

Drosdowski, Thomas

Working Paper

On the link between democracy and environment

Diskussionsbeitrag, No. 355

Provided in Cooperation with:

School of Economics and Management, University of Hannover

Suggested Citation: Drosdowski, Thomas (2006) : On the link between democracy and environment, Diskussionsbeitrag, No. 355, Universität Hannover, Wirtschaftswissenschaftliche Fakultät, Hannover

This Version is available at:

<https://hdl.handle.net/10419/22467>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

On the Link Between Democracy and Environment

Thomas Drosdowski *

Diskussionspapier 355

December 2006

Abstract

Using a considerable number of theoretical and empirical sources, we analyze the relationship between democracy and environment. First, we compare the situation in democracies and non-democracies. Later, we discuss environmental distribution conflicts and the role of economic growth. In addition, we illuminate the way in which democratization influences environmental policies, concentrating on the role of economic inequality. Moreover, we discuss the impact of electoral rules and systems, as well as polluting lobbies. Finally, we consider political alternatives and sum up the main conclusions.

ISSN 0949-9962

JEL classification: D72, Q56, Q58

Keywords: democracy, environmental policy, political economy

*Universität Hannover, Wirtschaftswissenschaftliche Fakultät, Institut für Makroökonomik, Königsworther Platz 1, 30167 Hannover, Germany, e-mail: drosdowski@vwl.uni-hannover.de

1 Introduction

The Economist's Special Report on China's Environment (Aug. 21, 2004) provides an intriguing tale illuminating the nexus of economic development, democracy deficits and environmental degradation. Relying on World Bank sources, the report states that China has 16 of 20 most polluted cities worldwide and that 300,000 people die each year from respiratory diseases, which is attributed to inefficient coal-fired power stations, emitting exorbitant quantities of sulphur dioxide into the air, although car ownership has not yet become a mass phenomenon. Moreover, the country's rivers are contaminated with waste threatening the health of around half its population. Other serious concerns pertain to erosion, desertification, deforestation and resource depletion. As a rapidly industrializing country, China is steadily increasing the scale of production, thereby contributing to environmental degradation in accordance with Mao's view of freeing oneself from nature by conquering it. Although the new generation of Communist Party leaders acknowledges the dangers of serious resource scarcity and other substantial direct costs of unconstrained growth, setting moderate emission targets, passing environmental laws and boosting environmental spending, the incentives for state-owned industrial polluters and local bureaucrats, that are rewarded according to a point system for growth achievements, remain low to change the current behavior. The author(s) resume(s) that "in a country where the public is not free to speak, too many courts are toothless and environmental groups remain on a tight leash, it will be hard to know if the government's avowedly green policies are being implemented."

Throughout this paper we attempt to elaborate on these issues, searching for more than tentative answers to the following questions:

- What is the difference between democracies and autocracies in their treatment of natural environment?
- What role plays democratization in the process of environmental improvement?
- In which way are distributional conflicts related to environment?
- Which political route could be taken to improve environmental quality?

The paper is organized as follows. Section 2 presents theoretical arguments explaining the differences in the environmental performance in democracies and non-democracies, which are supported by some empirical evidence. Section 3 adds another dimension to the analysis, looking at environmental problems as outcomes of environmental distribution conflicts. In the subsequent section 4, we examine the environmental repercussions of electoral processes and lobbying, focusing on the role of democracy deficits and economic inequality. Section 5 discusses the potential of direct democracy measures and

alternative representative systems. Section 6 sums up the main conclusions and policy recommendations derived in the paper.

2 Environment in democracies and non-democracies

This section discusses the differences between democracies and non-democracies with regard to their treatment of natural environment. The analysis centers around the arguments established by Payne (1995) who argues that democracy is superior for the following reasons:

1. Individual rights and the open marketplace for ideas.
2. Regime responsiveness.
3. Political learning.
4. Internationalism.
5. Open markets.

First, we discuss environmental implications of democratic regimes. Later, we highlight the environmental practice in non-democracies along the same criteria.¹

2.1 Environment in democracies

In democracies, citizens enjoy freedoms allowing them to express their discomfort with prevalent life-circumstances they consider adverse, organizing themselves in order to pursue their interests and influence political processes according to their needs. Due to the freedom of speech, of assembly and of association, they are allowed to oppose environmental degradation publicly, through demonstrations or with the aid of free press, which are likely to influence the public and politicians empowered in free elections, that may respond in a flexible way to civil demands of legislative measures assigned to protect the environment. Ecological lobbying of pressure groups using scientific assistance often counteracts the interests of polluting businesses, enforces transparency and a social control of corporations.² Arising from

¹Since even a highly undemocratic country such as Congo calls itself a “Democratic Republic”, we refer to non-democracies not only as communist countries or extreme monarchist regimes such as Saudi Arabia, but also as weakly democratic autocracies.

²Binder and Neumayer (2005) provide empirical evidence that environmental non-governmental organizations (NGOs) successfully act to improve air quality around the world. They argue that strengthening their efforts could be an important development strategy.

former grassroots groups, green parties implement ecological agendas directly in parliaments and governments. Legal systems are designed to protect the individual rights of activists and make governments and business actors accountable for failures. In turn, enforced regulations spark technological innovations in pollution abatement and energy conservation.³ Increasingly implemented market-based instruments of environmental policy such as green taxes or tradable emission permits create profit possibilities for enterprises improving environmental effectiveness (Popp 2003), and arguably leading to even more innovation, which entails diffusion and imitation of successful ideas.⁴ Public awareness fueled by access to information and green consumerism exert pressure on corporations that realize substantial losses on capital markets if they ignore their environmental responsibilities (Heal 2005). Since democracies are relatively open systems, best practices can spread across borders, and countries learn from each other. Not only corporate actors or international NGOs cooperate on a global scale - democratic countries are first to ratify treaties designed to tackle global problems⁵ and expected to negotiate coordinated reductions in polluting subsidies. However, the fact that democratically ruled developed countries are primarily responsible for global pollution, resource use and waste production is disturbing.⁶ The most likely reason is the discrepancy between concentrated present costs of environmental measures and the benefits spread over time. On the other hand, the available empirical evidence suggests that civil liberties and democratic institutions might be indeed instrumental in solving some environmental problems.⁷

2.2 Environment in non-democracies

Closed autocratic regimes do not respect individual rights of the citizens. Independent organizations are prohibited or controlled, political parties are

³For empirical evidence see Popp (2001, 2005 and 2006).

⁴Market-based instruments are not only more efficient, but they also induce more intrinsic motivation to environmental protection by giving individuals more freedom of choice (Kirchgässner and Schneider 2003, p. 371). However, Jänicke et al. (1997) argue that heavily polluting industries, operating in imperfect and politically regulated markets would not respond appropriately to such instruments. They favor corporatist solutions (“green industrial policy”), which may prevent excessive energy and material consumption. While this may be true, Neumayer (2003) does not find statistical evidence that corporatism reduces pollution.

⁵See Congleton (1992), Fredriksson and Gaston (2000), Neumayer (2002) and Neumayer et al. (2002). Bratberg et al. (2005) show that European countries which ratified the 1988 Sofia Protocol on the reduction of nitrogen oxides have had greater emission reductions since then.

⁶Sometimes it is argued that individual liberties must entail excessive consumption and pollution. Thus, some critics in the 1970s concluded that environmental protection might require authoritarian measures; see Payne (1995) and Scruggs (1998).

⁷See e.g. the discussion of empirical studies in Drosdowski (2006). The results of additional studies focusing on the role of institutions are found in Panayotou (2001).

suppressed, critics are silenced and free media marginalized. Ecological movements cannot rely on responsive politicians acting in accordance with the people's preferences. Actually, environmentalists are often threatened, abused or even killed. The juridical system does not protect the interests of the victims of environmental degradation. Without appropriate political participation of ecologically aware individuals or groups, business interests can easily dominate in the political process, opening gates for excessive pollution⁸ and resource depletion.⁹ As the media is censored and public expressions of criticism constrained, there is no free flow of environmentally relevant information.¹⁰ Moreover, official secrecy towards environmental degradation undermines transparency even further, which makes public opinion formation unlikely.¹¹ In closed systems, the leaders are less eager to learn and undertake changes, constraining technological advances and restricting the set of potential solutions to environmental problems.¹² The lack of reliable institutions, combined with inflexible regulation precludes a successful marriage of economic development and ecological improvements, because there is little room for incentive-driven entrepreneurship.¹³ In addition, such systems are less likely to take part in international agreements directed at limiting the natural degradation.

3 Environmental distribution conflicts

Environmental problems can be classified as global or local. Whereas global externalities affect citizens in a given country more or less equally, local externalities, especially air and water pollution, will have differential effects across regions and constituencies, depending on the political, social and eco-

⁸It is often argued that poorly regulated developing countries attract polluting industries from developed countries, creating "pollution havens". However, the present evidence is weak at best (Eskeland and Harrison 2003).

⁹Due to the fact that many natural resources are easily appropriable for corrupt elites which may be a source of underdevelopment, the term "resource curse" is commonly used. Sala-i-Martin and Subramanian (2003) attribute this phenomenon to weakening political institutions.

¹⁰The importance of media for government power is demonstrated in McMillan and Zoido (2004). In Peru, formally a democracy, the secret-police chief paid about 100 times more in bribes for television-channel owners than for judges and politicians.

¹¹Even in today's Russia that has adopted some democratic standards there are 90 towns closed to foreigners. Norilsk, an extremely polluted city is a case in point (Blacksmith 2006).

¹²Lucas et al. (1992) has shown that the toxic intensity of production tends to be higher in closed economies.

¹³In the communist countries of the former Soviet Bloc in which free enterprise was severely limited, pollution was rampant. See e.g. empirical evidence in Grossman and Krueger (1991). Jänicke et al. (1997) state that heavy industries, "strongly represented in the power structures of the communist countries" (p. 481), opposed structural changes. Moreover, the absence of price signals prevented eco-efficiency.

conomic relations in different geographic areas. Contrary to usual model assumptions, individually perceived environmental degradation is not uniform. Focusing on politico-economic questions, suspicion arises that less wealthy and powerful members of society may be the ones exposed to much heavier environmental degradation than the more well-off being able to avoid it, simply relocating to cleaner living areas or using their political power to drive out polluting industries from their neighborhoods.

Martinez-Alier (2002) sheds light on environmental degradation in different parts of the world as an outcome of unequal “environmental distribution”. This term describes ownership and access to natural resources providing a life-supporting system. It is closely linked to the power structure in the areas under consideration, besides natural determinants of life quality. The inequality inevitably leads to social conflicts between citizens affected by various forms of natural degradation and their opponents identified mainly as corporate actors, in some cases multinationals.¹⁴ The state plays an ambiguous role in these struggles, not always protecting its citizens from bearing ecological risks and costs (externalities), especially in developing countries.

Social movements arising from asymmetric power relations are heterogeneous with respect to the subjects of their woes as well as in the explicit language used to express their claims. Indigenous movements of the developing countries do not consider themselves as environmentalist, accentuating instead their livelihood being at stake in conflicts pertaining to foundation of mines, dams, refineries or plantations that threaten their access to clean water, soil or air and the possibilities of income generation in a traditionally sustainable way (Martinez-Alier 2000, p. 10ff). This “environmentalism of the poor” is different from “environmental justice” debates in the industrialized world, including the notion of “environmental racism”.¹⁵ Environmental Justice is a tag applying to a broad movement, whose origins reach back to the Civil Rights activism of the 1960s in the US. However, it has been used only since the late 1980s, at first in academic publications. Its goals and actions revolve almost exclusively around local issues, and it is evident that it has been successful, despite being still outside environmentalist mainstream, leading e.g. to the establishment of antidiscriminatory environmental legislation in the US. One of the most important “assets” used by the groups has been the racial dimension of the conflict. They have emphasized the vulnerability of racial minorities to environmental damage, which has been useful in their media campaigns (p. 168ff).

¹⁴However, Blacksmith (2006) reports that the most polluted sites worldwide are not a legacy of large multinationals, that instead tend to raise the environmental performance in poor countries. The main culprits appear to be old defunct companies or inefficient government ones.

¹⁵For a list of issues and movements, that “political ecology”, i.e. the study of ecological distribution conflicts in economies becoming (more) unsustainable, refers to, see Martinez-Alier (2002, pp. 258-260).

Gray and Shadbegian (2004) try to obtain some evidence from US data on the paper industry for the period 1985-1997. They find that polluting emissions in areas with more children, older people and fewer poor people are significantly lower than in the opposite cases. The same conclusion is drawn for areas with politically active and environmentally conscious members. Perhaps surprisingly, race does not appear to play an important role for pollution levels and plant inspections conducted by regulators. Very often, nonwhite neighborhoods have less pollution and more inspections. The authors put a caveat on the reported results, pointing out the possibility of a reverse causation: the poor may be attracted by environmentally disadvantaged places due to cheap housing, while other social groups could be willing to avoid them. The result that race does not matter is supported by Wolverton (2002) who also finds that there is a negative relationship between poor communities and the location of polluting sites. Some other studies report mixed evidence on the exposure of the poor and minorities to polluting activities. Political activism indicated by voter turnout is shown to have a positive impact on firms' decisions potentially affecting the inhabitants' health as well as on regulatory strictness.¹⁶ Apparently, the democratic state has taken the protests seriously, adjusting its institutional design, which has not been the usual practice in developing countries. In those, initiatives for a more just environmental distribution are often rejected and labeled as unpatriotic or worse. Frequently, ruthless capturing of natural wealth involves violent struggles with the affected local populations that bear the pollution costs.¹⁷

It is also apparent that "in large countries like India or China, the main environmental clashes are still with the[ir] own governments or public corporations rather than with multinationals." (Martinez-Alier 2002, p. 196). Despite striking differences between Environmental Justice and the southern movements with respect to relations with their governments or antagonisms between rural and urban interests, there might be a looming potential for an extensive cooperation between these poles, under the condition that northern attention shifts its focus to its own responsibilities for the damage being done in the "Third World", mainly by its steady hunger for natural resources.¹⁸ Environmental distribution problems that lie at the very heart of such social struggles are only beginning to shape global activism and may result in stronger international networks. As Martinez-Alier (*ibid.*, p. 174) states, environmental degradation in minority areas worldwide is increasingly seen as a violation of human rights.

Considering aggregate environmental outcomes resulting from social interactions, Scruggs (1998) insists that, besides social choice mechanisms,

¹⁶See Gray and Shadbegian (2004), p. 512f.

¹⁷A prominent example is the bloody conflict for oil in the Niger delta in Nigeria.

¹⁸Ironically, the minorities in the US are the majorities in most poor countries.

marginal preferences for environmental protection with respect to income/wealth are critically important.¹⁹ He hypothesizes that at low income levels marginal demand for degradation may increase in income, only to become decreasing at higher income levels in accordance with traditional views on environmental quality as a superior good.²⁰ At very high levels of material well-being, a paradigm shift might take place, and a social modernization caused e.g. by postmaterialist values might assure absolute decreases in environmental degradation as a function of income. This vision may be true for many immediately life-threatening aspects of natural degradation, while not necessarily appropriate with regard to issues such as climate change. Treating environmental quality exclusively as a luxury good, a notion which is strongly contended by political ecologists, neglects the fact that wide portions of the world population cannot survive without environmental services satisfying the people's basic needs.²¹ Poor citizens of economically developing autocracies may thus be benefited by stricter regulation, whereas rich elites are likely to oppose such measures. On the other hand, the poor in affluent democracies, that might be as rich as some members of the upper class in developing countries in absolute terms, might be hurt by additional regulation, while the rich could embrace it. Hence, there may be fundamentally different preferences for environmental care at work in developing and developed countries.

Economic growth may be instrumental for rescuing millions of people from absolute poverty (Dollar and Kraay 2002), alas its sheer scale does not guarantee any kind of sustainability. Although intrasectoral modernization within "dirty industries" has led to more energy and water use efficiency in some countries, measured as a ratio of their consumption and the real GDP, an absolute dematerialization has not been observed. In any case, growth as the main source of environmental degradation has to be permanently accompanied by technological and structural change (Jänicke et al. 1997). Moreover, "raising all boats" does not mean that distributional pressures, especially related to environmental issues, can be resolved without the democratic state implementing sound policies and shaping appropriate institutions such as property rights to resources and sinks.²² Whereas higher per capita income undoubtedly stabilizes democracy²³, and poverty is the main

¹⁹The author is rather cautious with regard to the ability of democracy per se to tackle ecological challenges, because of problems related to collective action, electoral rules and concepts of democracy.

²⁰The majority of literature supports this claim.

²¹See e.g. Dasgupta (2000).

²²Stiglitz (2005) among other scholars makes a strong case for sustainable growth, including environmental care and inequality reductions, relying on considerable government involvement.

²³Przeworski (2005) reports that the survival probability of democracy increases monotonically in per capita income and that it was never abolished in a country with an p.c. income higher than 6055\$. He attributes this fact to redistribution being within certain

reason for many instances of ecological degradation (WCED 1987), there is no automatism in achieving sustainability as already claimed, not only because global problems clearly suffer from the lack of international governance giving rise to free-rider behavior. While the strictness of environmental regulation clearly follows the economic development, regulating local pollution in developing countries is a task requiring political support (World Bank 2000). The latter can be achieved and maintained only if the public receives reliable information about both environmental and economic situation and if the objectives are jointly determined by all affected stakeholders, including local communities and business officials, some of which may advocate environmental regulation for image purposes.²⁴ The World Bank encourages environmental education of the poor in developing countries that sometimes may possess the best knowledge of their own environmental conditions anyway. Nevertheless, public education might be a key to an increased self-confident participation in environmental struggles, and better educated local government officials could provide more effective pollution control.

Overall, it can be argued that civil societies and public policies are the critical driving forces for environmental achievements.²⁵ As emphasized in the previous section, a certain degree of democracy is crucial for the existence of environmental pressure groups, NGOs or else, to pursue environment-friendly policies. Ecological objectives might become easier to achieve in the near future, since dictatorships are continuously on the decline.²⁶ However, democratic achievements in developing countries have to be supplemented with an equalization of environmental distribution.

4 Political economy, inequality and environment[†]

In this section, we concentrate on the role of democracy deficits pertaining to environmental problems, such as restricted electoral participation and competition, the design of electoral systems and rules and the role of lobbies in a politico-economic context. Moreover, we emphasize the importance of

bounds determined by income distribution and the role of military.

²⁴World Bank (2000) gives numerous examples for success stories in countries such as Indonesia, Bangladesh or Brazil, in which cost-effective regulation was implemented and the trade-off between environment and jobs was addressed. Such events are still rather exceptions than the rule. Blacksmith's (2006, p. 3) verdict about the conditions in the poorest countries is drastic: "living in a town with serious pollution is like living under a death sentence."

²⁵Ever since the seminal empirical works of Grossman and Krueger (1991 and 1994) linking pollution to economic development, it is widely accepted that pollution reductions require a policy-induced response.

²⁶Matthews and Mock (2003) report that the number of "free" and "partially free" (i.e. formally democratic but with some autocracy elements) countries according to Freedom House increased from 81 in 1973 to 144 in 2003.

[†]Parts of this section are included in Drosdowski (2005).

distributional conflicts in the process of democratization.

4.1 Democratic participation

Voting rights could be regarded as one of the main aspects of democracy, because the exclusion of large groups of citizens from voting creates an obvious bias in the representation of preferences in the political process. Historically, there appears to be a tendency towards power sharing of the wealthy elites in the form of democratization and increasing redistribution. One of the explanations is provided by Acemoglu and Robinson (2000) who argue that Western elites of the nineteenth century extended the voting franchise for strategic reasons in order to avoid violent upheavals of the lower classes. In slightly different vein, Gradstein (2005) demonstrates in his theoretical framework that democratization could have been a rational outcome of the elite's long-term benefit considerations. They may have introduced growth enhancing property rights and other institutions without the violent threat by the masses in situations where initial inequality was not excessive.²⁷ Otherwise, rent-seeking was their preferred option. Empirically, the connection between distribution of power and economic resources and endogenously determined institutions is strongly supported, using World Bank data from 121 countries. The income share of the middle class is also positively correlated with institutional indicators. Lizzeri and Persico (2004) concentrate directly on the link between democratization and the provision of public goods without focusing on institutions such as property rights. In their work, enfranchisement is a product of internal power struggles within the elite and is associated with more public goods.

Eriksson and Persson (2003) and Drosdowski (2005) incorporate the idea of extended democratic participation into their theoretical frameworks involving environmental pollution. Therein, a democratization means that the identity of the decisive voter shifts from a more wealthy group towards the median voter. In the latter paper, the progressivity of redistribution increases, reducing polluting subsidies and activating abatement, if the weight put on environmental financing as opposed to other redistributive transfers is sufficiently high.²⁸ Since environmental protection is not costless, a trade-off between growth and environmental quality is established. These results are partly confirmed by the findings of Mueller and Stratmann (2003), who assert that higher democratic participation is associated with more equal income distribution, larger government sectors and lower growth rates, testing various hypotheses empirically. While the participation in voting directly reduces inequality, it has also indirect effects on inequality through increased government spending or transfers (generally only in democracies with strong

²⁷Related work linking inequality and institutions is e.g. Glaeser et al. (2003).

²⁸Drosdowski (2006) shows empirically that redistribution might have contributed to recent emission reductions in West European countries.

institutions), reflecting the “class bias” caused by limited participation of the poor in elections due to educational deficits, which impose higher costs of being informed about them.

However, in weakly democratic Latin and Central American countries the indirect effect leads to more inequality being an indicator for a common “government capture” by the rich in this part of the world.²⁹ For this capture does not occur in weak democracies outside this continent, the authors do not support the thesis of Li et al. (1998) that link this phenomenon to weak democratic institutions. Increased government size due to larger participation is negatively related to growth which could reflect inefficiencies brought about by redistribution and thus the equity-efficiency trade-off.

Milanovic and Gradstein (2004) provide an insightful survey on the relationship between income inequality and democracy, concentrating on political freedoms such as the freedom of speech or party formation and the accountability of political elites. They suggest that political stability and the quality of governance are not necessarily indicators of democratization, for they can be observed in autocratic regimes as well. Their summary of case studies referring to the role of voting franchise extensions as the sole factor responsible for inequality reductions indicates that while being historically important, especially concerning voting rights of women, such expansions do not play a bigger role in explaining the current relationship between inequality and democracy in developed countries. A brief examination of the literature linking political liberties to inequality, which may be a better proxy for democracy, leads them to the conclusion that the relationship in contemporary empirical studies using steadily improving data tends to be negative. However, their own regression analysis shows that a change of political and civil freedoms in transitional, i.e. formerly communist, economies seems to be associated with a positive change in inequality, which decreases with the degree of democratization. The intriguing theoretical possibility of the finding is that inequality reducing democratization simply takes some time and the transition period may exacerbate equality at first. It could be expected then, that some democratic transitions are associated with temporarily exacerbated environmental quality through the inequality channel.

4.2 Electoral competition

Fredriksson et al. (2005) analyze the importance of democratic participation combined with electoral competition, which is also an intrinsic element of democratization, for environmental policy. Using data from 82 developing countries and 22 OECD countries while taking the lead content of gasoline as their proxy for environmental quality, they show in the empirical part of their paper that political competition positively affects environmental poli-

²⁹More on political economy in Latin America contains e.g. Chong and Zanforlin (2004).

cies under the condition that democratic participation is broad. However, participation alone is not sufficient to ensure better policy outcomes - the reported positive effects vanish in dictatorships. Interestingly, the authors derive a policy implication for developing countries suggesting that environmental groups in these countries should be supported with aid. Since environmental policy is still widely regarded as a “secondary” policy issue, List and Sturm (2004) investigate whether it has some importance for re-election purposes of politicians. They find that environmental spending is very likely to be changed as a reaction on a stronger political competition. When the support for an incumbent politician (state governor in the US) is sufficiently strong he will not change his policy, whether it is environment-friendly or not. However, when the re-election is at stake, the incumbent will reduce environmental spending in a “green” (i.e. having ecologically friendlier policies) state and increase it in a “brown” (i.e. neglecting environmental issues) state.

The general importance of political competition is highlighted in Besley et al. (2005), showing that the abolishment of voting impediments in the form of poll taxes and literacy tests following the Civil Rights and the Voting Rights Act in the southern states of the US significantly improved not only their growth performance but also the quality of policies and politicians. Whereas before reforms the Democrats with de facto political monopoly power, obtained by racist politics, often served special interests, were not forced to be accountable and did not have to rely on qualified personnel, the situation changed with their implementation. Afterwards, with more competition more skilled politicians became incumbents, promoting growth-enhancing policies that included lower taxes. Complementary to Besley et al. (2005), Husted and Kenny (1997) report that the end of the voting restrictions in the South was associated with increasing transfers but lower overall spending.³⁰ Stratmann (2005) points out that participation in political competition is often restricted by party endorsement, filing fees and signature requirements. Using data on state elections in the US from 1998 and 2000 he shows that, indeed, incumbents prevent political competition (entry barriers), mainly by imposing filing fees.³¹ Signature requirements are only significantly negative for the entry of major party candidates, while the impact of endorsements has not been tested. Similar analysis has not yet been made in the area of environmental policy. Yet despite current data scarcity, especially pertaining to developing countries, there are some indi-

³⁰These insights are compatible with Drosdowski (2005). Considering an initial situation with a strong wealth influence in politics, low growth and highly regressive taxation, a higher degree of electoral competition and participation shifts political power to the “middle” of the distribution, generating growth and reducing redistribution in absolute terms (less is redistributed in a more progressive way).

³¹A 1000\$ increase of those reduces the number of major party candidates by 5 percent and minor party candidates by 43 percent.

cations that democratic countries with high electoral competition are more likely to tackle various aspects of environmental degradation.

4.3 Electoral rules and political systems

Another important political determinant of stricter environmental policies is the set of given electoral rules within countries. The proportional voting rule forces political parties to consider the welfare of the entire electorate. Under a majoritarian system with single-member districts a party must only win the majority of votes in the majority of constituencies, having the leeway to ignore some of the preferences of the voting individuals. In fact, Fredriksson and Millimet (2004b) find supporting evidence that in majoritarian systems environmental policy is much weaker.³² When more members are elected in a district a need for a proportional voting rule arises, which may force parties to target the votes of each district, resulting in more redistribution and less inequality.³³ Empirical evidence for this conjecture has recently been provided by Verardi (2005). Employing panel data for 28 democratic countries, he demonstrates that an increase in the mean voting district magnitude significantly lowers inequality measures. It is quite possible that the link between inequality and environment operates through electoral rules.³⁴

Another institutional feature may also be of some importance for environmental outcomes: the distinction between parliamentary and presidential-congressional regimes. Fredriksson and Millimet (2004a) find evidence that in the former gasoline taxes tend to be higher. They see this result as being supportive of the theoretical framework provided by Persson et al. (2000), within which legislative incentives are different across both regimes. Assuming that political delegates act in their own interest without being held accountable by the voters, presidential systems are associated with a stronger separation of powers, since a president and a legislative body are directly elected. In addition, such a system displays less disciplined behavior on the part of the parliament members, often building loose arrangements on single issues. The opposite is true for parliamentary systems, in which governments require stable majorities (less separation of powers and more legislative cohesion). Therefore, the former regimes are expected to redistribute rents in a more moderate way than the latter. Fredriksson and Millimet (2004a) argue that their data may support lobby theories as well, which are discussed in the next subsection.

³²Using a sample of 86 “democratic” countries, they show that their majoritarian-system variable is negatively correlated with the Environmental Sustainability Index, at the 10 percent level.

³³See for instance Person and Tabellini (1999), Milesi-Ferretti et al. (2000) or Lizzeri and Persico (2001).

³⁴Empirical studies do not reveal a systematic direct link between inequality and environmental quality. See Drosdowski (2006).

4.4 Lobbies

As noticed in section 2, polluting interest groups are a serious obstacle for environmental improvements, both in democracies and non-democracies. Kirchgässner and Schneider (2003) find several reasons for their political advantage in comparison to green lobbies. They argue that industry and business associations use more financial resources for their lobbying. Moreover, organized polluters are better informed about the actual scope of their activities and the effectiveness of employed technologies. These information asymmetries allow them to influence the public through publications and media. Another source of advantage is the power which polluting lobbies exert in several markets (for goods, services and labor) with the option of relocating production abroad. Finally, lobbyists are members of legislative bodies, affecting legislative procedures in all stages.

Considering the modeling treatment of lobbies, Oates and Portney (2001, p. 2) state that “a framework in which interest groups vie with one another in a political setting seems to [them] the most promising approach to a positive theory of environmental regulation”. They regard lobby models as being superior to normative, median-voter or regulatory-capture models not only because of their realism but also because they allow for efficient outcomes, emphasize institutional settings (alas, without shedding some light on processes involving legislature, administration and courts) and create a possibility to examine the interplay between several policy instruments. The lobby theory is strongly supported by Tanguay et al. (2004) who confront it with the theory of public interest, whereby government is concerned about the aggregate welfare taking measures to internalize environmental damage. Their research shows that the former is more likely to be true, since higher levels of payroll taxes faced by firms in polluting industries are negatively correlated with environmental regulation in 22 OECD countries. This means that lobbying activities have an offsetting impact on firms’ costs via regulation. Moreover, “green” political influence contributes significantly to the severity of regulation.

The current strand of research focusing on environmental lobbying was initiated by Fredriksson (1997) who adapted the seminal “Protection for Sale” approach by Grossman and Helpman (1994) to the environmental literature. The authors developed a powerful game-theoretical tool to analyze the influence of campaign contributions on political decisions in the sphere of trade policy. There is no electoral competition assumed, thus a single politician maximizes the sum of aggregate welfare and campaign contributions or bribes presented to him by every lobby group.³⁵ The lobbies maximize the difference between their income and contributions by their choice of bribe schedule. The contributions become apparent before the incumbent makes

³⁵Oates and Portney (2001) enlist some empirical studies supporting the notion that political outcomes reflect both organized interests and social welfare maximization.

his choice of policy (import tariffs in this case). Given welfare maximizing domestic prices, the anticipated decision of the government and choices of other lobbies, in the equilibrium a single lobby chooses its optimal contribution schedule. Depending on the size of the lobby, its degree of organization and the price elasticity of import demand the protection by the government can be high or low.

Fredriksson (1997) replaces import tariffs/export subsidies by pollution taxes/abatement subsidies and shows that industrial lobbying for higher subsidies and lower pollution taxes, that reduce the firms' savings, can increase pollution, because subsidies increase output due to lower marginal cost of pollution more than pollution reduction per unit of output. On the other hand, increasing membership of the environmental lobby can result in higher pollution taxes. In addition, Damania (1999), using a different framework with two parties representing an environmentalist lobby and one consisting of an industrialist duopoly, respectively, demonstrates that pollution standards may be enforced more often by pressure groups, instead of more effective taxes which will be implemented only if the green party has a higher election probability. Another way of avoiding higher eco-taxes may be underinvestment in new abatement technologies, especially by old inefficient firms with high abatement costs, which gives the government a credible signal that campaign contributions from these firms may decrease, leading it to an implementation of lower taxes (Damania 2001). Discussing trade aspects of environmental policy, Fredriksson (1999) shows that emission taxes in polluting sectors protected by tariffs can decrease following a trade liberalization, if the environmentalist lobbying decreases relative to the polluters' lobby efforts. Eliste and Fredriksson (2002) argue that political pressure may increase production subsidies to polluting sectors as a compensation for stricter pollution standards, and prove their theoretical result empirically using cross-country data from the agricultural sector. Finally, Aidt (1998) shows that when each group of citizens is represented by a lobby, and the government can use an emission tax and an output tax/subsidy, it chooses only an efficient pollution tax while setting the other available instrument to zero. Inefficiencies arise if certain groups are not adequately represented in the political process.

The above models assume that lobbies do not face free-riding, which would create a collective action problem for their formation. Scruggs (1998) argues somewhat optimistically that such problems can be overcome if benefits to a subgroup exceed their cost of public goods provision, and that unequal resource distribution and access to government can make it easier. While it is not implausible that some powerful business subgroups are indeed willing to strive for more environmental protection, there is no empirical indication of such systematic behavior. Theoretically, Damania and Fredriksson (2000) show that lobby groups are most likely formed by collusive industries with higher collusive profits, if the discounted profits from lobbying exceed

the profits from free-riding. Since firms' profits decline with pollution tax rate, they will lobby for lower taxation. The more polluting they are the more likely is the formation of a lobby group. Additionally, Damania et al. (2005) argue that firms facing an additional regulation issue compared to other industries are more willing to form a lobby due to more enforcement power to overcome free-riding. Polluting lobbies with multiple regulation can discipline their members by reallocating surpluses from some policy areas to others. Empirical evidence corroborates this hypothesis: stricter regulation of manufacturing industries leads to higher campaign contributions than in other industries.

The presented arguments and the variety of possible outcomes resulting from strategic bargaining indicate that, even in democracies, the lobbying power of polluting interest groups can be a deciding factor determining environmental policies. Overcoming organized interests standing in the way of sustainable development is one of the main challenges facing today's societies.

5 Political alternatives

Previous sections indicate that democracies characterized by the division of powers, citizen rights and solid institutions are challenged by organized interests leading to policies often deviating from the preferences of the public. One very promising way of improving both economic and environmental conditions within a given country appears to be an introduction or expansion of direct democracy measures. In the prevailing representative or presidential systems a principal-agent problem between elected politicians and voters is observable, because the former are given leeway to pursue either party objectives or their own personal goals, often attached to special interests.

Describing mainly Swiss experience with direct democracy, Feld and Kirchgässner (2000) strongly advocate this kind of political mechanism, which tends to benefit the median voter more than representative systems, because referendums with agendas closer to median preferences compared with the status quo will be accepted and initiatives shift the power to set agendas directly to the citizens. However, interest groups may have the possibility of manipulating politicians in the presence of uncertainty about voters' preferences by the threat of launching initiatives seemingly closer to citizens' preferences. Additionally, they are able to influence the draft bills or pay bribes. Despite these concerns, some empirical evidence might suggest that "wealthy interest groups do not exert a particularly strong influence on referendum outcomes, and that citizens' preferences are more strongly enforced in representative systems with referenda and initiatives than in pure representative democracies" (p. 297). Direct voting over single issues leads to stronger demand for relevant information, reducing informational asym-

metries between citizens and their elected representatives, improving their judgment of implemented policies and generating learning processes within the population and legislative bodies. In turn, legislators must better communicate with citizens and cannot commit themselves excessively to rent-seeking or discretionary means. The costs of information for citizens, which are supposed to be lower in representative systems, are likely to be born because of the personal importance of the issues, as well as for status reasons. In spite of a potentially misleading role of mass-media and ideologies leading to possibly biased outcomes, informational cues and increasingly cheaper and more accessible communication technologies can mitigate the problem.³⁶ The rights of minorities do not appear to be compromised by the winning majority, since their positions become apparent and thus reflected in subsequent legislative changes. A review of empirical literature shows that direct democracy exerts positive effects on the efficiency of public services' provision and the related issue of willingness to pay taxes. Furthermore, it is associated with less public debt and higher incomes than in areas with less direct democracy elements. Finally, direct democracy leads to more willingness towards burden-sharing between the rich and the poor, i.e. redistribution, creating a political culture with increased social responsibility.

Hence, direct democracy appears to buttress Payne's arguments from section 2 with respect to information dissemination, policy responsiveness and political learning. Consequently, it is expected to induce more effective environmental policies, even more effective than in conventional representative democracies. Indeed, Feld and Kirchgässner (2000) hint at several cases relating to the Swiss experience. The costs of garbage collection have been shown to be significantly lower in cities with direct legislation indicating that environment-friendly outcomes could be obtained more efficiently this way.³⁷ In addition, the Swiss system was the first one to discuss the risks of nuclear power in 1979, even though the initiative leading to an exit from this energy form was slightly rejected. The discussions eventually ensured that "Swiss environmental policy became one of the most progressive in Europe" (p. 289).

Thalman's (2004) empirical analysis of the voters' motives in the failed Swiss referendum over taxes on non-renewable energy in 2000 indicates that some of the above views might be overly enthusiastic. While he does not contend any of the potential and factual merits of direct democracy, he argues that the presence of business interests in the debates preceding the vote was the deciding factor in the proposals' rejection, despite previously displayed eagerness to comply with market-based environmental policy and the fact that the nature of proposals was rather business-friendly.³⁸ Thal-

³⁶Matsusaka (2005) argues that using information cues from interest groups, newspapers or close relatives do not prevent voting accuracy with regard to preferences.

³⁷See Pommerehne (1983).

³⁸The proposals included gradually introduced, modest tax rates, a protection of energy-

mann observes that the associations convinced the majority of the electorate with the aid of substantial campaign budgets emphasizing eventual adverse short-term outcomes for households' budgets and employment. He concludes that a successful implementation of any advanced environmental measures should involve social marketing directed against polluting interests. As long as the social acceptance is not broadly shared, green taxes can be de facto only introduced according to their wishes. Additionally, the study shows that higher education and leftist political orientation were the main determinants of both voting participation and pro-environmental voting, contrary to Kahn and Matsusaka (1997) who discovered that income effects were the main determinants of green voting in Californian referendums. Thalmann (2004), in turn, shows that income did not play a clear role in Switzerland, opposing the luxury good hypothesis with respect to natural environment.

Analyzing the effectiveness of direct democracy, Matsusaka (2005) argues that issues such as environmental regulations are best resolved by government experts, that tend to be better informed about technical aspects, whereas direct legislation may be better suited for issues "where information is more dispersed or related to values" (p. 14). Thus, direct democracy would be ideal for local environmental problems including environmental distribution conflicts centered around social values.

Now, we turn once again to the question of political participation, which has been mainly discussed in subsection 2.4.1, in the context of historical franchise extensions in the process of democratization. In today's democracies, allowing full voting rights with minor participation costs, participation is not always very high, even in countries with direct democracy elements. Jakee and Sun (2006) discuss a potential remedy to increase voter turnout, which is compulsory voting. They oppose the view that such enforced voting, being an infringement of civil rights, will lead to more political consciousness and a higher demand of the electorate for politically relevant information. Furthermore, they recall that many autocratic regimes have instituted compulsory voting without necessarily changing the voters. Second, they formally demonstrate that a forced involvement of uninterested and uninformed citizens could lead to entirely random voting outcomes. In their view, voluntary voting is an expression of intrinsic values attached to it and a function of the electoral context, knowledge and information about the election, as well as of political interest. Solutions to encourage voluntary participation involve education, information provision to certain groups and lowering the barriers to voting.

Another possible improvement of democratic practice is proposed by Blankert and Mueller (2004) who state that voter alienation in Western countries arises due to "the impression that government leaders are more

intensive industries and a redistribution of revenues involving lower social security contributions.

concerned with advancing *their* interests than those of the citizens.” (p. 432). They argue that voters’ preferences could be better addressed by “pure” forms of parliamentary democracy suggested by them, having similar power as direct democracy. The first proposal involves a parliament with a fixed number of representatives, each one acting in accordance with different citizens’ preferences and using the number of votes assigned to her/him.³⁹ Legislative decisions would then oblige an independent executive body to implement them. In this way, sovereignty could be exercised directly by the voters, they could be directly engaged in the deliberative process of opinion formation⁴⁰, and the one-man one-vote rule would apply (p. 433). The principal-agent problem could be partly overcome through transparent voting records of candidates, information from interest groups or other candidates, or additional referendums.

The alternative proposal is a two-party model, where parties present a full set of policies, and the winning one has the majority to implement it.⁴¹ The policies would be debated and determined during the election, parliament seats would be distributed in proportion of vote shares, and the majority would choose an executive. The opposition would communicate its discomfort with policies to the public, and the winning party would be forced to defend its measures. Whereas the system could effectively improve the legislative process, especially the accountability, the influence of organized interests would again pose a problem to an adequate reflection of individual preferences in politics (p. 436).

Although the proposed alternatives would certainly increase the attractiveness of parliamentary democracy, potentially improving environmental policies, some issues remain unresolved. The main problem with the first one appears to be the control of the executive branch of government, involving bureaucracy. Kirchgässner and Schneider (2003) argue that environmental bureaucracy is one of the main forces opposing the use of market-based instruments of environmental policy.⁴² The second alternative seems to entail additional controversies. First, in case of a business-oriented majority, environmental interest could be vastly neglected, and the advantage of coalition governments with ecologically-minded parties would be lost. In such contemporary systems, vote-trading within coalitions ensures that “secondary” policy issues receive necessary support. Second, the winner-takes-it-all approach could be unpleasant for various social minorities, and additional protective measures would have to be developed. As promising the new forms

³⁹To reduce the number of representatives to this fixed number, a preliminary stage of election would be needed.

⁴⁰Information on candidates could be provided by both interest groups or the state.

⁴¹Again, a first stage would be required to reduce the number of parties to two.

⁴²Another important interest group opposing reforms they identify are workers in polluting sectors. Jänicke et al. (1997) advocate an active labor market policy, critically needed to realize environmental policies in such industries.

of political systems are, there is no sign that they could be enforced anytime soon.⁴³

6 Conclusions

The available theoretical and empirical literature strongly suggests that democracy be an important prerequisite of natural preservation and environmental quality improvements. Democratic freedoms, civil liberties and stable institutions enable individuals and social groups to articulate their concerns, organize themselves and enforce legislative changes to achieve environmental objectives. In addition, a free flow of information, spread by media or academic circles can help in their achievement by shaping preferences and public awareness.

Economic growth plays an ambiguous role for the complex relationship between democracy and environment. On the one hand, it is required to stabilize democracy, finance education, research and development, or reduce poverty. It is also associated with better environmental regulation. On the other hand, economic development increases environmental pressure leading to more pollution, resource depletion, climate change, etc.

How a growing economy copes with environmental degradation is ultimately a matter of political will, voters' preferences and the relative strength of organized interests. The nature of preferences towards ecological goals is not very clear, and it may differ across developing and developed countries, as well as across environmental issues. However, if the preferences for cleaner environment are given, democracies are more likely to take them into account than autocracies.

(Voluntary) electoral participation, strengthened through educational efforts or more attractive design of political systems, can be therefore instrumental. It may also help reduce economic and power inequality, which may stabilize institutions, while boosting environmental spending. In addition, strong electoral competition can lead to more political accountability, limit the influence of polluting interest groups and improve environmental policies. A transition from autocracy to democracy involving both elements of democratization, which is seldom smooth, may nevertheless temporarily exacerbate environmental outcomes.

Within democracies, proportional voting rules and parliamentary systems appear to be well-suited to promote green policies. Extending elements of direct democracy such as initiatives and referendums, may entail a better flow of environmentally relevant information, increase political and social learning and the efficiency of policies. A serious obstacle in achieving en-

⁴³Blankart and Mueller (2004) are dissatisfied with the fact that East European transformation countries chose to follow the established democracies with respect to parliamentary democracy options.

environmental improvements is the presence of lobbies formed by polluting industries, often supported by their workers. They are able to avoid stricter regulation and the promotion of market-based instruments of environmental policy, due to financial, informational, legislative and market power. These interests could be overcome by green lobbies, information campaigns, appropriate job market policies or coalitions involving ecologically-minded parts of business community. The increasing severity of global issues may threaten firms' long-term profitability and thus encourage changes.

A broader alliance of activists, organizations and governments could support forces in developing countries engaged in environmental distribution conflicts. The countries need to be involved in international cooperations and given financial, informational, as well as technological assistance. Social movements striving for more equal environmental distribution should also be supported both ideally and financially. Introducing and strengthening democracy in developing countries is an elementary step needed to advance development, including economic progress. More openness entailed by democratization is supposed to bring about the diffusion of ideas and technologies, while encouraging the use of cost-efficient solutions.

References

- Acemoglu, D., Robinson, J. (2000) Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective, *Quarterly Journal of Economics* 115(4), pp. 1167-1199.
- Aidt, T.S. (1998) Political Internalization of Economic Externalities and Environmental Policy, *Journal of Public Economics* 69, pp. 1-16.
- Besley, T., Persson, T., Sturm, D. (2005) Political Competition and Economic Performance: Theory and Evidence from the United States, NBER WP 11484
- Binder, S., Neumayer, E. (2005) Environmental Pressure Group Strength and Air Pollution: An Empirical Analysis, *Ecological Economics* 55, pp. 527-538.
- Blacksmith (2006) The World's Most Polluted Places. The Top Ten, The Blacksmith Institute, New York City.
- Blankart, C. B., Mueller, D. C. (2004) The Advantages of Pure Forms of Parliamentary Democracy over Mixed Forms, *Public Choice* 121, pp. 431-453.
- Bratberg, E., Tjøtta, S., Øines, T. (2005) Do Voluntary International Agreements Work?, *Journal of Environmental Economics and Management* 50, pp. 583-597.
- Chong, A., Zanforlin, L. (2004) Inward-looking Policies, Institutions, Autocrats, and Economic Growth in Latin America: An Empirical Exploration, *Public Choice* 121, pp. 335-361.
- Congleton, R. (1992) Political Institutions and Pollution Control, *Review of Economics and Statistics* 74, pp. 412-421.
- Damania, R. (1999) Political Competition, Rent Seeking and the Choice of Environmental Policy Instruments, *Environmental and Resource Economics* 13, pp. 415-433.
- Damania, R. (2000) On the Formation of Industry Lobby Groups, *Journal of Economic Behavior and Organization* 41, pp. 315-335.
- Damania, R., When the Weak Win: The Role of Investment in Environmental Lobbying, *Journal of Environmental Economics and Management* 42, pp. 1-22.
- Damania, R., Fredriksson, P.G., Osang, T. (2005) Polluters and Collective Action: Theory and Evidence, *Southern Economic Journal* 72, pp. 167-185.
- Dasgupta, P. (2000) Valuing Biodiversity, Cambridge University, mimeo.
- Dollar, D., Kraay, A. (2002) Growth Is Good for the Poor, *Journal of Economic Growth* 7, pp. 195-225.
- Drosdowski, T. (2005) Democracy Deficits, Inequality and Pollution. A Politico-Economic Analysis, Universität Hannover, DP 323.
- Drosdowski, T. (2006) Can Redistribution Contribute to Pollution Reductions? An Empirical Evaluation, LIS WP 451.
- The Economist (August 21, 2004) Special Report on China's Environment.

- Eliste, P., Fredriksson, P.G. (2002) Environmental Regulations, Transfers, and Trade: Theory and Evidence, *Journal of Environmental Economics and Management* 43, pp. 234-250.
- Eriksson, C., Persson, J. (2003) Economic Growth, Inequality, Democratization, and the Environment, *Environmental and Resource Economics* 25, pp. 1-16.
- Eskeland, G.S., Harrison, A.E. (2003) Moving to Greener Pastures? Multinationals and the Pollution Haven Hypothesis, *Journal of Development Economics* 70, pp. 1-23.
- Feld, L.P., Kirchgässner, G. (2000) Direct Democracy, Political Culture, and the Outcome of Economic Policy: A Report on the Swiss Experience, *European Journal of Political Economy* 16, pp. 287-306.
- Fredriksson, P.G. (1997) The Political Economy of Pollution Taxes in a Small Open Economy, *Journal of Environmental Economics and Management* 33, pp. 44-58.
- Fredriksson, P.G. (1999) The Political Economy of Trade Liberalization and Environmental Policy, *Southern Economic Journal* 65, pp. 513-525.
- Fredriksson, P.G., Gaston, N. (2000) Ratification of the 1992 Climate Change Convention. What determines Legislative Delay?, *Public Choice* 104, pp. 345-368.
- Fredriksson, P.G., Millimet, D.L. (2004a) Comparative Politics and Environmental Taxation, *Journal of Environmental Economics and Management* 48, pp. 705-722.
- Fredriksson, P.G., Millimet, D.L. (2004b) Electoral Rules and Environmental Policy, *Economics Letters* 84, pp. 237-244.
- Fredriksson P.G., Neumayer, E., Damania, R., Gates, S. (2005) Environmentalism, Democracy, and Pollution Control, *Journal of Environmental Economics and Management* 49, pp. 343-365.
- Glaeser, E., Scheinkman, J., Shleifer, A. (2003) The Injustice of Inequality, *Journal of Monetary Economics* 50, pp. 199-222.
- Gradstein, M. (2005) Inequality, Democracy and the Protection of Property Rights, mimeo.
- Gray, W.B., Shadbegian, R.J. (2004) 'Optimal Pollution Abatement - Whose Benefits Matter, and How Much?', *Journal of Environmental Economics and Management* 47, pp. 510-534.
- Grossman, G.M., Helpman, E. (1994) Protection for Sale, *American Economic Review* 84, pp. 833-850.
- Grossman, G.M., Krueger, A.B. (1991) Environmental Impacts of a North American Free Trade Agreement, NBER WP 3914.
- Grossman, G.M., Krueger, A.B. (1994) Economic Growth and the Environment, NBER WP 4634.
- Heal, G. (2005) Corporate Social Responsibility: An Economic and Financial Framework, *The Geneva Papers* 2005.

- Husted, T., Kenny, L.W. (1997) The Effect of the Expansion of the Voting Franchise on the Size of Government, *Journal of Political Economy* 105(1), pp. 54-82.
- Jakee, K., Sun G.-Z. (2006) Is Compulsory Voting More Democratic?, *Public Choice* 129, pp. 61-75.
- Jänicke, M., Binder, M., Mönch, H. (1997) 'Dirty Industries': Patterns of Change in Industrial Countries, *Environmental and Resource Economics* 9, pp. 467-491.
- Kahn, M.E., Matsusaka, J.G. (1997) Demand for Environmental Goods. Evidence from Voting Patterns on California Initiatives, *Journal of Law and Economics* 40, pp. 137-173.
- Kirchgässner, G., Schneider, F. (2003) On the Political Economy of Environmental Policy, *Public Choice* 115, pp. 369-396.
- Li, H., Squire, L., Zou, H. (1998) Explaining International and Intertemporal Variations in Income Inequality, *The Economic Journal* 108(446), pp. 26-43.
- List, J.A., Sturm, D.M. (2004) How Elections Matter: Theory and Evidence from Environmental Policy, NBER WP 10609.
- Lizzeri, A., Persico, N. (2001) The Provision of Public Goods under Alternative Electoral Incentives, *American Economic Review* 91(1), pp. 225-239.
- Lizzeri, A., Persico, N. (2004) Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government with Application to Britain's "Age of Reform", *Quarterly Journal of Economics* 119, pp. 707-765.
- Lucas, R.E.B., Wheeler, D., Hettige, H. (1992) Economic Development, Environmental Regulation and the International Migration of Toxic Industrial Pollution, The World Bank, WPS 1062.
- Martinez-Alier, J. (2002) The Environmentalism of the Poor, Edward Elgar.
- Matsusaka, J.G. (2005) Direct Democracy Works, *Journal of Economic Perspectives*.
- Matthews, E., Mock, G. (2003) More Democracy, Better Environment?, *World Resources 2002-2004: Decisions for the Earth: Balance, Voice, and Power*, Washington, DC.
- McMillan, J., Zoido, P. (2004) How to Subvert Democracy: Montesinos in Peru, CESifo WP 1137.
- Milanovic, B., Gradstein, M. (2004) Does Libertè=Egalité? A Survey of the Empirical Links Between Democracy and Inequality with Some Evidence on the Transition Economies, *Journal of Economic Surveys* 18(4).
- Milesi-Ferretti, G.-M.A., Perotti, R., Rostagno, M.A. (2000) Electoral Systems and the Composition of Public Spending, mimeo, Columbia University.
- Mueller D. C., Stratmann, T. (2003) The Economic Effects of Democratic Participation, *Journal of Public Economics* 87, pp. 2129-2155.
- Neumayer, E. (2002) Do Democracies Exhibit Stronger International Environmental Commitment? A Cross-Country Analysis, *Journal of Peace research* 39, pp. 139-164.

- Neumayer, E., Gates, S.G., Gleditsch, N.P. (2002) Environmental Commitment, Democracy and Inequality. Background Paper, World Development Report 2003, World Bank.
- Neumayer, E. (2003) Are Left-Wing Party Strength and Corporatism Good for the Environment?, *Ecological Economics* 45, pp. 203-220.
- Oates, W.E., Portney, P.R. (2001) The Political Economy of Environmental Policy, *Resources for the Future*, DP 01-55.
- Panayotou, T. (2001) Economic Growth and the Environment, CID WP 56, Harvard University.
- Payne, R.A. (1995) Freedom and the Environment, *Journal of Democracy* 6, pp. 41-55.
- Persson, T., Roland, G., Tabellini, G. (2000) Comparative Politics and Public Finance, *Journal of Political Economy* 108, pp. 1121-1161.
- Persson, T., Tabellini, G. (1999) The Size and Scope of Government: Comparative Politics with Rational Politicians, *European Economic Review* 43, pp. 699-735.
- Pommerehne, W.W. (1983) Private versus öffentliche Müllabfuhr - nochmals betrachtet, *Finanzarchiv* 41, pp. 466-475.
- Popp, D. (2001) The Effect of New Technology on Energy Consumption, *Resource and Energy Economics* 23, pp. 215-239.
- Popp, D. (2003) Pollution Control Innovation and the Clear Air Act of 1990, *Journal of Policy Analysis and Management* 22, pp. 641-660.
- Popp, D. (2005) Lessons from Patents: Using Patents to Measure Technological Change in Environmental Models, *Ecological Economics* 54, pp. 209-226.
- Popp, D. (2006) Exploring Links Between Innovation and Diffusion: Adoption of NOx Control Technologies at U.S. Coal-fired Power Plants, NBER WP 12119.
- Przeworski, A. (2005) Democracy as an Equilibrium, *Public Choice* 123, pp. 253-273.
- Sala-i-Martin, X., Subramanian, A. (2003) Addressing the Natural Resource Curse: An Illustration from Nigeria, NBER WP 9804.
- Scruggs, L. (1998) Political and Economic Inequality and the Environment, *Ecological Economics* 26, pp. 259-275.
- Stiglitz, J.E. (2005) The Ethical Economist, *Foreign Affairs*, November/December 2005.
- Stratmann, T. (2005) Ballot Access Restrictions and Candidate Entry in Elections, *European Journal of Political Economy* 21(1), pp. 59-71.
- Tanguay, G.A., Lanoie, P., Moreau, J. (2004) Environmental Policy, Public Interest and Political Market, *Public Choice* 120, pp. 1-27.
- Thalmann, P. (2004) The Public Acceptance of Green Taxes: 2 Million Voters Express Their Opinion, *Public Choice* 119, pp. 179-217.
- Verardi, V. (2005) Electoral Systems and Income Inequality, *Economics Letters* 86, pp. 7-12.

WCED (1987) *Our Common Future*, World Commission on Environment and Development, Oxford University Press.

Wolverton, A. (2002) *Does Race Matter? An Examination of a Polluting Plant's Location Decision*, mimeo, US EPA, National Center for Environmental Economics.

World Bank (2000) *Greening Industry: New Roles for Communities, Markets and Governments*, Oxford University Press.