

## Chapter 2

# Decentralization and Political Corruption: Disaggregating Regional Authority<sup>1</sup>

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## 2.1 Introduction

The authors of *The Federalist Papers* were aware of the benefits and pitfalls of decentralization. In 1787, James Madison warned the people of the State of New York that small constituencies run the risk of interest capture and of being governed by “[m]en of factious tempers, (...) [who] betray the interests, of the people” and are “unduly attached” to their electors (Hamilton et al., 2010[1787/88], Federalist No. 10). A few months later, Madison advocated the division of the legislature into several governments and branches to ensure reciprocal control and to safeguard the public interest (Hamilton et al., 2010[1787/88], Federalist No. 51).

Since the 1990s, governments and international organizations such as the International Monetary Fund or the World Bank have advocated greater decentralization. Research on the effect of decentralization on political corruption has, however, been inconclusive. We discuss, challenge, and build on studies such as Fan et al. (2009), Fisman and Gatti (2002a), Gerring and Thacker (2004), Rose-Ackerman (1999), Tavits (2007), and Treisman (2007b). This article provides a fresh angle to this debate by disaggregating decentralization into two domains: self-rule and shared rule. We argue that regional self-rule and shared rule have opposite effects on corruption. This refinement is able to make sense of both the positive and negative effects of decentralization found in previous studies.

Regional self-rule – the capacity of a region to decide autonomously in its territory – transfers decision-making authority to public officials. Such gain of power creates incentives for bribery. Self-rule also facilitates what Madison referred to as ‘undue attachment’ – we label it ‘collusion’ – and the formation of corruption networks. It multiplies the number of bribery targets and brings these decision-makers closer to local and regional elites (potential bribe-payers). That way, regional self-rule promotes political corruption. In contrast, a country with strong shared rule – the authority of subnational tiers to co-determine national decisions – allows for more political control. This is what the authors of *The Federalist Papers* had in mind when recommending the division of legislative authority among several governments.

Such government oversight increases the risk for exposure and punishment of corrupt actions. Hence, regional shared rule reduces incentives for officials to get involved in corruption.

In our analysis, we draw on a recent measure that unpacks regional authority: the Regional Authority Index (RAI) (Hooghe et al., 2010). The RAI combines fiscal and non-fiscal aspects of decentralization. Since we are interested in the consequences of decentralization as a broader concept and not just some of its aspects, the RAI provides a more valid operationalization than other, more narrow measures used in previous studies. At the same time, it disaggregates regional authority into self-rule and shared rule which allows disentangling the otherwise confounded effects of decentralization. The RAI also captures more variation of regional authority across countries and over time compared to other widely used variables and it covers a wide range of countries on an annual basis. Our analysis tests the hypotheses using pooled time-series cross-sectional data from up to thirty-six countries between 1984 and 2006. We use measures of perceived (and, as robustness check, experienced) corruption as the dependent variable. Whereas a single measure of decentralization confounds two causally distinct mechanisms, our robust empirical evidence supports the hypotheses in favor of a disaggregation of regional authority: self-rule increases corruption whereas shared rule reduces corruption.

This article contributes to the literature in three ways. First, we offer an explanation for the so far inconclusive findings, namely that decentralization has both a positive and a negative effect on political corruption that can be captured by the domains of self-rule and shared rule. Second, we disaggregate decentralization and develop detailed theoretical arguments for the conflicting effects of self-rule and shared rule. Unlike previous studies, we establish an in-depth micro-causal mechanism linking self-rule to higher and shared rule to lower corruption levels. Finally, the analysis uses a recent dataset of regional authority to estimate the effect of decentralization on several perceived and experience-based corruption measures. We provide robust empirical evidence in support of our hypotheses.

The next section elaborates on the concepts of decentralization and corruption and discusses previous research. We then develop our theoretical argument and derive the hypotheses, describe the data and method we use, and present the results of the empirical tests. The final section summarizes the findings and discusses implications.

## 2.2 Concepts and (Rival) Explanations

Since the early 1990s, there has been increasing scholarly interest in the causes and consequences of corruption. Research on causes of corruption highlights a broad array of factors, including economic factors (Montinola and Jackman, 2002, Sandholtz and Koetzle, 2000, Treisman, 2000, Xin and Rudel, 2004), cultural and societal conditions (Kunicová and Rose-Ackerman, 2005, La Porta et al., 1999, Treisman, 2000), and political aspects (Bhattacharyya and Hodler, 2010, Lederman et al., 2005, Lindstedt and Naurin, 2010, Montinola and Jackman, 2002, Sandholtz and Koetzle, 2000, Treisman, 2000). This article concentrates on one political factor, decentralization.

Corruption is defined as the misuse of an official position for one's own private benefit or the benefit of a certain group in society (see Kunicová and Rose-Ackerman, 2005, Rose-Ackerman, 1999). The term 'corruption' subsumes numerous kinds of illegal bribery or graft behavior in politics. More generally, researchers distinguish political from business corruption and petty or low-level from grand or high-level corruption (Husted, 1999, Rose-Ackerman, 2006b, Swamy et al., 2001, Treisman, 2007b, You and Khagram, 2004). *Political* corruption necessarily involves politicians or bureaucrats. *Petty* corruption comprises all corrupt activities when individuals pay a small bribe to government officials or bureaucrats to avoid a fine or to get a service more quickly. *Grand* corruption includes bribery by, e.g., businesses or interest groups to gain influence on the decision processes of governments such as

law-making or governmental contracts (You and Khagram, 2004). We focus on grand political corruption.

We conceive of decentralization/regional authority as the shift of fiscal, policy, or political authority from the central government to subnational tiers (Rodden, 2004). Further, we distinguish regional self-rule from shared rule (Elazar, 1987, 1995, Hooghe and Marks, 2013, Hooghe et al., 2010).<sup>2</sup> Existing studies focus on one or few specific parts of this concept (e.g. federal institutions, direct election of officials, fiscal measures). Our study, by contrast, builds on a much more comprehensive conceptualization and operationalization of decentralization. This includes a broader and, arguably, more valid assessment of fiscal decentralization independent of regional public spending or revenue (see Hooghe et al., 2010, 18f).

The scholarly debate on the effect of decentralization or federalism on political corruption provides several distinct causal mechanisms linking subnational authority to either *more* or *less* corruption. We discuss the two groups of theoretical arguments in turn.

### 2.2.1 Accountability, Collusion, and Fragmentation

Several authors argue that decentralization increases the accountability of bureaucrats to the people and thereby *reduces* the level of corruption. In short: decentralization “brings decision-making closer to those that are affected” (Fisman and Gatti 2002a, 328; see also Fiorino et al. 2013, Fisman and Gatti 2002b). Division of responsibilities allows for easier attribution of credit or blame and the smaller size of communities facilitates the coordination of voting strategies (Fan et al., 2009). The thrust of the argument is that voters in smaller jurisdictions are better informed and able to focus on the performance of a specific region, which improves accountability – it is, hence, about information and monitoring.

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<sup>2</sup>This concept is broader than *federalism*, which can be conceived as a particular institutional form to structure authority between at least two governmental tiers implying a constitutionally guaranteed autonomy (in certain areas) to each government (Lijphart, 1984, Riker, 1964).

In contrast, other scholars elaborate how decentralization provides *favorable conditions* for corruption because there are more opportunities for corrupt interactions and fewer obstacles: accountability might be conditional on the quality of monitoring – e.g. by free press – and, typically, monitoring, auditing, and media pressure are more developed at the national level (Lessmann and Markwardt, 2010, Prud’homme, 1995). Moreover, when lacking vertical accountability (in terms of centralized government institutions or centralized political parties), horizontal accountability can lead to the formation of corruption networks between local representatives and the respective local communities (Véron et al., 2006). In a similar vein, one could argue that decentralization strengthens the relationship between local or regional officials and the respective community: “The very smallness and intimacy of local jurisdictions may make corrupt relations possible” (Rose-Ackerman, 1999, 149) (Prud’homme, 1995). Such contiguity leads to more frequent and more intimate interaction between private individuals and public officials and fosters local collusion (Fan et al., 2009, Tanzi, 1995).

A more general criticism of the accountability approach is that decentralization fragments the political system and brings about diffuse decision-making, which allows for blame-shifting or credit-taking between jurisdictional units. That undermines accountability and increases corruption levels (Fisman and Gatti, 2002a). Centralized and strongly hierarchical structures, on the contrary, can provide for more accountability due to strong parties, effective government, and less fragmented bureaucracy (Gerring and Thacker, 2004).

### **2.2.2 Regional vs. Vertical Competition**

A second family of arguments deals with jurisdictional competition (Fan et al., 2009, Fiorino et al., 2013, Fisman and Gatti, 2002a,b, Rose-Ackerman, 1999). Competition for capital (or labor) among regional or local units forces bureaucrats to abstain from rent-extraction, which *reduces* corruption (Arikan, 2004). Less secrecy and stronger public pressure as well as the demand for efficiency and honesty discipline

governments in their competition for labor and capital (Shleifer and Vishny, 1993, Treisman, 2000).

Yet, competition can also lead to *more* corruption due to double marginalization or overgrazing. Officials from each unit at each level of government extract rents which lead to a higher aggregate level of corruption (Fan et al., 2009, Lessmann and Markwardt, 2010, Shleifer and Vishny, 1993, Treisman, 2000). Also, under certain conditions, local governments competing for capital and business may be induced to shield firms from central law enforcement and, hence, competition may increase corruption (Cai and Treisman, 2004). Rose-Ackerman (1999, 151) concludes that “[b]ecause, in practice, it may be difficult to tell the difference between constructive and destructive competition, the decentralization of government structures can, at best, make a marginal contribution to the control of corruption.”

### 2.2.3 Tying the Ends Together

The choice of measures, methods, and samples appears to drive empirical findings whether decentralization encourages corruption (Cai and Treisman, 2004, Gerring and Thacker, 2004, Nelson, 2013, Treisman, 2000, Voigt and Blume, 2012) or deters it (Arikan, 2004, De Mello and Barenstein, 2001, Fiorino et al., 2013, Fisman and Gatti, 2002b, Lessmann and Markwardt, 2010, Véron et al., 2006). Overall, the evidence is mixed or weak.<sup>3</sup>

Thus, neither the theoretical nor the empirical debate on the nature and mechanism of the effect of decentralization on political corruption is settled. Scholars were looking for one consistent effect of decentralization while largely neglecting the possibility of contrasting effects of different domains of decentralization. The

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<sup>3</sup>For examples, see Enikolopov and Zhuravskaya (2007), Fan et al. (2009), Lessmann and Markwardt (2010), Treisman (2007b), Véron et al. (2006). Fiorino et al. (2013) find fiscal but not administrative decentralization to reduce corruption and this effect is stronger in countries with more fragmentation among lowest-level jurisdictions. Nelson (2013), on the other hand, finds fragmentation at the municipality-level to stimulate corruption. Other scholars find fiscal decentralization to improve government quality whereas political decentralization (federalism and subnational elections) has a negative effect and also nullifies the effect of fiscal decentralization (Kyriacou and Roca-Sagales, 2011a,b). Asthana (2012) reports a positive relation in the short and medium run but a negative effect in the long run.

uni-dimensional measures of decentralization used in most research are suitable as long as studies aim to explain the effect of only one dimension of decentralization, but they miss out its overall effect. Few studies try to capture more than one facet of decentralization (see e.g. Enikolopov and Zhuravskaya, 2007, Fan et al., 2009, Voigt and Blume, 2012). To help overcome this lack of agreement in past research and to disentangle the sophisticated relationship between decentralization and corruption, this article employs a more fine-grained conceptualization and measure of decentralization. This allows us to develop and test a detailed theoretical explanation for the contradictory effects of regional self-rule (positive) and shared rule (negative) on political corruption.

## 2.3 Theory and Hypotheses

In this section, we develop a theoretical argument for how decentralization may affect the incidence of political corruption. We do this by disaggregating regional authority into two domains: self-rule and shared rule. Regarding regional *self-rule*, the argument starts out from the local collusion logic described above. Whereas existing studies fail to elaborate on the causal mechanism, we explain the relationship in a more detailed and systematic way. Existing research neglects how *shared rule* affects corruption. We explain below how shared rule reduces the level of political corruption because it leads to more control of the government. We start off with some basic assumptions.

### 2.3.1 Assumptions on Actors' Preferences and Behavior

We assume that there are two kinds of actors involved in a corruption interaction: a bribe-payer and a bribe-taker. *Bribe-payers* are people and groups outside the political and bureaucratic institutions who are willing to pay bribes to get a certain favor: for instance, rich individuals, companies, and interest groups. Under certain circumstances, they increase their benefits by means of bribery: the incidence of



corruption is a combination of *incentives* (where benefits exceed costs, i.e. there is something to gain) and *opportunities* for interaction. Incentives for corruption are, for example, public contracts or tax reductions that increases the bribe-payer's benefit and that she would otherwise not get. The costs of corruption refer to the size of the bribes that need to be paid but also the risk of being discovered and punished by the judiciary.

The *bribe-takers* are politicians in parliaments, elected or appointed bureaucrats, and career civil servants at various governmental tiers. They have the authority to decide on taxes, hand out government contracts, etc. (or at least play an important role in preparation of decision-making). Bribe-takers have the power to do someone a favor and are willing to sell this power in return for another favor, e.g. holiday trips, company shares, or cash. These officials are – usually partly rather than completely – self-interested, aim to maximize their utility, and seek office.<sup>4</sup> Therefore, politicians or bureaucrats are accessible for bribery once they benefit from corruption, but they are less willing to accept bribes once the costs (in terms of the risk of being uncovered and punished by both the judiciary and the voters) increase. Moreover, parties and politicians are interested in making public wrongdoings of their opponents – such as corrupt actions – because this usually harms the opponent's popularity among voters and increases their own support. Therefore, politicians monitor their opponents very closely.

### 2.3.2 Self-Rule: Local Collusion and Corruption Networks

Our conceptualization of regional self-rule refers to a country's institutional depth, policy scope, fiscal autonomy, and degree of direct representation on subnational levels (Hooghe et al., 2010). Based on this conceptualization, when considering the effect of self-rule on political corruption the local collusion logic is most convincing.

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<sup>4</sup>The extreme versions of the assumption about officials' motivations and actions (being either completely self-interested as defined by Downs (1957), or totally benevolent) are implausible. Rather, we believe it is sufficient to follow Treisman (2007a) who assumes that government officials are to some extent both benevolent and predatory, seeking to maximize a combination of their own private utility and public benefit.

The dispersion of authority to subnational levels of government creates *stronger incentives for bribery attempts* below the national level because it gives subnational politicians and bureaucrats (potential bribe-takers) discretion to make decisions that affect the people and businesses in their jurisdiction – i.e., self-rule vastly increases the number of potential bribery targets: (1) Administrative responsibilities: one can imagine a business paying local bureaucrats in order to avoid punishment for non-compliance with e.g. environmental standards. (2) Policy-making authority: arms manufacturers might pay officials to prevent more restrictive gun control that would have negative consequences for their business. (3) Fiscal autonomy: a businessperson invites officials to exclusive events or holidays in order to get public contracts. (4) Regional representation: coal-mining companies can make campaign donations to candidates running for office to make sure that the representatives owe them a favor such as prevention from stricter environmental legislation (Cai and Treisman, 2004). The fact that subnational officials decide important issues in these areas attracts potential bribe-payers to induce corrupt actions.

Real world cases reported in the media help to illustrate these incentives: For a long time online gambling was prohibited in all German states. However, the online gambling industry made friends with leading politicians from the state Schleswig-Holstein (e.g. through an invitation to an exclusive two-day trip for key decision-makers to a five star superior hotel on the island Sylt) and successfully influenced decision-making. Since March 1, 2012, online gambling is legal in Schleswig-Holstein.<sup>5</sup> In the Czech Republic, the former governor of the Central Bohemian region faces prosecution for mismanagement of European Union funds for awarding public contracts in exchange for bribes; moreover, in the Republic’s capital, Prague, media reported “collusion over the allocation of city funds” between a businessman and a former mayor (The Budapest Times, 2012). Media further report that in

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<sup>5</sup>The example was reported in *frontal21*, television magazine of German broadcasting network ZDF, March 6, 2012.

Ohio business representatives bribed a school board president in order to get contracts awarded (Dissell, 2012).

Self-rule not only raises the number of bribery targets and incentives for bribing them. Officials are also more accessible under self-rule and more interaction takes place providing *more opportunities for collusion* because the strengthening of regional authority brings the government and its representatives – potential bribery targets – closer to potential bribe-payers. The distance between potential bribe-payers and bribe-takers decreases since each jurisdiction at each tier has its own government and administration. This multiplies the number of bureaucrats with decision-making authority who can be approached and, ultimately, the number of interactions between potential bribe-payers and bribe-takers. That way, multiple networks of corruption can emerge at the subnational level (in addition to a national level corruption network that might exist as well).<sup>6</sup> Imagine the many occasional meetings and interactions between local/regional business elites and government elites that take place at societal events, country club meetings, or birthday parties. Multiply these times the number of, for example, U.S. states and districts and the number of interactions is far higher than the ones that take place in the national capital.

Altogether, regional self-rule stimulates both opportunities for and incentives to form corruption networks following a local collusion logic. Moreover, the large number of officials in multiple jurisdictions complicates the monitoring of every single one by the media and the public (see the fragmentation logic outlined above). Hence, it is less risky and therefore easier for officials at each level of government to make friends with bribe-payers and to engage in rent-extraction which multiplies the incidence of bribery.

The prominent counterargument claims that more decentralization improves *accountability* and thereby the control of the government's performance by the people (Fisman and Gatti, 2002a). Yet, so far nobody has convincingly explained

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<sup>6</sup>Bureaucrats at the local level spend their career at one single location where they can establish corruption networks, whereas national bureaucrats may rotate (Prud'homme, 1995, 211).

how voters get better information about local government performance compared to central government performance and it is unclear how voters would overcome the problem of fragmentation in multi-tier systems which reduces accountability (Gerring and Thacker, 2004, Treisman, 2007a). Rather, decentralization complicates governmental finances (Rodden, 2003) and limits the possibilities of voters to hold the government accountable via economic voting because it undermines the clarity of responsibility and the lack of such clarity leads to higher corruption levels (Anderson, 2006, Tavits, 2007). Additionally, provisions for auditing and monitoring are usually less developed at the subnational level (Prud'homme, 1995). Similarly, the focus of the media and watchdog groups is more often on the national level than on subnational tiers (Fan et al., 2009, Treisman, 2007a). This makes it easier for bribe-payers and bribe-takers to form networks of corruption and to engage in local collusion far from wider attention.

In summary, self-rule brings together elite circles, those with power and those with money. They meet at golf clubs, charity events, in the VIP lounges at sports events, or fairs. They meet and develop networks in small groups behind closed doors. Ordinary people (and the media) have no access to these elites and their meetings. Thus, self-rule brings bribe-payers closer to bribe-takers and promotes local collusion. At the same time, self-rule does not improve accountability towards the public.

### **2.3.3 Shared Rule: Oversight Hinders Corruption on the National Level**

A country's level of regional shared rule refers to the extent to which regional governments co-determine decisions on the national level with regard to national law-making (typically via the upper chamber of the parliament), implementing policies, distributing tax revenues, and constitutional change (Hooghe et al., 2010). This conceptualization differs substantially not only from regional self-rule but also from approaches focusing on federal institutions or the number of governmental tiers in a country and is much more comprehensive than these.

Among the above discussed theories linking decentralization to corruption, the overgrazing mechanism seems appealing when it comes to shared rule because it involves several layers of government. However, overgrazing refers to quantitative decentralization (the number of governmental tiers) whereas shared rule pertains to qualitative decentralization as the regional-level influence in national decision-making. Local collusion and inter-regional competition clearly do not apply to the concept of national-level influence of regional governments. Finally, the idea of a government getting closer to the people thereby allowing for improved monitoring of public officials does also not fit the concept of national-level shared rule. Yet, the idea behind this accountability logic, namely that decentralization improves monitoring and accountability of politicians and bureaucrats, travels quite well to a situation where regional governments are also involved in national-level decision-making.

We argue that shared rule of regional and national government on the national level *strengthens institutional control*. Compared to purely centralized states, countries with some extent of shared rule introduce additional actors to the decision-making process. These regions have distinct preferences. For example, they want the central government to provide public goods and services efficiently. Therefore, regional governments monitor national government actions and force the government to spend its money efficiently in the interest of the public instead of selling off its decisions to exclusionary interests that do not benefit the regions and their constituents.<sup>7</sup> Through this monitoring, shared rule increases the risk of corrupt actions being uncovered and punished. A higher risk of punishment is equivalent to higher costs for the potential bribe-taker (or drives up the demanded bribes) which makes engaging in corruption less attractive. We expect the control effects of shared rule to reduce political corruption.<sup>8</sup>

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<sup>7</sup>This is even more relevant in case of partisan differences between national and regional governments (which is often the case) because making wrong-doings of the opponent public can pay off in the next elections.

<sup>8</sup>One could argue that the monitoring actor can be bought off. However, bribing more actors increases the costs of corrupt interactions for the bribe-payer (or leaves less money to distribute

From the above outlined arguments, we derive the following two hypotheses:

*H1: The higher the level of self-rule the more political corruption a country will experience.*

*H2: The higher the level of shared rule the less political corruption a country will experience.*

## 2.4 Data and Method

We test the proposed hypotheses empirically in a large-N study. The dependent variable is political corruption, explained by self-rule, shared rule, and various control variables. We outline the choices of our operationalizations in the following paragraphs.

### 2.4.1 Political Corruption

Since the beginning of corruption research, scholars have been discussing measures of corruption. Clearly measuring corruption accurately is crucial for adequately testing hypotheses. Yet, measuring corruption is difficult as corrupt interactions usually happen in secret. With growing scholarly interest in the causes and consequences of corruption in the 1990s, the need for valid corruption data was intensively outlined.

Corruption indicators can be divided into two groups: *perception-based* corruption indicators and *experience-based* indicators. Perception-based indicators usually rest on one or several expert assessments. Three data sources have been widely used in past research: the *International Country Risk Guide* (ICRG) corruption indicator provided by the *Political Risk Services Group* (PRS), *Transparency International's* (TI) *Corruption Perception Indicator* (CPI), and the *Worldwide Governance Indicators* (WGI) by the World Bank (WB).<sup>9</sup> “ (...) [C]ertain elements of corruption

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among the bribe-takers). Higher costs make corruption less profitable which is why fewer incidences of corruption will occur.

<sup>9</sup>The ICRG is used, for example, by Adserà et al. (2003), Bhattacharyya and Hodler (2010), Dollar et al. (2001), Fisman and Gatti (2002a,b), La Porta et al. (1999), Persson et al. (2003),

(especially petty corruption) can be measured by surveys” (Razafindrakoto and Roubaud, 2010, 1060). Experience-based survey-indicators include TI’s *Global Corruption Barometer* (GCB) and *Bribe Payers Index* (BPI), the *World Business Environment Survey* (WBES) provided by the World Bank, the *Interregional Crime and Victimization Survey* (ICVS) published by the United Nations Inter-regional Crime and Justice Research Institute (UNICRI), and the *European Quality of Government Index* (EQI) by Charron et al. (2014) and Charron et al. (2013). For reasons of space, we provide more detailed information and a discussion of these measures (and why we do not use them in our main analysis) in the online appendix.

Scholars put forward three problems with *perceived* corruption indicators: first, the accuracy of perception indicators “only concern[s] the perception of corruption (generally by experts), not corruption itself” (Razafindrakoto and Roubaud, 2010, 1059). Country experts’ perceptions might be biased in their evaluation of a country’s corruption level (Fan et al., 2009). These experts might have certain causal mechanisms in mind that should influence the corruption level such as democratic institutions or economic performance and these can influence their assessment of the level of corruption (see e.g. Razafindrakoto and Roubaud, 2010, 1059). Donchev and Ujhelyi (2013, 3) find empirical support for this view: “cultural, economic and political factors bias corruption perception away from corruption experience.” Yet, as Charron (2011, 599) quotes Kaufmann and colleagues: “perceptions matter because agents base their actions on their perceptions, impression, and views.” Second, TI changed the method of construction of the CPI and thus comparison over time might be a problem for some years (Treisman, 2007b). Third, the sources used and the way global perception indicators are constructed are questionable (Razafindrakoto and Roubaud, 2010).

There are also problems with *experience-based* corruption indicators. Since grand political corruption necessarily involves elites, experience-based mass-surveys of

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Swamy et al. (2001) while Gerring and Thacker (2004), Xin and Rudel (2004) use CPI; Kunicová and Rose-Ackerman (2005) use WGI.

ordinary people are only able to capture petty corruption. The phrasing of questions asked in these surveys and documented in the online appendix supports this view: questions either explicitly refer to bribing e.g. police officers (i.e., petty corruption) or ask for respondents' *perceptions* of corruption when referring to potentially non-petty corruption (e.g. in parliament). In the former case, these surveys do not capture grand political corruption. In the latter case, they might capture political corruption but only measure perceptions and not actual experience. In this case, one can give the expert surveys the credit of expertise: experts can be expected to have less biased perceptions than ordinary people (still, expertise might not completely avoid measurement error). Hence, experience-based surveys might be well suited for measuring petty corruption levels but they are inappropriate to test hypotheses on grand political corruption. Moreover, it seems plausible to assume that respondents do not always tell the truth (or do not at all participate in the survey to conceal their illegal actions). This would also bias the survey's findings. Further, culture may bias answers: it might be easier for people to truthfully respond 'yes' in a survey on corruption experience when corruption is a culturally accepted behavior.

Charron (2011, 599) gives three guidelines for choosing suitable corruption data: first, coverage of countries and years; second, "precision and reliability with which the researchers that provide the data can define and measure the desired concept;" third, use of the data in the literature (number of papers as well as citations). We use the ICRG corruption indicator since it is available annually since 1984 and covers between eighty-one and 139 countries, which gives it the largest coverage of cases and time (Keefer, 2007). It is commonly used by scholars and it measures the type of corruption we address with our analysis most accurately, that is: political corruption.

The underlying definition of the ICRG indicator for measuring corruption focuses on "actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business" (The PRS Group, 2012). This quote clearly indicates



that the ICRG aims to capture grand political corruption (though it likely also picks up petty corruption).

Treisman (2007b) points out potential flaws in the ICRG index, for example abrupt changes in country ratings that seem to have no historically justified origin. This is less problematic unless there is reason to believe that measurement errors are systematic but we treat them as ‘white noise.’ Further, our theory focuses on levels of corruption and not on changes in corruption levels.<sup>10</sup> Still, we rely on CPI, WGI, WBES, and EQI to test the sensitivity of the results.

### 2.4.2 Decentralization

Traditional operationalizations of decentralization (such as federalism dummies) focus on parts of the latent underlying concept. By doing so, they do not capture both the broader concept of decentralization and the critical distinction between self-rule and shared rule (see Rodden, 2004, for a critical assessment of widely used measures of decentralization and federalism). Few studies combine some aspects of decentralization but still leave out others (e.g. Fan et al., 2009). These operationalizations are suitable as long as they test predictions focusing on certain aspects of decentralization and do not aim to understand the more general effects. However, they fail to explain the overall effect of decentralization and are not able to capture the contrasting effects of self-rule and shared rule as laid out in the theory section. Therefore, we rely on the RAI and its domains of self-rule and shared rule published by Hooghe et al. (2010) as a more comprehensive disaggregated measure of decentralization. They demonstrate the validity of the RAI with regard to its content and compared to other indicators pointing to weaknesses in the content validity of fiscal measures as indicators of decentralization (Hooghe et al., 2010). The RAI combines eight dimensions of decentralization on the two domains of self-rule

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<sup>10</sup>The relative levels of corruption estimates, we believe, are still valid and so are the long-term trends they reveal (Fiorino et al., 2013, 129).

and shared rule and thereby provides a more comprehensive operationalization of the latent concept of decentralization.

*Self-rule* (a regional government's authority within its jurisdiction) measures the dimensions of institutional depth, policy scope, fiscal autonomy, and representation; *shared rule* (a regional government's co-decision authority over the whole country) combines measures of law-making, executive control, fiscal control, and constitutional reform. Each region from each tier in each country receives a score on each of the eight dimensions based on a detailed coding scheme (Table 5.A.1 lists the RAI dimensions and their definitions; see Hooghe et al., 2010, 13ff, for more details on the coding scheme). These scores are then added up for each region and aggregated to the regional tier (weighted by population in case of different scores between one tier's regions) to indicate scores for self-rule and shared rule. Where several tiers exist, scores are calculated for each tier. The country scores we use are aggregated from all regional tiers and range from zero to 23.6 (self-rule) and from zero to twelve (shared rule). Because of its broader range, the index also provides more nuanced information about variation in decentralization between countries and over time which adds to its advantage over other measures. RAI data cover up to forty-two countries from 1950 to 2006.

Distinguishing the domains of self-rule and shared rule shows that decentralization may have both a positive (self-rule) and a negative (shared rule) effect on political corruption. Hooghe et al. (2010) demonstrate that despite a strong association between self-rule and shared rule they represent two different dimensions of the latent concept of regional authority. The fact that the two are strongly correlated does, however, not mean that they need to have the same causal effect on corruption. Indeed, if their effects are opposite despite their strong correlation this is an even more interesting finding.

### 2.4.3 Control Variables and Sample

We control for the influence of a number of variables in corruption research. The choice of control variables follows a four-step strategy: a variable is included if it is widely used in previous research, significant, substantially increases the model fit, while not dramatically decreasing the number of observations. Based on these considerations, we include the following variables in our empirical analysis (supplemented by additional variables in the robustness section). *Democratic institutions* can contribute to reducing corruption levels because they facilitate the monitoring of public officials (see e.g. Lederman et al., 2005, Treisman, 2000). Countries with a *presidential system* arguably experience more competition – hence, less corruption (Panizza, 2001, Persson and Tabellini, 1999) – or more fragmentation – hence, more corruption (Gerring and Thacker, 2004, Kunicová and Rose-Ackerman, 2005, Lederman et al., 2005). *Economic development* increases salaries of public officials as well as education levels and, thereby, helps controlling corruption (see e.g. Montinola and Jackman, 2002, Treisman, 2000). *Trade* and *foreign direct investment (FDI)* stimulate competition and ‘cultural diffusion of Western norms’ whereas barriers to trade and investment provide incentives for bribery (Ades and Di Tella, 1999, Gerring and Thacker, 2005, Sandholtz and Koetzle, 2000). *Women* in the workforce or in government have been argued to be more public-spirited compared to men (Dollar et al., 2001, Swamy et al., 2001, You and Khagram, 2004) or to increase the demand for public goods (Neudorfer, forthcoming) both of which reduce corruption. The overlap between the datasets as well as missing data reduce the number of countries (ranging from twenty-one to thirty-six) and the time period (1984-2006) of our sample. Data availability limits the sample so that countries with comparably low corruption levels are dominant which restricts the generalizability of the results. Table 5.A.1 provides an overview of all variables, their operationalization and data sources. Table 5.A.2 presents descriptive statistics.

#### 2.4.4 Method of Analysis

We investigate a pooled cross-section time-series dataset. Critics might argue that corruption and decentralization do not vary over time and, therefore, the time-dimension leads to inflated statistical significance. Despite the fact that corruption and decentralization are not very volatile (and some popular measures of decentralization or federalism are even constant), ICRG and self-rule clearly vary over time (Figures 2.2 and 2.3 respectively). Shared rule (Figure 2.4) has little temporal variation but both components of the RAI, self-rule and shared rule, systematically measure existing institutional change over time that is not captured by, for example, federalism dichotomies. Further, it is implausible to assume that observations at one point in time could indicate ‘equilibria values’ on the variables of interest (corruption and decentralization) and average values waste information and distort analyses (Fiorino et al., 2013, 123) . We further address this issue in the robustness analysis.

For ordinal variables, such as the ICRG index, ordered probit, ordered logit, or multinomial regression are the standard estimation procedures. In contrast to multinomial analysis, ordered probit and ordered logit models take the ordering of values into account and do not lose this valuable information. There should usually be no difference between the signs of beta coefficients of ordered probit and ordered logit models (Long and Freese, 2006). We use ordered probit as main estimation procedure and ordered logit as robustness check. The model estimates robust standard errors and controls for serial correlation by including splines (as suggested for logit and probit models for binary data by Beck et al., 1998).

Critics might point out that corruption levels depend on country-specific conditions such as traditions or history and that our model should take unit effects into account. Yet, there are good statistical reasons why there is no implementation for fixed-effects ordered probit models in Stata (and a least square dummy variable model would be equally problematic). So far, there is no official publication on this matter but some discussion on the Stata list: running simulations the authors

found that the standard errors and coefficients are biased.<sup>11</sup> For periods of fifty years or more for one country one might have less of a problem the authors conclude. However, our dataset covers far less than fifty years. Leaving these strong objections aside and estimating a model with country dummy variables the results for self-rule and shared rule stay robust. However, control variables such as democracy and GDP per capita have the wrong sign casting doubt on the results. As one alternative, in our robustness section we cluster observations by countries instead of just estimating robust standard errors. The results remain robust.

The possibility of endogeneity needs to be addressed here as well: our theory is consistent with the idea that self-rule and shared rule affect incentives and opportunities for corrupt behavior. Yet, one could also argue that corrupt societies structure their government in a distinct way. One potential way of addressing endogeneity econometrically is an instrumental variable (or: two-stage least squares) design. Following Jackson (2008), the implementation would go as follows: the explanatory variable (in our case self-rule and shared rule) is replaced by one or several alternative variables “with finite variances and covariances” correlated with the explanatory variable but uncorrelated with the error term. The problem in our case is that there is no single residual prediction after an ordered probit model. Thus, the implementation of an instrumental variable design is not available in our case. Another, though less preferable, approach is lagging the explanatory variables. Introducing a one- or two-year lag into our model does not change the main results.

## 2.5 Results

The empirical analysis tests whether an increasing level of self-rule comes with higher levels of corruption and whether higher levels of shared rule decrease corruption. Model 1 in Table 2.1 is our main model in which we estimate the effect of self-rule

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<sup>11</sup>Available at <http://www.stata.com/statalist/archive/2003-09/msg00103.html> (accessed May 6, 2013) and at <http://www.stata.com/statalist/archive/2004-09/msg00124.html> (accessed May 4, 2013).

and shared rule on the ICRG corruption index. Model 2 replaces self-rule and shared rule with the overall RAI index. As a robustness check, Models 3 to 6 replace the ICRG index with CPI and WGI corruption data.

Models 1, 3, and 5 in Table 2.1 support both hypotheses (self-rule to increase and shared rule to decrease corruption) but self-rule is not significant in Model 5 (high values of corruption variables indicate extensive corruption). Including the overall RAI instead of its components in Models 2, 4, and 6 yields insignificant results. Hence, the disaggregation of regional authority into self-rule and shared rule is a sensible approach when explaining political corruption.

The majority of the results of our control variables are in line with past research, which gives further credit to our findings on an increasing effect of self-rule and a decreasing effect of shared rule on corruption: democracy, GDP per capita, working women (all negative), and presidential system (positive) are highly significant and robust in all models and support existing studies.<sup>12</sup> The effect of FDI on corruption is positive but significant only using ICRG data. Trade is significant only in the first model showing a positive effect. Both findings are contrary to the literature.<sup>13</sup> The count  $R^2$  of 0.41 in Model 1 indicates the overall performance of the estimation predicting the correct category in forty-one percent of all observations.

### 2.5.1 Predicted Probabilities

Coefficients from ordered probit models cannot be interpreted like coefficients from OLS models because their signs can change depending on the values of the explanatory variables. Instead, we graph predicted probabilities to illustrate the effect of self-rule and shared rule on political corruption for Model 1. Each category of

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<sup>12</sup>On democracy, see Bhattacharyya and Hodler (2010), Lederman et al. (2005), Montinola and Jackman (2002), Sandholtz and Koetzle (2000), Treisman (2000). On political system, see Gerring and Thacker (2004), Lederman et al. (2005), Panizza (2001), Treisman (2007b). On economic development, see Ades and Di Tella (1999), Adserà et al. (2003), La Porta et al. (1999), Persson et al. (2003), Treisman (2000, 2007b). On women in parliament and workforce, see Dollar et al. (2001), Swamy et al. (2001), You and Khagram (2004).

<sup>13</sup>See Ades and Di Tella (1999), Fisman and Gatti (2002a), Gerring and Thacker (2005), Persson et al. (2003), Treisman (2000) on trade and Gerring and Thacker (2005) on FDI.

**Table 2.1.** The effect of regional authority on political corruption in thirty-six countries (1984-2006)

	ICRG models		CPI models		WGI models	
	(1)	(2)	(3)	(4)	(5)	(6)
SELF-RULE	0.046* (0.011)		0.052* (0.012)		0.010 (0.011)	
SHARED RULE	-0.091* (0.020)		-0.064* (0.021)		-0.039* (0.019)	
REGIONAL AUTHORITY INDEX		0.001 (0.006)		0.015 (0.008)		-0.005 (0.007)
DEMOCRACY	-0.419* (0.074)	-0.368* (0.072)	-0.628* (0.166)	-0.578* (0.167)	-0.210* (0.053)	-0.205* (0.049)
FDI (% OF GDP)	0.026* (0.009)	0.032* (0.011)	0.000 (0.009)	0.002 (0.008)	0.002 (0.003)	0.002 (0.003)
GDP PER CAPITA (IN 1000 US\$)	-0.031* (0.006)	-0.029* (0.006)	-0.107* (0.009)	-0.104* (0.009)	-0.063* (0.006)	-0.062* (0.007)
WOMEN IN THE LABOR FORCE (%)	-0.040* (0.010)	-0.034* (0.010)	-0.092* (0.019)	-0.097* (0.020)	-0.036* (0.013)	-0.036* (0.013)
TRADE (% OF GDP)	0.004* (0.001)	0.001 (0.001)	-0.001 (0.002)	-0.002 (0.002)	-0.001 (0.001)	-0.001 (0.001)
PRESIDENTIAL SYSTEM	0.652* (0.112)	0.531* (0.110)	0.787* (0.163)	0.761* (0.161)	0.316* (0.141)	0.296* (0.144)
<i>Count R</i> <sup>2</sup>	0.41	0.41	0.39	0.36		
<i>adj. R</i> <sup>2</sup>	0.15	0.14	0.24	0.23	0.69	0.69
<i>Observations</i>	661	661	340	340	280	280

*Notes:* Corruption indicators (dependent variable): International Country Risk Guide (ICRG), Corruption Perception Index (CPI), Worldwide Governance Indicators (WGI); main explanatory variables: self-rule and shared rule (Hooghe et al., 2010). Ordered probit with splines for Models 1-4 and Prais-Winsten regressions with AR(1)-term for Models 5-6. Adjusted McFadden  $R^2$  for Models 1-4, adjusted  $R^2$  for Models 5-6. The count  $R^2$  equals the ratio of the number of correct predictions to the total number of observations. Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.

the dependent variable has different predicted probabilities. When looking at graphs of predicted probabilities, the categories of high levels of corruption (categories four to six) should perform opposite to the categories of low levels of corruption (categories zero to two). Indeed, the probability for a country to have a low level of corruption (ICRG category one) decreases with increasing levels of self-rule (Figure 2.1a). Accordingly, the probability for a high level of corruption (category four, Figure 2.1b) increases with stronger self-rule. These predicted probabilities give empirical support to our first hypothesis that stronger regional self-rule brings about more corruption.<sup>14</sup> The second hypothesis – a negative effect of shared rule – finds support as well: when shared rule becomes stronger, the predicted probabilities for a low level of corruption increase (Figure 2.1c) but decrease for a high level of corruption (Figure 2.1d).<sup>15</sup>

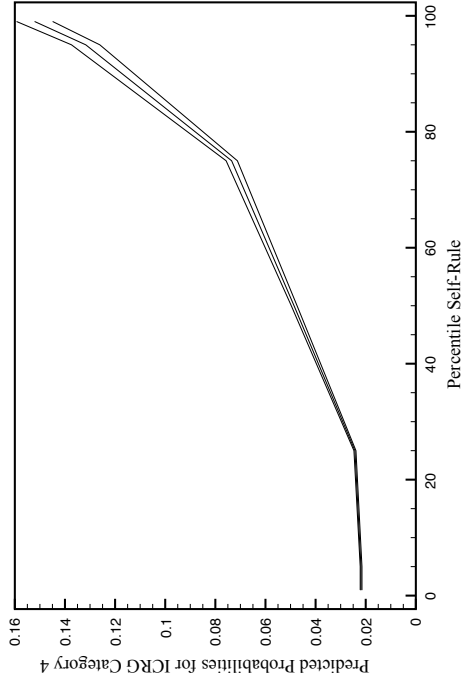
What do these results mean in practice? We look into the case of Poland to show that the predictions of Model 1 based on variation in self-rule help explaining corruption in real world cases. After the fall of the iron curtain, Poland scores relatively low on self-rule from 1990 to 1998 (two on a scale from zero to 23.6). This was an intentional setup of the new government in Poland as decentralized government was “perceived as tools for Communist Party influence” (Hooghe et al., 2010, 90). In 1999, the government somewhat decentralized authority which is picked up by the self-rule index equaling eight from 1999 to 2006. As for shared rule, Poland has a constant value of zero for the whole time period between 1990 and 2006.

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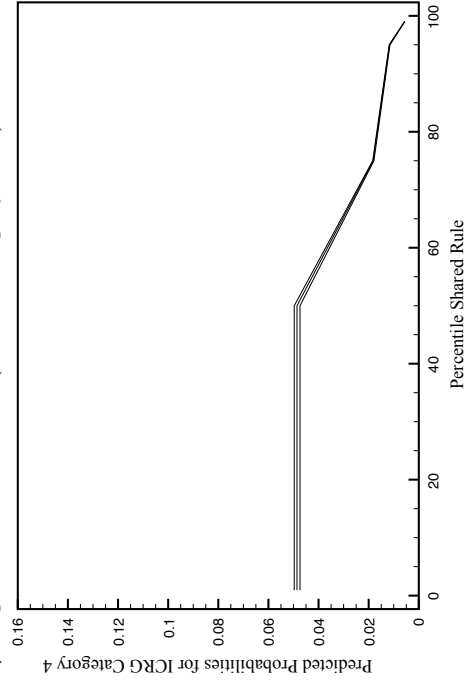
<sup>14</sup>The confidence intervals are wider in Figure 2.1a than in Figure 2.1b because the overall prediction levels in Figure 2.1a – ranging from around 0.3 to 0.45 – are much higher than in Figure 2.1b – ranging from around 0.02 to 0.15 (the same logic applies to Figures 2.1c and 2.1d).

<sup>15</sup>In Figure 2.1c, up to the 50<sup>th</sup> percentile the actual value of shared rule is constantly zero. The predictions are based on the percentile values. Thus, the flat line up to the 50<sup>th</sup> percentile is due to the same value being used for the predictions. The predicted probabilities decrease after the 75<sup>th</sup> percentile because of a higher prediction for category zero (even lower levels of corruption) for the 95<sup>th</sup> and 99<sup>th</sup> percentile of shared rule (and not because of a non-linear effect). Category zero has the predicted probabilities of 0.21, 0.36, 0.43, and 0.54 (for the 50<sup>th</sup>, 75<sup>th</sup>, 95<sup>th</sup>, and 99<sup>th</sup> percentile of shared rule).

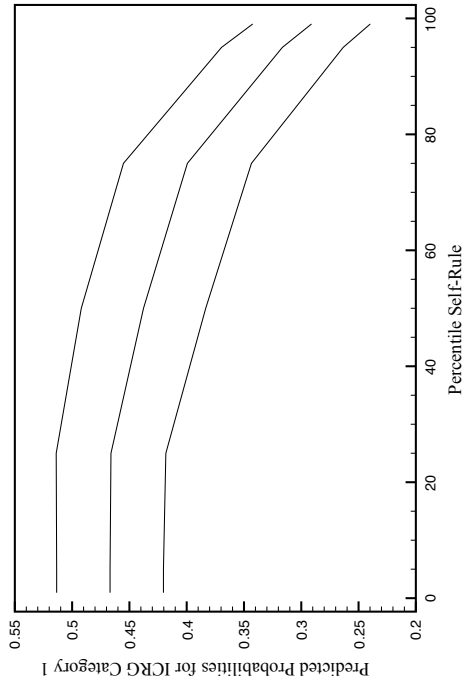




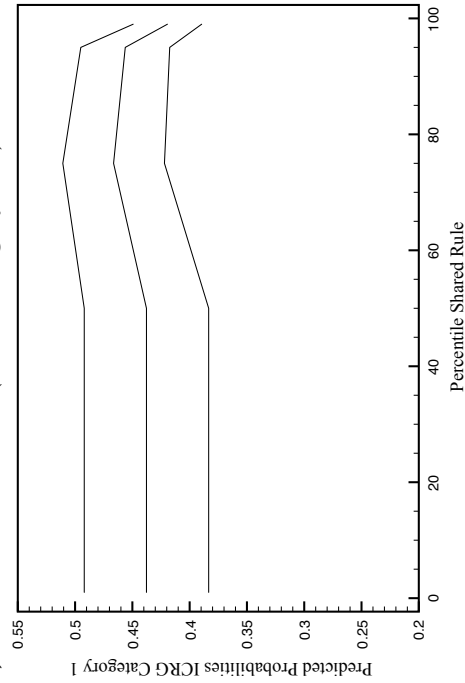
(b) High corruption level (ICRG category four)



(d) High corruption level (ICRG category four)



(a) Low corruption level (ICRG category one)



(c) Low corruption level (ICRG category one)

**Figure 2.1.** Effect of increasing levels of self-rule (Figures 2.1a and 2.1b) and shared rule (Figures 2.1c and 2.1d) on levels of political corruption: predicted probabilities and 95% confidence intervals. Shared rule and, respectively, self-rule as well as presidential system at 50<sup>th</sup> percentiles, control variables at their means.

Poland experienced a low level of corruption for most of the 1990s (ICRG category one between 1990 and 1998). This changed in 1999 and the corruption indicator increased from two (1999) to three (2000 and 2001) and four (2002 to 2006). Most of the control variables remain rather stable after the transition years from 1995 onwards (democracy, GDP per capita, women in the labor force, and presidential system) while trade (slightly) and FDI increase.

Our model predicts the observed category with the highest probability in five out of twelve years from 1995 to 2006 and with the second highest probability for the remaining seven years (while it predicts an adjacent category with the highest probability). The joint predicted probability for the actual and its surrounding corruption categories is between fifty-three and eighty-four percent. We consider this a good performance of the model showing that with increasing levels of self-rule the model predicts Poland's observed higher level of corruption.

Similarly to Poland, Turkey has a very low level of shared rule but medium to high levels of self-rule. Our model predicts the value four of the observations of Turkey from 2002 to 2006 with probabilities between about 0.38 and 0.42. In each case, the model predicts the correct category. Another comparable country is the Slovak Republic (2002 to 2006). Only once, in 2002, our model predicts the observed category four with the highest probability. For all other years, the predicted probabilities for category four (between about 0.16 and 0.25) are lower than for category three (between about 0.24 and 0.28). Despite their differences on other aspects, for reasons of simplicity and for illustrative purposes we compare these countries bearing in mind that this is a strong but necessary simplification to illustrate the results.

We can illustrate the effect of shared rule comparing the Netherlands to Poland. Although the two countries are not completely comparable regarding the control variables, they are still interesting to compare: with a score of eight from 1994 onwards, the Netherlands has the same level of self-rule as Poland from 1999 onwards

but, at the same time, a substantially higher value of shared rule (6.5 from 1984 to 2006 in contrast to zero for Poland from 1990 to 2006).

The Netherlands experiences very low levels of corruption for the whole time period in the sample. Model 1 predicts the observed category with the highest probability in seven out of the eight years from 1999 to 2006. Moreover, the joint probability of the actual and its adjacent categories is at least ninety-one percent for each year from 1999 to 2006. Hence, the predictions are even more accurate for the Netherlands than for Poland and show that – at the same level of self-rule – a higher level of shared rule may keep corruption levels low.

We look at further predictions to illustrate the importance of shared rule for the level of corruption in a country by artificially setting the value of shared rule to zero but keeping all other variables at the original values for the Netherlands. We observe that when moving from no shared rule to the actual value of shared rule (i.e., 6.5), the predicted probabilities for the actual corruption level increase by between eleven percent and twenty-three percent. This shows that shared rule plays an important role in predicting the level of corruption.

A country that is relatively similar to the Netherlands with respect to high levels of shared rule and self-rule is, for instance, the United States. Again, we do not claim that these countries are comparable on all possible factors but only for self-rule and shared rule. The United States (for most years in the 1980s and 1990s) enjoys high values of self-rule (even a little higher than the Netherlands) and shared-rule (very similar to the Netherlands) and the actual corruption level of one is predicted for these years very well by our model. For the vast majority of observations, category one has the highest probability (with values between about 0.37 and 0.46). Only for few observations (three out of thirteen), category zero has an even higher predicted probability. Hence, our empirical model is very good in correctly predicting the observed categories for the ICRG corruption variable. We could give respective numbers for Australia and Canada, two comparable countries with respect to regional authority, but due to the limited space in the paper we only

report that most of their observed corruption levels are predicted with the highest probability by our model.

### 2.5.2 Robustness of the Results

We perform several robustness checks to analyze how sensitive our results for Model 1 are. Tables and Figures presenting results of the robustness checks are made available in an online appendix. For information on operationalizations and data sources of additional variables used in the robustness section, see Table 2.4. A result is considered robust if the direction of the effect does not change when changing model specifications (Sala-I-Martin, 1997). First, various measures of decentralization replace the variables on self-rule (Table 2.5) and shared rule (Table 2.6).<sup>16</sup> Next, we add several control variables to Model 1 (one at a time, Tables 2.7 and 2.8): Protestantism, OECD dummy, government consumption, imports, democratic tradition (cross-section only), ethnic fractionalization, mineral depletion, fuel export, secondary school enrollment, population, and legal origin. In Table 2.9, we re-estimate Model 1 as an ordered logit model; we exclude a group of Nordic countries (Denmark, Finland, Netherlands, Norway, Sweden) from the estimation; observations are clustered by country; we replace our perceived corruption measure by an experienced corruption measure on bribe frequency from the WBES (this is a cross-section of respondents from twenty-three countries only); we estimate a regional-level model with a non-linear effect for self-rule using a corruption variable from the EQI (a cross-section of 137 regions from 18 EU member states with data from 2010 for the dependent variable and data from 2006 for all other variables); we also follow the suggestion by Marks (2007) to triangulate different datasets in order to reduce potential systematic measurement bias and thereby improve measurement validity (we combine ICRG, CPI, and WGI data). We carry out a bootstrap for Model 1 (Table 2.10) and perform a jackknife (leaving out one country per step, Table 2.11).

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<sup>16</sup>The online appendix provides detailed information about the alternative measures we use, how they might relate to self-rule and shared rule, and why the comparability of these models to our main model is limited.

Moreover, we include self-rule and shared rule separately into our analysis (results not reported). To address the concern regarding potentially underestimated standard errors due to the use of pooled data of variables with relatively little temporal variation, we also re-estimate Model 1 using averages of five-year periods, eleven-year periods, and the whole period (Table 2.12 and Figures 2.5 to 2.8). In conclusion, none of these model specifications changes the direction of the effect of self-rule and shared rule – the results are robust.

### 2.5.3 Discussion

We hypothesized that self-rule facilitates the formation of corruption networks and thereby increases political corruption. Shared rule restrains corruption through increasing control on the national level. Disaggregating the measure of regional authority in these two components enhances our understanding of how decentralization affects political corruption. Indeed, for this sample, model specifications, and robustness checks our empirical results strongly substantiate the usefulness of disaggregating regional authority. In a consistent, robust manner they support our predictions of a positive effect of self-rule and a negative effect of shared rule that capture but disentangle the contradictory results found in previous studies.

The positive effect of *self-rule* on corruption is consistent with the local collusion, fragmentation, and overgrazing theories in the literature but contradicts the accountability and competition theories. Since we test the macro-level relation between decentralization and corruption and not the micro-causal mechanism, we cannot claim that one of the three supported theories is more valid than the others. Yet, contrary to other studies we provide a detailed theoretical argument to explain the underlying causal mechanism. This argument is based on a logic of local collusion. The negative effect of *shared rule* is in accordance with the accountability and competition logics – however, the underlying mechanisms of the accountability and competition arguments do not refer to decision-making on the national level where shared rule is allocated. Hence, the results do not support the specific theoretical

arguments made in the literature for the subnational level. Rather, the control effects of shared rule on the national level as theorized here show some characteristics of the accountability logic, namely information and monitoring. Since previous studies neglected the shared rule component of regional authority, our theoretical explanation for the negative effect of shared rule (through more oversight) challenges existing theories to take shared rule on the national level serious.

## 2.6 Conclusion

Theory and results presented in this article help to bring the scholarly debate on the effect of decentralization on grand political corruption a substantive step further and invite researchers to re-think this relationship. We disaggregate regional authority into self-rule and shared rule and provide robust evidence demonstrating that self-rule stimulates while shared rule limits corruption.

These measures, provided by the Regional Authority Index, are a major improvement compared to previously available data on decentralization and federalism that confounded two causally distinct and empirically opposing effects. Yet, we are aware of the limitations of our analysis. We use a measure of perceived corruption (ICRG index) and despite the robustness of our results when using other corruption variables future research needs to pay attention to the conceptualization and measurement of political corruption. Additionally, the restricted sample in our study limits the generalizability of the results. The RAI mainly covers OECD countries, which tend to have low corruption levels compared to countries in other parts of the world. Despite the current limitation of the sample, the results are encouraging for future research which should address this problem by analyzing data from different regions.

Our findings suggest that in order to avoid the corruption enhancing effect of regional self-rule constitution builders should make sure that local and regional officials are monitored properly. Strong central-level authorities as well as independent actors like free media or watchdog groups might be instruments to prevent

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collusion otherwise caused by self-rule. In strongly centralized states experiencing high corruption levels, strengthening shared rule can help reducing corruption.

## 2.7 *Appendix*

TI's CPI is calculated on the basis of various other data sources and provides a point estimate for the corruption level as well as a 95 percent confidence interval for this estimate. It takes on values between zero (high corruption) and ten (low corruption). We transformed the variable so that high values indicate high levels of corruption. Further, we transformed all values into integer values (e.g. original values larger than 7.5 and smaller than 8.5 were changed to the value eight) to account for the mainly ordinal measurement level of the datasets underlying the index. Data are available from 1995 to present. A major problem for using the CPI for time-series cross-sectional analysis is that TI changed the method of construction over the period the data is published (Treisman, 2007b).

Similar to the CPI indicator, the WGI corruption measure is also constructed on the basis of several other data sources. The country sample for the year 1996 comprises 176 countries. During the first four waves (1996, 1998, 2000, and 2002) data are only available every second year. WGI data re-adapted all changes of the methodology retrospectively so that changes in the method do not affect the data very much. The indicator takes on values between -2.5 (high corruption) and 2.5 (low corruption). Again, we transformed this variable so that high values indicate high levels of corruption.

In contrast to the other two perception indicators (CPI and WGI), the ICRG is not based on a combination of different data sources but on an expert survey published by the PRS Group. It takes on values between zero (high corruption) and six (low corruption). We transformed the values so that zero represents low corruption. Some countries have intermediate values which we rounded to integer values (towards the next higher category) to avoid having categories with very few observations.



GCB started in 2003 (seventh edition in 2010/2011) and covers corruption in the following way: “Measuring people’s perceptions and experiences of corruption, the Global Corruption Barometer is a representative survey of more than 100,000 households in 100 countries.” (*Source*: [http://cpi.transparency.org/cpi2012/in\\_detail/#myAnchor8](http://cpi.transparency.org/cpi2012/in_detail/#myAnchor8), accessed June 3, 2013)

The survey contains both experience- and perception-based questions such as: “In the past three years how has the level of corruption in this country changed?” Possible answers are: ‘decreased’, ‘same’, ‘increased’. “To what extent do you perceive the following institutions in this country to be affected by corruption?” Institutions are: political parties, parliament, police, business, media, public officials, judiciary, non-governmental organizations, religious bodies, military, education. Answers range from one (‘not at all corrupt’) to five (‘extremely corrupt’). “How would you assess your current government’s actions in the fight against corruption?” Potential answers are: ‘ineffective’, ‘neither’, ‘effective’. (*Source*: <http://gcb.transparency.org/gcb201011/results/>, accessed June 3, 2013)

Additionally, respondents are asked to indicate their own experience with corruption leading to the following experienced corruption variables: “percentage of people that have paid a bribe in the past 12 months” or “percentage of people that have paid a bribe to each of 9 institutions” (education system, judiciary, medical services, police, registry and permit service, utilities, tax revenue, land services, customs). (*Data source*: [http://gcb.transparency.org/gcb201011/in\\_detail/](http://gcb.transparency.org/gcb201011/in_detail/), accessed June 3, 2013)

BPI has its first wave in 1999 (fifth edition in 2011) rating twenty-eight countries: “Measuring the supply side of corruption in international business transaction, the Bribe Payers Index is a ranking of leading exporting countries according to the perceived likelihood of their firms to bribe abroad. It is based on a survey of business executives capturing perceptions of the business practices of foreign firms in their country.” (*Source*: [http://cpi.transparency.org/cpi2012/in\\_detail/#myAnchor8](http://cpi.transparency.org/cpi2012/in_detail/#myAnchor8), accessed June 3, 2013) Respondents were asked: “How often do firms headquartered

in (country name) engage in bribery in this country?” Answers range from one (‘never’) to five (‘always’). (*Source*: [http://bpi.transparency.org/bpi2011/in\\_detail/#myAnchor4](http://bpi.transparency.org/bpi2011/in_detail/#myAnchor4), accessed June 3, 2013)

WBES is a cross-sectional survey from 1999-2000: “In this study, we explore the results of an experience-based survey of business managers conducted in eighty countries. The World Business Environment Survey interviewed managers from more than 9000 firms in 1999–2000. We focus on two questions. Respondents were asked: “Is it common for firms in your line of business to have to pay some irregular ‘additional payments’ to get things done?” and “On average, what percent of total annual sales do firms like yours typically pay in unofficial payments/gifts to public officials?” The first question provides an indicator of the frequency of bribery, while the second aims to estimate its scale” (Fan et al., 2009, 15).

ICVS is used, for instance, by Donchev and Ujhelyi (2013, 11-12): “We use the 1996 and 2000 rounds of the survey, with 57,386 and 66,763 individual observations, respectively. The measure of corruption experience is based on the responses to the following question: ‘During [the past year] has any government official, for instance a customs officer, police officer or inspector in your own country, asked you or expected you to pay a bribe for his services?’ ”

Finally, the EQI is based on a survey carried out in 2010 among about 34,000 EU citizens in 172 regions from 18 EU member states (Charron et al., 2014, 2013). The data can be analyzed on the national and regional level which is a major advantage over other measures while the limited country coverage is a comparative disadvantage. The EQI combines questions on respondents’ experiences and perceptions regarding quality, impartiality, and corruption in public health care provision, education, and law enforcement. Questions focusing on corruption are, for instance: “In the past 12 months have you or anyone living in your household paid a bribe in any form to: Health or medical services? (Yes/no)” Or: “In your opinion, how often do you think other citizens in your area use bribery to obtain public services? (Never/very often, 0-10)” (Charron et al., 2014, 83). Research using this index included (though not

focused on) analyses of the impact of regional authority on regional QoG but found little evidence for a substantial effect (Charron et al., 2014, Charron and Lapuente, 2013, Charron et al., 2013).

These surveys ask ordinary people or businesspeople on their perception or actual experience of (or involvement in) corruption. Researchers who use experience-based corruption indicators do not claim that they are “superior’ to more subjective perception indicators; both have their place, but each reflect different concepts, and they cannot be likened to one another” (Razafindrakoto and Roubaud, 2010, 1067).

Basically, there is one substantive and there are three practical reasons for us not to consider the EQI in our main analysis: (A) with respect to our object of study—grand political corruption—the EQI suffers from the same weakness as the national-level survey data discussed above: as the questions quoted above show, the EQI can measure petty corruption but is not able to measure grand political corruption compared to expert assessments (which, as acknowledged in the main text, are not free from measuring petty corruption as well but are, arguably, better able to focus on grand political corruption). (B) The EQI is not available for the time period that our study is limited to (1984-2006). EQI data are available only as a cross-section for 2010 (with a recent update for the year 2013). Hence, there is a substantial gap between the time periods for which data are available. (C) So far, the EQI does not capture changes over time or a long-term trend but only provides a single snap-shot (that might, for example, be affected by external shocks such as the economic and financial crisis in the aftermath of the 2008 banking collapse). (D) The coverage of countries—and overlap with the RAI data—is far more limited than when using ICRG, CPI, or WGI data. Still, in the robustness section, we estimate a model using the corruption measure from the EQI as an alternative measure of corruption. Note that the dependent variable is from 2010 whereas all our right-hand-side variables are from 2006. Further, we model the relationship including a squared term of self-rule because a scatter plot indicates a non-linear relationship. The results support that higher levels of self-rule lead to

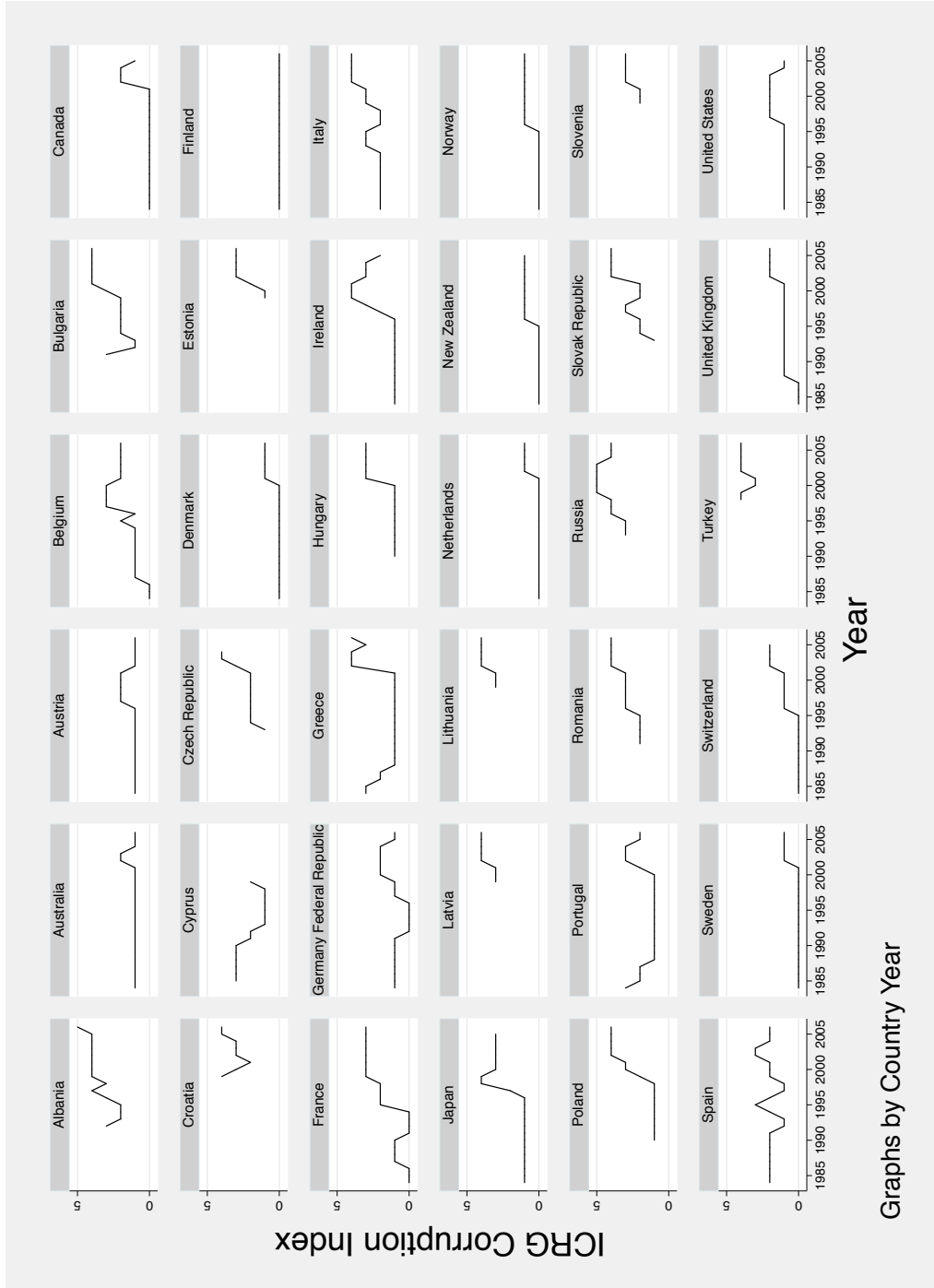
more corruption but the effect weakens for higher levels of self-rule. The effect of shared rule is negative (as in the main model). Hence, the results are robust.

**Table 2.2.** Operationalizations and data sources of all variables in the main analysis in Table 2.1

<i>Variable</i>	<i>Operationalization</i>	<i>Source</i>
PERCEIVED CORRUPTION (ICRG)	after transformation: integer values from zero (low) to six (high); intermediate (.5) values rounded to next higher category	The PRS Group (2012)
PERCEIVED CORRUPTION (CPI)	after transformation: integer values from zero (low) to ten (high); intermediate values rounded (<.5 down, >.5 up)	Transparency International (2013)
PERCEIVED CORRUPTION (WGI)	variable ‘control of corruption’; after transformation: continuous values ranging from -2.5 (low) to 2.5 (high)	Kaufmann et al. (2010)
REGIONAL AUTHORITY INDEX SELF-RULE	aggregated country-level data; two domains: <i>institutional depth</i> : “extent to which a regional government is autonomous rather than deconcentrated” (0-3) <i>policy scope</i> : “range of policies for which a regional government is responsible” (0-4) <i>fiscal autonomy</i> : “extent to which a regional government can independently tax its population” (0-4) <i>representation</i> : “extent to which a regional government is endowed with an independent legislature and executive” (0-4) <i>law making</i> : “extent to which regional representatives co-determine national legislation” (0-2) <i>executive control</i> : “extent to which a regional government co-determines national policy in intergovernmental meetings” (0-2) <i>fiscal control</i> : “extent to which regional representatives co-determine the distribution of national tax revenues” (0-2) <i>constitutional reform</i> : “extent to which regional representatives co-determine constitutional change” (0-3)	Hooghe et al. (2010, 8)
LEVEL OF DEMOCRACY	‘polity2’; range from zero (autocratic) to ten (democratic) in .5 steps	Marshall et al. (2011)
FDI	‘Foreign direct investment, net inflows (% of GDP)’	World Bank (BX.KLT.DINV.WD.GD.ZS)
ECONOMIC DEVELOPMENT	‘GDP per capita (constant 2000 US\$)’	World Bank (NY.GDP.PCAP.KD)
FEMALE LABOR FORCE	‘Labor force, female (% of total labor force)’	World Bank (SL.TLF.TOTL.FE.ZS)
TRADE	‘Trade (% of GDP)’	World Bank (NE.TRD.GNFS.ZS)
PRESIDENTIAL SYSTEM	dummy: one for full presidential systems	DPI (Beck et al., 2001)

**Table 2.3.** Descriptive statistics (1984-2006, 661 observations)

<i>Variable</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Minimum</i>	<i>Maximum</i>
ICRG CORRUPTION INDEX	1.59	1.31	0	5
RAI	11.76	8.44	0	32.10
SELF-RULE	9.71	6.17	0	21.10
SHARED RULE	2.06	3.02	0	12
DEMOCRACY	9.72	0.66	5	10
FDI (% OF GDP)	3.06	5.47	-15.13	92.67
GDP PER CAPITA (IN 1000 US\$)	16.61	10.04	0.66	41.44
WOMEN IN THE LABOR FORCE (%)	42.72	4.10	26.13	49.10
TRADE (% OF GDP)	73.90	35.35	16.11	184.68
PRESIDENTIAL SYSTEM	0.16	0.37	0	1



Graphs by Country Year

Figure 2.2. Variation in the ICRG index over time by country

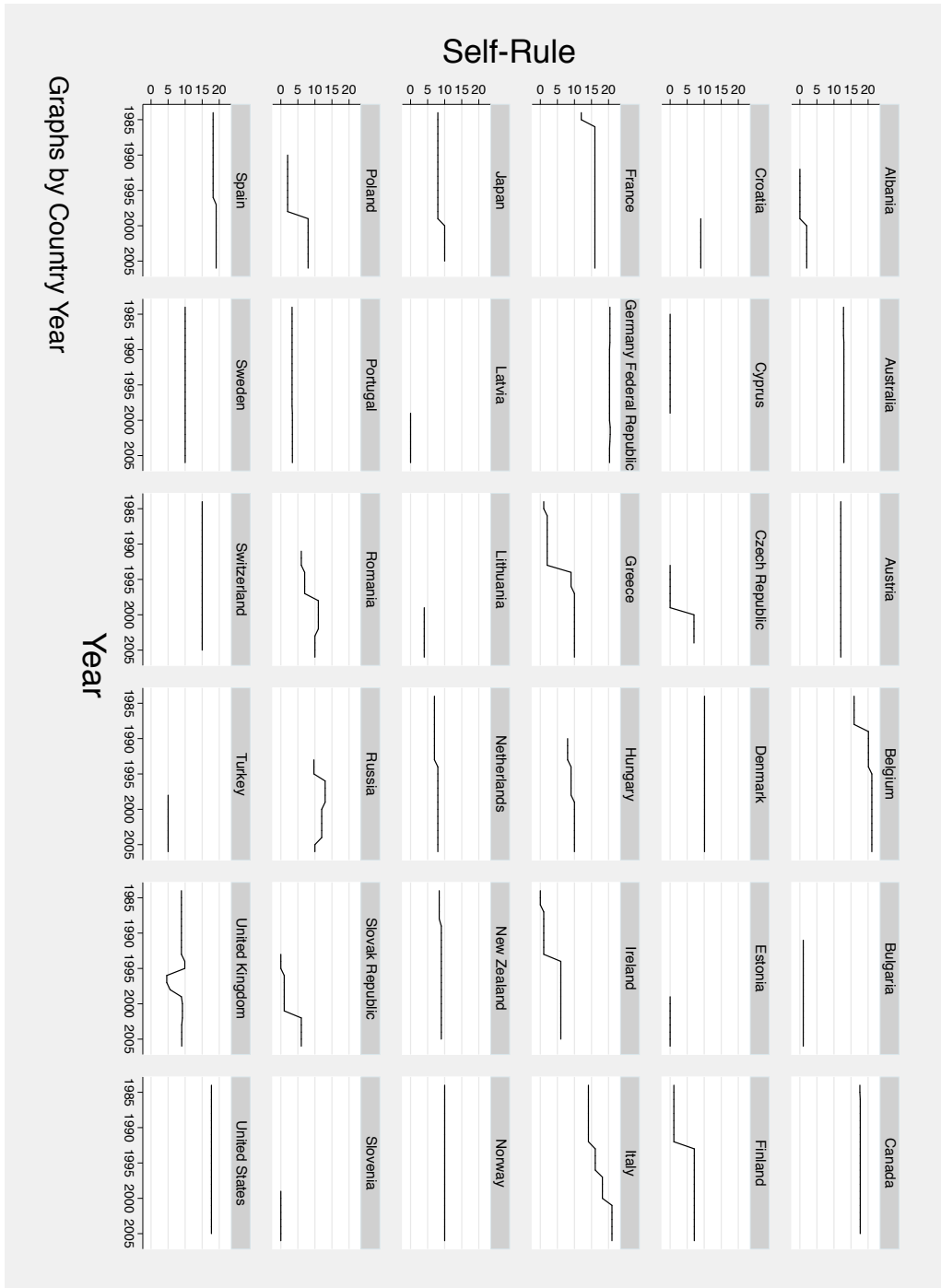


Figure 2.3. Variation in self-rule over time by country



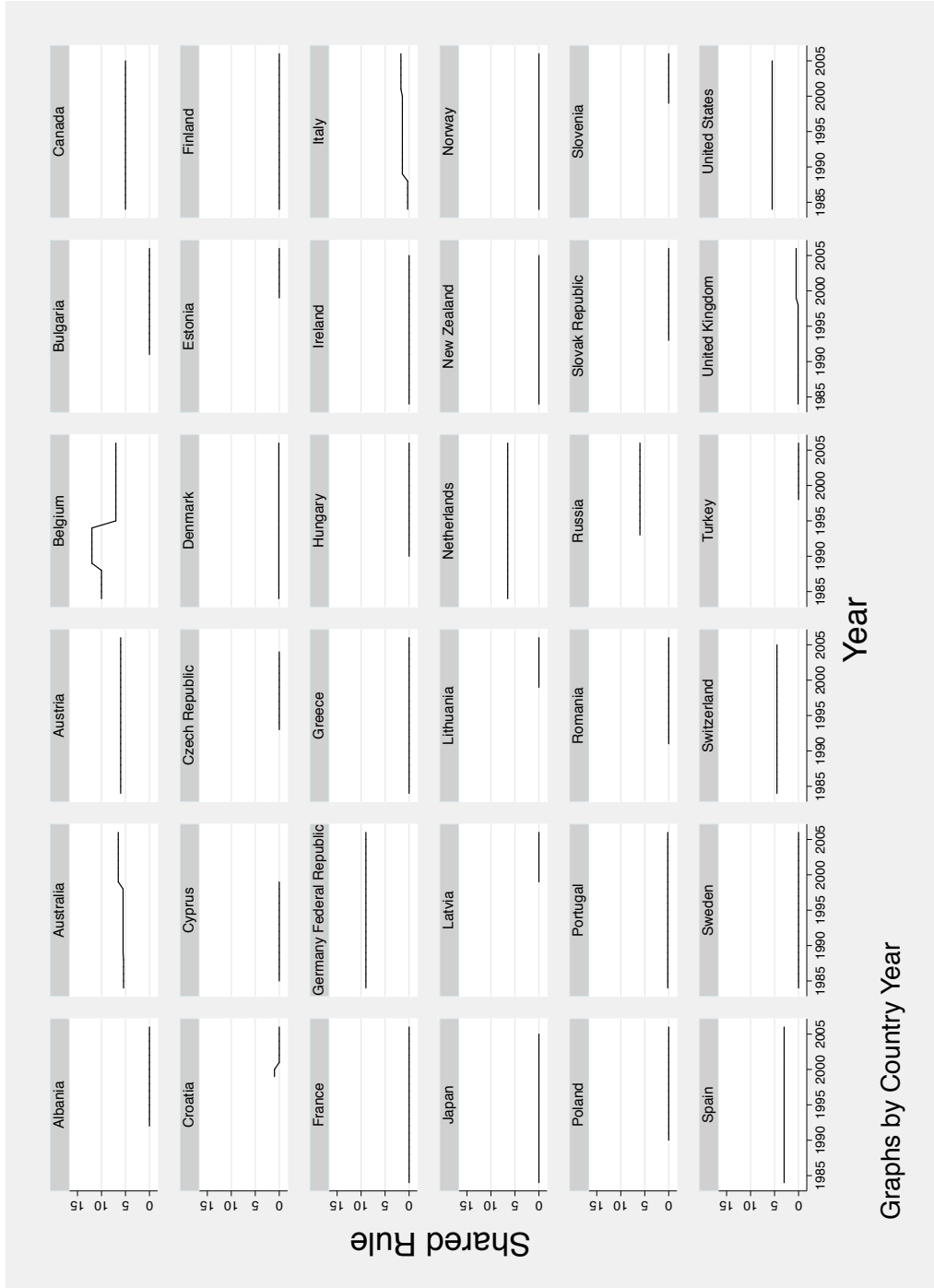


Figure 2.4. Variation in shared rule over time by country

**Table 2.4.** Operationalizations and data sources of variables used in the robustness section

<i>Variable</i>	<i>Operationalization</i>	<i>Source</i>
<i>Alternative measures of corruption</i> EXPERIENCED CORRUPTION (WBES)	“Is it common for firms in your line of business to have to pay some irregular ‘additional payments’ to get things done.” This is true (1) always (2) mostly (3) frequently (4) sometimes (5) seldom (6) never; values transformed so that higher values indicate more experienced corruption	World Business Environment Survey (variable ‘apay’)
QUALITY OF GOVERNMENT	QoG is the average of its components <i>quality</i> , <i>impartiality</i> , and <i>corruption</i> . These three components aggregate a total of sixteen questions/indicators by means of factor analysis. They focus on public education, public health care, and law enforcement.	Charron et al. (2014, 2013)
<i>Alternative measures of decentralization</i> AUTONOMOUS REGIONS	“Autonomous regions are <i>not</i> the same as states, provinces, etc. An autonomous region is recorded if a source explicitly mentions a region, area, or district that is autonomous or self-governing.” (The Quality of Government Institute, 2013, 194) Dummy variable takes on value one if there is an autonomous region.	Teorell et al. (2013); DPI (Beck et al., 2001)
ELECTION OF STATE GOV.	‘Election of State/Province Government’ variable: The variable takes on values from zero (no direct election of government) to two (both levels have direct elections of government) (see The Quality of Government Institute, 2013, 194)	Teorell et al. (2013); DPI (Beck et al., 2001)
ELECTION OF MUNICIPAL GOV.	‘Election of Municipal Government’ variable: “Are the municipal governments locally elected? Coded the same as the state/provincial government, dpi_state above (0-2). If there are multiple levels of sub-national government, the lowest level is considered as the “municipal” level.” (The Quality of Government Institute, 2013, 195)	Teorell et al. (2013); DPI (Beck et al., 2001)
STATE GOV. AUTHORITY	‘Authority of Sub-national Governments’ dummy variable: “1 if sub-national governments have extensive taxing, spending or regulatory authority.” (The Quality of Government Institute, 2013, 195)	Teorell et al. (2013); DPI (Beck et al., 2001)
UNITARY OR FEDERAL STATE	‘Unitary or Federal States’: takes on values from one to three (three indicating a federal system). “This variable examine the relationship between the central and regional governments, those which are immediately below the central government. We focus exclusively on states or provincial levels of government, municipalities are not coded.” (The Quality of Government Institute, 2013, 245)	Teorell et al. (2013); Institutions and Elections Project

*(to be continued on next page)*

(continued from previous page)

INDEPENDENT SUB-FEDERAL UNIT	“Dummy variable coded 1 if there are independent sub-federal units (states, provinces, regions etc.) that impose substantive constraints on national fiscal policy.” (The Quality of Government Institute, 2013, 225)	Teorell et al. (2013); Henisz (nd)
POLITICAL CONSTRAINTS INDEX V	The variable varies between zero and one (higher constraints). The measurement “(...) includes two additional veto points: the judiciary and sub-federal entities.” (The Quality of Government Institute, 2013, 224)	Teorell et al. (2013); Henisz (nd)
<i>Additional control variables</i>		
PROTESTANTISM	dummy: one for protestant tradition	La Porta et al. (1999)
OECD MEMBER	dummy: one for OECD members	OECD membership list
GOVERNMENT CONSUMPTION	‘General government final consumption expenditure (% of GDP)’	World Bank ( <i>NE.CON.GOV.T.ZS</i> )
IMPORTS	‘Imports of goods and services (% of GDP)’	World Bank ( <i>NE.IMP.GNFS.ZS</i> )
DEMOCRATIC TRADITION	number of consecutive democratic years since 1930 (‘tensys95’) and dummy for democratic tradition since 1930 (‘alldem95’)	Treisman (2007b)
ETHNIC FRACTIONALIZATION	Ethnic fractionalisation: “Restricting attention to groups that had at least 1 percent of country population in the 1990s, Fearon identifies 822 ethnic and “ethnoreligious” groups in 160 countries. This variable reflects the probability that two randomly selected people from a given country will belong to different such groups. The variable thus ranges from 0 (perfectly homogeneous) to 1 (highly fragmented).” (The Quality of Government Institute, 2013, 199)	Teorell et al. (2013); Fearon (2003)
MINERAL DEPLETION	‘Adjusted savings: mineral depletion (% of GNI)’	World Bank ( <i>NY.ADJ.DMIN.GN.ZS</i> )
FUEL EXPORT	‘Fuel exports (% of merchandise exports)’	World Bank ( <i>TX.VAL.FUEL.ZS.UN</i> )
SECONDARY SCHOOL ENROLLMENT	‘School enrollment, secondary (% gross)’	World Bank ( <i>SE.SEC.ENRR</i> )
POPULATION COMMON LAW	‘Population, total’ Legal origin: “Identifies the legal origin of the Company Law or Commercial code of each country. There are five possible origins: (1) English Common Law (2) French Commercial Code (3) Socialist/Communist Laws (4) German Commercial Code (5) Scandinavian Commercial Code.” (The Quality of Government Institute, 2013, 301) Variable recoded. Takes on value one if a country has an English Common Law and zero if a country has one of the other four legal origins.	World Bank ( <i>SP.POP.TOTL</i> ) Teorell et al. (2013); La Porta et al. (1999)

### 2.7.1 Robustness Analysis: Alternative Measures of Decentralization

Models using operationalizations of decentralization other than self-rule and shared rule do not really test our hypothesis because there is no straightforward substitute for the distinction between regional self-rule and shared rule. Therefore, we do not include such models in the baseline regressions. Nevertheless, we tried to find proxies for self-rule and shared rule that at least capture part of these measures and estimate a substantive number of models using alternative operationalizations as part of the robustness checks. We present the results in Tables 2.5 and 2.6 below and refer to them in the robustness section of the article.

The RAI is, of course, not the only indicator that measures subnational authority. Yet, we are convinced that, as outlined in the paper, the RAI is the most comprehensive measure capturing various aspects of decentralization in one indicator while allowing for a distinction between regional self-rule and shared rule. Obviously, components of the RAI correlate with other measures.

In a more general context, our first hypothesis predicts that the transfer of decision-making authority towards the subnational level increases the possibilities of public officials to decide on the distribution of governmental goods. The local collusion mechanism at the subnational level then allows for more corruption. Alternative measures trying to estimate such transfers of national authority to subnational governments are, for instance:

- “Autonomous Regions” from the Database of Political Institutions (DPI) as included in Teorell et al. (2013).<sup>17</sup> The QoG codebook states: “Autonomous regions are *not* the same as states, provinces, etc. An autonomous region is recorded if a source explicitly mentions a region, area, or district that is autonomous or self-governing.” (The Quality of Government Institute, 2013, 194) The dummy variable takes on value one if there is an autonomous region. Obviously, this is a very rudimentary distinction between autonomous and

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<sup>17</sup>All descriptions of variables from the Database of Political Institutions (DPI) presented here are quoted from The Quality of Government Institute (2013).

non-autonomous regions that does not consider any authority non-autonomous regions might have (which is, in contrast, picked up by the self-rule component of the RAI).

- “Election of State/Province Government” from the DPI as included in Teorell et al. (2013). The variable takes on values from zero (no direct election of government) to two (both levels have direct elections of government). This variable is similar to one dimension that enters into the self-rule index (representation).
- “Election of Municipal Government” from the DPI as included in Teorell et al. (2013). Again, the variable varies between zero and two and is coded like the variable outlined above (and also relates to the dimension of representation).
- “Authority of Sub-national Governments” from the DPI as included in Teorell et al. (2013). The variable is a dummy variable: “1 if sub-national governments have extensive taxing, spending or regulatory authority.” (The Quality of Government Institute, 2013, 195). This variable relates to the dimension of fiscal autonomy (of the self-rule variable) and also touches on the self-rule dimension of policy scope but is more crude than those and even more crude than the self-rule measure as a whole.
- “Unitary or Federal States” is a variable by the “Institutions and Elections Project” that takes on values from one to three (three indicating a federal system). “This variable examine the relationship between the central and regional governments, those which are immediately below the central government. We focus exclusively on states or provincial levels of government, municipalities are not coded.” (The Quality of Government Institute, 2013, 245) The result supports our hypothesis.

As to the results, all five alternative measures increase corruption (Models 2 to 6 in Table 2.5) and shared rule continues to reduce corruption. The number of observations is lower than in our main model but the models still cover a few

hundred observations. We conclude that this finding supports our results. Still the RAI index is a more suitable operationalization of self-rule and a better test of our hypothesis and therefore preferred.

Our second hypothesis predicts that if subnational authorities co-decide matters on the national level corruption levels are significantly lower. Possible alternative measures for our shared rule variable could be:

- “Independent Sub-Federal Unit” from Henisz’ “The Political Constraints Data” as included in Teorell et al. (2013). “Dummy variable coded 1 if there are independent sub-federal units (states, provinces, regions etc.) that impose substantive constraints on national fiscal policy.” (The Quality of Government Institute, 2013, 225) This variable to some extent measures veto power of subnational authorities in national decision-making (here: in the area of fiscal policy, thus related to fiscal control).
- “Political Constraints Index V” from Henisz’ “The Political Constraints Data” as included in Teorell et al. (2013). The variable varies between zero and one (higher constraints). The measurement “(...) includes two additional veto points: the judiciary and sub-federal entities.” (The Quality of Government Institute, 2013, 224) It is important to note here that subnational units are only one part of the political constraints variable and, hence, not an ideal measure for our hypothesis. However, in a different way this variable also broadens the conclusion from our results. Constraints in a more comprehensive way (beyond the influence of subnational entities) also reduce the level of corruption in a country.

In summary, all alternative measures of shared rule decrease corruption and self-rule remains positive and significant. Again, the count  $R^2$  is only substantially higher once the number of observations is much lower. Further, like self-rule, the shared rule index from the RAI is a more accurate and more encompassing operationalization of our conceptualization of decentralization and the distinction between the two

domains of regional authority. Therefore, we prefer the operationalization using the RAI and include those models only in the robustness section.

**Table 2.5.** Robustness checks for Model 1 in Table 2.1: alternative measures of decentralization replacing self-rule

	<i>Original</i>	(2)	(3)	(4)	(5)	(6)
SELF-RULE	0.046* (0.011)					
SHARED RULE	-0.091* (0.020)	-0.028 (0.016)	-0.083* (0.016)	-0.042 (0.023)	-0.143* (0.030)	-0.051* (0.018)
DEMOCRACY	-0.419* (0.074)	-0.366* (0.073)	-0.305* (0.080)	-0.389* (0.087)	0.140 (0.259)	-0.467* (0.085)
FDI (% OF GDP)	0.026* (0.009)	0.029* (0.009)	0.031* (0.010)	0.065* (0.020)	0.029* (0.010)	0.025* (0.008)
GDP PER CAPITA (IN 1000 US\$)	-0.031* (0.006)	-0.025* (0.006)	-0.021* (0.006)	-0.018* (0.006)	-0.010 (0.012)	-0.020* (0.006)
WOMEN IN THE LABOR FORCE (%)	-0.040* (0.010)	-0.041* (0.010)	-0.071* (0.012)	-0.070* (0.012)	-0.058* (0.024)	-0.041* (0.011)
TRADE (% OF GDP)	0.004* (0.001)	0.003 (0.002)	0.004* (0.001)	0.001 (0.002)	0.006* (0.003)	0.003 (0.002)
PRESIDENTIAL SYSTEM	0.652* (0.112)	0.513* (0.116)	0.765* (0.146)	0.774* (0.143)	0.705* (0.237)	0.472* (0.126)
AUTONOMOUS REGIONS (DPI)		0.285* (0.115)				
ELECTION OF STATE GOVERNMENT (DPI)			0.194* (0.074)			
ELECTION OF MUNICIPAL GOVERNMENT (DPI)				0.657* (0.162)		
AUTHORITY OF SUBNATIONAL GOVERNMENTS (DPI)					0.211 (0.268)	
UNITARY OR FEDERAL STATES (IEP)						0.196* (0.058)
Count $R^2$	0.410	0.402	0.452	0.461	0.457	0.409
Observations	661	624	571	490	289	597

Notes: Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.



**Table 2.6.** Robustness checks for Model 1 in Table 2.1: alternative measures of decentralization replacing shared rule

	<i>Original</i>	(2)	(3)
SELF-RULE	0.046* (0.011)	0.050* (0.011)	0.029* (0.009)
SHARED RULE	-0.091* (0.020)		
DEMOCRACY	-0.419* (0.074)	-0.364* (0.071)	-0.246* (0.073)
FDI (% OF GDP)	0.026* (0.009)	0.028* (0.010)	0.028* (0.011)
GDP PER CAPITA (IN 1000 US\$)	-0.031* (0.006)	-0.033* (0.006)	-0.031* (0.006)
WOMEN IN THE LABOR FORCE (%)	-0.040* (0.010)	-0.038* (0.010)	-0.029* (0.011)
TRADE (% OF GDP)	0.004* (0.001)	0.002 (0.001)	0.002 (0.001)
PRESIDENTIAL SYSTEM	0.652* (0.112)	0.584* (0.118)	0.456* (0.114)
INDEPENDENT SUB-FEDERAL UNIT		-0.616* (0.148)	
POLITICAL CONSTRAINTS INDEX V			-1.793* (0.364)
<i>Count R<sup>2</sup></i>	0.410	0.425	0.408
<i>Observations</i>	661	623	623

*Notes:* Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.

Table 2.7. Robustness checks for Model 1 in Table 2.1: additional control variables, part 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SELF-RULE	0.069* (0.013)	0.058* (0.011)	0.055* (0.011)	0.054* (0.011)	0.077* (0.013)	0.231* (0.078)	0.243* (0.080)
SHARED RULE	-0.151* (0.026)	-0.097* (0.020)	-0.097* (0.020)	-0.096* (0.021)	-0.185* (0.027)	-0.260* (0.133)	-0.258 (0.132)
DEMOCRACY	0.294 (0.232)	-0.284* (0.081)	-0.379* (0.079)	-0.401* (0.079)	0.055 (0.212)	-0.795 (0.441)	-0.821 (0.437)
FDI (% OF GDP)	0.020* (0.008)	0.027* (0.010)	0.022* (0.007)	0.022* (0.009)	0.017* (0.007)	-0.173 (0.129)	-0.171 (0.129)
GDP PER CAPITA (IN 1000 US\$)	-0.019* (0.008)	-0.023* (0.007)	-0.027* (0.006)	-0.024* (0.007)	0.011 (0.011)	-0.043 (0.051)	-0.080 (0.043)
WOMEN IN THE LABOR FORCE (%)	-0.012 (0.016)	-0.055* (0.011)	-0.013 (0.010)	-0.041* (0.010)	-0.036* (0.018)	-0.190* (0.085)	-0.167* (0.085)
TRADE (% OF GDP)	0.008* (0.002)	0.003* (0.002)	0.006* (0.001)	-0.019* (0.009)	-0.060* (0.015)	0.014 (0.010)	0.013 (0.009)
PRESIDENTIAL SYSTEM	1.453* (0.163)	0.475* (0.126)	0.622* (0.112)	0.705* (0.106)	1.227* (0.174)	1.039 (0.700)	0.966 (0.690)
PROTESTANT TRADITION	-0.814* (0.169)				-0.654* (0.175)		
OECD MEMBER		-0.772* (0.182)			-0.221 (0.259)		
GOVERNMENT CONSUMPTION (% OF GDP)			-0.096* (0.012)		-0.058* (0.016)		
IMPORT (% OF GDP)				0.049* (0.019)	0.146* (0.031)		
CONSECUTIVE YEARS OF DEMOCRACY IN 1995						-0.037* (0.019)	
DEMOCRATIC TRADITION SINCE 1930 IN 1995							-1.418 (0.744)
Count $R^2$	0.47	0.41	0.44	0.42	0.49	0.67	0.70
Observations	481	661	661	661	481	30	30

Notes: Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.

**Table 2.8.** Robustness checks for Model 1 in Table 2.1: additional control variables, part 2

	<i>Original</i>	(2)	(3)	(4)	(5)	(6)	(7)
SELF-RULE	0.046* (0.011)	0.062* (0.012)	0.050* (0.011)	0.043* (0.011)	0.034* (0.017)	0.034* (0.011)	0.045* (0.011)
SHARED RULE	-0.091* (0.020)	-0.082* (0.021)	-0.102* (0.021)	-0.079* (0.021)	-0.108* (0.032)	-0.117* (0.021)	-0.084* (0.021)
DEMOCRACY	-0.419* (0.074)	-0.428* (0.075)	-0.430* (0.074)	-0.428* (0.086)	-0.162 (0.140)	-0.332* (0.072)	-0.375* (0.074)
FDI (% OF GDP)	0.026* (0.009)	0.024* (0.009)	0.025* (0.009)	0.023* (0.008)	0.017* (0.006)	0.023* (0.008)	0.024* (0.009)
GDP PER CAPITA (IN 1000 US\$)	-0.031* (0.006)	-0.033* (0.006)	-0.030* (0.006)	-0.033* (0.006)	-0.048* (0.008)	-0.049* (0.006)	-0.031* (0.006)
WOMEN IN THE LABOR FORCE (%)	-0.040* (0.010)	-0.040* (0.010)	-0.042* (0.010)	-0.044* (0.010)	-0.066* (0.021)	-0.039* (0.009)	-0.045* (0.010)
TRADE (% OF GDP)	0.004* (0.001)	0.005* (0.002)	0.004* (0.002)	0.004* (0.002)	-0.001 (0.002)	0.010* (0.002)	0.003* (0.002)
PRESIDENTIAL SYSTEM	0.652* (0.112)	0.730* (0.130)	0.653* (0.113)	0.626* (0.115)	0.369* (0.178)	0.039 (0.133)	0.677* (0.123)
ETHNIC FRACTIONALIZATION		-1.066* (0.314)					
MINERAL DEPLETION (% OF GNI)			0.172* (0.087)				
FUEL EXPORT PER EXPORT				0.008* (0.004)			
SECONDARY SCHOOL ENROLLMENT					-0.004 (0.005)		
POPULATION						0.000* (0.000)	
COMMON LAW							-0.166 (0.111)
<i>Count R</i> <sup>2</sup>		0.441	0.416	0.419	0.475	0.454	0.420
<i>Observations</i>	661	624	661	630	297	661	624

*Notes:* Additional control variables included based on Fiorino et al. (2013), for operationalizations, see Table 2.4. Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.

Table 2.9. Robustness checks for Model 1 in Table 2.1

	<i>Model specification (see notes below the table)</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
SELF-RULE	0.087* (0.019)	0.032* (0.012)	0.046 (0.029)	0.018* (0.007)	0.196* (0.081)	0.094 (0.060)
SELF-RULE (SQUARED)					-0.019* (0.005)	
SHARED RULE	-0.165* (0.035)	-0.118* (0.024)	-0.091 (0.052)	-0.024 (0.013)	-0.034 (0.042)	-0.221* (0.099)
DEMOCRACY	-0.709* (0.136)	-0.413* (0.079)	-0.419* (0.134)	-0.152* (0.038)	-0.237 (0.365)	-0.563 (0.426)
FDI (% OF GDP)	0.040* (0.019)	0.021* (0.007)	0.026* (0.011)	0.011 (0.009)	0.004 (0.022)	-0.011 (0.011)
GDP PER CAPITA (IN 1000 US\$)	-0.052* (0.011)	-0.017* (0.007)	-0.031 (0.018)	-0.030* (0.004)	-0.084* (0.010)	-0.220* (0.029)
WOMEN IN THE LABOR FORCE (%)	-0.066* (0.018)	-0.013 (0.010)	-0.040 (0.025)	-0.007 (0.006)	-0.182* (0.041)	-0.226* (0.058)
TRADE (% OF GDP)	0.007* (0.003)	0.005* (0.001)	0.004 (0.003)	-0.002* (0.001)	0.002 (0.003)	0.007 (0.005)
PRESIDENTIAL SYSTEM	1.086* (0.204)	0.468* (0.114)	0.652* (0.235)	-0.008 (0.057)	-0.912* (0.295)	2.726* (0.695)
<i>Count R</i> <sup>2</sup>	0.41	0.39	0.41	0.40	0.67	0.60
<i>adj. R</i> <sup>2</sup>						
<i>Observations</i>	661	546	661	2805	137	254

*Notes:* Model 1 uses ordered logit regression instead of ordered probit; Model 2 excludes a group of Nordic countries from the sample (Denmark, Finland, Netherlands, Norway, Sweden); Model 3 clusters observations by countries; Model 4 replaces the measure of the dependent variable, the ICRG (perceived) corruption indicator, by a measure of experienced corruption (WBES); Model 5 analyzes regional-level data of corruption from the EQI as dependent variable; Model 6 is a Prais-Winsten regression using a factor combining ICRG, CPI, and WGI corruption data as dependent variable—the eigenvalue for a one-factor solution equals 2.6, for a two-factor or three-factor solution it is zero and the factor-weightings are 0.8356 (ICRG), 0.9708 (CPI), and 0.9789 (WGI).

Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.

**Table 2.10.** Robustness check for Model 1 in Table 2.1: bootstrap

	<i>Coefficient</i>	<i>Standard error</i>
SELF-RULE	0.046*	0.011
SHARED RULE	-0.091*	0.020
DEMOCRACY	-0.419*	0.080
FDI (% OF GDP)	0.026	0.015
GDP PER CAPITA (IN 1000 US\$)	-0.031*	0.006
WOMEN IN THE LABOR FORCE (%)	-0.040*	0.010
TRADE (% OF GDP)	0.004*	0.002
PRESIDENTIAL SYSTEM	0.652*	0.112

*Notes:* Bootstrap resampling with 500 replications. \* indicates significance at the 5% level.

**Table 2.11.** Robustness check for Model 1 in Table 2.1: countrywise jackknife

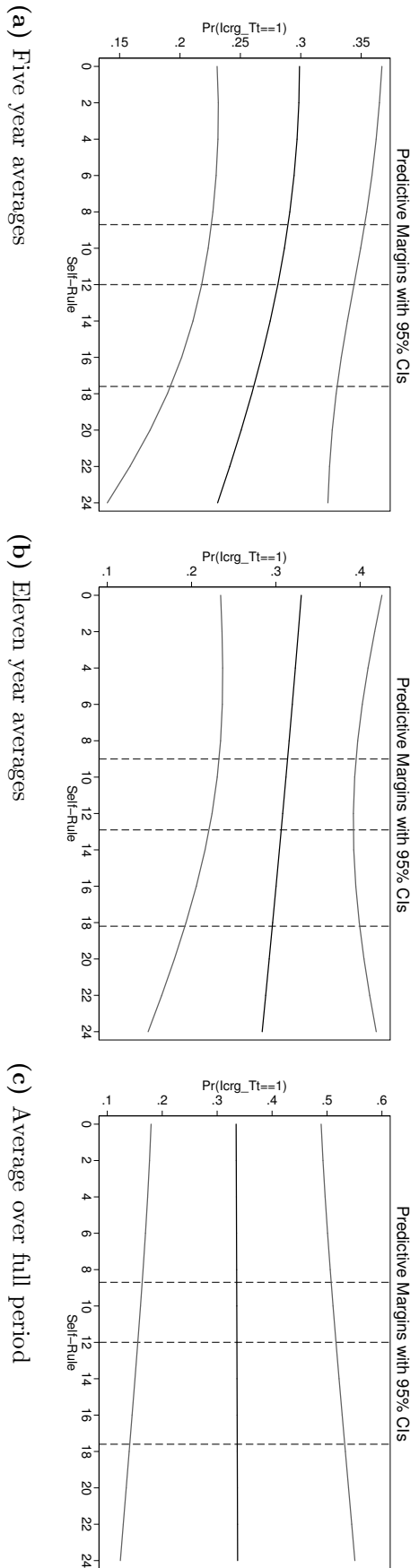
<i>Excluded country</i>	<i>Self-rule</i>	<i>Standard error</i>	<i>Shared rule</i>	<i>Standard error</i>
ALBANIA	0.051*	(0.011)	-0.096*	(0.020)
AUSTRALIA	0.052*	(0.011)	-0.111*	(0.021)
AUSTRIA	0.049*	(0.011)	-0.103*	(0.021)
BELGIUM	0.043*	(0.012)	-0.071*	(0.021)
BULGARIA	0.048*	(0.011)	-0.094*	(0.020)
CANADA	0.054*	(0.011)	-0.089*	(0.020)
CROATIA	0.049*	(0.011)	-0.095*	(0.020)
CYPRUS	0.043*	(0.011)	-0.090*	(0.020)
CZECH REPUBLIC	0.046*	(0.011)	-0.091*	(0.020)
DENMARK	0.050*	(0.011)	-0.105*	(0.020)
ESTONIA	0.047*	(0.011)	-0.097*	(0.020)
FINLAND	0.038*	(0.011)	-0.090*	(0.020)
FRANCE	0.054*	(0.011)	-0.106*	(0.020)
GERMANY	0.046*	(0.011)	-0.087*	(0.021)
GREECE	0.043*	(0.012)	-0.085*	(0.020)
HUNGARY	0.046*	(0.011)	-0.091*	(0.020)
IRELAND	0.043*	(0.011)	-0.079*	(0.020)
ITALY	0.028*	(0.011)	-0.065*	(0.021)
JAPAN	0.065*	(0.011)	-0.086*	(0.020)
LATVIA	0.053*	(0.011)	-0.099*	(0.020)
LITHUANIA	0.046*	(0.011)	-0.089*	(0.020)
NETHERLANDS	0.032*	(0.011)	-0.059*	(0.021)
NEW ZEALAND	0.049*	(0.011)	-0.101*	(0.020)
NORWAY	0.048*	(0.011)	-0.098*	(0.020)
POLAND	0.042*	(0.011)	-0.087*	(0.020)
PORTUGAL	0.050*	(0.011)	-0.094*	(0.020)
ROMANIA	0.042*	(0.011)	-0.086*	(0.020)
RUSSIA	0.044*	(0.011)	-0.114*	(0.020)
SLOVAK REPUBLIC	0.043*	(0.011)	-0.086*	(0.020)
SLOVENIA	0.052*	(0.011)	-0.095*	(0.020)
SPAIN	0.047*	(0.012)	-0.090*	(0.020)
SWEDEN	0.050*	(0.011)	-0.105*	(0.020)
SWITZERLAND	0.047*	(0.011)	-0.090*	(0.020)
TURKEY	0.047*	(0.011)	-0.090*	(0.020)
UNITED KINGDOM	0.048*	(0.011)	-0.092*	(0.020)
UNITED STATES	0.045*	(0.011)	-0.092*	(0.020)

*Notes:* Results of thirty-six estimations of Model 1 in Table 2.1 when excluding one country at a time. For reasons of space, we only present the coefficients and standard errors of the self-rule and shared rule variables. \* indicates significance at the 5% level.

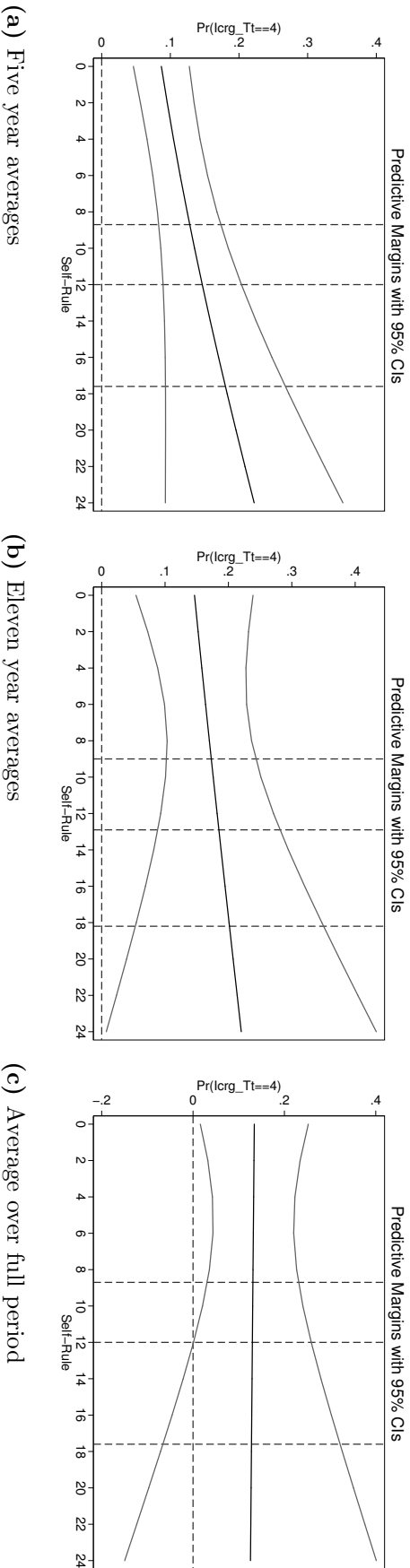
**Table 2.12.** Robustness checks for Model 1 in Table 2.1: estimations based on average values

	<i>Original</i> (1)	<i>Averages</i>		
		<i>Five years</i> (2)	<i>Eleven years</i> (3)	<i>Full period</i> (4)
SELF-RULE	0.046* (0.011)	0.041 (0.021)	0.0182 (0.034)	-0.003 (0.063)
SHARED RULE	-0.091* (0.020)	-0.091* (0.038)	-0.078 (0.061)	0.003 (0.106)
DEMOCRACY	-0.419* (0.074)	-0.276* (0.100)	0.055 (0.058)	-0.393 (0.250)
FDI (% OF GDP)	0.026* (0.009)	0.101* (0.042)	0.160* (0.043)	-0.205 (0.197)
GDP PER CAPITA (IN 1000 US\$)	-0.031* (0.007)	-0.037* (0.011)	-0.047* (0.016)	-0.124* (0.039)
WOMEN IN THE LABOR FORCE (%)	-0.040* (0.010)	-0.034 (0.018)	-0.020 (0.030)	-0.040 (0.046)
TRADE (% OF GDP)	0.004* (0.001)	0.0014 (0.003)	-0.003 (0.004)	0.001 (0.009)
PRESIDENTIAL SYSTEM	0.652* (0.112)	0.619* (0.214)	0.322 (0.325)	0.504 (0.649)
<i>Count R<sup>2</sup></i>	0.41	0.433	0.404	0.433
<i>Observations</i>	661	178	94	36

*Notes:* Coefficients with robust standard errors in parentheses; \* indicates significance at the 5% level.

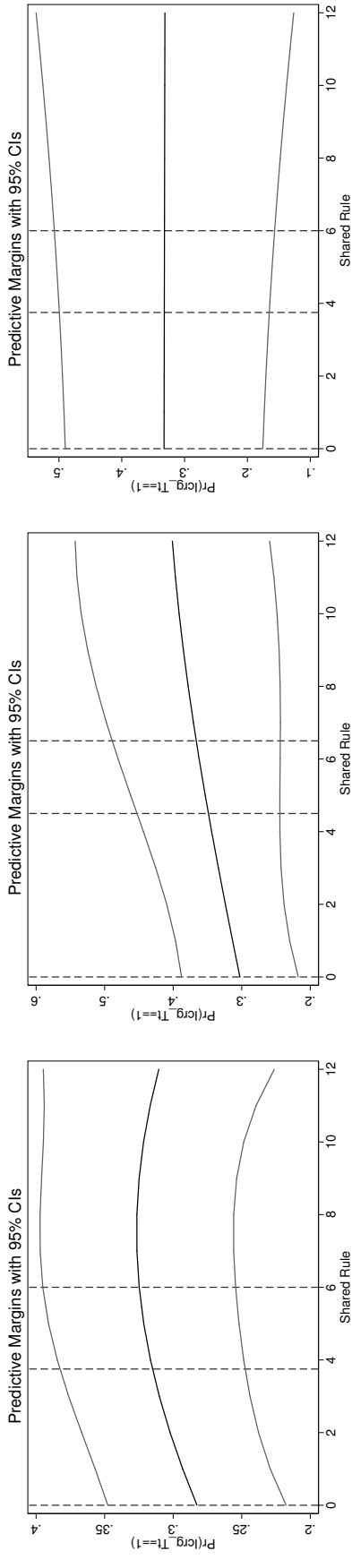


**Figure 2.5.** Margins plots of the effect of self-rule on a low level of political corruption (ICRG category one) based on Table 2.12. Vertical lines represent 50<sup>th</sup>, 75<sup>th</sup>, and 90<sup>th</sup> percentiles of self-rule. Other variables at their means.



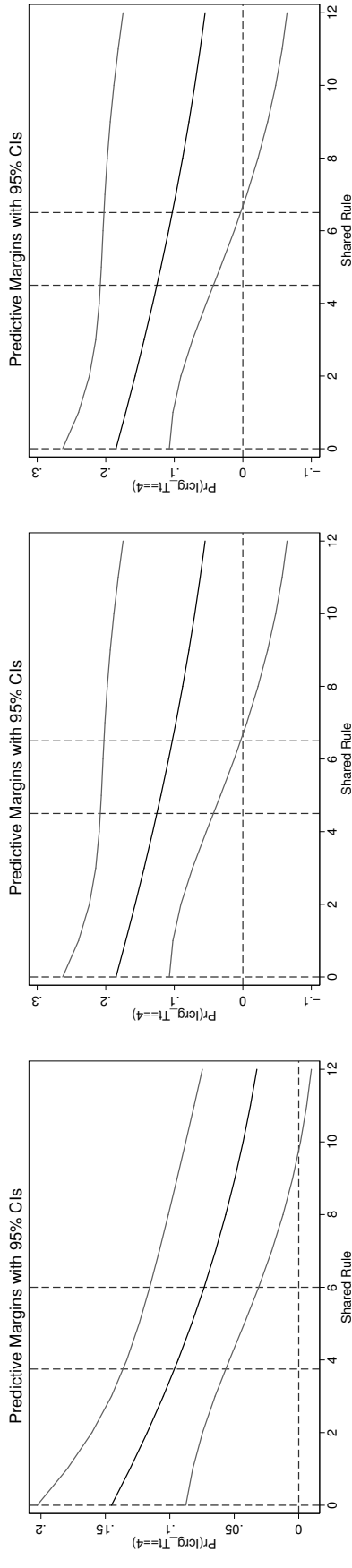
**Figure 2.6.** Margins plots of the effect of self-rule on a high level of political corruption (ICRG category four) based on Table 2.12. Vertical lines represent 50<sup>th</sup>, 75<sup>th</sup>, and 90<sup>th</sup> percentiles of self-rule. Other variables at their means.





(a) Five year averages (b) Eleven year averages (c) Average over full period

**Figure 2.7.** Margins plots of the effect of shared rule on a low level of political corruption (ICRG category one) based on Table 2.12. Vertical lines represent 50<sup>th</sup>, 75<sup>th</sup>, and 90<sup>th</sup> percentiles of shared rule. Other variables at their means.



(a) Five year averages (b) Eleven year averages (c) Average over full period

**Figure 2.8.** Margins plots of the effect of shared rule on a high level of political corruption (ICRG category four) based on Table 2.12. Vertical lines represent 50<sup>th</sup>, 75<sup>th</sup>, and 90<sup>th</sup> percentiles of shared rule. Other variables at their means.

