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THE ROLE OF GOVERNMENT IN ANTI-SOCIAL REDISTRIBUTIVE ACTIVITIES

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Abstract

It is known that anti-social redistributive activities (rent seeking, tax evasion, corruption, violation of property rights, delay of socially beneficial reforms, etc) hurt the macroeconomy. But it is less known what is the role of government size as a determinant of such activities. We use data from 64 counties (both developed and developing) in 5-year periods over 1980-2000. As a measure of anti-social activities, we use the ICRG index; as a measure of government size, we use the government share in GDP; and as a measure of government efficiency, we construct an index by following the methodology of Afonso, Schuknecht and Tanzi (2003). Our regressions show that what really matters to social incentives is the relation between size and efficiency. Specifically, while a larger size of government is bad for incentives when one ignores efficiency, the results change drastically when government efficiency is also taken into account. Only when our measure of size exceeds our measure of efficiency, larger public sectors are bad for incentives. By contrast, when efficiency exceeds size, larger public sectors are not bad; actually, in the case where efficiency is measured by government performance in the policy areas of administration, stabilization and infrastructure, larger public sectors significantly improve incentives.

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1. Introduction

Incentives motivate economic and social life. For many economists, economics is to a large extent a matter of “good” incentives.¹ In this paper, by good incentives we mean the involvement in socially productive activities as opposed to socially unproductive activities, legal or illegal, that aim at a redistributive struggle for a larger share of the national pie. In other words, by socially unproductive, or anti-social, activities we mean situations in which economic agents (e.g. social groups, professional associations, public sector unions, industrial associations, networks, or even single individuals) use their private time and resources to gain an advantage in dividing up the benefits of aggregate economic activity and appropriate other agents’ product and effort.²

In their search for private gain, anti-social agents reduce the pie that initiated the redistributive struggle in the first place. For instance, Olson (1982) argues that entrenched vested interests are a main cause for economic decline, while Rodrik (1999) points out that domestic social conflicts and redistributive struggles play a key role in understanding why growth rates lack persistence and why some countries have experienced a sharp decline in growth since the mid 1970s. In the end, even aggressive agents, that look as winners, may lose by finding themselves with a larger slice of a smaller pie.

Anti-social redistributive activities (ASRA) can take a variety of forms.³ For instance, they can take the form of rent-seeking competition for extra favors from the state, which benefit specific groups at the expense of others⁴ (see e.g. Persson and Tabellini (2000, chapter 7), Mohtadi and Roe (1998, 2003), Alesina (1999), Mauro (2002) and Park et al. (2003)). Or they can take the form of a distributive struggle

¹ See e.g. the examples in the book by Laffont and Martimort (2002).

² See Mueller (2003, chapters 3 and 29) for a survey of the literature on redistribution. Here, we focus on what Mueller calls “involuntary” redistribution, or “redistribution as taking”.

³ Although different authors use different terms, they describe similar problems and use similar proxies. For instance, Knack and Keefer (1995) use the term “institutions”, Barro (1997) uses the term “rule of law”, Knack and Keefer (1997) use the term “social capital”, Hall and Jones (1999) use the term “social infrastructure”, and Zak and Knack (2001) use the term “trust”; on the other side of the coin, Rodrik (1999) uses the term “social conflict”. In this paper, we prefer to use the term “ASRA”. Note also that we will use the terms incentives, behavior and activities interchangeably.

⁴ Rent seeking is the socially costly pursuit of a contestable prize, where the prize can take various forms (for surveys of rent seeking, see e.g. Drazen, 2000, chapters 8 and 10, and Mueller, 2003, chapter 15). Usually it is the government that can create, increase and protect a rent. As a result, and due to the post-war expansion of government, fiscal rent seeking is a key way of redistributive politics. In this case, examples of rent seeking include lobbying for the provision of local public goods, obtaining contracts for the provision of public goods, securing public sector employment, getting extra fiscal transfers and tax exemptions, using the revenue from privatised public assets for the benefit of special interests like public sector unions, etc. This goes back to Tullock (1967) and Krueger (1974).

among power groups, like trade unions and high executives (see e.g. Mueller (2003, chapter 20) for interest groups). Or they can take the form of non-adoption, delay or reversal of socially beneficial reforms and policy changes as vested interests preserve the status quo to keep extra rents (see e.g. Alesina and Drazen (1991) and Drazen (2000, chapter 10)). Or they can take the form of extraction from national natural resources for private benefit (see e.g. Leite and Weidmann (2002) and Grossman and Mendoza (2003)). Or, when there are trade impediments, they can take the form of higher prices as firms charge higher prices to increase their profit margins. Or they can take the form of shadow or underground economic activities (see e.g. Schneider and Enste (2000)). But ASRA can also take the form of illegal activities like tax evasion, corruption, criminal violations of property rights, smuggling or fraud (see e.g. Rose-Ackerman (1999) and Mueller (2003, chapter 16)). Finally, they can take the form of anti-social behavior in the form of incivility, disorder, nuisance and disrespect for public goods (see e.g. *The Economist*, September 13th 2003, p. 36).

ASRA are at best a zero-sum game. As Mueller (2003, p. 9) puts it, “if stealing, and guarding against it, detract A and B’s ability to produce corn and cattle, it becomes a negative-sum game”. Nevertheless, although such activities lead to socially inefficient outcomes, they can be privately rational. Utility-maximizing agents tradeoff personal benefits and costs expected from alternative uses of their time and resources.⁵ In a decentralized (Nash) equilibrium, they may find it optimal to allocate a part of their time and resources to ASRA. However, the society would be better off (the national pie would be larger), if economic agents allocated their resources to socially productive activities. A larger national pie could in turn allow higher personal welfare. Thus, in most cases, there is a prisoners’ dilemma situation in the sense that everybody gets worse off.

But, although the human motivator is utility maximization (namely, self interest) in all societies, societies do differ in the way they channel self-interest. As Rose-Ackerman (1999, p. 2) points out, in some societies, self-interest is transmuted mainly into socially productive activities that lead to an efficient allocation of resources. In some other societies, by contrast, self-interest is transmuted mainly into socially unproductive activities that lead to an inefficient allocation of resources.

This non-technical paper investigates the determinants of ASRA. Obviously, many factors can contribute to such activities ranging from fundamentals to incentive

⁵ Concerning the private costs of ASRA, lobbying, participating in strikes, paying campaign contributions to politicians, bribing, paying lawyers, hiring private security services, etc, are costly activities. For the social costs of ASRA, see below in Section 3.

schemes and time horizons. Here, the focus will be on the role of the government sector, and in particular on the relation between size and efficiency of the government sector.⁶

There is a popular belief that governments, especially big-sized governments, are a main reason for poor incentives and anti-social redistributive activities. Rent seeking, corruption, tax evasion, moral hazard, etc are believed to be phenomena associated with high government spending, large tax burdens and heavy regulation. For instance, as Mueller (2003, p. 544) puts it, “it is tempting when thinking of this question (why has the underground sector grown so rapidly across all countries?) to seek an answer in the tremendous growth in government that has occurred since 1960”. However, Scandinavian countries or Canada have large public sectors, yet they enjoy relatively top institutions and socially behaved citizens. Therefore, as Mueller also warns on the same page “linking up the size and growth of the government sector to the size of growth of the underground economies of the developed countries remains a challenging research task”.

We use data from 64 counties (both developed and developing) in 5-year averages over the period 1980-2000. As a measure of ASRA, we will follow usual practice by using the International Country Risk Guide (ICRG) index. As a measure of government size, we will use the government share in GDP. As a measure of government efficiency, we will construct an index by following the methodology of Afonso et al. (2003) for OECD countries. This index measures the efficiency of the public sector of each country in reaching a range of objectives of government intervention. It is calculated as the ratio of performance indicators (output) by a measure of public expenditures related to those indicators (input), based on the assumption that the input is used to achieve that output. Thus, among other things, a contribution of our paper is to rank a relatively large group of countries according to their public sector efficiency, where the latter is measured by government

⁶ It is important to lay out a conceptual framework that provides the basis of our empirical work. In one-shot non-cooperative games, strategic complementarities can produce multiple, Pareto ranked, Nash equilibria (see e.g. Cooper and John (1988)). By strategic complementarities, we mean that private incentives depend positively on those of the groups we associate with. This implies that, if there are complementarities in anti-social activities (e.g. I tax evade, if the others tax evade), one may get equilibria with good incentives and equilibria with bad incentives depending on fundamentals (see e.g. Tirole (1996)). For instance, in models of rent seeking from state coffers, the probability of an equilibrium with rent seeking increases with the size of public sector and decreases with the degree of efficiency in this sector (see e.g. Mauro (2002) and Park et al. (2003)). This is the conceptual framework here. In turn, the standard results hold. For instance, if an economy is stuck in a bad equilibrium in the one-shot game, a cooperative outcome can be achieved via repetition.

performance in the policy areas of administration, stabilization, infrastructure and education.

Our main empirical findings are as follows. When one ignores efficiency, a larger size of government is bad for incentives. However, the results change drastically when efficiency is also taken into account. Our regressions show that only when our measure of size exceeds our measure of efficiency, larger public sectors are bad for incentives. By contrast, when efficiency exceeds size, larger public sectors are not bad; actually, in the case where efficiency is measured by government performance in the policy areas of administration, stabilization and infrastructure, larger public sectors significantly improve incentives. To give an illustrative example, a large public sector is good for incentives in a country like Canada or Malaysia, in which efficiency is also high. But a public sector of about the same size is bad for incentives in a country like Romania or Uruguay, where efficiency is low.

Therefore, our findings question the popular belief that large sizes per se are bad for incentives. Whether the effect of government size on incentives is positive or negative (or equivalently whether the government size is too small or too large) depends on the nexus between size and efficiency of the public sector. In other words, as it is the case in the literature relating government size to economic growth (see the literature initiated by Barro, 1990), the data reveal an inverted-U relationship between size and incentives. In principle, government intervention can have both positive and negative effects on incentives (see Section 4 below for details), so that countries should be located all along the curve. And this is what the data say.

Our findings are consistent with the warning of Levine and Renelt (1992, p. 951) that “using simple expenditure data without accounting for government efficiency may yield inaccurate measures of the actual delivery of public services”. They are also consistent with Tanzi’s (1998, p. 566) intuition that “the way the state operates and carries its functions is far more important than the size of public sector activity measured in the traditional way”. Mueller (2003, p. 548) also believes that “both the size of government and the quality of its institutions appear to matter”.

We will build our arguments in simple logical steps. We begin with measures of social incentives in Section 2. Section 3 reviews how economic performance is shaped by incentives. In Section 4, we search for the determinants of incentives by focusing on government size. A measure of government efficiency is constructed in Section 5. Section 6 presents the main findings by examining the size vis-à-vis efficiency mix. Section 7 concludes.

2. Measures of anti-social redistributive activities (ASRA)

Anti-social redistributive activities (or their mirror image, socially productive activities) are hard to measure. Any empirical methodology can only utilize proxy variables, usually in the form of subjective indexes, which can hopefully provide adequate description of this type of activities. Several indexes have been proposed and used by the literature. In this section, we briefly present the most popular indexes and choose the one we are going to use.

Most studies use the IRIS dataset (version IRIS-3, obtained by *countrydata.com*) that contains annual values over 1982-1997, as constructed by Stephen Knack and the IRIS Center at the University of Maryland, from monthly ICRG data provided by Political Risk Services. This index includes five sub-indexes: “rule of law”, “risk of expropriation”, “corruption in government”, “risk of repudiation of government contracts” and “quality of bureaucracy”. A key advantage of this proxy is that it has a sufficiently long time-series dimension. This dataset has been used by e.g. Knack and Keefer (1995), Barro (1997), Mauro (1998), Rodrik (1999), Hall and Jones (1999), Olson et al. (2000), Persson et al. (2003) and Barro and Sala-i-Martin (2004). Note that some authors use this index as a flow variable (e.g. rent seeking, corruption, social behavior), while some others use it as a stock variable (e.g. quality of government institutions, social infrastructure, social capital). This conforms to our claim above that, at least from an empirical viewpoint, all these different names are effectively picking up the same thing, what we here call ASRA.

There are other datasets available that can also provide proxies for ASRA. For instance, for corruption in government, most researchers use the CPI index as developed by Transparency International. This index has been used by e.g. Treisman (2000), Persson and Tabellini (2003) and Persson et al. (2003). It should be noted that the CPI and the ICRG indexes are highly correlated (see Treisman (2000, p. 411) and Persson et al. (2003, p. 967)). An alternative proxy for corruption, compiled by the organization Business International (BI), has been used by e.g. Mauro (1995) and Ades and Di Tella (1999). The BI index is also highly correlated with the CPI index (see e.g. Treisman (2000, p. 411)). Another measure of socially productive activities can be obtained from the Kaufmann et al. (2003) dataset on governance. This has been used by e.g. Persson and Tabellini (2003) and Persson et al. (2003). This index is also highly correlated with the CPI index (see e.g. Persson and Tabellini (2003, p.

57)). Finally, Knack and Keefer (1997) and Zak and Knack (2001) have used an index of social capital or trust obtained from the World Values Surveys.

In this paper, we will choose the most commonly used index, the ICRG. Although, like most related indexes, the ICRG index is centred on governance problems, it essentially captures anti-social symptoms in the society as a whole. For instance, corruption of government officials is highly correlated with ASRA in general. To measure ASRA, one could use the “rule of law” sub-index only. However, since there are very strong correlations among the five sub-indexes, we will follow usual practice by using the sum of all five sub-indexes included in the ICRG index.

3. Anti-social redistributive activities (ASRA) hurt the macroeconomy

It is recognized that ASRA are associated with worse macroeconomic performance. This section will briefly review the main results and empirical findings of the literature.

ASRA lead to a smaller national pie, so that competing social groups can end up with a larger slice of a smaller pie. The pie gets smaller because national resources are misallocated.⁷ For instance, rent seeking misallocates the talent of people, absorbs labor and so reduces output. Or the tax imposed by the rent-seeking sector on the productive sector can reduce incentives to produce. Or social conflict can discourage innovation. Or low trust environments increase transaction costs and reduce investment. Or collected tax revenues can be used for the benefit of special interests at the expense of public goods and social infrastructure so that the government cannot play its useful Musgravian role.

There is a lot of econometric work confirming that ASRA hurt the macroeconomy. Here we list the most influential empirical papers. Mauro (1995) uses the Business International index of corruption and finds that corruption has a negative effect on growth and private investment. Knack and Keefer (1995) use the ICRG index, as a measure of the quality of institutions, and document a positive effect on growth and private investment in cross-country regressions. The same index has been

⁷ Theorists have always attributed economic progress to the quality of institutions in a society (see e.g. the early work by Olson (1982) and North (1990)). Recent theoretical work has also shown how non-cooperative behavior generates a destructive redistributive struggle over national wealth that leads to poor macro outcomes. See e.g. Benhabib and Rustichini (1996), Lane and Tornell (1996), Mohtadi and Roe (1998, 2003), Tornell and Lane (1999), Mauro (2002), Park and Philippopoulos (2003) and Park et al. (2003); see also Drazen (2000, chapters 10 and 11) for a survey of most of this literature. For surveys of the macro effects of corruption and anti-social activities in general, see e.g. Knack and

repeatedly used in growth regressions (see e.g. Barro (1997) and Barro and Sala-i-Martin (2004, chapter 12) who call the index “rule of law”) and is always found to be important for growth. Hall and Jones (1999) provide evidence that growth-promoting factors, like physical and human capital formation as well as productivity, are negatively affected by bad social infrastructure as measured by the ICRG index. Rodrik (1999) attributes growth collapses and inability to cope with external shocks to insufficient social infrastructure, which is the result of latent social conflicts and poor governmental institutions with the latter measured by the ICRG index. Olson et al. (2000) also use the ICRG index, as a measure of the quality of governance, to show that it is important in explaining differences in productivity growth among countries. Knack and Keefer (1997) and Zak and Knack (2001) find that social trust is important to growth. There is also a lot of evidence that anti-social activities distort fiscal policy decisions.⁸

We sum up. Social cooperation and cohesion are engines of growth. Since this is already well established in the empirical literature, we do not provide our own evidence (however, results are available upon request).

4. The fiscal size of government as a determinant of ASRA

Given the importance of anti-social redistributive activities (ASRA) for macroeconomic outcomes, it is necessary to search for their determinants. The empirical literature has already identified several factors that cause ASRA.⁹ These

Keefer (1997, section II) and Tanzi (1998, pp. 578-586). For intuitive papers on rent seeking and their harmful effects, see Baumol (1990) and Murphy et al. (1991).

⁸ ASRA distort the composition of government expenditure and taxation. In particular, Mauro (1998) uses the ICRG index as a proxy for rent seeking and provides evidence that this is resulting in a reallocation of government resources from areas that do not leave much room for extraction (e.g. education) into areas that allow for corruption (e.g. defence) (see also Gupta et al. (2001a, 2001b)). Tanzi and Davoodi (1998) show that high corruption (measured by the ICRG index) is associated with high public investment (because political corruption is often tied to capital projects) but low operation and maintenance expenditure and poor quality of infrastructure. Tanzi and Davoodi (1998) and Ghura (2002) provide evidence that higher corruption is associated with lower tax revenues.

⁹ For rich studies see e.g. La Porta et al. (1999), Treisman (2000) and Persson and Tabellini (2003, chapter 3). Commonly proposed determinants of anti-social activities include e.g. ethnic tensions, democracy, openness and inequality. Ethnic tensions result in social conflict and this exacerbates anti-social activities and hurts growth (see e.g. Easterly and Levine (1997), Mauro (1995), La Porta et al. (1999), Persson and Tabellini (2003, chapter 3) and Treisman (2000)). The quality of democracy increases transparency and reduces corruption and illegal activities (see e.g. Treisman (2000), Paldam (2002) and Persson and Tabellini (2003, chapter 3)). Openness has ambiguous effects (see e.g. Tanzi (1998)). On the one hand, it can reduce rent seeking because it removes controls (e.g. tariffs, import quotas) that create the possibility of monopoly rents; on the other hand, it can result in a redistribution of corruption, as new interest groups become more powerful by the new developments. The empirical evidence so far seems to suggest that more open economies improve incentives (see e.g. Ales and Di Tella (1999), Persson and Tabellini (2003, chapter 3) and Treisman (2000)). Finally, income inequality

factors include government policies.¹⁰ Concerning government policies, the focus has been on two things. First, the beneficial effects of targeted policies, like education and redistribution.¹¹ Second, the adverse effects of regulations, since heavy regulation and government intervention can push agents to rent seeking, tax evasion, shadow economic activities, etc.¹² But there is relatively little evidence on the role of the *fiscal size of the government sector*, anyhow this size is measured.¹³ This is surprising because it is widely believed that economic performance - and the quality of incentives is an important indicator of economic performance - correlates systematically with the fiscal size of the government sector.

But it is better to take things in turn. In principle, the effect of the fiscal size of government on the quality of private incentives is ambiguous. On the one hand, government intervention can improve incentives. For instance, governments can enforce the law by financing activities like police, courts and prisons; they can educate people the benefits of trust, ethics, social cohesion and cooperation; they can redistribute income and thus create opportunities and reduce social conflict; they can build schools and pay the salaries of teachers. On the other hand, there is the counter-argument that government intervention, not only requires higher taxes, but also pushes self-interested individuals further away from socially productive to unproductive activities. For instance, large public sectors can lead to tax evasion; they can foster corruption; they generate both rents and rent-seeking behavior; they cause

also results in social conflicts and anti-social activities (see e.g. Rodrik (1999), Keefer and Knack (2002) and Paldam (2002), who associate measures of income inequality with corruption).

¹⁰ Government policies have always been considered to be important in shaping social behavior. For instance, Tanzi (1998, p. 565) argues that “corruption is generally connected with the activities of the state and especially with the monopoly and discretionary power of the state”. Olson et al. (2000, p. 343) point out that “the structure of incentives is given by a country’s institutions and economic policies and thus by its government”. In Mueller (2003, p. 539), “taxes and other forms of government intervention and regulation can ... affect the choice between conducting an activity in the legitimate economy and conducting it in the underground economy”. Alesina (1999) argues similarly when he compares big public sectors in developed economies to small public sectors in developing economies.

¹¹ For instance, Van Rijckeghem and Weder (2001) provide evidence that civil-service wages relative to manufacturing wages reduce corruption (however see also Treisman (2000) and La Porta et al. (1999) on this). Ales and Di Tella (1999) and Persson and Tabellini (2003, chapter 3), among many others, use measures of school enrolment as potential determinants of less corruption.

¹² Johnson et al. (1998) relate the size of underground economy to indexes of the burden of regulation, taxation and corruption in a sample of 49 economies. Schneider and Enste (2000) review the literature that provides evidence that higher tax and social security contributions, as well as heavier regulation, cause shadow economic activities. Graeff and Mehlkop (2003) and Paldam (2002) use the “Economic Freedom of the World” index, developed by the Fraser Institute, while Treisman (2000) uses an index of state interference as constructed by the Institute for Management Development at Lausanne, to investigate the impact of economic freedom (or its mirror image, government regulations) on corruption.

¹³ Exceptions include e.g. Goel and Nelson (1998) who find that corruption at the state level in the US increases with the fiscal size of state governments, and La Porta et al. (1999) who present cross-country correlations between various measures of the fiscal size of government and various proxies of rent seeking, and find (unexpectedly) an inverse relation.

moral hazard behavior. Therefore, as always with government intervention, there should be a tradeoff in the size of government, which implies that private incentives (and economic performance in general) follow an inverted-U pattern with the size. When the size is too small, a bigger size should improve incentives. Beyond a critical size, the distorting effects dominate and a bigger size should be bad for incentives.¹⁴

When we go to the “real world”, a popular belief among economists is that in most countries (especially the developed ones) the costs outweigh the benefits so that, other things equal, countries with big governments perform worse than countries with small governments. For instance, Tanzi and Schuknecht (1997, 2000) provide correlations that, in industrial countries, countries with small governments perform better than countries with big governments in terms of several socioeconomic indicators. As said above, this belief is particularly popular when the performance indicator is private incentives (tax evasion, corruption, rent seeking, moral hazard, etc, are believed to be phenomena especially associated with big-sized governments).

We sum up. The size of government is expected to be a key determinant of anti-social redistributive activities. We now look at the data.

Preliminary econometric evidence

To examine empirically the above conjectures, we use a pooled cross section of data for 64 counties (both developed and developing). We take 5-year averages for all variables over four time-periods, 1980-1985, 1985-1990, 1990-1995 and 1995-2000. Thus, ideally, we have four observations for each country. But there are missing observations for some countries in certain time periods, so that we end up with a total of 162 observations.¹⁵

As a measure of anti-social redistributive activities, we will use the *ICRG* index described in Section 2 above, with higher scores denoting better social behavior. The *ICRG* index will be regressed on a selective small number of commonly-used explanatory variables (e.g. ethnic divisions, democracy and openness), plus the key variable in our study which is the government size. As a measure of government size, we will use the variable *government share in GDP*,

¹⁴ Tradeoffs between macro outcomes and the size of public sector are well studied (see e.g. Barro’s (1990) well-known growth model and the review of the empirical literature in Mueller (2003, chapter 23)). But tradeoffs between private incentives and government size are less studied.

¹⁵ For what we do in this section, we can collect data from 108 countries. However, the main constraint to the data is the construction of a measure of government efficiency described in Section 5 below. We therefore prefer to use the same sample (64 countries) throughout the paper. We report that the results reported in this section do not change if we use the bigger sample of 108 countries.

which is obtained from the Penn World Tables, version 6.1 (Heston et al., 2002).¹⁶ As a measure of ethnic divisions, we will use the variable *ethnic tensions* provided by the IRIS dataset.¹⁷ Democracy will be measured by the *Gastil Index* developed by the Freedom House. To measure openness, we will use the variable *openness* from the Penn World Tables defined as imports plus exports over GDP in constant prices. All these variables will be averaged over the four 5-year periods. Since historical or geographical effects can still be important even after controlling for the above factors, we will follow usual practice by adding a set of regional dummies for the countries located in *East Asia*, *Sub-Saharan Africa* and *Latin America*, as well as for the *Transition Economies*.

Estimation of a regression for the ICRG index by fixed effects would not be informative in this sample, as there are several countries that have only one observation, which implies that they would have to be dropped. In addition, restricting the analysis to the within dimension of the data, would result in losing all cross-country variation, and therefore our study would not be comparable to the relevant literature which has focused on cross-national differences. We therefore opt to estimate our regressions by pooled OLS after making two corrections (on the use of OLS techniques with panel data, see e.g. Wooldridge (2002, chapter 7)). First, we introduce a set of time dummies so as to control for possible time effects that appear to be common in all countries. We thus include a dummy for the 1985-1990 period (denoted as *D1985*), a dummy for 1990-1995 period (denoted as *D1990*) and a dummy for the 1995-2000 period (denoted as *D1995*). Second, we report standard errors that are robust to arbitrary heteroskedasticity and serial correlation.

The results of our basic regression are presented in column 1 of Table 1. The government size (as measured by *gov. share*) has a significantly negative effect on the

¹⁶ The fiscal size of government can be measured by government spending, tax revenue and the budget balance, all as shares of GDP (see e.g. Tanzi and Zee, 1997, and Persson and Tabellini, 2003). However, the tax revenue-to-GDP ratio is a problematic measure mainly because of tax evasion problems; this problem gets particularly acute when we examine social behavior since anti-social activities and tax evasion are correlated. The same can be said about the budget-to-GDP ratio since it includes tax revenues. We will therefore use common measures of government spending (as in the empirical growth literature). In this case, our primary measure will be the government share in GDP. This is government consumption expenditures to GDP and includes spending on goods and services like education and health (e.g. the salaries of professors and doctors and spending on non-capital goods), national defense, public administration, police and the judiciary system. These variables are close to the spirit of our paper. Nevertheless, we will also report results with more general measures of government spending, like the ratio of total government expenditures to GDP (available from World Development Indicators, WDI) that also includes public investment, transfers and interest payments on public debt. See below for further details.

¹⁷ In cross-national analyses, Mauro (1995), Easterly and Levine (1997), Rodrik (1999), Treisman (2000) and Persson and Tabellini (2003, chapter 3) use an index of ethno linguistic fractionalization in

ICRG index, supporting the popular belief that, on average, large governments are bad for private incentives. The rest of the variables exert their expected effects. Specifically, the results confirm the positive effect of democracy and the adverse effect of ethnic tensions. Openness is not significant (see above for explanations). Concerning the regional dummies, the transition economies, East Asian countries and especially Latin American countries are associated with worse incentives. Also, the time dummies make a strong case that the 1990s have been a much better decade than the 1980s. It should be pointed out that this set of explanatory variables is explaining about 76% of the variation of the ICRG index.¹⁸

Summing up this section, there is evidence that private incentives are negatively affected by the size of government. A key message of our paper is that this result, although popular, is missing an important point. Whether the effect of government size on incentives is positive or negative (or equivalently whether the government size is too small or too large) should depend explicitly on the nexus between size and efficiency of the public sector (see also e.g. Levine and Renelt (1992)). To put it differently, since government activity can have both positive and negative effects on incentives, both possibilities should be detected by the data so that countries are located all along a Laffer-type curve. Therefore, in what follows we try to go a bit deeper by taking account of government efficiency. But to do so, we first need a measure of government efficiency.

5. A measure of government efficiency

To measure government efficiency, we use the methodology developed by Afonso et al. (2003). We will construct sub-indices of relative Public Sector Efficiency (PSE) in certain policy areas in each country and each time period, and then take the average of

the early sixties as a proxy for ethnic tensions. Here, we prefer the IRIS index (also used by e.g. Keefer and Knack, 2002) because it is available for more countries and more time periods.

¹⁸ Two remarks: First, we have alternatively used total government expenditures-to-GDP as a measure of government size but it is not significant. We believe this is because this measure includes transfers and interest payments, where the former has several effects on incentives that work in different directions, and the latter is predetermined and thus too inflexible to affect social behavior. We thus believe that the government share in GDP is more appropriate for what we do here. Second, the results are affected if we include per capita GDP as an explanatory variable. In particular, most of the other regressors lose about half of their estimated effect on the ICRG index and their estimated standard errors get higher, while the coefficient of *gov. share* gets insignificant (for similar results, see La Porta et al. (1999) although in a study without government size; Persson and Tabellini (2003, chapter 3), when they control for per capita income, also do not find significant effects of democracy, ethnic tensions or regional dummies on rent seeking). This is because the level of per capita income is a strong indicator of economic development; it is therefore highly correlated with (and thus absorbing the

these sub-indices to obtain an index of aggregate government efficiency in each country and each time period.

Afonso et al. have constructed such PSEs in seven policy areas for OECD countries over the eighties and nineties. Here, we will focus on four policy areas (education, administration, infrastructure and stabilization) for 64 countries, both industrialized and developing, and four 5-year time-periods, over 1980-2000 (obviously, due to data availability, there is a trade-off between the number of countries and the number of policy areas). Note that we keep only those observations for which indexes of government efficiency in all four areas are available.

The basic insight in the methodology of Afonso et al. is to compare the performance of government in certain areas of economic activity (where these areas are directly influenced by government intervention) to the associated expenditures that the government allocates in order to achieve this particular performance. Thus, to construct a PSE index, we need a measure of Public Sector Performance (PSP) and a measure of the associated Public Sector Expenditure (PEX) for each country in each policy area in each time period. Then, the PSE will be the ratio of PSP to PEX.¹⁹

In the policy area of education, the PSP can be measured by the variable *Secondary School Enrollment*, while the associated PEX is the average of the variable *Public Spending in Education* as a percentage of GDP (both variables are available from the World Development Indicators, WDI), where we use the end of period values (or the closest to the end available) of Secondary School Enrollment.²⁰ The resulting PSE is then a measure of government efficiency in the policy area of education.

In the policy area of administration, the PSP is measured by the end of period values of the variables *Corruption in Government* and *Bureaucratic Quality* (both obtained from the IRIS-3 dataset)²¹ with higher scores denoting better outcomes,

effect of) policies (e.g. the share of government in GDP, or the degree of openness) and other institutional factors (e.g. the measures of democracy, ethnic tensions, or regional dummies).

¹⁹ Afonso et al. have focused on OECD countries, where the available data cover both government performance and the associated public expenditure. Although we have tried to follow Afonso et al. in the choice of policy areas and variables used, the construction of such a rich PSE for a broader group of countries runs into data limitations, especially when looking for decomposed public expenditure data. Thus, some deviations from the variables used by Afonso et al. are inevitable. Nevertheless, the variables used here are the same in spirit.

²⁰ Afonso et al. (2003) use the same PEX, but they also include a measure of the quality of education when they construct the PSP. See below for further details.

²¹ Afonso et al. (2003) have used very similar variables (measures of corruption, red tape, quality of judiciary and shadow economy). We prefer the IRIS-3 indices simply because they are available for the counties and time period we work with.

while the PSE is obtained as in Afonso et al. (2003) by dividing this variable by the average public spending on goods and services (available from WDI).

In the policy area of infrastructure, the PSP is measured by the average of the variable *Diesel Locomotives in Use* as a percentage of total locomotives, and the average of the inverse of *Electric Power Transmission and Distribution Losses* (both variables are available from WDI). These measures are also used in Tanzi and Davoodi (1998) as indicators of the quality of infrastructure. A problem here is that the relevant PEX for infrastructure quality, which has been used by Afonso et al. for the OECD countries, is not available for the larger group of countries we work with. We therefore choose to use *Total Government Expenditure* (as a percentage of GDP) for PEX (this is also available from WDI), again averaged over the 5-year period.

Finally, in the policy area of stabilization, the PSP is measured by the average of the inverse of the variables *Inflation Rate* and *Unemployment Rate* (obtained from WDI), while the relevant PSE is calculated by dividing this PSP by *Total Government Expenditure* (as a percentage of GDP), averaged over the 5-year period. Afonso et al. also use total government spending as a measure of the expenditures of the public sector that are associated with stabilization and economic performance indicators, such as inflation and unemployment.

To make the above PSP and PEX measures (expressed in different units of measurement) comparable across countries, we follow Afonso et al. by expressing each country's PSP and PEX relative to the average PSP and PEX of all countries in each period, and this is done for all periods and for all four indexes. In other words, each country's PSP and PEX are expressed as percentages of the respective average (normalized to be 100), and in turn the PSE is obtained as the ratio of these relative PSP and PEX.²² Therefore, the resulting PSE is an index that measures the efficiency of a country relative to other countries in each period in a particular policy area. The larger the value, the more efficient the country is. This is the notion of *relative efficiency* in Afonso et al.

Table 2 reports the relative PSEs in the four policy areas over the most recent time-period, 1995-2000, for the 52 countries for which data are available for this time

²² Since the averages of PSP and PEX are both normalized to be 100, the resulting PSE has an average around 100 (specifically, the PSEs in education and stabilization have an average of about 110, whereas the PSEs in infrastructure and administration have an average of about 125). For instance, a number of 73 for the PSE in education in Algeria over 1985-1990 means that Algeria scores 73, when all the countries in this time period score on average 110 in the policy area of education.

period.²³ In turn, the first column in Table 3 reports the aggregate (relative) efficiency of government in each country over 1995-2000, obtained as the simple average of the four (relative) sub-indices in Table 2. The numbers in parentheses in the same column indicate the ranking of countries according to government efficiency. With two striking exceptions (Argentina and Thailand) that score paradoxically high and are marked with a question mark, the ranking looks rather sensible at least to us (in our econometric work below, we will use both the whole sample and a sample that excludes those few countries marked with a question mark).²⁴ As expected, OECD countries get on average better scores. However, the ranking of countries according to government efficiency does not always follow their per capita income ranking; we report that the correlation between per capita GDP and the government efficiency index of each country is, in the whole sample, 20% only.

Of course, we have to be cautious. For instance, in rich countries, like Finland or Sweden, the cost of resources used for providing public education or capital is higher than in say Uruguay or Lebanon, and this may result in an overestimation of relative efficiency in the latter group of countries. Also, government performance in a certain policy area may be overestimated when private resources are used to complement government policy; this is especially the case of education in many countries (Greece is a clear example). Actually, concerning the PSE in education, we feel that it is less related to *quality performance* than the PSEs in the other three policy areas. For instance, government expenditure on schools, teacher salaries or computers does not automatically mean better quality of education.²⁵ Given these problems, we will alternatively use an index of government efficiency that excludes education, and it is thus the average of the PSEs in administration, infrastructure and stabilization only. This new index is reported in the first column of Table 4, where as before the numbers in parentheses indicate the relative ranking of countries. Again, Argentina and Thailand score paradoxically high and are marked with a question

²³ Results for the previous three time-periods are not reported so as to save on space. See Angelopoulos (2005) for all time-periods.

²⁴ During the other time-periods not reported here, Indonesia, Paraguay and Philippines also score paradoxically high. Thus, Argentina, Thailand, Indonesia, Paraguay and Philippines are listed as countries with a question mark.

²⁵ This is one of the reasons that Afonso et al. (2003) include test outcomes when they calculate the PSP in education. On the importance of the quality of education, see also e.g. Hanushek and Kimko (2000). Unfortunately, such data are not available for the countries and especially the time period covered in our sample.

mark (in our econometric work below, we will use both the whole sample and a sample that excludes those few countries marked with a question mark).²⁶

Summing up, the main advantage of the Afonso et al. (2003) methodology is its simplicity and logical coherence, which allow a meaningful comparison across countries. Its main weakness is that strong assumptions have to be made in order to calculate such a composite index. Of course, if one wants to focus on OECD countries only, for which more detailed data are available, it is possible to construct more sophisticated measures (for a critical assessment of different measures of public sector efficiency, see Afonso et al. (2003), Afonso (2004) and the special issue of *European Economy*, no. 3, 2004, on “Public finances in EMU 2004”).

6. Taking account of government efficiency and an inverted-U link

This section addresses the main question posed in the paper: does the size effect depend on the relation between size and efficiency?

We start by simply adding government efficiency as a regressor into the simple regression of column 1 in Table 1.²⁷ The new results (reported in column 2 of the same table) show that the coefficient on government size remains significantly negative. Thus, by just adding government efficiency does not change anything.

We therefore move on to the main task, which is the investigation of whether there is an inverted-U pattern between government size and incentives depending on the size-efficiency mix. To do so, we will work in two steps. In the first step, we will classify countries into two groups: those whose relative size is bigger than their relative efficiency (we call them *inefficient governments*), and those in which the opposite is true (we call them *efficient governments*). In the second step, we will examine whether the effect of government size on incentives differs depending on the group. Thus, the difference from the simple regressions in Table 1, is that now we classify countries according to whether they have efficient or inefficient public sectors.

The first subsection below will use the aggregate measure of government efficiency (the one reported in column 1 of Table 3), while the next subsection will

²⁶ During the other time-periods not reported here, Panama, Paraguay and Philippines also score paradoxically high. Thus, Argentina, Thailand, Panama, Paraguay and Philippines are now listed as countries with a question mark.

²⁷ In this regression, as government efficiency we use the aggregate index reported in column 1 of Table 3. The results do not change if we use instead the less general index of government efficiency that excludes the PSE in education and is reported in column 1 of Table 4.

report results with the measure of government efficiency that excludes education performance (the one reported in column 1 of Table 4).

Using the aggregate index of government efficiency

Consider the first step. Relative government efficiencies are reported in column 1 of Table 3, while government sizes are reported in column 2 of the same Table (again we report results for the 1995-2000 period only). In column 3, we express each country's government size relative to the average government size in the sample. Then, whenever the number in column 3 exceeds the number in column 1, a government is called *inefficient*, and vice versa. Note that since each country's measures of PSP, PEX and government size are relative to their respective averages, these comparisons make sense. Take for example the first country in the list, Algeria: The government share in GDP is 25.9% (column 2 in Table 3), which implies a relative size of 161.8 (this is relative to the average which is 100). Since the relative efficiency of its public sector is only 45.5 (column 1 in Table 3), Algeria is classified as having an *inefficient* public sector. In turn, column 4 of Table 3 denotes countries as I (inefficient) or E (efficient) depending on whether the number in column 3 minus the number in column 1 is positive or negative.²⁸ It is worth pointing out that by following this rule of classification about 60% of the countries are classified as being *efficient* in the whole sample (four 5-year time periods). For the period 1995-2000 reported here, the percentage of *efficient* governments is higher. Thus, there is an improvement in the nineties compared to the eighties. This is also evident from the high significance of the dummies for the nineties in our regressions.

The regression results of the second step are reported in Table 5. Column 1 shows that, in the group of inefficient governments, the government size (gov. share in GDP) significantly distorts social behavior at 5% level. By contrast, in the group of efficient governments, the size effect is not significant. Thus, the data reveal a difference between the two groups, although ideally we would like the size effect of efficient governments to be significantly positive (but see below). Notice that, since we have included the efficiency index as a regressor, these effects are net of any direct

²⁸ Two remarks here: First, although most of the countries with efficient governments also have small governments, the two classifications do not coincide. For example, Malaysia, Canada, Chile, Argentina, Cyprus and Colombia, at certain time periods, have public sectors around, or larger than, the average and yet they are classified as having efficient governments. India, on the other hand, although scores well in terms of efficiency, it has a very big public sector so it is eventually classified as inefficient (I). We report that the correlation between government size and government efficiency is – 0.28 only. Second, the OECD economies are not always classified as having efficient governments. For

effects that efficiency might have on incentives. In particular, in both groups, the effect of efficiency is positive although not significant (but see below). The effects of all other variables on the *ICRG* index make sense and remain as in Table 1.

There are several concerns regarding the above regression. First, it is possible that the administration efficiency sub-index is endogenous because the construction of the PSP in administration uses data also included in the *ICRG* index (see Section 5). To check that our results do not depend on this, we ignore the policy area of administration and take instead the average of the other three sub-indices (education, stabilization and infrastructure) to construct an index of government efficiency. Then, working as above and dividing governments into *efficient* and *inefficient* according to the new index, we get the results reported in column 2 of Table 5. The results are very similar to those in column 1, so that the inclusion of administration in the index of government efficiency does not seem to cause any important biases. We will therefore continue to use the general index unless said otherwise.

A second concern is the inclusion of those countries whose government efficiency scores looked paradoxical, at least to us. To make sure that the results do not depend on the inclusion of those observations, we omit these countries (defined in footnote 24 above). We then get the results reported in column 3 of Table 5. The previous results remain robust. Actually, the results become more sensible, in the sense that the efficiency indices in both groups get significantly positive.

Third, there might be a potential problem with countries for which the difference (between size and efficiency) is small. A blind application of our classification rule to these countries implies that some of them have been only marginally classified as efficient or inefficient since their measures of size and efficiency are very close to each other. A way to overcome this problem is to classify public sectors in three groups: efficient (E), inefficient (I) and non-classified (N) (see column 5 of Table 3), where the N-group consists of counties whose efficiency is close (from above or below) to their size.²⁹ The regression reported in column 4 of Table 5 follows this new classification. The main results again do not change (we also report that results are not sensitive to the omission of those countries mentioned in footnote 24).

example, Belgium 1980-1995, Ireland 1980-1990, Denmark 1980-1990, Portugal 1985-1995, Sweden 1985-1995 and the Netherlands 1980-1985 are classified as inefficient.

²⁹ As N-governments, we define those in which the difference between relative efficiency and relative size lies in the interval (-15, +15); this amounts to about 18% of the observations in the sample. The rest of the countries exhibit differences far from this interval.

Using the index of government efficiency that excludes performance in education

We now work as in the previous subsection but we use the measure of government efficiency that excludes the PSE in the area of education. In the first step, we again divide governments into efficient and inefficient. Whenever the number in column 2 of Table 4 exceeds the number in column 1 of the same Table, the government is called inefficient, and vice versa. The new classification of countries into efficient (E) and inefficient (I) appears in column 3 of Table 4.

The regression results of the second step are reported in Table 6. The regression in column 1 shows that in the group of inefficient governments, the government size significantly distorts social behavior at the 5% level, while in the group of efficient governments, the effect of the size is positive although not significant. All other results remain as in column 1 of Table 5 (we also report that these results do not change if we drop the administration index as we did in the previous subsection).

In the regression reported in column 2 of Table 6, we omit those countries whose efficiency scores looked paradoxical, at least to us (defined in footnote 26 above). Now both the negative and positive effects are significant at 10% level. Thus, in the group of inefficient governments, the government size distorts social behavior, while, in the group of efficient governments, the government size improves social behavior. We therefore get a significant U-inverted pattern. Also notice that government efficiency exerts a significantly positive effect at 5% in both groups of countries. The other results are not affected. This is a good regression.

In the regression in column 3 of Table 6, as we did in the previous subsection, we classify public sectors in three groups: *efficient (E)*, *inefficient (I)* and *non-classified (N)*, where the *N*-group consists of counties whose efficiency is close (from above or below) to their size.³⁰ This classification appears in column 4 of Table 4. The resulting regression in column 3 of Table 6 shows that the size effect in the I-countries is significantly negative at 10%, while the size effect in the two other groups is not significant. However, results get better when we omit the same problematic countries we omitted in column 2 above. The new results, reported in column 4 of Table 6, reveal that the size effect in the I-countries remains significantly negative at 10%,

³⁰ As N-governments, we again define those in which the difference between relative efficiency and relative size lies in the interval (-15, +15); this amounts to about 16% of the observations in the sample.

while the size effect in the E-countries gets significantly positive at 5%, and the size effect in the N-countries is insignificant as expected. This is again a good regression.

Summing up this section, the data indicate that private incentives follow an inverted-U pattern with government size. These results are clearer when one focuses on the policy areas of administration, infrastructure and stabilization.

7. Conclusions

We focused on the role of government in shaping anti-social redistributive incentives. To do so, we constructed an index of government efficiency by following the methodology of Afonso et al. (2003). The main finding is that social behavior follows an inverted-U pattern with government size, where the size effect on behavior depends on the relation between size and efficiency in the public sector.

Our findings can also explain the correlations in Tanzi and Schuknecht (1997, 2000) who show that countries with small-sized governments perform better. Here we showed that when the size is small relative to efficiency, social incentives improve with the size; and, obviously, this is more possible to happen when the size is small. But we explained something beyond this. Small per se is not beautiful. What matters to incentives, and hence to the macro-economy, is the relation between size and efficiency. Just shrinking the size of government will not necessarily reduce anti-social problems like rent seeking, tax evasion and corruption.

We recognize that there are several limitations. For instance, we took the size of government, as well as its efficiency, as given. But government sizes, in particular, depend on a number of politico-economy factors varying from demographics to electoral cycles and special interests (see e.g. Persson and Tabellini (2003, chapter 3)). Also, as admitted in Section 5, it would be useful to construct more detailed indexes of public sector efficiency depending on data availability. We however believe that our work is a contribution in the right direction and leave these issues to future research.

Therefore, to reduce the possibility of getting stuck in a bad equilibrium, where agents behave anti-socially and destroy the national pie, we should improve the relation between size and efficiency in the public sector. This is not an easy task. It requires, among other things, the reallocation of government resources, and the effective and efficient use of those resources, towards identified and transparent strategic priorities. With respect to such priorities, we believe that the focus should be

on the link between fiscal policy and long-term growth (see also the policy conclusions in the special issue of *European Economy*, no. 3, 2004, on “Public finances in EMU 2004”). The design of fundamentals and institutions that can provide good incentives remains a big policy challenge.

**Table 1: The effect of the size of government on anti-social activities
(basic regressions)**

Dependent variable: <i>ICRG index</i>	(1)	(2)
<i>gov. share in GDP</i>	-0.175*** (0.061)	-0.162** (0.062)
<i>gov. efficiency</i>		0.008 (0.009)
<i>democracy (Gastil)</i>	2.364*** (0.350)	2.342*** (0.349)
<i>ethnic tensions</i>	-1.839*** (0.648)	-1.783 (0.641)
<i>openness</i>	0.009 (0.013)	0.010 (0.013)
<i>East Asia</i>	-5.922** (2.819)	-6.785** (2.866)
<i>Sub-Saharan Africa</i>	1.424 (3.547)	1.496 (3.512)
<i>Latin America</i>	-11.409*** (1.181)	-11.536*** (1.176)
<i>Transition Economies</i>	-3.611* (1.952)	-3.329* (1.994)
<i>D1985</i>	0.611 (1.107)	0.588 (1.099)
<i>D1990</i>	3.438*** (1.272)	3.374*** (1.267)
<i>D1995</i>	4.749*** (1.490)	4.767*** (1.481)
<i>Constant</i>	38.266*** (3.900)	37.257*** (4.026)
R^2	76.12%	76.5%

Notes: (i) The estimation method is OLS. (ii) There are 162 observations. (iii) Standard errors that are robust to arbitrary heteroskedasticity and serial correlation are shown in parentheses. (iv) An asterisk denotes significance at 10%; two asterisks at 5%; three asterisks at 1%.

**Table 2: Government efficiency in four areas of policy over 1995-2000
(efficiency relative to the mean)**

Country	Education efficiency	Administration efficiency	Stabilization efficiency	Infrastructure efficiency
Algeria	73.000	39.531	23.709	45.919
Argentina	136.636	215.013	413.631	104.336
Australia	121.831	199.940	146.158	160.321
Austria	104.243	128.967	131.048	95.632
Bulgaria	160.557	65.792	19.432	50.160
Canada	112.985	337.331	174.088	163.146
Chile	141.077	125.352	107.111	137.734
Costa Rica	61.251	64.098	94.138	121.553
Cyprus	97.667	92.595	142.670	131.412
Czech Republic	111.870	167.185	68.252	95.376
Denmark	75.802	158.244	99.801	130.986
Dominican Rep.	178.313	87.792	76.388	61.602
Egypt	97.777	54.357	54.338	67.708
El Salvador	108.852	37.429	137.808	128.684
Finland	90.520	176.648	133.810	148.505
France	107.496	104.653	96.943	86.932
Germany	127.228	125.417	137.067	144.522
Greece	197.128	117.825	56.349	114.400
Hungary	122.387	159.674	31.526	49.759
Iceland	100.322	79.576	165.161	123.765
India	87.037	296.368	66.705	160.191
Ireland	107.935	215.324	96.765	90.500
Israel	74.789	73.810	39.511	105.754
Italy	127.248	136.410	52.209	73.808
Jamaica	90.533	54.721	27.196	72.062
Jordan	55.116	49.882	65.722	95.639
Korea, Rep	175.708	193.237	212.120	275.319
Lebanon	207.091	77.630	64.750	46.017
Luxembourg	112.022	121.848	180.954	23.832
Malaysia	135.653	78.239	230.074	137.754
Mexico	76.402	172.329	193.089	145.451
Namibia	25.429	46.600	29.467	95.938
Netherlands	127.098	183.132	87.136	103.704
New Zealand	87.248	71.927	129.293	67.702
Nicaragua	62.572	43.186	30.498	27.073
Norway	84.893	144.364	125.122	94.871
Peru	131.652	62.610	102.484	99.320
Portugal	109.420	60.685	81.073	79.673
Romania	128.197	43.906	48.723	80.452
South Africa	60.474	124.054	35.687	118.637
Spain	133.654	222.535	60.740	92.908
Sweden	87.681	205.840	162.771	89.357
Switzerland	100.562	175.177	308.331	158.982
Thailand	83.685	94.384	314.540	155.101
Trinidad & Tobago	151.001	44.486	61.600	108.886
Tunisia	53.611	53.125	71.616	83.642
Turkey	154.354	114.961	54.126	73.552
UK	127.755	118.877	78.483	84.424
Uruguay	166.197	96.027	39.182	48.399
USA	121.813	285.576	194.427	195.410
Venezuela	30.174	138.801	49.410	97.846
Yemen	44.559	45.298	12.203	35.142

Table 3: Aggregate government efficiency (in administration, stabilization, infrastructure and education) and government size over 1995-2000

Country	(1) Relative government efficiency	(2) Government size (gov. share in GDP)	(3) Relative government size	(4) Efficient (E) and Inefficient (I) governments	(5) Efficient (E), Inefficient (I) and Non-classified (N) governments
Algeria	45.540 (50)	25.908	161.873	I	I
Argentina (?)	217.404 (1)	16.393	102.426	E	E
Australia	157.062 (7)	6.896	43.088	E	E
Austria	114.973 (22)	6.238	38.974	E	E
Bulgaria	73.985 (43)	28.463	177.836	I	I
Canada	196.887 (4)	13.791	86.167	E	E
Chile	127.818 (14)	16.566	103.503	E	E
Costa Rica	85.260 (38)	20.967	131.001	I	I
Cyprus	116.086 (21)	21.470	134.141	I	I
Czech Republic	110.671 (24)	11.807	73.771	E	E
Denmark	116.208 (20)	7.211	45.058	E	E
Dominican Rep.	101.024 (28)	23.416	146.299	I	I
Egypt	68.545 (45)	9.856	61.582	E	N
El Salvador	103.193 (26)	16.121	100.722	E	N
Finland	137.371 (11)	7.271	45.429	E	E
France	99.006 (31)	8.339	52.104	E	E
Germany	133.560 (13)	6.421	40.122	E	E
Greece	121.426 (18)	8.067	50.406	E	E
Hungary	90.837 (35)	14.363	89.738	E	N
Iceland	117.206 (19)	8.642	53.996	E	E
India	152.575 (8)	32.056	200.282	I	I
Ireland	127.631 (15)	4.819	30.111	E	E
Israel	73.466 (44)	26.017	162.552	I	I
Italy	97.419 (33)	5.660	35.365	E	E
Jamaica	61.128 (48)	27.019	168.813	I	I
Jordan	66.590 (46)	49.992	312.346	I	I
Korea, Rep.	214.096 (2)	5.802	36.251	E	E
Lebanon	98.872 (32)	25.788	161.122	I	I
Luxembourg	109.664 (25)	4.398	27.479	E	E
Malaysia	145.430 (10)	18.777	117.317	E	E
Mexico	146.818 (9)	6.630	41.422	E	E
Namibia	49.359 (49)	38.356	239.646	I	I
Netherlands	125.268 (17)	9.640	60.232	E	E
New Zealand	89.043 (36)	8.181	51.117	E	E
Nicaragua	40.832 (51)	29.834	186.403	I	I
Norway	112.313 (23)	6.428	40.165	E	E
Peru	99.017 (30)	12.961	80.981	E	E
Portugal	82.713 (40)	12.538	78.335	E	N
Romania	75.319 (42)	14.105	88.125	I	N
South Africa	84.713 (39)	25.266	157.862	I	I
Spain	127.459 (16)	6.334	39.574	E	E
Sweden	136.412 (12)	6.691	41.808	E	E
Switzerland	185.763 (5)	10.324	64.507	E	E
Thailand (?)	161.927 (6)	14.118	88.208	E	E
Trinidad & Tobago	91.493 (34)	14.523	90.743	E	N
Tunisia	65.498 (47)	11.599	72.468	I	N
Turkey	99.248 (29)	14.732	92.044	E	N
UK	102.385 (27)	7.134	44.575	E	E
Uruguay	87.451 (37)	18.754	117.177	I	I
USA	199.306 (3)	11.231	70.173	E	E
Venezuela	79.058 (41)	14.504	90.623	I	N
Yemen	34.301 (52)	59.847	373.915	I	I

Table 4: Aggregate government efficiency (in administration, stabilization and infrastructure) and government size over 1995-2000

Country	(1) Relative government efficiency	(2) Relative government size (as in Table 3)	(3) Efficient (E) and Inefficient (I) governments	(4) Efficient (E), Inefficient (I) and Non-classified (N) governments
Algeria	36.386 (50)	161.873	I	I
Argentina (?)	244.32 (1)	102.426	E	E
Australia	168.806 (9)	43.088	E	E
Austria	118.549 (22)	38.974	E	E
Bulgaria	45.128 (49)	177.836	I	I
Canada	224.855 (4)	86.167	E	E
Chile	123.399 (18)	103.503	E	E
Costa Rica	93.263 (30)	131.001	I	I
Cyprus	122.226 (20)	134.141	I	N
Czech Republic	110.271 (23)	73.771	E	E
Denmark	129.677 (15)	45.058	E	E
Dominican Rep.	75.261 (37)	146.299	I	I
Egypt	58.801 (45)	61.582	I	N
El Salvador	101.307 (25)	100.722	E	N
Finland	152.988 (10)	45.429	E	E
France	96.176 (27)	52.104	E	E
Germany	135.670 (13)	40.122	E	E
Greece	96.191 (26)	50.406	E	E
Hungary	80.320 (36)	89.738	I	N
Iceland	122.834 (19)	53.996	E	E
India	174.421 (7)	200.282	I	I
Ireland	134.196 (14)	30.111	E	E
Israel	73.025 (39)	162.552	I	I
Italy	87.476 (34)	35.365	E	E
Jamaica	51.326 (48)	168.813	I	I
Jordan	70.414 (41)	312.346	I	I
Korea, Rep	226.892 (2)	36.251	E	E
Lebanon	62.799 (43)	161.122	I	I
Luxembourg	108.878 (24)	27.479	E	E
Malaysia	148.689 (12)	117.317	E	E
Mexico	170.290 (8)	41.422	E	E
Namibia	57.335 (47)	239.646	I	I
Netherlands	124.658 (17)	60.232	E	E
New Zealand	89.641 (32)	51.117	E	E
Nicaragua	33.586 (51)	186.403	I	I
Norway	121.452 (21)	40.165	E	E
Peru	88.138 (33)	80.981	E	N
Portugal	73.810 (38)	78.335	I	N
Romania	57.694 (46)	88.125	I	I
South Africa	92.793 (31)	157.862	I	I
Spain	125.394 (16)	39.574	E	E
Sweden	152.656 (11)	41.808	E	E
Switzerland	214.163 (5)	64.507	E	E
Thailand (?)	188.008 (6)	88.208	E	E
Trinidad & Tobago	71.657 (40)	90.743	I	I
Tunisia	69.461 (42)	72.468	I	N
Turkey	80.880 (35)	92.044	I	N
UK	93.928 (29)	44.575	E	E
Uruguay	61.203 (44)	117.177	I	I
USA	225.137 (3)	70.173	E	E
Venezuela	95.353 (28)	90.623	E	N
Yemen	30.881 (52)	373.915	I	I

**Table 5: The effects of the size and efficiency of government on anti-social activities
(efficiency as in Table 3)**

Dependent variable: <i>ICRG index</i>	(1)	(2)	(3)	Dep. variable: <i>ICRG index</i>	(4)
<i>gov. share in GDP (inefficient govts)</i>	-0.191** (0.076)	-0.190** (0.074)	-0.175** (0.076)	<i>gov. share in GDP (inefficient govts, I)</i>	-0.221** (0.084)
<i>gov. share in GDP (efficient govts)</i>	-0.142 (0.163)	-0.257 (0.187)	-0.145 (0.174)	<i>gov. share in GDP (non-classified govts, N)</i>	0.674 (0.495)
<i>gov. efficiency (inefficient govts)</i>	0.028 (0.023)	0.003 (0.023)	0.049* (0.025)	<i>gov. share in GDP (efficient govts, E)</i>	-0.014 (0.168)
<i>gov. efficiency (efficient govts)</i>	0.009 (0.010)	0.001 (0.004)	0.032*** (0.011)	<i>gov. efficiency (inefficient govts, I)</i>	0.041 (0.024)
				<i>gov. efficiency (non- classified govts, N)</i>	-0.143* (0.083)
				<i>gov. efficiency (efficient govts, E)</i>	0.005 (0.010)
<i>democracy (Gastil)</i>	2.284*** (0.359)	2.351*** (0.362)	-2.116*** (0.354)	<i>democracy (Gastil)</i>	2.129*** (0.352)
<i>ethnic tensions</i>	-1.903*** (0.658)	-1.790*** (0.657)	-1.509** (0.671)	<i>ethnic tensions</i>	-1.808*** (0.600)
<i>openness</i>	0.010 (0.014)	0.009 (0.014)	0.017 (0.013)	<i>openness</i>	0.013 (0.013)
<i>East Asia</i>	-6.770** (2.909)	-5.846** (2.819)	-7.278*** (1.874)	<i>East Asia</i>	-7.160** (2.775)
<i>Sub-Saharan Africa</i>	1.666 (3.236)	1.106 (3.397)	1.591 (2.981)	<i>Sub-Saharan Africa</i>	1.512 (2.963)
<i>Latin America</i>	-11.844*** (1.166)	-11.673*** (1.234)	-11.135*** (1.198)	<i>Latin America</i>	-11.765*** (1.113)
<i>Transition Economies</i>	-3.472* (1.984)	-3.777* (1.898)	-2.744 (2.005)	<i>Transition Economies</i>	-2.983 (2.219)
<i>D1985</i>	0.534 (1.087)	0.660 (1.164)	0.804 (1.131)	<i>D1985</i>	0.342 (1.251)
<i>D1990</i>	3.335*** (1.209)	3.324*** (1.255)	3.171*** (1.210)	<i>D1990</i>	3.368*** (1.302)
<i>D1995</i>	4.823*** (1.427)	4.703*** (1.482)	4.378*** (1.426)	<i>D1995</i>	4.744*** (1.460)
<i>Constant</i>	36.085*** (3.993)	38.992*** (3.937)	34.735*** (3.907)	<i>constant</i>	35.956*** (3.651)
R ²	76.69%	76.26%	76.62%	R ²	78.04%
Observations	162	162	153	Observations	162

Notes: (i) See the notes in Table 1. (ii) In columns (1)–(3), efficient (inefficient) governments are those whose relative size is smaller (larger) than relative efficiency. In column (4), efficient, inefficient and non-classified governments are as defined in the text.

**Table 6: The effects of the size and efficiency of government on anti-social activities
(efficiency as in Table 4)**

Dependent variable: <i>ICRG index</i>	(1)	(2)	Dep. variable: <i>ICRG index</i>	(3)	(4)
<i>gov. share in GDP (inefficient govs)</i>	-0.144** (0.071)	-0.138* (0.073)	<i>gov. share in GDP (inefficient govs, I)</i>	-0.148* (0.077)	-0.147* (0.080)
<i>gov. share in GDP (efficient govs)</i>	0.137 (0.124)	0.179* (0.106)	<i>gov. share in GDP (non-classified govs, N)</i>	-0.925 (0.954)	-0.836 (0.990)
<i>gov. efficiency (inefficient govs)</i>	0.023 (0.020)	0.050** (0.023)	<i>gov. share in GDP (efficient govs, E)</i>	0.154 (0.145)	0.249** (0.120)
<i>gov. efficiency (efficient govs)</i>	0.004 (0.008)	0.027** (0.009)	<i>gov. efficiency (inefficient govs, I)</i>	0.027 (0.023)	0.057** (0.024)
			<i>gov. efficiency (non-classified govs, N)</i>	0.159 (0.157)	0.168 (0.161)
			<i>gov. efficiency (efficient govs, E)</i>	0.004 (0.008)	0.025** (0.008)
<i>democracy (Gastil)</i>	2.331*** (0.338)	1.900*** (0.356)	<i>democracy (Gastil)</i>	2.310*** (0.349)	1.831*** (0.360)
<i>ethnic tensions</i>	-1.807*** (0.638)	-1.539** (0.592)	<i>ethnic tensions</i>	-1.789*** (0.655)	-1.490*** (0.569)
<i>openness</i>	0.008 (0.012)	0.018 (0.011)	<i>openness</i>	0.007 (0.012)	0.017 (.011)
<i>East Asia</i>	-6.803** (2.855)	-7.789*** (1.428)	<i>East Asia</i>	-6.758** (2.932)	-7.537*** (1.405)
<i>Sub-Saharan Africa</i>	1.894 (3.447)	1.767 (3.100)	<i>Sub-Saharan Africa</i>	1.815 (3.411)	1.598 (2.958)
<i>Latin America</i>	-11.542*** (1.148)	-10.402*** (1.197)	<i>Latin America</i>	-11.510*** (1.203)	-10.350*** (1.230)
<i>Transition Economies</i>	-2.779 (2.280)	-1.947 (2.253)	<i>Transition Economies</i>	-2.726 (2.329)	-1.843 (2.364)
<i>D1985</i>	0.491 (1.072)	0.632 (1.177)	<i>D1985</i>	0.504 (1.171)	0.501 (1.268)
<i>D1990</i>	3.581*** (1.258)	3.314*** (1.290)	<i>D1990</i>	3.581*** (1.295)	3.212*** (1.315)
<i>D1995</i>	4.962*** (1.418)	4.319*** (1.451)	<i>D1995</i>	5.022*** (1.445)	4.334*** (1.477)
<i>constant</i>	35.081*** (3.755)	32.137*** (4.012)	<i>constant</i>	35.031*** (3.776)	32.095*** (3.843)
R ²	77.92%	78.28%	R ²	77.96%	78.63%
Observations	162	153	Observations	162	153

Notes: (i) See the notes in Table 1. (ii) In columns (1) and (2), efficient (inefficient) governments are those whose relative size is smaller (larger) than relative efficiency. In columns (3) and (4), efficient, inefficient and non-classified governments are as defined in the text.

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