefficients of our explanatory variable.

⁷ France, Germany, Italy, Japan, Norway, United Kingdom, United States and Taiwan.

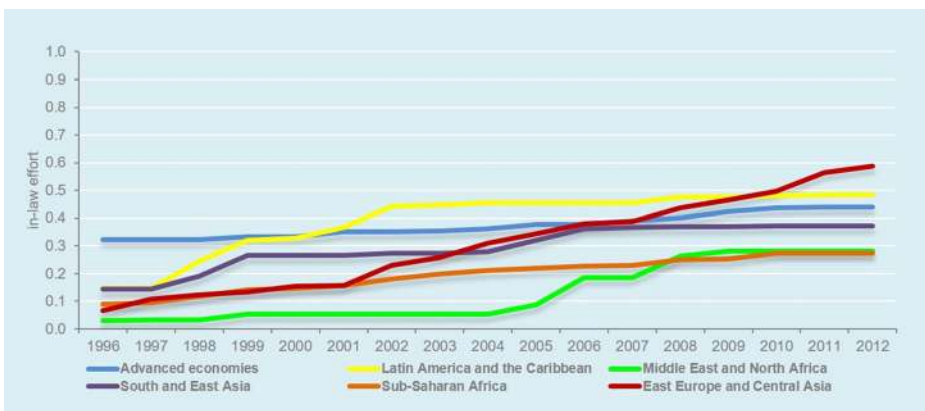


Graph 3 Financial disclosure in-law efforts by income groups (2012 World Bank classification), 1996-2012. Source: Own calculations

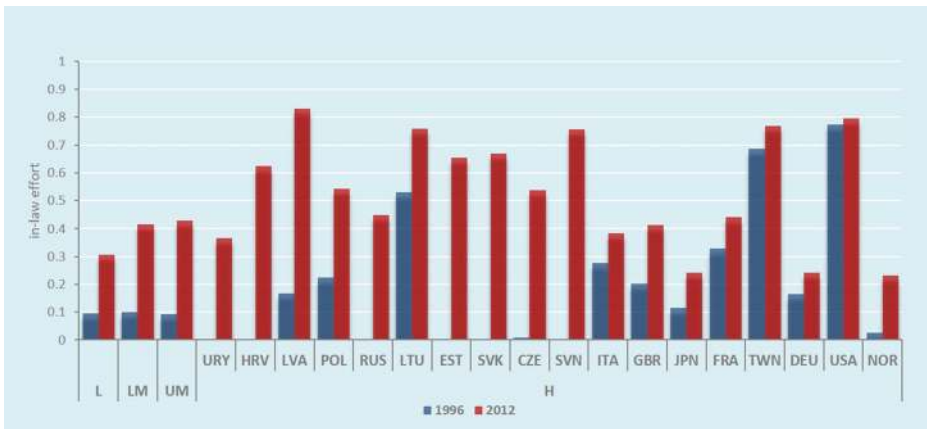
As mentioned previously, FD regulation can be disaggregated into five lower-level components that capture different aspects of a FD system:

1. Disclosure items
2. Filing frequency
3. Sanctions
4. Monitoring and oversight
5. Public access to declarations

As an analytical exercise, it is relevant to check whether there were particular or atypical changes in specific FD regulation components between 1996 and 2012 or whether increases occurred evenly across all of them. As can be seen in Graph 6, it seems that there is no particular trend for individual components, either in one specific FD regulation component or in a particular group of countries. However, two aspects are interesting to note regardless of a



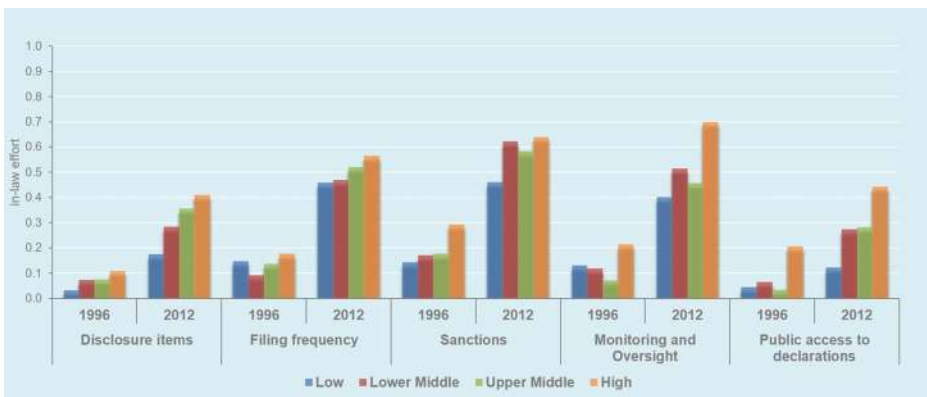
Graph 4 Financial disclosure in-law efforts by world regions (2012 World Bank classification), 1996-2012. Source: Own calculations



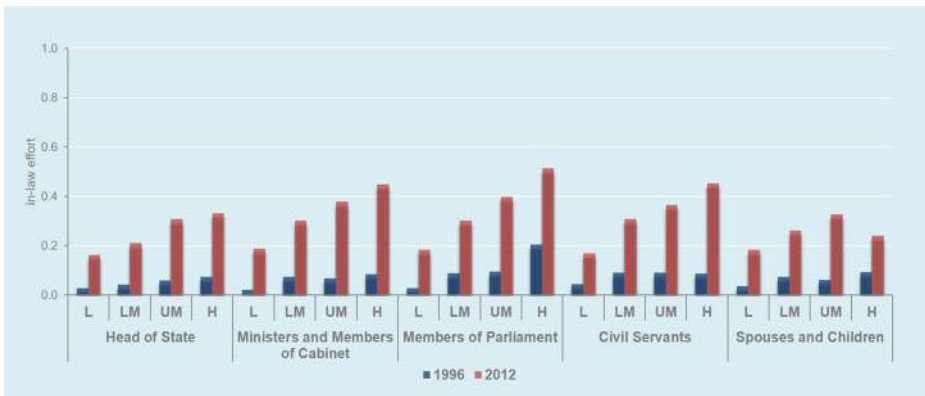
Graph 5 Financial disclosure in-law efforts by income groups (2012 World Bank classification), 1996, 2012. Source: Own calculations

generalised increase in FD in-law efforts: disclosure items and public access to declarations remain considerably lower for all country groups when compared with the remaining components. This finding shows how these two components of an FD system may meet more political resistance against their enactment, presumably due to their stronger anticorruption effect by allowing better scrutiny of public officials while making credible prosecution threats and increasing accountability towards the public.

With results categorised by level of political officer, it seems that there is no particular or atypical increase in any of the five components of an FD system. As can be seen in Graphs 7–11, for all country groups and all aspects of regulation, FD in-law effort has increased analogously. Assuming FD regulation for civil servants captures FD in-law efforts against petty corruption, and that FD regulation for all the other public officers measures in-law efforts against grand corruption, it is possible to discard the assumption that, in general, FD in-law efforts are focused on explicitly tackling a specific type of corruption (grand or petty).



Graph 6 In-law efforts by financial disclosure items by income groups (2012 World Bank classification), 1996, 2012. Source: Own calculations

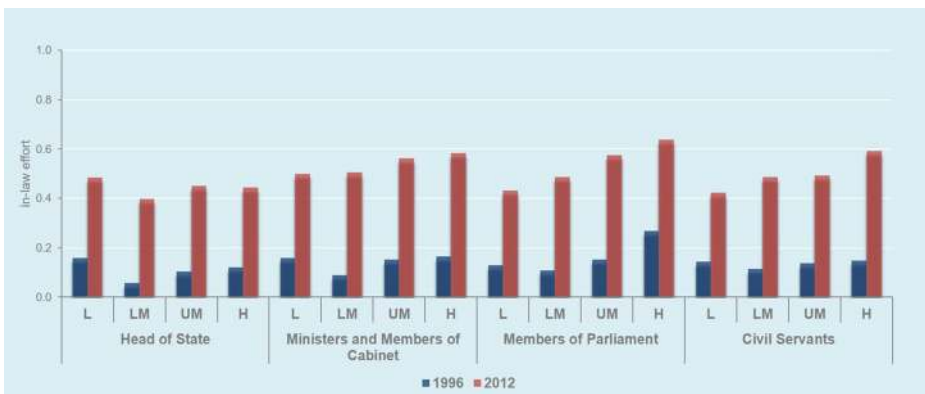


Graph 7 Disclosure items by level of political officer and income groups, 1996, 2012. Source: Own calculations

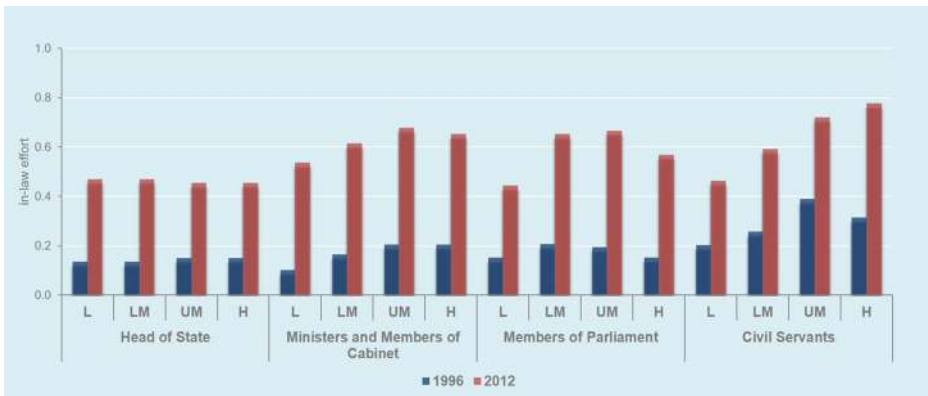
Finally, it is interesting to note that most countries in our sample have expanded their FD systems, whereas very few economies have actually experienced improvements in combating corruption as measured by the WB’s Control of Corruption (COC) Governance Indicator. As can be seen in Graphs 12 and 13, only 33 countries experienced positive changes in COC between 1996 and 2012. This finding confirms the multifaceted and rather complex nature of COC and shows how corruption is explained by many other determinants.

A Model to Capture Corruption: of Vicious Equilibria

Today’s conceptualisation of corruption is strongly influenced by the assumption that modern states are characterised by a rational legal system with institutionalised governance rules that draw a clear line between private and public dimensions (Ledeneva 2013). Klitgaard’s influential principal-agent model, introduced in 1988, centres around the same principle. According to this model, modern states feature numerous principal-agent relationships, where the citizens or their government are the principals and public servants are the agents. The principal assigns the agent certain duties and transfers the respective responsibilities, resources and discretion to them. However, this transfer gives the agent an informational advantage that gives room for corrupt transactions and thus the



Graph 8 Filling frequency by level of political officer and income groups, 1996, 2012. Source: Own calculations



Graph 9 Sanctions by level of political officer and income groups, 1996, 2012. Source: Own calculations

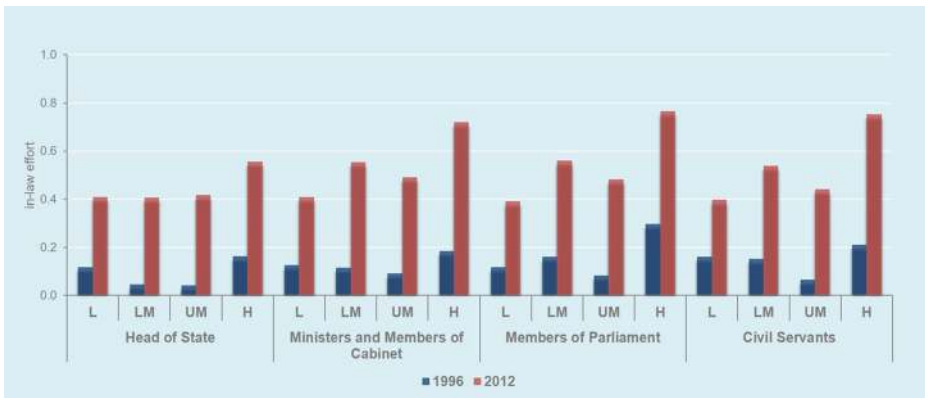
breach of the public–private dichotomy (1988; see also Kaufmann et al. 2002; Besley 2007). Today, the principal-agent model informs most contributions in corruption research as well as the design of most of today’s anticorruption interventions (Persson et al. 2013; Ugur and Dasgupta 2011).

However, a growing number of authors raise questions about some of the model’s main assumptions, rejecting the notion of a clear dividing line between the private and the public realm when defining corruption (Rose-Ackerman 1999; Mungiu-Pippidi et al. 2011; Persson et al. 2013).

Persson et al. (2013), for example, argue that people’s willingness to control corruption depends on people’s expectation of how many individuals in their society are corrupt. If the majority expects corrupt behaviour to be the widespread norm, deviating from this norm will be too costly for an individual in the short term, even though it might be benefit maximising for all individuals in the society in the long run. Accordingly, reforms targeted at strengthening monitoring and increasing punishment will be ineffective, as the principals will lack the incentives to enforce them, or in other words, to be a principled principal. It is only through collective action, where many actors deviate simultaneously from the corrupt equilibrium, that a new equilibrium can be reached and endemic corruption tamed (ibid.).⁸

In a similar manner, Mungiu-Pippidi et al. argue for a holistic conceptualisation of corruption, locating it in a “broader social order framework” (2011: 35). In order to express this broader understanding, Mungiu-Pippidi et al. (2014) uses the terms ‘particularism’ and ‘ethical universalism’. She defines these terms by describing a continuum of governance order with equal and fair treatment of every citizen (ethical universalism) at one end of the continuum, and favoritism and corruption (particularism) at the other. The author stresses that the nature of the state cannot differ from the society in which it is embedded. Particularism is not only perpetuated by those who have access to power resources but also by the weaker members of society, who also resort to corruption as a means of defending themselves against state exploitation (ibid; Mungiu-Pippidi et al. 2014). According to Mungiu-Pippidi et al. (2011), only a limited number of societies have managed to part from that natural state and develop universal systems. Thus, particularism is “not a social ‘malady’, as corruption is usually described, but a state of default equilibrium, natural” (ibid: 25). The powerful implication from this perspective on corruption is that anticorruption efforts are not understood as

⁸ For Mungiu-Pippidi et al. (2011) the change of equilibria to the better can be a lengthy social evolution process in which many countries get stuck in transition, whereas Rothstein (2011) sees the only opportunity of a change in equilibria through a “Big Bang approach that brings about radical changes in a short time period.



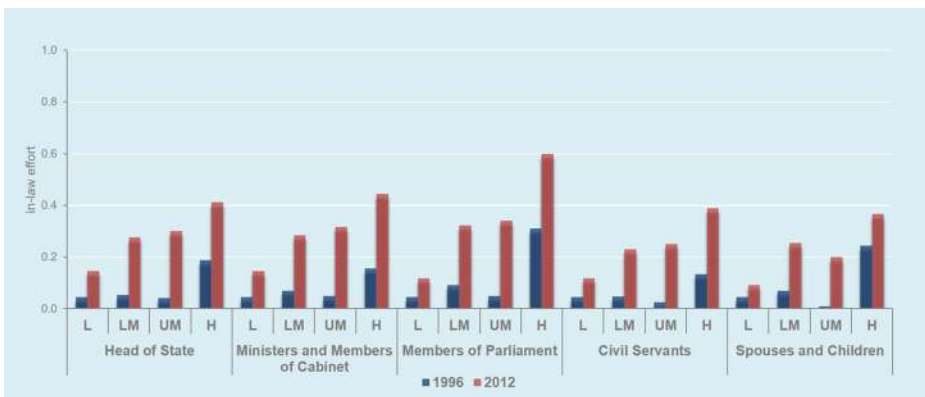
Graph 10 Monitoring and oversight by level of political officer and income groups, 1996, 2012. Source: Own calculations

...serving the purpose of restoring the natural, noncorrupt state. In fact, they are supposed to perform a much more tedious task: making the unnatural a reality.

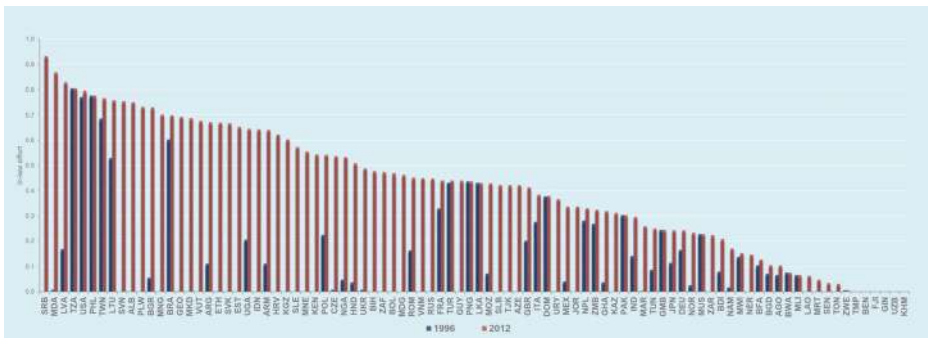
Thus, Mungiu-Pippidi et al. (2014) proposes a so-called equilibrium model that conceptualises corruption as the outcome of a situation in which a society’s constraints are not strong enough to prevent the abuse of public resources. Her model measures “the collective capacity to enforce governance based on ethical universalism” (ibid.: 49). Borrowing from Mungiu-Pippidi et al. (2011, 2014), who understand COC as the antithesis of corruption, we present the following equation to conceptualise COC:

$$\text{Control of Corruption} = f(\text{Opportunities, Constraints})$$

In this logic, the level of COC in a society is the result of equilibrium in available opportunities to exploit society’s resources and constraints upheld by strong institutions and the citizenry. Accordingly, opportunities are negatively and constraints positively correlated with COC. Describing the opportunities, Mungiu-Pippidi et al. (2011, 2014) summarise two complementary elements. First, the discretionary power resources, which include factors that increase public officials’ political and economic discretion of power. Second, the availability of material resources, conceptualised as all



Graph 11 Public access to declarations by level of political officer and income groups, 1996, 2012. Source: Own calculations



Graph 12 Financial disclosure in-law efforts by country, 1996, 2012. Source: Own calculations

sources that offer the opportunity to extract rents or spoils, such as natural resources, state assets and also foreign aid. Conversely, the constraints entail a legal, as well as a normative, dimension. Legal constraints are based on the strength of the judiciary, the body of laws and the institutions that enforce them. The normative constraints, understood as constraints upheld by the citizenry, depend on whether universalism is the prevailing social norm and whether society has the necessary collective action capacities to enforce it. This is heavily dependent on the level of education and material security. Graph 14 summarises the model's underlying logic.

Given that our empirical analysis focuses on the country level, we believe that the equilibrium model will provide us with a more useful perspective to capture changes in COC. Accordingly, the equilibrium model will serve as conceptual framework for our empirical approach.

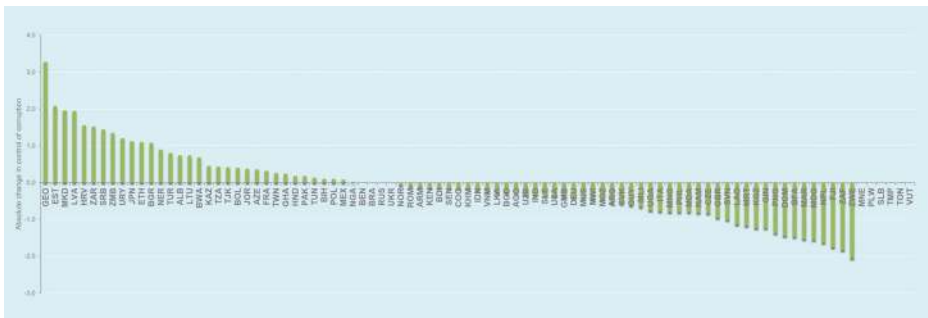
Data Description

The FD in-law effort indicator will serve as the explanatory variable for our empirical model. For our dependent variable, we chose the WB's composite COC indicator that captures national corruption levels, or more precisely, "the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests" (Kaufmann et al. 2006: 4).⁹ Grand corruption takes place within the highest level of political leadership, such as heads of state, ministers, or other top officials who exploit their influence and power to serve their private interests (Andvig et al. 2000). Conversely, petty corruption involves low- and mid-level officials who demand rewards for granting access to or expediting the delivery of a public service (e.g. licenses, official documents, etc.) or delivering services that normally are not available (ibid.). The indicator covers 215 countries over a period from 1996 to 2013, with biannual values from 1996 to 2002 (WB 2013c).¹⁰ In order to increase the number of observations, we extrapolated the missing values between 1996 and 2002 by taking the mean of the previous and the following years.¹¹ To test the robustness of our results, we also ran our model with the Heritage

⁹ For a detailed description of this indicator's methodology, refer to Kaufmann et al. (2006). For criticism of the indicator, refer to Langbein and Knack (2010) and Brewer et al. (2007).

¹⁰ Given the availability of our explanatory and dependent variables, our sample ranges from 1996 to 2012.

¹¹ We believe this is a valid approach, since the values for COC vary very little from year to year. As a robustness check, we decided to run our empirical models without the imputed values. We found that some variables, including our explanatory variable, lose significance. This may be partly explained by the decrease in the number of observations of the sample.



Graph 13 Change in Control of Corruption by country, 1996, 2012. Source: Own calculations

Foundation's Freedom from Corruption (FFC) indicator, which strongly resembles an extended version of Transparency International's Corruption Perception Index (CPI).¹²

With regard to control variables, the model orients towards the literature on corruption, which suggests a considerable number of different determinants of corruption that have already been analysed to various degrees of depth and methodological soundness.¹³ A useful classification of the vast number of corruption determinants is presented by Mungiu-Pippidi et al., who differentiate between those determinants that “can be affected by human agency” (Mungiu-Pippidi et al. 2011: 27) and those that represent path-dependent factors that are embedded in a society's history and culture and can thus hardly be altered. Given the policy orientation of the question as to whether FD laws and regulations have an impact on corruption levels, we limit our analysis to the former, which can be divided into macroeconomic, socioeconomic and polity and governance determinants.¹⁴

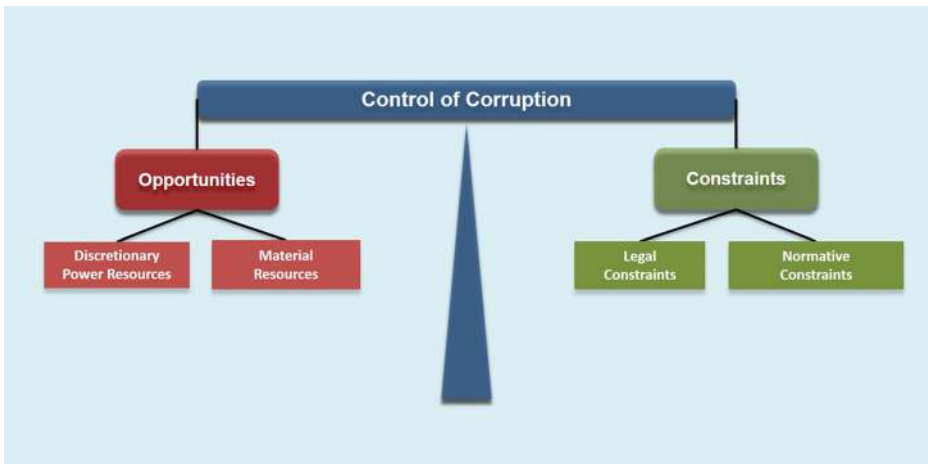
The inclusion of all corruption determinants that fall into these classifications can potentially cause several methodological problems when performing a quantitative analysis. First, since some of these determinants are highly correlated, there is a risk that analysing them together might generate a multicollinearity problem that would result in underestimating the findings' levels of significance. However, as pointed out by Seldadyo and de Haan (2006), some variables that represent a particular phenomenon can be clustered. Hadenius and Teorell (2005, 2007), for instance, combine the Freedom House measures for Civil Liberties and Political Rights as well as the Polity 2 indicator¹⁵ to construct an Imputed Polity 2 (iPolity 2) indicator to capture the level of democracy in a country. In line with this consideration, we conducted a simple correlation analysis of a large number of potential corruption determinants in order to exclude variables that are, to a large extent, captured by others. The correlation table for these variables is reported in “Appendix 3”. A second problem is the availability of data for

¹² For a detailed discussion of the CPI, see Seldadyo and de Haan (2006).

¹³ One of the main challenges that many studies face is the problem of reverse causality. As it is challenging to identify causes and consequences of corruption, many authors refrain from claiming causation and confine themselves to presenting correlations (Lambsdorff 2005). Another common challenge is the robustness of results. Often, the explanatory variable is significant only in simple model specifications and becomes insignificant when additional control variables are added (Seldadyo and de Haan 2006).

¹⁴ Accordingly, we do not consider cultural, religious and historical corruption determinants, such as ethnolinguistic fractionalisation (La Porta et al. 1999; Ali and Isse 2003; Lederman et al. 2005), colonial heritage (Treisman 2000; Herzfeld and Weiss 2003) or share of Protestants in the population (Treisman 2000; Chang and Golden 2007).

¹⁵ This indicator is part of the second series of the Polity Project containing annual information about the level of democracy for independent states with a population >500,000 people.



Graph 14 Control of Corruption Model. Source: Own graph. Based on Mungiu-Pippidi et al's (2011) Control of Corruption model

some of the corruption determinants. Not all data is available for the same group of countries, especially when considering long time periods. Given the fact that this study considers the period from 1996 to 2012, this was particularly challenging.

Given these methodological caveats, we limited our analysis to the following control variables: First, to capture the economic corruption determinants, we include a measure of **economic freedom and openness to trade**. The literature finds that restrictions on economic freedom through state interventions increase the discretionary power of public officials and thereby the possibilities for rent-seeking. Second, a higher degree of unrestricted openness to international trade leads to a higher level of competition, which in turn reduces rents that can be extracted by public officials (Ades and Di Tella 1999; Treisman 2000; Ali and Isse 2003; Kunicová and Rose-Ackerman 2005; Gurgur and Shah 2014; Elbahnasawy and Revier 2012). We also include a measure of the **domestic availability and reliance on natural resources**, commonly described as the resource curse. The argument follows that the abundance of natural resources gives opportunities for rent seeking through, for example, state companies or the allocation of exploitation rights (Leite and Weidmann 1999; Ades and Di Tella 1999; Herzfeld and Weiss 2003; Elbahnasawy and Revier 2012).

Capturing the socioeconomic determinants, we included a measure of income per capita (Treisman 2000; Brunetti and Weder 2003; Kunicová and Rose-Ackerman 2005; Chang and Golden 2007; Brown et al. 2011). **Income** serves as a powerful proxy for those aspects that are often associated with the classic modernisation argument best expressed by Lipset's (1963) Political Man. This prototype of an active citizen engages with other individuals in collective action to actively shape and control the state when the levels of income, education and urbanisation increase.

Under polity and governance determinants, we understand the different political features of a state that define its regime and general mode of operation. In line with this definition, we first included a measure for **democracy**, which in many studies has been approximated by factors such as political freedom, political rights, civil liberties or freedom of the media (Brunetti and Weder 2003; Lederman et al. 2005). The argument follows that democracy allows for higher degrees of transparency and thus opportunities for citizens to monitor state activities (Kunicová and Rose-Ackerman 2005; Paldam 2002). Similarly, other authors argue that

democracies are characterised by stronger institutional learning and institutional checks and balances (Treisman 2000; Lederman et al. 2005; Chang and Golden 2007). Second, we included a measure for **foreign aid**. However, this determinant's impact on corruption is more ambiguous. Tavares (2003) finds that foreign aid decreases corruption, hypothesising that first, donor conditionality might force receiving governments to reduce the discretion of their public officials; and second, that aid might help to fill finance gaps for public wages and thus make public employees less dependent on corrupt transactions. In contrast, Ali and Isse (2003) find a positive correlation between foreign aid and corruption, arguing that the transferability of aid might cause an inflation of the public sector.¹⁶

Graph 15 shows the resulting composition of the empirical model.¹⁷

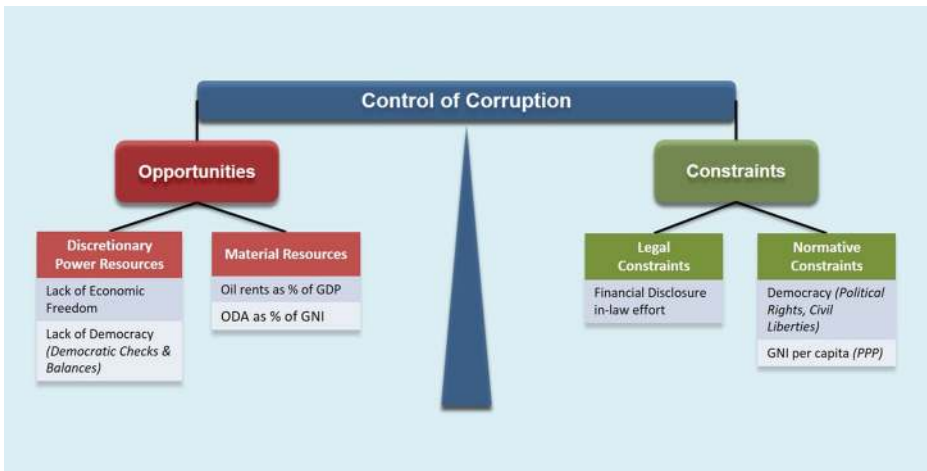
Financial Disclosure In-law Effort and Control of Corruption

To examine whether the introduction of comprehensive FD systems reduces national corruption levels, we employed a fixed-effects panel data analysis using annual data from 1996 to 2012. Furthermore, following the rationale of Rousso and Steves (2007)—that policies' effect on anticorruption is felt only after some time—we ran several model specifications, including different lags of FD in-law effort, to check whether our indicator is significant in explaining changes in COC. In our analysis, we focussed on the impact and significance of our variables rather than directly interpreting the estimated coefficients. The logic behind this is that interpreting numerical results might be misleading given the abstract nature of most variables. As a robustness check, we drew on the Heritage Foundation's FFC measure. The regression equation for the fixed-effects panel data model is the following:

$$\begin{aligned} \text{Control of corruption}_{it} = & \alpha_i + \beta_1 \text{FD inlaw effort}_{it-j} - \beta_2 \text{Oil rents as \% of GDP}_{it} \\ & - \beta_3 \text{Net ODA as \% of GNI}_{it} + \beta_4 \text{Economic freedom}_{it} + \beta_5 \text{Democracy}_{it} \\ & + \beta_6 \text{GNI per capita PPP}_{it} + e_{it} \end{aligned}$$

¹⁶ Due to its nature, our main explanatory variable, FD in-law effort, captures only the *de jure* dimension of FD. However, the mere existence of laws and regulations does not guarantee that they will be enforced. Accordingly, the inclusion of a measure for a country's level of rule of law could potentially fulfill an important complementary function. Such a measure could serve as a proxy to capture the state's *de facto* capacity to effectively enforce FD laws and regulations. However, the only existing indicator for rule of law that has a sufficiently large country coverage is one of the six Worldwide Governance Indicators (WGI) by the WB, which was at the same time the source for our dependent variable COC. According to Langbein and Knack (2010), the inclusion of a left-hand and a right-hand variable, both taken from the WGIs, would compromise the model's validity. The authors convincingly criticise the construction of the six WGIs, arguing that they indistinguishably measure the same latent and broad concept of good government and that they "do not discriminate usefully among different aspects of governance" (2010: 353). The authors claim that the definitions of the WGIs strongly overlap, leading to conceptual tautologies. A correlation of 0.92 between the COC and rule of law variables taken from the WGIs seems to lend support to their criticism. In order to not put the validity of our results at risk, we decided not to include the WGI's rule of law indicator.

¹⁷ A more detailed explanation of the variables included in our analysis is available in "Appendix 4". Summary statistics of all variables are presented in "Appendix 5".



Graph 15 Control of Corruption (COC) and its determinants. Source: Own graph. Based on Mungiu-Pippidi, et al's (2011) Control of Corruption model

Performing all necessary tests,¹⁸ we found that our model suffers from groupwise heteroscedasticity, cross-sectional correlation and autocorrelation. Therefore, considering the structure of our data, where the number of countries included in our sample is greater than number of years covered, we calculated our estimations by applying panel-corrected standard errors (PCSE), controlling for autocorrelation of order 1, and including a dummy variable for every country in our sample. Interestingly, when plotting the two dependent variables together, a considerable number of observations of FFC clustered at the values 1, 3, 5 and 7.¹⁹ Dummy variables were added to control for this phenomenon. We present a scatterplot showing the clusters in Graph 17 in “Appendix 6”.

Considering that FD in-law effort and GNI per capita PPP are variables that presumably always increase over time, it was relevant to check whether these variables were subject to a unit root problem. To corroborate this hypothesis, we performed an augmented Dickey–Fuller test with different lags. The results were not conclusive, and we could not observe a systematic pattern allowing us to reject or confirm the trend hypothesis. We considered two solutions for addressing this potential problem. The first consisted of adding a trend variable.²⁰ The second solution was to use first-difference estimators.²¹ We did not obtain a significant result for the latter specification (see “Appendix 7”).

Table 1 presents results for different specifications of the model and the robustness check. When turning to model specification 1.1, we observe that our main explanatory variable not only had a positive sign, but it was also statistically significant. In other words, an increase in FD in-law efforts is positively associated with an increase in COC 1 year after expansion of the FD system. Our indicator, however, was not significant when turning to models 1.2 and 1.3. This may indicate that the corruption-reducing effect vanishes in the second year. From a

¹⁸ Hausman specification test (1978), Greene's (2000) modified Wald statistic test, Frees' (1995) test of cross-sectional independence and Wooldridge's (2002) autocorrelation test.

¹⁹ A request to the Heritage Foundation for an explanation for the systematic clustering of certain units at specific values remained unanswered.

²⁰ See Cameron (2005) for a more detailed discussion of the effects of adding a trend variable to an ordinary least squares (OLS) regression.

²¹ A detailed description of this method is available at <http://people.duke.edu/~mau/411diff.htm>.

Table 1 Effects of financial disclosure (FD) in-law effort on national corruption levels: panel fixed-effects models, analysing lags (1996–2012 data)

	Model 1.1 11 COC	Model 1.2 12 COC	Model 1.3 13 COC	Model 2.1 13 FFC	Model 2.2 13 FFC	Model 2.3 13 FFC
FD in-law effort (t-1)	0.189** (0.078)	0.125 (0.077)	0.124 (0.078)	0.090 (0.108)	0.038 (0.107)	-0.019 (0.107)
FD in-law effort (t-2)		0.032 (0.085)	0.006 (0.079)		0.206* (0.117)	0.129 (0.113)
FD in-law effort (t-3)			0.108 (0.092)			0.261** (0.118)
Oil rents as % of GDP	0.002 (0.003)	0.002 (0.003)	0.003 (0.003)	-0.013** (0.006)	-0.010* (0.006)	-0.008 (0.007)
Net ODA as % of GNI	0.007*** (0.002)	0.007*** (0.003)	0.007*** (0.002)	0.002 (0.003)	0.002 (0.004)	0.004 (0.003)
Economic freedom	0.003*** (0.001)	0.003** (0.001)	0.002** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)
Democracy (iPolity 2)	0.054*** (0.014)	0.061*** (0.015)	0.056*** (0.016)	-0.013 (0.016)	-0.024 (0.018)	-0.013 (0.020)
GNI per capita (PPP)	0.020** (0.008)	0.017** (0.008)	0.019** (0.008)	0.054*** (0.006)	0.054*** (0.006)	0.054*** (0.006)
<i>d1</i>				-1.600*** (0.050)	-1.567*** (0.051)	-1.542*** (0.052)
<i>d3</i>				0.030 (0.043)	0.073* (0.041)	0.117*** (0.043)
<i>d5</i>				0.699*** (0.073)	0.636*** (0.082)	0.484*** (0.092)
<i>d7</i>				0.458*** (0.162)	0.442** (0.194)	0.196 (0.235)
Trend	-0.021*** (0.005)	-0.019*** (0.005)	-0.021*** (0.006)	-0.026*** (0.005)	-0.025*** (0.005)	-0.026*** (0.006)
Constant	2.056*** (0.159)	2.051*** (0.156)	1.981*** (0.183)	2.770*** (0.334)	2.601*** (0.343)	2.428*** (0.413)
Observations	1304	1227	1148	1304	1227	1148
<i>R</i> ²	0.920	0.925	0.931	0.883	0.889	0.900

Correlated panels corrected standard errors (PCSEs) reported in parentheses. Country dummies are not displayed
ODA official development assistance, *GDP* gross domestic product, *GNI* gross national income, *PPP* purchasing power parity, *FFC* Freedom from Corruption

*Significant at 10 %

**Significant at 5 %

***Significant at 1 %

technical perspective, this may be explained by the collinearity between the different lags of the FD in-law efforts variable. However, from a systemic point of view, this observation could potentially be explained by the scandalising effect of large public corruption affairs. Such scandals often force political elites to engage in publicly visible anticorruption reforms with new laws and regulations. However, given the ostensible brevity of the corruption-reducing

effect, it might well be that the short-term decrease in corruption levels does not stem from the reforms but from the scandals themselves, as they cause public officials to adopt a more cautious behavior *vis-à-vis* corrupt transactions for a limited time.

The scandalising effect hypothesis seems to lose its validity on examination of models 2.2 and 2.3 of the robustness check. In this case, we observed positive and significant results for lags 2 and 3 of our indicator, as well as an intensification of the corruption-reducing effect of expanding FD systems. Thus, an increase in FD in-law efforts seems to be positively correlated with an increase in the capacity of a country to control for corruption (measured by FFC). Taking both models together (COC and FFC), the results provide tentative support to both the idea that new policies require some time to have an impact, and to our hypothesis that the introduction of comprehensive FD systems reduces national corruption levels.

Taking a look at the other variables, we observe a positive, albeit not significant, effect between oil rents as a percentage of gross domestic product (GDP) and COC. Our robustness check, on the other hand, shows the expected negative and significant relationship between oil rents as a percentage of GDP and FFC. Against our expectations, ODA as a percentage of GNI has a positive and significant impact in models 1.1, 1.2 and 1.3, which is, however, in line with findings of authors such as Tavares (2003) and Okada and Samreth (2012). For economic freedom, we observed the predicted positive and highly significant relationship across all models. Confirming our expectations, democracy is statistically significant and positively associated with the capacity of a country to control for corruption in models 1.1, 1.2 and 1.3. The robustness checks do not yield the same results and show a negative, albeit nonsignificant, relationship. Finally, we observed that for all models, GNI per capita (PPP) is positively and significantly associated with a country's capacity to combat corruption. This provides evidence for the positive relationship between COC and FFC on the one hand and the aspects that are often associated with Lipset's classic modernisation argument (e.g. income education, urbanisation, etc.) on the other.

In order to check whether the impact of FD in-law effort on COC varies with different levels of other corruption determinants, we included two interaction terms in our model. We chose those variables that we believe have a varying relationship with the impact of FD laws and regulations. Thus, we included interaction terms for FD in-law effort with democracy and GNI per capita (PPP), respectively. For the democracy interaction term, we expected to observe a negative relationship. This was based on the assumption that established democracies have more institutionalised checks and balances that ensure a high level of COC. Thus, the stronger the democratic institutions in a country, the smaller will be the additional positive effect of FD laws and regulations on the COC. Likewise, for the GDP per capita (PPP) interaction term, we expected to observe a negative relationship. Highly developed countries are normally characterised by high levels of COC. Accordingly, expansion of the FD system in such countries would probably only have additional marginal effects on COC. In other words, the more developed a country, the smaller the increase in FD in-law efforts' effect to increase a country's capacity to control for corruption.

Table 2 presents results comparing model 1.1 (t-1) with the aforementioned interaction terms. As expected, coefficients of both interaction terms are negative but not significant. Interestingly, in both models, the effect of the lagged FD in-law effort variable increases in magnitude yet remains significant only in the model including the GNI per capita (PPP) interaction term. For the remaining control variables, the results presented in Table 2 continue to be consistent both in terms of sign and significance when compared with the base model

Table 2 Effects of financial disclosure (FD) in-law effort on national corruption levels: panel fixed effects models, including lag and interactions terms (1996–2012 data)

	Model 1.1 COC	Model 1.1a COC	Model 1.1b COC
FD in-law effort (t-1)	0.189** (0.078)	0.242 (0.217)	0.288** (0.114)
Oil rents as % of GDP	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)
Net ODA as % of GNI	0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)
Economic freedom	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Democracy (iPolity 2)	0.054*** (0.014)	0.055*** (0.015)	0.054*** (0.014)
GNI per capita, PPP	0.020** (0.008)	0.020** (0.008)	0.027*** (0.009)
FD in-law effort (t-1)* iPolity 2		-0.007 (0.029)	
FD in-law effort (t-1) * GNI per capita PPP			-0.011 (0.009)
Trend	-0.021*** (0.005)	-0.021*** (0.005)	-0.022*** (0.005)
Constant	2.056*** (0.159)	2.057*** (0.158)	2.052*** (0.157)
Observations	1304	1304	1304
R^2	0.920	0.920	0.921

Panel-data-corrected standard errors reported in parentheses. Country dummies are not displayed

GDP gross domestic product, *ODA* official development assistance, *GNI* gross national income, *PPP* purchasing power parity, *FFC* Freedom from Corruption

*Significant at 10 %

**Significant at 5 %

***Significant at 1 %

1.1. Once more, our estimations provided tentative evidence that an increase in FD in-law efforts is positively associated with an increase in COC after some time.²²

²² In the descriptive statistics in section three, we observed that the expansion of FD laws and regulations and the decrease in corruption was particularly strong for those countries that found themselves in the various stages of EU association. To test for this effect, we constructed a variable that captures the degree of EU association for each country. A value of 0 was attached if there is no association with the EU and the highest value of 5 if the country is an EU member state. The values of 1, 2, 3 and 4 capture the various intermediate stages, such as being party to an association agreement with the EU or having applied for full membership. Based on the assumption that an increasing cultural, political and legal proximity to the EU has a positive effect on corruption levels, we expected to observe a positive relationship. The results for this model specification are reported in “Appendix 8”. Presumably due to the high collinearity between association with the EU and GNI per capita (PPP) variables, we observed slightly less robust results in comparison with the basic model. The Association with EU variable itself is highly significant in the base model, whereas FD in-law effort loses some significance. However, most of the other variables showed similar results as the basic model.

We also ran model 1.1 (t-1) for different subsamples, clustering countries by income groups and regions according to the WB 2012 classification. The results were not as robust as those presented in Table 2, as the calculated coefficients for our main explanatory variable and for some controlling variables lost significance. This could be partly explained by the considerably smaller number of countries grouped in each subsample. The results for this analysis are available in “Appendixes 10 and 11”.

In sum, when comparing results between the base model and the robustness check, we observed consistent robust results in terms of significance and expected sign of the estimated coefficients. Except for ODA as a percentage of GNI, all of our control variables follow the predicted relationship with COC and FFC. Overall, we obtained compelling positive and significant results when considering a time dimension by adding time lags. This supports the rationale that certain public policies require some time before their effects are measurable and provides tentative evidence to confirm our initial hypothesis that the introduction of comprehensive FD systems reduces national corruption levels.

Limitations

Despite obtaining robust results across various model specifications, we acknowledge that there are potential limitations and caveats to the findings presented here. First, we cannot exclude a reverse causality problem. There is a risk that FD systems do not cause a change in national levels of COC, but in fact the situation is *vice versa*. For instance, it is possible that only the high-income countries that already have high levels of COC implement strong FD systems. Similarly, one could argue that the introduction of FD regulation in low-income countries where corruption is rampant is due to donor pressure. However, the descriptive statistics in section 6 illustrate that, independent of the region or the income classification, most countries in our sample have expanded their FD systems. In fact, as middle-income countries witnessed the largest expansion, the assumption of low levels of corruption or donor pressure, as driver behind FD system expansions, can be partly dismissed. Moreover, our finding that COC is significantly correlated with the values of FD in-law effort of previous years limits the threat of reverse causality. It is hard to imagine that present levels of COC could cause previous levels of FD in-law effort.

Second, our estimates could suffer from an omitted-variable bias. Civil society, for instance, may play a significant role in combating corruption. Countries with a strong citizenry have additional surveillance mechanisms to control public officials. Limitations of data availability did not allow us to control for this variable. However, following Lipset’s modernisation theory, we believe the effects of this variable and its relationship with COC are sufficiently captured when including GDP per capita.

Third, our sample might suffer from a selection bias, as the countries’ selection was not random. There is an over-representation of Eastern European and Central Asia and Sub-Saharan African countries, whereas other regions are underrepresented. This might bias the estimates through characteristics that are especially present among European and African countries.

Fourth, despite the WB’s claim that data collection for the PAM data sets followed a “rigorous and systematic approach” (WB 2013b: 5) with accuracy and relevance checks, we cannot exclude that measurement errors were made that would consequently weaken the validity of our FD in-law effort. To minimise this risk, we went back to country-level data sets and checked them for inconsistencies and gaps. For this process, we also drew on the support of WB experts involved in the PAM initiative.

Finally, it is important to note that despite the robust results we obtained in our model specifications, we are not making a claim for a causal relationship between an increase in FD in-law efforts and an increase in COC. Nevertheless, we claim to have discovered a robust positive correlation, regardless of its moderate magnitude.

Conclusions

Despite the growing global popularity of anticorruption instruments and policies in recent years, little is known about their true effectiveness. To contribute to filling this research gap with new quantitative evidence and in order to answer the question of whether FD laws and regulations have an impact on national corruption levels, we constructed the very first index that captures a country's FD in-law efforts based on WB data.

The analysis of this indicator yields that almost all countries in the sample have experienced a sharp increase in FD laws and regulations between 1996 and 2012, independent of their level of development or region. Remarkably, we observed the smallest increase for high- and low-income countries. This allowed us to relativise the assumption that especially countries that already have low levels of corruption or countries that experience donor pressure implement extensive FD systems.

Using our index as the explanatory variable, we tested the relationship between corruption levels and FD regulation in a panel fixed-effects model. This model showed that almost all of the control variables, except for ODA as a percentage of GNI, follow the predicted relationship with COC. Following the assumption that FD laws and regulations might only unfold their anticorruption effect after time, we included lagged modifications of the FD in-law effort into the model and find that an expansion of the FD system has a positive and significant effect on COC over time.

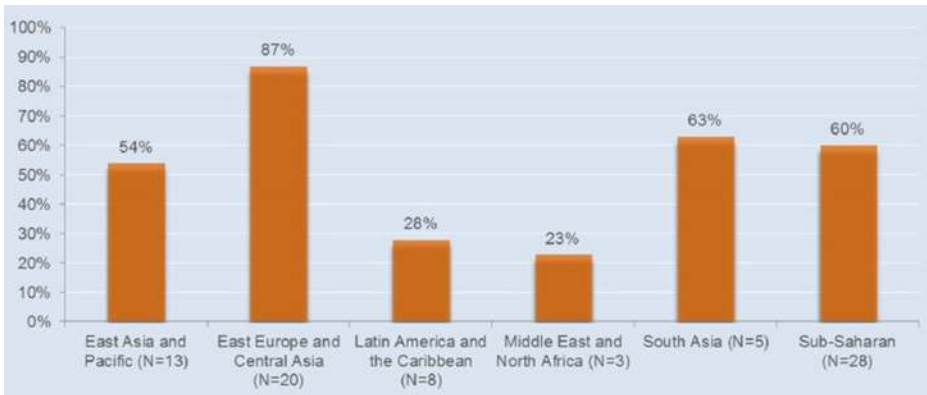
From a policy perspective, these results must be taken with a grain of salt, as judgments about the real magnitude of the effect are difficult to make. As much as it is challenging to define the meaning of a 1-unit increase in democracy, it is difficult to describe the meaning of a 1-unit increase in economic freedom. In contrast, a change in the indicator for FD in-law effort is much easier to quantify, as it is based on a clearly defined set of actionable governance indicators that can provide policymakers with clear micro-level guidance on where gaps in the FD system exist and accordingly in which areas their FD system could be strengthened. Nevertheless, this does not change the fact that all the corruption determinants analysed in this paper can only claim to have a small effect on COC. This shows that anticorruption strategies must be thought of at a holistic, societal level, in line with the assumptions of the equilibrium model. Policymakers will struggle to register success in their fight against corruption if they rely solely on improving their FD in-law efforts score.

We have shown that FD systems are one factor that can help explain national levels of COC. However, there are many opportunities for future research, as we have not fully used all analytical possibilities offered by our FD in-law effort indicator. First, we have not analysed in detail the single subcomponents of the indicator, such as monitoring and oversight or public access to information in order to identify whether single components play a more important role in anticorruption.²³ Second, we concentrated on highly aggregated measures of corruption and did not take into account single, disaggregated components to see whether we could observe a larger impact on them. An interesting ally to explore is, for example, the impact of

²³ A preliminary analysis of the components is presented in Appendix 11.

FD systems on petty corruption, exemplified by bribery data. Researchers could draw on data on bribery experiences derived from the Eurobarometer, Latinobarometer and Afrobarometer. Another interesting relationship is the connection between FD systems and trust in the government, following the assumption that comprehensive FD systems increase people's trust in the government's actions. To answer this question, researchers could draw own measures of trust in the government, such as the OECD's Trust in Government indicator or the World Economic Forum's Public Trust in Politicians.

Appendix 1



Graph 16 Public Accountability Mechanism (PAM) coverage of regional groups. Source: World Bank 2013

Appendix 2

Table 3 List of countries covered by the Public Accountability Mechanism (PAM)

List of countries covered by the PAM

Albania	Angola	Argentina	Armenia
Azerbaijan	Bangladesh	Benin	Bolivia
Bosnia Herzegovina	Botswana	Brazil	Bulgaria
Burkina Faso	Burundi	Cambodia	Congo Dem. Rep.
Congo, Rep.	Croatia	Czech Republic	Dominican Republic
Estonia	Ethiopia	Fiji	France
Gambia, The	Georgia	Germany	Ghana
Guinea	Guyana	Honduras	India
Indonesia	Italy	Japan	Jordan
Kazakhstan	Kenya	Kyrgyz Republic	Lao PDR
Latvia	Lithuania	Macedonia, FYR	Madagascar
Malawi	Mali	Mauritania	Mauritius
Mexico	Moldova	Mongolia	Montenegro
Morocco	Mozambique	Namibia	Nepal

Table 3 (continued)

List of countries covered by the PAM

Niger	Nigeria	Norway	Pakistan
Palau	Solomon Islands	South Africa	Sri Lanka
Taiwan, China	Tajikistan	Tanzania	Timor-Leste
Tonga	Tunisia	Turkey	Papua New Guinea
Philippines	Poland	Romania	Russian Federation
Senegal	Serbia	Sierra Leone	Slovak Republic
Slovenia	Uganda	Ukraine	United Kingdom
United States	Uruguay	Uzbekistan	Vanuatu
Vietnam	Zambia	Zimbabwe	

Appendix 3

Table 4 Correlation table

	FD in-law efforts	Oil rents as % of GDP	Net ODA as % of GDP	Economic freedom	Democracy (iPolity2)	Press freedom	Indepence judiciary	GNP per capita, PPP
FD in-law efforts	1							
Oil rents as % of GDP	-0.0199	1						
Net ODA as % of GDP	-0.147	-0.159	1					
Economic freedom	0.1615	-0.2243	-0.2749	1				
Democracy (iPolity2)	0.2921	-0.2931	-0.2708	0.535	1			
Press freedom	-0.1836	0.2555	0.2142	-0.5744	-0.8498	1		
Indepence judiciary	0.0014	-0.2445	-0.1869	0.4366	0.5907	-0.6395	1	
GNP per capita, PPP	0.1682	0.0468	-0.4804	0.4356	0.5343	-0.5535	0.4642	1

FD financial disclosure, *GDP* gross domestic product, *ODA* official development assistance, *GNP* gross national product, *PPP* purchasing power parity

Appendix 4

Table 5 Description of variables

Variable	Definition	Year	Source
Explanatory variable			
Financial disclosure (FD) in-law effort	Aggregated variable that measures the FD in-law effort of a country. The value ranges from 0 to 1, where the variable takes a value of 0 when no regulations are in place for any of the features of the FD framework. Conversely, the indicator takes the value of 1 when no regulation is in place for any of the features of the FD framework. Each of the five subcomponents of financial disclosure, namely, (i) disclosure items, (ii) filing frequency, (iii) sanctions, (iv) monitoring and oversight and (v) public access to declarations were aggregated using different weights	1996–2012	Author's elaboration
Dependent variables			
Control of Corruption (COC)	This indicator measures “the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests” (Kaufmann et al. 2006, p. 4). The indicator has been rescaled from 0 to 10, where 0 is a country with no COC and 10 is a country with the maximum COC.	1996–2012	World Bank: http://info.worldbank.org/governance/wgi/index.aspx#home
Freedom from corruption (FFC)	This indicator (measured by The Heritage Foundation) is based on Transparency International's Corruption Perceptions Index (CPI). The CPI is based on a 10-point scale in which a score of 10 indicates very little corruption	1996–2012	QOG Standard Data set 2015: http://qog.pol.gu.se/data/datadownloads/qogstandarddata
Control variables			
Oil rents as % of GDP	Difference between the value of crude oil production at world prices and total production costs	1996–2012	World Bank: http://data.worldbank.org/indicator/NY.GD.PETR.ZS
		1996–2012	World Bank:

Table 5 (continued)

Variable	Definition	Year	Source
Net official development aid received as % of GNI	The sum of “disbursements of loans made on concessional terms and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote 1996–2012 economic development and welfare measured as % of GNI (World Bank)		http://data.worldbank.org/indicator/DT.ODA.ODAT.GN.ZS
Revised Economic Freedom Index	Economic Freedom Index recalculated using 9 out of the 10 specific subcomponents used by the Heritage Foundation to construct this index. FOC was not considered. The subcomponents are: business freedom, property rights and labour freedom.	1996–2012	QOG Standard Data Set 2015: http://qog.pol.gu.se/data/datadownloads/qogstandarddata
Democracy	Measured by the iPolity 2 Indicator. This indicator averages Freedom House’s Civil Liberties and Political Rights and Polity 2. Scale ranges from 0 to 10, where 0 is least democratic and 10 most democratic. “The imputed version has imputed values for countries where data on Polity is missing by regressing Polity on the average Freedom House measure” (QOG)	1996–2012	QOG Standard Data set 2015: http://qog.pol.gu.se/data/datadownloads/qogstandarddata
Gross national income (GNI) per capita on purchasing power parity (PPP)	“GNI per capita (formerly GNP per capita) is the gross national income, converted to US dollars using the World Bank Atlas method and divided by the midyear population” (World Bank). Values are rescaled dividing by 1.000	1996–2012	World Bank: http://data.worldbank.org/indicator/NY.GNP.PCAP.CD

FD financial disclosure, *FFC* Freedom from Corruption, *QOG*, *GDP* gross domestic product, *GNI* gross national income

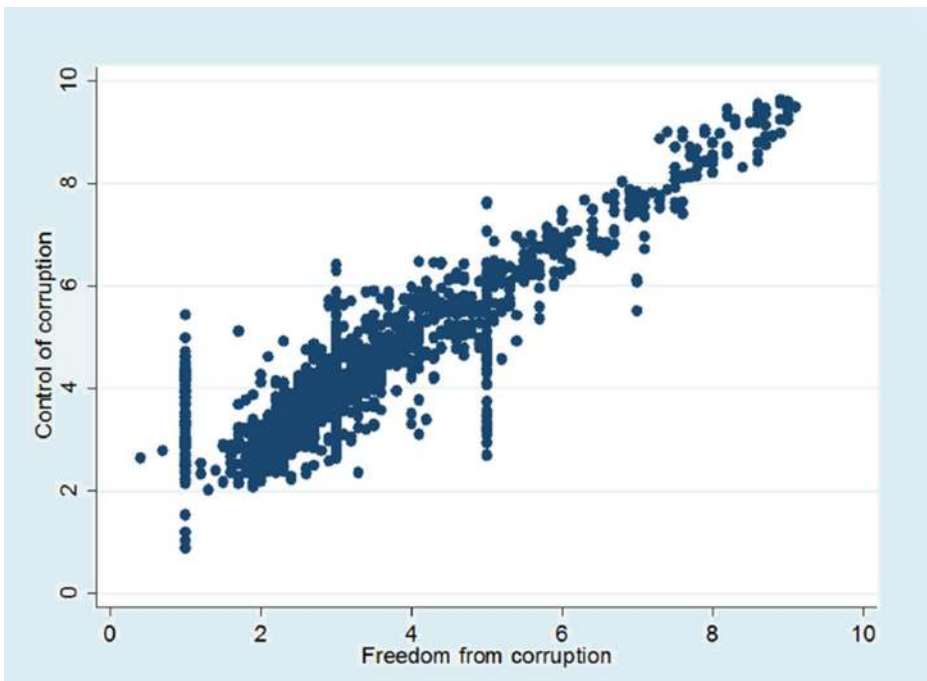
Appendix 5

Table 6 Statistical summary

Variable	Observations	Mean	SD	Min	Max	Year
Explanatory variable						
Financial disclosure in-law effort	1530	0.277	0.261	0	0.93	1996–2012
Dependent variables						
Control of Corruption	1498	4.426	1.560	0.88	9.64	1996–2012
Freedom from corruption	1402	3.487	1.732	0.4	9.1	1996–2012
Control variables						
Oil rents as % of GDP	1513	2.629	8.343	0	70.638	1996–2012
Net official development aid received as % of GNI	1513	6.116	8.213	-0.253	75.788	1996–2012
Revised Economic Freedom Index	1402	54.514	14.229	2.5	90	1996–2012
Democracy	1504	6.685	2.625	0.25	10	1996–2012
GNI per capita on, PPP	1505	8.710	10.295	0.317	63.738	1996–2012

GDP gross domestic product, *GNI* gross national income, *GNP* gross national product, *PPP* purchasing power parity, *SD* standard deviation

Appendix 6



Graph 17 Two-way scatter: Control of Corruption (COC) and Freedom from Corruption (FFC). Source: Own calculations

Appendix 7

Table 7 Table outputs comparing results: correcting for the unit root problem with first differences

Effects of FD in-law effort on national corruption levels: correcting the unit root problem

	Model 1 COC	Model 1.1 COC trend	Model 1.2 COC 1st diff
FD in-law effort	-0.032 (0.083)	0.097 (0.087)	
FD in-law effort (t-1)			-0.122* (0.066)
Oil rents as % of GDP	0.003 (0.003)	0.003 (0.003)	0.002 (0.003)
Net ODA as % of GNI	0.007*** (0.003)	0.005** (0.003)	0.009*** (0.002)
Economic freedom	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Democracy (iPolity 2)	0.047*** (0.013)	0.057*** (0.014)	0.044*** (0.013)
GNI per capita, PPP	0.003 (0.006)	0.024*** (0.008)	
GNI per capita, PPP (t-1)			0.026 (0.018)
Trend		-0.021*** (0.005)	
Constant	1.950*** (0.173)	2.036*** (0.166)	1.970*** (0.156)
Observations	1377	1377	1301
R^2	0.920	0.921	0.933

Correlated panels corrected standard errors (PCSEs) reported in parentheses. Country dummies are not displayed
FD financial disclosure, *GDP* gross domestic product, *ODA* official development assistance, *GNI* gross national income, *PPP* purchasing power parity, *COC* Control of Corruption

*Significant at 10 %

**Significant at 5 %

***Significant at 1 %

Appendix 8

Table 8 Output table including Association with European Union (EU)

Effects of FD in-law effort on national corruption levels: panel fixed-effects models—analysing lags (1996–2012 data)

	Model 1.1 11 COC	Model 1.2 12 COC	Model 1.3 13 COC	Model 2.1 11 FFC	Model 2.2 12 FFC	Model 2.3 13 FFC
FD in-law effort (t-1)	0.141* (0.083)	0.087 (0.081)	0.088 (0.082)	0.064 (0.107)	0.004 (0.111)	-0.061 (0.110)
FD in-law effort (t-2)		0.010 (0.086)	-0.012 (0.080)		0.188 (0.116)	0.109 (0.114)
FD in-law effort (t-3)			0.099 (0.094)			0.251** (0.119)
Oil rents as % of GDP	0.003 (0.003)	0.002 (0.003)	0.003 (0.003)	-0.013** (0.006)	-0.010* (0.006)	-0.008 (0.007)
Net ODA as % of GNI	0.007*** (0.002)	0.007*** (0.003)	0.007*** (0.002)	0.002 (0.003)	0.002 (0.004)	0.004 (0.003)
Economic freedom	0.003*** (0.001)	0.003** (0.001)	0.002** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.004*** (0.001)
Democracy (iPolity 2)	0.050*** (0.014)	0.057*** (0.015)	0.053*** (0.016)	-0.015 (0.016)	-0.028 (0.018)	-0.017 (0.020)
Association with EU	0.124*** (0.036)	0.119*** (0.038)	0.108*** (0.036)	0.067 (0.052)	0.101* (0.055)	0.124** (0.056)
GNI per capita, PPP	0.013* (0.008)	0.011 (0.008)	0.014* (0.008)	0.050*** (0.007)	0.049*** (0.006)	0.048*** (0.006)
<i>d1</i>				-1.599*** (0.049)	-1.566*** (0.050)	-1.541*** (0.051)
<i>d3</i>				0.033 (0.043)	0.078* (0.042)	0.123*** (0.043)
<i>d5</i>				0.706*** (0.074)	0.642*** (0.083)	0.491*** (0.094)
<i>d7</i>				0.467*** (0.166)	0.453** (0.200)	0.208 (0.244)
Trend	-0.020*** (0.005)	-0.019*** (0.005)	-0.020*** (0.006)	-0.026*** (0.005)	-0.024*** (0.005)	-0.025*** (0.006)
Constant	2.083*** (0.162)	2.072*** (0.162)	2.011*** (0.189)	2.781*** (0.326)	2.613*** (0.330)	2.451*** (0.394)
Observations	1304	1227	1148	1304	1227	1148
<i>R</i> ²	0.920	0.926	0.931	0.883	0.891	0.902

Correlated panels corrected standard errors (PCSEs) reported in parentheses. Country dummies are not displayed
FD financial disclosure, *GDP* gross domestic product, *ODA* official development assistance, *GNI* gross national income, *PPP* purchasing power parity, *COC* Control of Corruption, *FFC* Freedom from Corruption

*Significant at 10 %

**Significant at 5 %

***Significant at 1 %

Appendix 9

Table 9 Output table comparing results by income groups

Effects of FD in-law effort on national corruption levels: panel fixed-effects models—comparing by income groups (1996–2012 data)

	Model 1.1 COC low income	Model 1.2 COC lower middle income	Model 1.3 COC upper middle income	Model 1.4 COC High income
FD in-law effort (t-1)	0.128 (0.117)	0.036 (0.177)	0.251** (0.120)	0.209 (0.170)
Oil rents as % of GDP	0.081 (0.145)	0.008 (0.006)	-0.001 (0.003)	0.000 (0.008)
Net ODA as % of GNI	0.010*** (0.004)	0.004 (0.004)	0.005 (0.009)	0.148 (0.306)
Economic freedom	0.004* (0.002)	0.002* (0.002)	0.005*** (0.002)	-0.002 (0.003)
Democracy (iPolity 2)	0.030* (0.017)	0.051** (0.023)	0.095** (0.039)	0.179*** (0.042)
GNI per capita, PPP	-0.067 (0.130)	0.174*** (0.034)	0.068*** (0.017)	-0.013 (0.016)
Trend	-0.015 (0.009)	-0.053*** (0.008)	-0.042*** (0.011)	0.004 (0.019)
Constant	1.537*** (0.463)	3.982*** (0.307)	2.017*** (0.200)	8.268*** (0.871)
Observations	334	376	324	270
R^2	0.794	0.802	0.886	0.937

Panel-data-corrected standard errors reported in parentheses. Country dummies are not displayed

FD financial disclosure, *GDP* gross domestic product, *ODA* official development assistance, *GNI* gross national income, *PPP* purchasing power parity, *COC* Control of Corruption

*Significant at 10 %

**Significant at 5 %

***Significant at 1 %

Appendix 10

Table 10 Output table comparing results by regional groups

Effects of FD in-law effort on national corruption levels: panel fixed-effects models comparing by regions (1996–2012 data)

	Model 1.1 COC Advanced economies	Model 1.2 COC East Asia	Model 1.3 COC Eastern Europe and Central Asia	Model 1.4 COC Latin America and the Caribbean	Model 1.5 COC Middle East and North Africa	Model 1.6 COC South Asia	Model 1.7 COC Sub- Saharan Africa
FD in-law effort (t-1)	-0.120 (0.877)	0.036 (0.260)	-0.004 (0.114)	0.031 (0.248)	0.178 (1.023)	-0.036 (1.447)	0.200 (0.138)
Oil rents as % of GDP	-0.052 (0.038)	-0.026** (0.013)	0.002 (0.004)	-0.022 (0.024)	-0.270*** (0.095)	0.401* (0.221)	0.003 (0.004)
Net ODA as % of GNI	.	0.022*** (0.008)	-0.000 (0.010)	-0.003 (0.009)	0.060 (0.045)	0.007 (0.052)	0.010*** (0.003)
Economic freedom	-0.009 (0.006)	0.001 (0.004)	0.005*** (0.001)	0.001 (0.003)	-0.008 (0.010)	0.003 (0.004)	0.005** (0.002)
Democracy (iPolity 2)	-0.152 (0.255)	0.166*** (0.026)	0.087*** (0.031)	0.053 (0.063)	-0.031 (0.071)	-0.014 (0.027)	0.068*** (0.017)
GNI per capita, PPP	-0.028 (0.020)	0.137** (0.068)	0.017 (0.013)	0.056** (0.024)	0.437*** (0.166)	0.131** (0.065)	0.021 (0.027)
Trend	-0.001 (0.024)	-0.073*** (0.013)	0.004 (0.012)	-0.024* (0.014)	-0.186*** (0.049)	-0.058*** (0.017)	-0.022*** (0.006)
Constant	11.550*** (2.696)	4.672*** (0.391)	2.206*** (0.203)	5.915*** (0.599)	4.557*** (1.225)	2.853*** (0.459)	1.902*** (0.228)
Observations	112	125	387	128	48	80	424
R^2			0.890				0.873

Feasible generalised least squares errors reported in parentheses for models 1.1, 1.2, 1.4, 1.5 and 1.6. Panel-data-corrected standard errors reported in parentheses for models 1.3 and 1.7. Country dummies are not displayed
FD financial disclosure, *GDP* gross domestic product, *ODA* official development assistance, *GNI* gross national income, *PPP* purchasing power parity, *COC* Control of Corruption

*Significant at 10 %

**Significant at 5 %

***Significant at 1 %

Appendix 11

Table 11 Output table comparing results by components of financial disclosure (FD)

Effects of FD in-law effort on national corruption levels: panel fixed-effects models, including lag and interactions terms (1996–2012 data)

	Model 1.1 L1 COC	Model 1.1 L1 COC	Model 1.1 L1 COC	Model 1.1 L1 COC	Model 1.1 L1 COC	Model 1.1 L1 COC
FD in-law effort (t-1)	0.189** (0.078)					
Disclosure items (t-1)		-0.032 (0.054)				
Filling frequency (t-1)			0.015 (0.030)			
Sanctions (t-1)				0.007 (0.026)		
Monitoring and oversight (t-1)					0.009 (0.031)	
Public access to declarations (t-1)						0.013 (0.048)
Oil rents as % of GDP	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)
Net ODA as % of GNI	0.007*** (0.002)	0.006** (0.002)	0.006** (0.002)	0.006** (0.002)	0.006** (0.002)	0.006** (0.002)
Economic freedom	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Democracy (iPolity 2)	0.054*** (0.014)	0.057*** (0.014)	0.056*** (0.014)	0.057*** (0.014)	0.057*** (0.014)	0.057*** (0.014)
GNI per capita, PPP	0.020** (0.008)	0.023*** (0.007)	0.023*** (0.007)	0.023*** (0.007)	0.023*** (0.007)	0.023*** (0.007)
Trend	-0.021*** (0.005)	-0.019*** (0.004)	-0.019*** (0.004)	-0.019*** (0.004)	-0.019*** (0.004)	-0.019*** (0.004)
Constant	2.056*** (0.159)	2.043*** (0.162)	2.035*** (0.164)	2.036*** (0.164)	2.035*** (0.164)	2.038*** (0.164)
Observations	1304	1296	1296	1296	1296	1296
R^2	0.920	0.929	0.929	0.929	0.929	0.929

Panel-data-corrected standard errors reported in parentheses. Country dummies are not displayed. The nonsignificant results of the FD components are potentially due to the nature of our indicator itself, which causes a natural clustering of the observations. This behaviour inflates the calculated standard errors of our estimated coefficients. Illustrations evidencing the previous are available in Graph 18 in “Appendix 12”

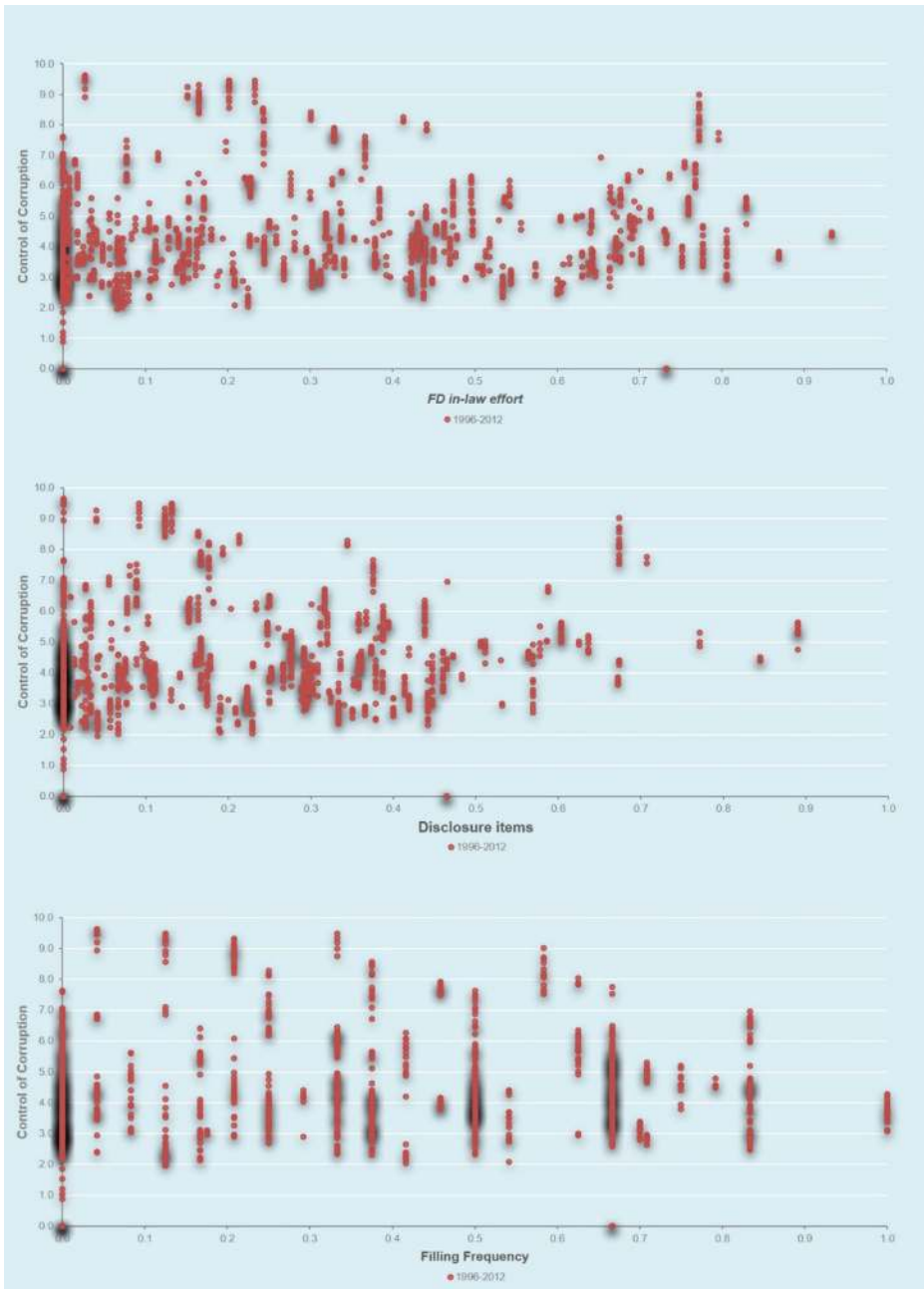
FD financial disclosure, GDP gross domestic product, ODA official development assistance, GNI gross national income, PPP purchasing power parity, COC Control of Corruption

*Significant at 10 %

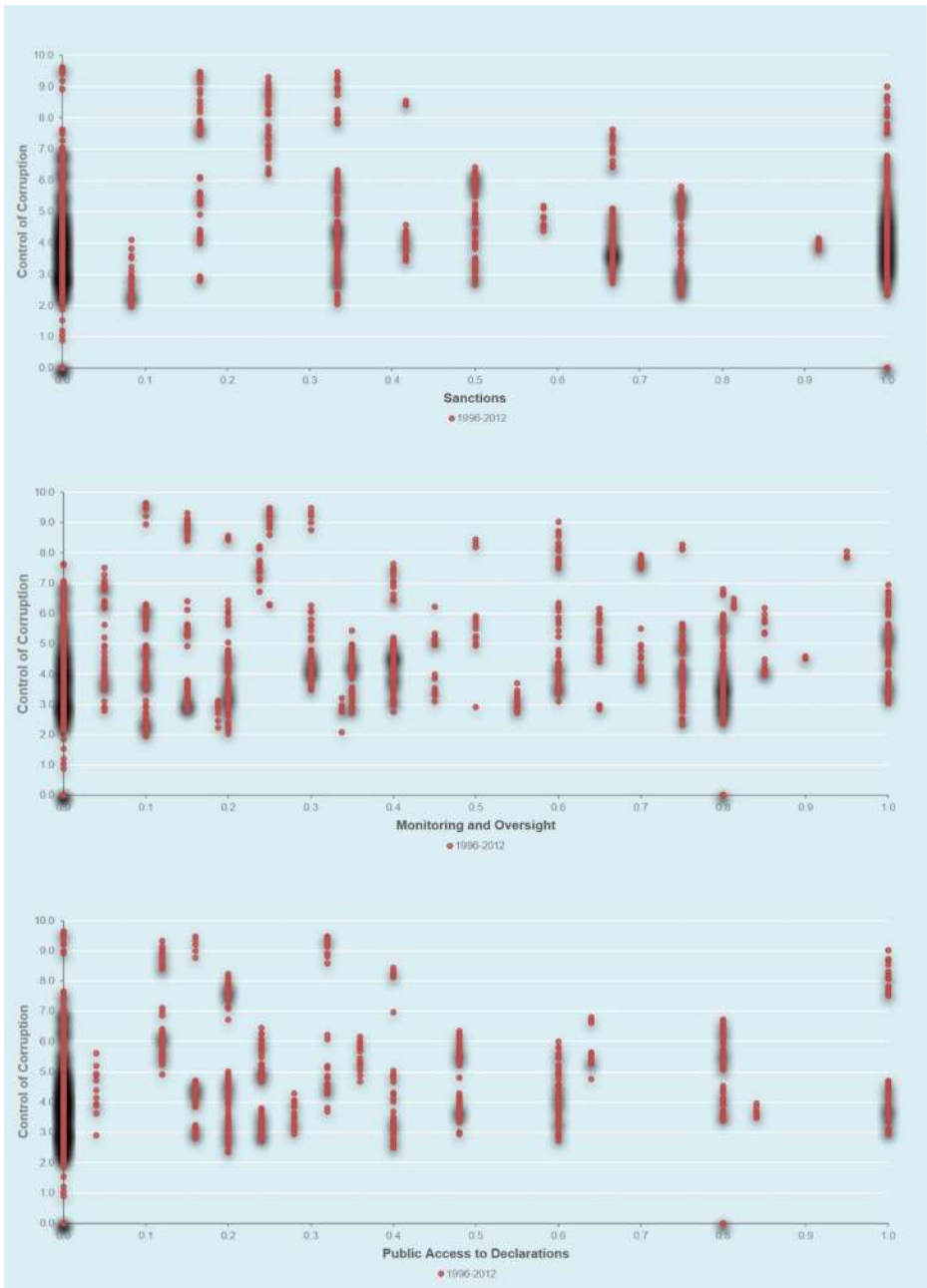
**Significant at 5 %

***Significant at 1 %

Appendix 12



Graph 18 Two-way scatter: Control of Corruption (COC) and components of financial disclosure (FD), 1996-2012. Source: Own calculations



Graph 18 (continued.)

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