



Government Spending, Corruption and Economic Growth

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Summary. — There is considerable debate over the effects of both corruption and government spending on growth, but few studies have considered how the interaction between them might affect economic growth. This paper provides a contribution to the debate, starting with an endogenous growth model and extending it to account for the effects of corruption on components of government spending, namely military and investment spending. It then illustrates the non-negligible indirect effects of corruption on military spending and government investment expenditure using model simulations. The resulting model is then estimated on a comprehensive panel of 106 countries and the results show that the interactions between corruption and investment and corruption and military spending have strong negative impacts on economic growth. The results also indicate important complementarities between corruption and military spending, suggesting that combating corruption will not only have direct positive effects, but is also likely to have positive indirect effects, through reducing the size of the negative impact of the military burden. They are also found to be robust across different measures of corruption, levels of economic development and groupings of countries. This suggests that policies to reduce corruption, combined with those to reduce military burdens, such as regional security agreements, would have a considerable impact on economic growth.
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1. INTRODUCTION

Corruption is a constant concern for countries facing economic problems and a considerable amount of research has gone into understanding its economic effects. It is a relatively complex phenomenon, however, encompassing a range of human action, so to consider its effects on the economy or polity, it has been necessary to start with a relatively straightforward definition. The World Bank settled on—“the abuse of public office for private gain as a useable definition of corruption”.¹ Transparency International provides a similar, but more general definition in “the abuse of entrusted power for private gain”, which is not limited to the public sector as in the case of the World Bank definition. In most countries, one would expect these to show similar patterns over time.

A major concern for the World Bank and others is the impact of corruption on economic growth and this has been extensively researched, with most studies following the approach of Barro (1991) and Levine and Renelt (1992) and reporting cross sectional regressions with the average rate of economic growth as a function of average corruption and a set of control variables. Some studies have found evidence of positive effects with, for example, Méon and Weil (2010) arguing that corruption can provide a “greasing of the wheels” rather than “putting sand in them”, meaning it is less detrimental to efficiency in countries where institutions are less effective and may even be positively associated with efficiency in countries where institutions are extremely ineffective. While not denying that corruption may have played a positive role at particular times in specific countries, however, the main findings of the empirical literature have been that corruption tends to lead to lower growth, hampering both private and government investment spending, and inhibiting the efficiency of public services.

Bardhan (1997) suggested that corruption effect on growth was likely to be negative, but based his conclusion on historical experience rather than contemporary empirical research, while Wei (1999) concluded that corruption had an adverse

effect on growth through its reducing domestic investment, discouraging foreign direct investment, encouraging overspending in government, and distorting the composition of government spending. Reviews by Aidt (2003) and Svensson (2005) reported more nuanced findings, but recent meta studies have supported the negative effect of corruption on growth. Campos, Dimova, and Saleh (2010) considered 460 estimates of the effect of corruption on growth from 41 empirical studies and found that factors including whether the model accounted for institutions and trade openness, the authors affiliation (academics systematically report less negative impacts), and the use of fixed-effects tended to reduce but not eliminate the negative effect of corruption on economic growth. More recently, Ugur (2014) considered 327 estimates of the direct effects of corruption on growth from 29 primary studies and while the findings are heterogeneous, because of different measures of corruption and growth, estimation methods, country coverage, and sample periods, the primary studies tended to report negative effects.

To illustrate this general finding, Figure 1 plots the average growth rate and average World Bank control of corruption index for 1996–2010 across all countries for which data are available, with 0 representing a non-corrupt country and 100 a hypothetical completely corrupt country (the reverse of the World Bank index). A clear negative association is apparent.

While generally accepting the negative effects of corruption on growth, the literature still remains divided on the channels through which this works and the size of the direct and indirect impact of corruption on the growth rate (Basu & Li, 1998). The seminal work by Mauro (1995) found that much of the effect of corruption on growth comes through its effect on investment. Corruption is also seen to distort of tax collection, affecting not just the level of public expenditure, but also its composition, with Rose-Ackerman (1997) arguing that corrupt government officials are likely to adjust spending allocations to favour

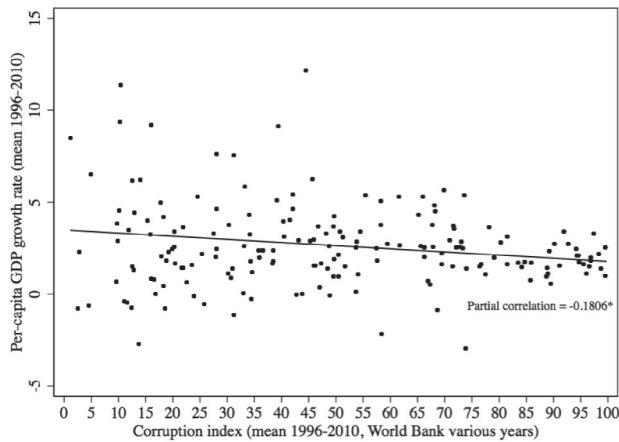


Figure 1. Cross-country relationship between per-capita growth rate and corruption (mean 1996–2010). Notes. Corruption index increases from 0 to 100. Sample: countries = 106; years = 1996–2010 (World Bank, various years).

projects that allow them to collect bribes and to keep them hidden. Shleifer and Vishny (1993) suggested that this is likely to lead to a favouring of large specialised projects such as major weapons systems and civil engineering projects (missiles and bridges), which are expensive and their exact market value is difficult to determine, giving more opportunities for corruption. It is certainly likely to be easier to collect substantial bribes on the high technology defence component or infrastructure projects than on teacher's salaries (Mauro, 1997) and the nature of defence procurement and trade has certainly made it particularly prone to corrupt practices. Secrecy and limited competition have led to a relatively high level of informal contracts, encouraging rent seeking, increasing the cost of military activities, and crowding out productive investment in the private sector (Mauro, 1998). A well-known example is the purchase from BAE Systems of an overpriced and over specified military air traffic control system by the Tanzanian government for their main civil airport. Another is the experience of the South African ANC government in their first major arms procurement deal, involving British, German, and Swedish defence companies. Investigations by Sweden and Germany have found evidence of shady corrupt dealings and bribes. This was also apparent in the UK experience with the Al Yamamah deal in which Saudi Arabia bought advanced weapon systems. In 2006, a consultancy Control Risks conducted an extensive survey of 350 international businesses and found that during 2001–06, 26% of the defence companies interviewed thought they had lost contracts due to corruption. In 2010 UK arms producer BAE Systems admitted two criminal charges and agreed to pay fines of 286m to settle US and UK probes into the firm (Feinstein, 2011).

This paper updates and develops this work using an extensive panel of 106 countries to estimate an endogenous growth model that incorporates government spending and corruption. This entails a novel extension of the model to allow corruption to interact with different types of government spending, in particular military spending and investment spending. Section 2 presents a simple illustrative growth model following Barro (1990), assuming that the military sector and government investment spending are potentially productive inputs that can affect long run economic growth. The model is extended in Section 3 following Mauro (1997) and De La Croix and Doepke (2009) in allowing corruption to influence the

allocation of public spending and to create budgetary distortions. This leads to a more general and flexible model, with corruption not only acting as a proportional tax on a budget surplus, but also distorting the composition of public spending, as in d'Agostino, Dunne, and Pironi (2012). A comparative statics analysis of the resulting model is carried out and the effects of corruption on the categories of government spending illustrated by model simulations. In Section 4 the empirical model is presented and the data discussed, with the analysis moving beyond the usual focus on cross-country differences, as enough within-country variation is available to use panel data analysis. All countries in the World for which data are available (106) are included for the period 1996–2010. Section 5 then discusses the estimation methods, which in line with the theoretical model, allows the public sector variables in the empirical model to have some contemporaneous feedbacks on the error term of growth rate. Following Dollar and Kraay (2004), Loayza, Oviedo, and Serven (2005), and Chang, Kaltani, and Loayza (2009), the generalised method of moments (GMM) procedure is used to address endogeneity issues and to control for unobserved country specific factors. In another innovation, elasticities are calculated for the variables in the model that are, in principle, subject to policy intervention through economic and institutional reforms. Both direct and indirect effects are evaluated, with the indirect effects/elasticities estimated using an auxiliary regression for each covariate of interest rather than the usual procedure of creating interaction variables. The empirical results are discussed in Section 6 and confirm the theoretical predictions, that while government investment spending enhances economic growth, large military burdens and current (non capital) government spending reduce GDP growth, and that corruption has a negative impact. In addition, significant indirect effects of corruption on economic growth are found for each of the components of government spending, which are illustrated by the calculation of gross and net elasticities. The stability of the parameters over time, which is a concern given the length of the time period, is then confirmed. Finally, Section 7 provides some concluding remarks, emphasizing the importance of allowing for both the direct and indirect effects of corruption in gauging its impact on economic growth.

2. THE BASE MODEL

Consider an economy where a representative household maximises a utility function choosing the optimal amount of private consumption. The agent produces a single commodity, which can be consumed, accumulated as capital, or paid as income tax. The objective is to maximise the discounted sum of future instantaneous utilities:

$$\text{MAX} \int_0^{\infty} U(c)e^{-\rho t} dt, \quad (1)$$

where c describe the amount of private consumption, and ρ is the subjective discount rate. Private consumption is modelled by an utility function with an intertemporal constant elasticity of substitution:

$$U(c) = \frac{c^{1-\sigma} - 1}{1-\sigma}. \quad (2)$$

Following Barro (1990) and Devarajan, Swaroop, and Heng-fu (1996), the production function is modelled as an interaction between private capital k and total public spending \bar{g} , which is disaggregated into military spending m , government investment i , and current government consumption

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