



Analysis

Environmental decentralization and political centralization

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ABSTRACT

In this paper, we investigate how political institutions affect policy outcomes. In particular, does the level of political centralization affect the outcome of environmental decentralization? We use a cross section of up to 110 countries and a propensity score estimation approach. We find that political centralization, measured by the strength of national level political parties, increases the stringency of environmental policies set under decentralized regimes.

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1. Introduction

Efforts at the international level to address climate change face serious problems. While many national governments appear unable or unwilling to take action, recent evidence suggests that local governments are more proactive (Rabe, 2002; WDR, 2010). Meanwhile, local government officials face constraints, as they depend on political support and financial support from their national political parties for their career prospects. In a seminal study, Riker (1964) argues that the result of decentralized (fiscal) policymaking depends on the level of political centralization. Riker predicts that decentralization is less likely to lead to inefficient fiscal policies when national political parties are stronger and thus the political system is more centralized. Political centralization affects policy decentralization by aligning the incentives of politicians at lower levels with national interests.

We provide an empirical analysis of the combined effect of political centralization and environmental policy decentralization (“environmental federalism”) on environmental policies in a cross-section of countries, based on Riker’s prediction. We believe that such an analysis may provide an improved understanding of observed outcomes and

valuable insights for the ongoing debate in the literature and among policymakers on whether authority over environmental policymaking should be allocated to lower levels of government, or to the central level of government. However, since the efficient stringency of environmental policy across countries is unobservable, we are unable to determine whether political centralization improves or reduces efficiency in decentralized countries.

A large theoretical literature studies the costs and benefits of decentralization versus centralization of environmental policymaking, and provides a number of arguments why either institutional design may yield more efficient policies.¹ Decentralized policymaking is thought by some to yield inefficiently weak policies due the associated neglect of transboundary pollution spillovers (Oates, 1972; Silva and Caplan, 1997) and inter-jurisdictional capital competition, or inefficiently strong policies due to, e.g., absentee capital ownership or cross-hauling of capital (Wellisch, 1995; Ulph, 2000; Kuncze and Shogren, 2005a,b, 2007; Lee, 2005; McAusland, 2002). Oates (2002) sees an essential informational and guidance role for the central government, but finds decentralization compelling as long as environmental quality is a local public good. One reason is that centralized policies that are uniform across heterogeneous

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E-mail addresses: per.fredriksson@louisville.edu (P.G. Fredriksson), jim.wollscheid@uafortsmith.edu (J.R. Wollscheid).¹ For a more complete list of arguments, see Oates and Portney (2003), Dijkstra and Fredriksson (2010), Alm and Banzhaf (2012), Millimet (2013a), and Woods (2013) who survey the literature on environmental federalism.

jurisdictions will yield a policy distortion in at least some location. There are also informational and political advantages to allocating decision making to the local level where specific environmental benefits, costs and preferences may be taken into account (Oates, 1972, 1999; Sigman, 2003), as well as improved accountability via local elections (Seabright, 1996).²

The seminal model by Oates and Schwab (1988) finds that both centralized policymaking and decentralized policymaking yield the first-best policy as long as no political incentives are present. However, with a heterogeneous population of voters, environmental policy may be too weak or too strict, and with a Leviathan ruler policy will again be sub-optimally weak. Similarly, Fredriksson and Gaston (2000) find that while individual groups' lobbying incentives differ across decentralized and centralized regimes, in the aggregate the incentives are equal. This results in equivalent policies across institutional approaches. Using a median-voter model, Roelfsema (2007) finds that in a decentralized system environmental regulation may be either too weak or too strict due to strategic delegation by the median voter. Special interests' influence may be greater on either the local or the central government level (Bardhan and Mookherjee, 2000). Esty (1996–97) suggests that decentralized environmental policymaking gives better-financed industry groups an advantage over environmental groups as they are able to cover the high fixed costs involved with having an office in each lower level jurisdiction. On the other hand, Revesz (2001) argues that at the national level a minimum spending level must be achieved which implies that centralization favors industry; grassroots environmental groups have a comparative advantage at the local level. Complete decentralization would help avoid a possible bias due to the majority party in Congress or parliament favoring its own home districts with weaker regulations (Fredriksson et al., 2010). In sum, the theoretical literature yields a number of ambiguous predictions, offering our empirical work the opportunity to shed light on which effect dominates.

The empirical literature on environmental federalism has not yet addressed Riker's hypothesis.³ However, using cross-country data from up to 34 countries, Sigman (2008) finds evidence that decentralization of environmental expenditures is associated with reduced access to sanitation facilities and greater levels of habitat protection, but has no effect on wastewater treatment or SO₂ concentrations. A federal constitution has no effect on either measure. Sigman (2014) presents an empirical analysis of environmental decentralization using panel-data from 47 countries. She finds positive effects of both a federal constitution and expenditure decentralization on biochemical oxygen demand (BOD) but not on fecal coliform. Note that Sigman did not expect decentralization to affect the latter pollutant as it is purely local. Her results suggest that decentralization may lead to inefficient policies in the case of spillovers, but not in other cases. Moreover, she finds that a federal constitution (but not expenditure decentralization) raises interjurisdictional variation of water pollution, which may or may not indicate increased efficiency. Sigman (2008, 2014) does not investigate the role of political institutions for environmental decentralization.

Decentralization of government can take several forms, and we focus on constitutional federalism and vertical decentralization (reflected by the number of tiers (layers) of government), i.e. the way decentralization is organized administratively (administrative decentralization). A

² Thus, a pattern of heterogeneous policies across jurisdictions under a decentralized design may reflect efficiency due to different marginal costs and benefits.

³ Fredriksson and Millimet (2002), Levinson (2003), and Konisky (2007) report that U.S. states engage in strategic interaction in their environmental policymaking, although it is not clear whether this leads to a race-to-the-bottom or race-to-the-top. A number of studies find evidence of free-riding behavior both among countries and among U.S. states, including Sigman (2002, 2005), Helland and Whitford (2003), and Gray and Shadbegian (2004). Chupp (2011) shows that U.S. states take local conditions into account when regulating air pollution. Banzhaf and Chupp (2012) simulate the tradeoffs between decentralized versus uniform centralized control of air pollution from the U.S. electricity sector. The centralized policy outperforms the state policy because inter-state spillovers are more important than interstate heterogeneity, and because of the shape of the marginal cost functions.

Table 1
Democracies.

Treatment variable	Outcome variable	
	Environmental Governance (1)	Institutional Capacity (2)
Panel 1		
<i>Federal Dummy</i>	−0.66** (2.50)	−14.27** (2.16)
<i>Federal Dummy × PolCentral</i>	0.01** (2.17)	0.22* (1.79)
<i>PolCentral</i>	0.005 (1.38)	0.17** (2.28)
Observations	81	81
Panel 2		
<i>Tiers Dummy</i>	−0.65** (2.10)	−15.10* (1.94)
<i>Tiers Dummy × PolCentral</i>	0.01*** (2.80)	0.28** (2.24)
<i>PolCentral</i>	0.001 (0.15)	0.09 (0.81)
Observations	71	71

Notes: t-Statistics within parenthesis.

* Indicates significance at the 10 percent level.

** Indicates significance at the 5 percent level.

*** Indicates significance at the 1 percent level.

tier may be an autonomous decision making body or an administrative agent of a higher tier. Treisman (2002) classifies a layer of government as a tier if it has a political executive at that particular tier. Vertical decentralization has several ambiguous effects which have not been extensively discussed in the literature on environmental federalism. While such decentralization enables environmental decisions to be tailored to local conditions, there is according to Fan et al. (2009) the risk of a greater competition between government units for bribes, leading to a higher aggregate bribe burden as the number of regulators increases.⁴ Moreover, the supply of a public good such as environmental quality may suffer from free riding when provided by multiple tiers, as voters may credit all government tiers with increases even if only one tier supplies the good (Treisman, 2002). Voters may not be well informed of the exact nature of responsibilities of various tiers of government (Salmon, 1987). According to Salmon's argument, each tier sets its marginal benefit (in terms of votes) equal to marginal cost, while a fully centralized government would have a greater tendency to set all government units' marginal benefits equal to marginal costs (assuming away other distortions). Thus, according to this argument more tiers would tend to reduce the provision of public goods, in particular when the tiers have autonomous regulatory authority.⁵

The level of party strength is an indicator of the level of centralization of the political system (Enikolopov and Zhuravskaya, 2007; Gehlbach and Keefer, 2012). Greater political centralization leads local politicians and Congressional legislators to pay more attention to their national party bosses because their political careers depend on it (Riker, 1964; Enikolopov and Zhuravskaya, 2007; Fredriksson and Wollscheid, 2014). Legislative leaders of strong parties often have control over appointed posts within the national government, and over campaign funds and political support that are crucial during re-election campaigns. A strong party is likely to have a better organized party machine at the grassroots and national levels (Enikolopov and Zhuravskaya, 2007). Thus, national leaders of strong parties have the ability to promote or hamper a legislator's career, and the national leaders' decisions are conditional on

⁴ McWhinnie (2009) and Burgess et al. (2012) find that fish and forest stocks are depleted at a faster rate when shared by more jurisdictions.

⁵ On the other hand, decentralization may induce local officials to refrain from taking bribes in order to compete for promotions to higher tiers (Myerson, 2006). Moreover, vertical decentralization creates beneficial "yardstick" competition between tiers of governments (Salmon, 1987).

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