Discussion Paper Series

Deconcentration, Corruption and Economic Growth

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June 2015
Number 209

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Abstract

This paper highlights a channel through which decentralisation may curb the level of corruption and, in doing so, foster economic development. The analysis is based on a dynamic general equilibrium model in which corruption affects growth through entry regulation and the costs of doing business: for certain types of business to be undertaken, licenses are required from public officials who demand bribes in exchange for them. When entry regulation is centralised, each official issues his own designated type of license to all regions. When entry regulation is decentralised, each official issues all types of license to his own designated region. We show that the latter structure of government is associated with lower bribes, higher capital and higher growth.

1 Introduction

It is now generally accepted that poor governance - corruption, in particular - represents a major obstacle to economic development. Decentralisation is often proposed as a means of improving the quality of governance by reducing the incidence of corruption in one way or another.[1] In spite of this, the

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[1] A commitment to decentralisation has been an important element of donor supported anti-corruption strategies for some time (e.g., World Bank 1997,1999)

relationship between corruption, decentralisation and economic performance remains unclear, being the subject of considerable debate (e.g., Bardhan 2002; Bardhan and Mookherjee 2005; Bruess and Eller 2004; Fjeldstad 2004; Shah 2004). This lack of consenses is found at both theoretical and empirical levels, and there is little sign of it disappearing in the near future.

Both corruption and decentralisation are mutli-dimensional concepts that cover a broad range of practices and policies within the public sector.[2] Thus corruption can manifest in many different ways, in any area and at any level of public office: it can be the payment of a bribe, the embezzlement of public funds or the submission of fraudulent information; it can be the misuse of power by political leaders, the illegal profiteering by bureaucrats, or the subversion of the legal system by the judiciary; it can be a collusive arrangement between public and private agents, or a non-collusive act of opportunism by just the former; and it can be a coordinated strategy amongst a well-connected network of officials, or a non-coordinated set of actions in a more fragmented institution. Likewise, decentralisation can take many different shapes and forms on various scales: it may range from deconcentration through delegation to devolution, whereby the central government transfers increasing powers of administrative autonomy and responsibility to sub-national units; it may be aimed at giving greater fiscal independence to regional offices, such as the authority to raise and retain revenues, and to allocate these revenues to local public services; it may be geared towards empowering provincial councils with legislative functions, such as responsibility for designing and implementing local laws and regulations; and it may be targeted in the direction of political reform, by which district officials are elected by their constitutents, rather than being appointed by higher government. Whilst numerous different scenarios exist for describing corruption and decentralisation, there is a commonality in each case which forms the basis of a general definition: in the case of corruption this is the abuse of authority (in one way or another) by public officials for personal gain; in the case of decentralisation it is the transfer of power (in one way or another) from central to local governments.

There are various potential avenues through which decentralisation might reduce corruption. One of the most long-standing arguments is that decentralisation can improve accountability in public sector decision-making by moving the decision-making process closer to citizens and making it more transparent (e.g., Seabright 1996). Another well-known argument is that

[2]Further general discussions can be found in various surveys. On corruption, examples include Bardhan (1997), Jain (2001), Rose-Ackerman (1999) and Tanzi (1998). On decentralisation, examples include Bardhan and Mookherjee (2005), Martinez-Vazquez and McNab (2003), Schneider (2003) and Vo (2009).

decentralisation can foster greater effiiciency and honesty on the part of public officials by inducing competition between them (e.g., Gurgur and Shah 2005). These factors - accountability, transparency and competition - are often viewed as being vital ingredients of any anti-corruption strategy (e.g., Ades and Di Tella 1999; Aidt 2003; Jain 2001; Tanzi 1998). On a more cautionary note, however, several observers have suggested that such potential benefits of decentralisation will be realised only if reforms are implemented with appropriate safeguards. For example, it has been argued that, by increasing the discretionary powers of local officials, decentralisation may increase the opportunitites for corruption (e.g., Prud'homme 1995), may enlarge the size of a rent-seeking bureaucracy (e.g., Shleifer and Vishny 1993) and may induce local capture by a powerful elite (e.g., Bardhan and Mookherjee 2000).

In order to evaluate decentralisation as an effective institutional reform in combating corruption and promoting development, it is necessary to assess which of the above effects dominate and under what circumstances they do so. The objective of the present paper is to take a further step in this direction by studying one of the key dimensions of decentralisation in a simple model of governance and growth. As background and motivation for our analysis, we devote the remainder of our introductory discussion to a brief review of the relevant literature.

1.1 Empirical Observations

There is a large body of evidence on the effects of, and interactions between, corruption and decentralisation. Neither of these concepts are easy to quantify, and each of them may be measured in different ways that are not agreeable to all. The usual measure of corruption is a corruption perception index, which overcomes problems with more direct measures of corruption, but which is susceptible to the familiar pitfalls of using survey data. The usual measure of decentralisation is fiscal decentralisation, which is more straightforward to quantify than other forms of decentralisation, but which is only one aspect of the much broader issue. Nevertheless, improvements in data and methodology over the years have led to a greater reliability of measures and, with this, more confidence in the results obtained.[3]

The effect of corruption on economic development has been the subject of extensive empirical investigation. The broad consensus is that this effect is

[3]For further discussion, see, for example, Kaufmann *et al.* (2007), Tanzi and Davoodi (1997) and Treisman (2000, 2007) on measures of corruption, and Ebel and Yilmaz (2002a,b), Fisman and Gatti (2002) and Dziobek *et al.* (2011) on measures of decentralisation.

negative, with many studies indicating a significant reduction in per-capita income growth as a result of corrupt activity (e.g., Gyimah-Brempong 2002; Keefer and Knack 1997; Knack and Keefer 1995; Li *et al.* 2000; Mauro 1995; Meon and Sekkat 2005; Mo 2001; and Sachs and Warner 1997). There is also much evidence on the numerous potential channels through which corruption may take hold. Included amongst these are lowering rates of investment (e.g., Mauro 1995; Meon and Sekkat 2005), creating obstacles to doing business (e.g., Brunetti *et al.* 1997; Fisman and Svensson 2007; Kaufmann 1997), distorting allocations of public expenditures (e.g., Gupta *et al.* 2002; Mauro 1997; Tanzi and Davoodi 1997), inducing misallocations of talent (e.g. Ehrlich and Lui 1999; Murphy *et al.* 1991), impeding human development (e.g., Azfar 2001; Gupta *et al.* 1999, 2001; Rajkumar and Swaroop 2008), and raising barriers to trade and foreign investment (e.g., Pelligerini and Gerlagh 2004; Wei 2000).[4]

Evidence of a direct effect of decentralisation on economic performance is rather more mixed. In both single-country and cross-country analyses there are conflicting results which suggest that the effect could be either positive (e.g., Akai and Sakata 2002; Iimi 2005; Lin and Liu 2000; Zhang and Zou 2001) or negative (e.g., Zhang and Zou 1998, 2001; Phillips and Woller 1998; Davoodi and Zou 1998). As regards the latter, the effect tends be rather weak and there is conflicting evidence on which types of country - developed or developing - are more likely to suffer a reduction in growth as a result of decentralisation (e.g., Phillips and Woller 1998; Davoodi and Zou 1998). Other findings indicate the existence of a non-linear (hump-shaped) relationship between growth and decentralisation, implying that growth tends to be higher at medium, rather than either high or low, levels of decentralised government (e.g., Akai *et al.* 2007; Thieben 2003, 2005). Finally, there are those studies which suggest that decentralisation has no significant impact on growth (e.g., Bodman and Ford 2006; Thornton 2007). If one is pressed to take sides, then one would be inclined to argue that, at least up to some point and at least to some degree, decentralisation is conducive to development.

Empirical work on the interaction between corruption and decentralisa-

[4]Of course, some of these findings have been subject to qualification, and the strength of the relationship between corruption and development is known to vary across countries and regions. Various factors to explain this include the quality of institutions, the degree of financial openness and the way in which corruption is practised (e.g., Aidt *et al.* 2007; Neeman *et al.* 2006; Svensson 2005). Nevertheless, in a meta-analysis of the literature, Campos (*et al.* 2010) conclude that there is a genuine negative effect of corruption on growth. From the opposite perspective, there is also evidence of reverse causality, meaning that corruption not only influences, but is also influenced by, the level of development (e.g., Montinola and Jackman 1999; Paldam 2002; Rauch and Evans 2000; Treisman 2000).

tion has produced similarly mixed results, though it is possible to draw a tentative conclusion in this case as well. Several authors identify significant improvements in a range of governance indicators as a consequence of decentralisation (e.g., Altunas and Thornton 2012; De Mello and Barenstein 2001; Dreher 2006; Fisman and Gatti 2002; Huther and Shah 1998; Kyria and Roca-Sagales 2011). Corruption is one of these indicators, and there are studies which focus specifically on this to produce further evidence that decentralisation is a means of reducing corrupt activity (e.g., Arikan 2004; Lederman *et al.* 2005). Other investigations obtain similar findings, whilst raising concerns over contextual and methodological issues which may make the results sensitive to country-specific circumstances (e.g., Enikolopov and Zhuravskaya 2007; Lessmann and Markwardt 2010) and econometric techniques (e.g., Bardhan and Mookherjee 2005; Lessmann and Markwardt 2010; Treisman 2000, 2007). The possibility that decentralisation may actually encourage corruption is also evidenced in some cases (e.g., Goldsmith 1999; Kunicova and Rose-Ackerman 2005; Treisman 2000). Again, if a judgement needs to be made one way or the other, then it would be that corruption is mitigated, rather than fostered, by decentralisation.

1.2 Theoretical Considerations

Many ideas have been advanced to explain how corruption and decentralisation may impact on macroeconomic performance. A good number of these have been formalised within the context of analytical models which lend rigour and precision to the arguments involved. Others await such treatment.

One of the major channels through which corruption can affect growth is its impact on public policy. There are many ways in which this might occur, some more direct than others. On one side of the government's balance sheet, corruption can cause a misallocation of public expenditures away from growth-promoting areas (such as education and health) towards bribe-generating areas (such as military and defence) (e.g., Gupta *et al.* 2001; Mauro 1998; Tanzi and Davoodi 1997). For the same reason, expenditures may be misallocated away from the most to the least cost-effective means of public procurement, producing inefficient and inflated levels of spending (e.g., Blackburn *et al.* 2011). On the other side of the balance sheet, corruption can lead to a loss of public funds which may compromise the delivery of pro-growth social programmes and, in doing so, weaken individuals' incentives to save and invest (e.g., Blackburn and Sarmah 2008). A loss of public funds may also force the government to seek additional means of distortionary finance, including inflationary finance (e.g., Blackburn and Powell 2011). In a

different vein, corruption in regulation can cause a dilution of property rights and an escalation of the costs of doing business, each of which may impede innovation and entrepreneurship (e.g., Hall and Jones 1999; North 1990; Sarte 2000). Beyond public policy, corruption can induce a misallocation of talent away from productive (entrepreneurial) activities towards non-productive (rent-seeking) activities (e.g., Acemoglu 1995; Ehrlich and Lui 1999; Murphy *et al.* 1991). More directly, corruption can impose deadweight losses on society through the costs of trying to conceal and expose it (e.g., Blackburn *et al.* 2006; Blackburn and Forgues-Puccio 2007). In some analyses, including a subset of the above, corruption is determined jointly (endogenously) with the level of development so as to produce two-way causality and the possibility of poverty traps (e.g., Blackburn et al. 2006, 2011; Blackburn and Forgues-Puccio 2007, 2010; Blackburn and Sarmah 2008).

Traditional theories of the effects of decentralisation on economic performance were based on the ideal economic paradigm of competitive markets, perfect information, costless mobility and benign public officials (e.g., Tiebout 1956; Oates 1972; Rubinfeld 1987).[5] Given such an environment, it is contended that decentralisation brings benefits by opening up competition amongst subnational governments that recognise the ability of citizens to choose their preferred jurisdiction of residence based on the best package of local services offered to them. Needless to say, this view has not gone unchallenged as many observers dispute the validity of the underlying assumptions, especially in the context of developing countries. In particular, it has been argued that neither the functioning of factor markets nor the quality of democratic institutions are sufficient in these countries to confer the degree of mobility and power on individuals that are necessary for the above result to hold (e.g., Litvack *et al.* 1998; Oates 1993; Tanzi 1996).

More recent theories of decentralisation focus on a different set of issues that cross the borders of economics and political science. In this so-called second-generation literature, it is the quality of governance, the structure of institutions and the incentives of individuals that are central to understanding how decentralisation may affect economic outcomes (e.g., Bardhan and Mookherjee 2005; Oates 2005; Weingast 2009). One of the key aspects of this is the extent to which decentralisation may influence corruption in one way or another.[6] A first potential channel of influence is through the stimulation of competition between subnational governments: according to some authors, the need to attract labour and capital to a region is likely to induce a greater

[5]The seminal contribution in the literature is credited to Tiebout (1956). For further discussion, see, for example, Mieszkowski and Zodrow (1989) and Zodrow (1983).

[6]In an early analysis, Brueckner (2000) showed how the benefits of decentralisation in the model of Tiebout (1956) are qualified if the model is extended to include corruption.

degree of honesty, integrity and efficiency on the part of decentralised rival local offices (e.g., Arikan 2004; Brennan and Buchanan 1980; Edwards and Keen 1996); according to others, more backward regions that are unable to compete for resources using business-friendly policies may be inclined to resort to predation (e.g., Cai and Treisman 2005), whilst more corrupt regions may seek to attract business by promising protection against central government policies, thereby undermining the effectiveness of governance and encouraging corruption even further (e.g., Cai and Treisman 2004).[7] A second potential channel is through the influence on accountability of public officials: on the plus side, there is the general argument that decentralisation encourages accountability by bringing the government closer to the people (e.g., Fjeldstad 2004) - for example, by increasing transparency about the responsibilities of local officials designated with specific tasks (e.g., Seabright 1996; Persson and Tabellini 2001), and by introducing yardstick competition that enables local electorates to compare the performance of their own regions with the performance of others (e.g., Besley and Case 1995; Salmon 1987); on the negative side, there is the contention that decentralisation weakens accountability by blurring the onus of responsibility among different layers of government (Fisman and Gatti 2002), together with the view that the democratic mechanisms on which the above arguments are based do not apply in many developing countries. A third possible channel is through the fostering of local capture: in a number of ways - greater intimacy and frequency of interactions between local officials and their constituents, greater cohesiveness in local interest groups, less professionalism and independence of the local press, and less coverage and monitoring of local elections - decentralisation may endow local elites with the power to influence local policies to their own personal advantage (e.g., Bardhan and Mookherjee 2000); for this reason, it has been argued that strong administrative control by the central government is essential if this is to be avoided (e.g., Blanchard and Shleifer 2000; Enikolopov and Zhuravskaya 2007; Sonin 2010). Finally, a fourth possible channel is through the empowerment of regional officials with greater discretion: a general concern is that, by doing this, decentralisation may create new opportunities for corruption by allowing more regional control over rules and regulations, the abuse of which may be subject to less intense scrutiny (e.g., Arikan 2004; Persson and Tabellini 2001; Prud'homme 1995).

[7] Of course, these arguments relate to an environment where factors are freely mobile between regions. As mentioned above, this may not be an appropriate description of developing countries.

1.3 This Paper

The foregoing discussion provides the motivation for the analysis that follows. Our objective is to study the effects of decentralisation on economic growth through its influence on the behaviour of corrupt public officials. The particular dimension of decentralisation on which we focus is closest to administrative deconcentration. This is representative of the type of decentralisation that is found in many developing countries, and allows us to attend specifically to the impact of decentralisation on corruption via bureaucratic structures, rather than its relation to other issues - such as democratic accountability and inter-jurisdictional competition - that may not be very applicable in a development context.[8]

Our analysis is based on a dynamic general equilibrium model in which the engine of growth is capital accumulation and the playing field of corruption is entry regulation. Entrepreneurs choose between alternative types of capital project as a means of producing final output. For certain types of project to be undertaken, various complementary licenses must be acquired from public officials, each of whom is able to exploit his monopoly over the issue of his designated licenses by demanding bribes in exchange for them. In this way, corruption impedes growth by raising the costs of doing business. We study the implications of this under centralised and decentralised systems of government: by the former is meant the case in which each bureaucrat has no regional affiliation, but rather is assigned the responsibility for granting a particular license (or set of licenses) regardless of locality; by the latter is meant the case in which each bureaucrat is given local jurisdiction, and is empowered to issue all licenses in a particular district (or group of districts). Our key finding is that bribe payments are lower, capital production is higher and growth is higher when decentralisation takes place. The basic intuition for this lies in the potential negative externalities of rent-seeking behaviour - externalities that are prevalent under a central bureaucracy but that are internalised by local bureaucracies.

Our result is similar to, yet markedly distinct from, the conclusions of other analyses that focus on the behavioural aspects of different rent-seeking environments. In particular, it has been shown how the scale and effects of rent-seeking may depend on the extent to which such activity is organised:

[8]Some obervers have noted that the scale of decentralisation tends to be more limited in lower-income countries (e.g., Oates 1972, 1993). From a practical perspective, it has been argued that subnational units in such countries may lack the capacity (competence, skills, etc.) to perform complex government functions that extensive forms of decentralisation may require (e.g., Prud'homme 1995). For various reasons, international organisations have warned of decentralising too much and too quickly, and have recommended a more gradual process of reform (e.g., World Bank 2006; United Nations 2000).

corruption in a well-organised and well-coordinated bureaucracy is typically viewed as being less harmful than corruption in a disorganised and uncoordinated bureaucracy because of the externality effects alluded to above (e.g., Blackburn and Forgues-Puccio 2009; Celantani and Ganuza 2002; Ehrlich and Lui 1999; Shleifer and Vishny 1993). When considering such aspects, it is common to treat organised and disorganised forms of corruption as synonymous with centralised and decentralised structures of government, respectively. Yet these terms are quite distinct, as the present paper makes clear. Indeed, our analysis gives an example of the opposite association: centralisation (decentralisation) produces exactly the same rent-seeking behaviour as would occur under disorganised (organised) corruption. This observational equivalence occurs even though the behavioural assumptions are quite different in our analysis. In particular, we treat bureaucrats as always acting independently so as to maximise their own bribe income, abstracting from any collusion between them in coordinating their bribe-taking activity.

The remainder of the paper is organised as follows. In Section 2 we present a generic framework of analysis, describing the basic features of our model economy that allows for the possibility of corruption. In Section 3 we characterise the general equilibrium of the economy in terms of capital accumulation and growth. In Section 4 we distinsguish between centralised and decentralised forms of government, and describe rent-seeking behaviour in each case. In Section 5 we bring our previous results together to compare and contrast the aggregate implications of alternative scenarios. In Section 5 we make a few concluding remarks.

2 The Model

We consider an economy that is spatially divided into a fixed number, N, of separate regions or locations. Each region is inhabitated by a constant population, n, of two-period-lived agents belonging to overlapping generations of dynastic families. Agents of each generation are divided at birth into two groups of market participants - households (or workers), of whom there is a fraction, $\eta \in (0,1)$, and firms (or entrepreneurs), of whom there is a remaining fraction, $1-\eta$. The former are suppliers of labour when young and consumers of output when old. The latter are producers of capital when young, and producers and consumers of output when old. Capital is produced from investment projects that are funded by loans under the terms and conditions of financial contracts. For certain types of project to be undertaken, licenses must be acquired from public officials (or bureaucrats), of whom there are m. Bureaucrats exploit their monopoly control

over these licenses by issuing them only in exchange for bribes and, like all other agents, consume only when old. All agents are risk neutral and all markets are competitive. Neither labour nor capital is mobile between regions.[9] We proceed with our formal description of the environnment with reference to the behaviour of individuals of generation t.

2.1 Households

The behaviour of households is rudimentary. Each young household supplies one unit of labour to old entrepreneurs (producers of output) in return for a wage of w_t. After paying a lump-sum tax of τ_t, a household lends its disposable income, $w_t - \tau_t$, to young entrepreneurs (producers of capital) at an interest rate of I_{t+1}. The proceeds of this are used to finance a household's retirement consumption.

2.2 Firms

The ultimate activity of entrepreneurs is the manufacture of final output in the second period of their lives. The inputs to manufacturing are labour (hired from young households of the next generation) and capital (acquired from investment projects undertaken previously by firms of the current generation). A mature entrepreneur employing h_{t+1} units of labour and k_{t+1} units of capital is able to produce y_{t+1} units of output according to

$$y_{t+1} = \Theta h_{t+1}^{\theta} k_{t+1}^{1-\theta} K_{t+1}^{\theta}, \tag{1}$$

($\Theta > 0$, $\theta \in (0,1)$) where K_{t+1} denotes the aggregate stock of capital in a region.[10] Labour is hired at the competitively-determined wage rate w_{t+1}, whilst capital is rented at the competitively-determined interest rate r_{t+1}. If an entrepreneur produced $\widehat{k}_{t+1}$ units of capital when young, then he is a net borrower of capital if $k_{t+1} - \widehat{k}_{t+1} > 0$ and a net lender of capital if $k_{t+1} - \widehat{k}_{t+1} < 0$. His profit is therefore $\pi_{t+1} = \Theta h_{t+1}^{\theta} k_{t+1}^{1-\theta} K_{t+1}^{\theta} - w_{t+1} h_{t+1} - r_{t+1}(k_{t+1} - \widehat{k}_{t+1})$ which, for given values of w_{t+1}, r_{t+1}, K_{t+1} and $\widehat{k}_{t+1}$, is maximised by choosing h_{t+1} and k_{t+1} so as to satisfy $\theta\Theta h_{t+1}^{\theta-1} k_{t+1}^{1-\theta} K_{t+1}^{\theta} = w_{t+1}$

[9] This means that any benefits from decentralisation in our analysis do not accrue as a result of competitive pressures, which have been appealed to before and which may be questioned in the context of less-developed economies

[10] This aggregate externality - a common feature of endogenous growth models - allows us to work with a simple AK technology, where the social returns to capital are constant. Our main results would not change were we to assume diminishing returns to capital, instead. Similarly, our results would survive if we assumed that the externality involved economy-wide (rather than regional) spillover effects.

and $(1-\theta)\Theta h_{t+1}^{\theta} k_{t+1}^{-\theta} K_{t+1}^{\theta} = r_{t+1}$. Since each household supplies one unit of labour, $h_{t+1} = \eta n$ in equilibrium. And since $K_{t+1} = (1-\eta) n k_{t+1}$ in equilibrium as well, we may write the foregoing conditions as

$$w_{t+1} = \left(\frac{\Theta\theta}{\eta n}\right)[\eta(1-\eta)n^2]^{\theta} k_{t+1} \equiv \omega k_{t+1}, \tag{2}$$

$$r_{t+1} = \Theta(1-\theta)[\eta(1-\eta)n^2]^{\theta} \equiv r. \tag{3}$$

Correspondingly, $\pi_{t+1} = r\widehat{k}_{t+1}$ which gives the potential payoff to each entrepreneur from engaging in productive activity.

An entrepreneur begins life with zero resources, but has the opportunity to undertake an investment project by acquiring loans from all other agents (households and bureaucrats) of the same generation. Two types of project are available: the first involves the use of some basic, rudimentary technology that is freely available and that yields $\phi > 0$ units of capital per unit of loan with minimal (zero) effort. The second entails the operation of a more advanced, modern technology that requires licenses from public officials and that yields $\Phi > \phi$ units of capital per unit of loan for some positive amount of effort. We comment further on these features below. For now, we note that the total amount of capital, $\widehat{k}_{t+1}$, that can be produced from each type of project with a total loan size of l_t is given by

$$\widehat{k}_{t+1} = \begin{cases} \phi l_t \\ \Phi l_t. \end{cases} \tag{4}$$

The financial arrangements between lenders and borrowers are determined straightforwardly as there are no capital market imperfections in the model. Recall that I_{t+1} is the rate of interest charged on loans. We assume that potential lenders (households and bureaucrats) are able to access a storage technology, paying a fixed rate of return of i, as an alternative means of saving. Given this, then competition between lenders means that $I_{t+1} = i$ in equilibrium.

As indicated above, an entrepreneur who chooses to produce capital using the advanced technology must obtain various licenses, or permits, from public officials. Licenses are complementary in the sense that all of them are required - otherwise, only the basic technology can be accessed. The total number of licenses is denoted by M. In the absence of any rent-seeking, each license is issued free of charge. In the presence of rent-seeking, each license is granted only in exchange for the promise of a bribe payment once the return on a project has been realised. Specifically, bribes are demanded as a fraction of an entrepreneur's realised payoff, π_{t+1}, in which case the total fraction of this payoff that is extorted is given by $B_{t+1} = Mb_{t+1}$, where b_{t+1}

is the extortion rate per license. The precise determination of bribes is an issue that we take up later when it is shown that bureaucrats' optimal rate of extortion is constant: that is, $b_{t+1} = b$ (hence $B_{t+1} = B$) for all t. For now, we note that our modelling of corruption can be likened to the case in which public officials receive kickbacks *ex post* in the form of a share of a company's profits. That such arrangements exist in practice implies that, for one reason or another, firms find it worthwhile to adhere to their *ex ante* bribe promises. One reason might be the threat of being closed down or being denied licenses in the future if bureaucrats' demands are not met; another might be the possibility that bribes are a means of avoiding costly rules and regulations, in which case bureaucrats could retaliate against renegers of promises by threatening to report them for running a business illegally, having failed to comply with official procedures.[11] The enforcement of illicit agreements between private and public agents is an issue worth pursuing, but it is not one that we address in the present analysis. Rather, our interest lies elsewhere, being focused on the question of how corruption might influence economic performance and how it may do so to an the extent that depends on the decentralisation of government.

An earlier assumption to which we now return is that the operation of the advanced technology requires some positive input of entrepreneurial effort, e_t. We assume that this effort yields a disutility of δe_t and that the amount which is needed increases with the scale of the project such that $e_t = \epsilon l_t$ ($\epsilon > 0$). Different amounts of effort are needed by different entrepreneurs, whom we assume to be randomly endowed with idiosyncratic technical capabilities (skills, knowledge, expertise and the like), attributes that are unimportant for operating the basic technology. These attributes are realised according to a distribution of ϵ which accounts for agent heterogeneity in the model. For simplicity, we specify ϵ to be uniformly distributed on the interval $[0, 1]$ with probability distribution function $f(\epsilon) = 1$. Thus $\int_{\epsilon_0}^{\epsilon_1} f(\cdot)d\epsilon = \epsilon_1 - \epsilon_0$ gives the fraction of entrepreneurs for whom $\epsilon \in (\epsilon_0, \epsilon_1)$.

We are now in a position to deduce the final utility of an entrepreneur. As noted previously, the profit that each firm makes from productive activity is $\pi_{t+1} = r\widehat{k}_{t+1}$, where $\widehat{k}_{t+1}$ is determined according to (4). Irrespective of which technology is used to produce this capital, the firm faces a loan repayment of $(1 + i)l_t$. In the case of the basic technology this is the only cost that is incurred. In the case of the advanced technology there is also the cost of bribe payments, $Br\widehat{k}_{t+1}$, together with the disutility of effort, $\delta\epsilon l_t$. Collecting these observations together, it follows that entrepreneurial utility can be written

[11] Such practices are well-documented in the corruption literature (e.g., Rose-Ackerman 1999).

as

$$u_t = \begin{cases} [r\phi - (1+i)]l_t \\ [r\Phi(1-B) - (1+i) - \delta e]l_t. \end{cases} \tag{5}$$

The decision problem for an entrepreneur is to maximise his utility by choice of investment project. In accordance with (5), this entails choosing the advanced project if $r\Phi(1-B) - \delta e \geq r\phi$. When holding with equality, this condition determines a critical level of effort, denoted $\widehat{\epsilon}$, which separates different types of project investor. That is,

$$\widehat{\epsilon} = \frac{r[\Phi(1-B) - \phi]}{\delta} \equiv \mathcal{E}(B). \tag{6}$$

Thus the advanced technology is adopted by any entrepreneur for whom $\epsilon \in [0, \widehat{\epsilon}]$ whilst the basic technology is used by anyone else for whom $\epsilon \in (\widehat{\epsilon}, 1]$.[12] Evidently, $\mathcal{E}'(\cdot) < 0$ which means that an increase in bribe payments reduces the threshold input of effort below which it pays to invest in the advanced project.

2.3 Bureaucrats

In the first period of life each bureaucrat earns a salary of s_t from supplying his labour to the government. In the second period of life each bureaucrat receives bribe payments from firms through his rent-seeking activities. Obviously, only the former is saved, being lent to firms at the interest rate $I_{t+1} = i$. For the moment, this is all that we need to know in order to characterise the general equilibrium. We study the precise details of rent-seeking behaviour in a subsequent part of our investigation.

3 General Equilibrium

Given the foregoing analysis, we may now proceed to determine the process by which growth takes place in the economy. This process is obtained from the dynamic path of capital accumulation which may be derived as follows.

The aggregate amount of capital produced in each region comprises the total production of capital from the advanced investment project plus the total production of capital from the basic investment project. Recall from above that the former venture is chosen by entrepreneurs for whom $\epsilon \in [0, \widehat{\epsilon}]$, whilst the latter venture is chosen by entrepreneurs for whom $\epsilon \in (\widehat{\epsilon}, 1]$. The populations of these groups are therefore $(1-\eta)n \int_0^{\widehat{\epsilon}} f(\epsilon)d\epsilon = (1-\eta)n\widehat{\epsilon}$ and

[12] Naturally, we assume appropriate restrictions on parameters to ensure that $\widehat{\epsilon}_t \in (0, 1)$.

$(1-\eta)n\int_{\widehat{\epsilon}}^{1} f(\epsilon)d\epsilon = (1-\eta)n(1-\widehat{\epsilon})$, respectively. Each member of each group produces the same amount of capital in accordance with (4) - that is, either Φl_t or ϕl_t. It follows that the aggregate stock of capital in each region is given by

$$K_{t+1} = [\Phi\widehat{\epsilon} + \phi(1-\widehat{\epsilon})](1-\eta)nl_t. \tag{7}$$

To obtain an expression for the growth rate of capital, we need to determine the amount of funding available to project investors. This funding is provided as loans from households and bureaucrats out of their first period incomes. Each of the former earns a net income of $w_t - \tau_t$ to be disposed of as a loan, whilst each of the latter earns a legal income of s_t to do likewise. It follows that the total amount of lending by households is $N\eta n(w_t - \tau_t)$, and that the total amount of lending by bureaucrats is ms_t. We assume that the lump-sum taxes paid by households are used to finance public sector pay. The budget constraint of the government is therefore understood to be $N\eta n\tau_t = ms_t$. Given this, then aggregating over all lenders delivers the total volume of funds available to capital producers as $N\eta n w_t$. Since the total demand for funds is $N(1-\eta)nl_t$, equilibrium in the loan market implies $\eta w_t = (1-\eta)l_t$. Using this, together with the expression for w_t in (2) (and recalling that $K_t = (1-\eta)nk_t$), we may compute from (7) the constant, endogenous equilibrium growth rate, $\frac{K_{t+1}}{K_t} = g$. That is,

$$g = \kappa[\Phi\widehat{\epsilon} + \phi(1-\widehat{\epsilon})] \equiv \mathcal{G}(\widehat{\epsilon}), \tag{8}$$

where $\kappa = \omega\left(\frac{\eta}{1-\eta}\right)$. Evidently, $\mathcal{G}'(\cdot) > 0$ which shows that the higher is the critical level of effort the higher is rate of growth because the greater is the number of entrepreneurs who choose to take on the more advanced (i.e., more productive) investment project.

Given the above, it is straightforward to establish the following result.

Proposition 1 *An increase in bribe payments reduces equilibrium growth.*

Proof. From (6) and (8), the equilibrium growth rate can be written as $g = \mathcal{G}(\mathcal{E}(B)) \equiv G(B)$. Hence $G'(\cdot) = \mathcal{G}'(\cdot)\mathcal{E}'(\cdot) < 0$. ■

The effect of bribe payments is to make the advanced investment project more costly, less profitable and therefore less attractive to entrepreneurs. The higher are these payments, the fewer is the number of entrepreneurs whose required input of effort is low enough to induce them to take on this project. Growth is reduced as a result. In short, corruption impedes growth by distorting investment decisions and limiting access to the most productive technology. There is, of course, an obvious implication of this.

Corollary 1 *The growth rate of a corrupt economy is always lower than the growth rate of a non-corrupt economy.*

Proof. The growth rate is $g = G(B)$. Since $G'(\cdot) < 0$, then $G(B) < G(0)$ for any $B > 0$. ■

With these results in mind, we now turn to consider how bribe payments, themselves, are determined.

4 Rent Seeking

The main purpose of our analysis is to examine how the adverse effect of corruption on growth may depend on the administrative arrangements for implementing public policy. The particular types of arrangement that we are interested in are centralised and decentralised bureaucratic structures. As mentioned earlier, decentralisation can take place to varying degrees along different dimensions and it is important to be clear about what precisely one means when considering the issue. The specific focus of the present paper is the following. By a centralised bureaucracy, we mean a system of central administration whereby public officials have no regional affiliation in the issuance of licenses, but rather supply whatever licenses they are in charge of to applicants from any district: in other words, each bureaucrat, or bureau, is a provider of a particular type of license, or set of licenses, to all localities. By a decentralised bureaucracy, we mean a system of regional administration whereby public officials have local responsibility for license distribution, being allocated to districts over which they have complete jurisdiction: in other words, each bureaucrat, or bureau, is a provider of all types of license to a particular region, or regions. To fix ideas, we suppose that in the case of centralisation each bureaucrat is given responsibility for the same number, $\frac{M}{m}$, of distinct types of license, whilst in the case of decentralisation each bureaucrat is given jurisdiction over the same number, $\frac{N}{m}$, of different regions. The main assumption that we make in this set-up is that bureaucrats do not share control of either the same license or the same region. This assumption rules out potential competition between officials in the provision of licenses: a bureaucrat in a central administration is a monopoly supplier of one or more licenses to all regions, whilst a bureaucrat in a decentralised administration is a monopoly supplier of all licenses to one or more regions.

Under both types of administrative arrangement, a bureaucrat issues a license only in return for a kickback, agreed as some fraction, b, of a firm's

profit, π_{t+1}. As in other analyses, we assume that bureaucrats, whilst never being caught, incur some costs from their corrupt activities. These costs may be thought of in a number of ways. For example, corrupt public officials may need to spend effort and resources on arranging and concealing their illicit transactions, and may also experience some moral shame or social stigma from abusing their privileged positions. It is plausible to imagine that these costs are higher the larger is the scale of the particular offence, as measured by the amount of bribe demanded for each license, $b\pi_{t+1}$. It is also conceivable that the extraction of more bribe income is more costly for a bureaucrat if this occurs as a result of an increase in b rather than an increase in π_{t+1}. This is because the former reflects a bureaucrat's own individual choice to extort more profit for himself, whilst the latter is an event from which all bureaucrats stand to gain equally without intention. Thus, given the behaviour of others, a bureaucrat who raises his own bribe demand may be expected to incur higher costs not only because of the absolute increase in the scale of his offence, but also because of the relative increase in this - a factor that may make him more vulnerable to detection unless he spends more resources on concealing his activities, and that may even be costly in terms of attracting greater stigma and hostility. For these reasons, we specify the cost of bribe-taking as $\beta(b)\pi_{t+1}$, where $\beta(b)$ is some convex function which satisifies $\beta(b) = b$ at both $b = 0$ and some $b = b^* > 0$. These properties ensure that, at least up to some level of bribe, a bureaucrat's net payoff (income or utility) from each bribe transaction is positive - that is, $[b - \beta(b)]\pi_{t+1} > 0$ for $b \in [0, b^*]$.[13]

Given the above, the total returns to a bribe-taking bureaucrat may be deduced as follows. Recall that in a centralised administration each official has responsibility for $\frac{M}{m}$ licenses which he supplies to all of the N regions, whilst in a decentralised administration each official has jurisdiction over $\frac{N}{m}$ regions which he provides with all of the M licenses. In both cases the potential number of bribe-payers in any region is $\widehat{\epsilon}(1-\eta)n$, the population of entrepreneurs who choose the advanced investment project. Since the profit that each one of these earns is $\pi_{t+1} = r\Phi l_t$, the return to a bureaucrat from each bribe transaction is $[b - \beta(b)]r\Phi l_t$. It follows that the total return from all bribe transactions under either form of administrative arrangement is

$$P = \widehat{\epsilon}[b - \beta(b)](1 - \eta)n \left(\frac{NM}{m}\right) r\Phi l_t \tag{9}$$

The decision problem for each corrupt public official is to choose a bribe rate, b, so as to maximise his payoff, P. Whilst the expression for P is

[13] This follows from the convexity of $\beta(\cdot)$, implying that $\beta'(\cdot) > 0$ and $\beta''(\cdot) > 0$. In addition, $\beta'(0) < 1$ and $\beta'(b^*) > 1$.

the same under both types of bureaucratic structure, the solution to the maximisation problem is different. The reason for this, and the implications thereof, are elucidated in the analysis that follows.

5 Centralisation Versus Decentralisation

The key difference between alternative administrative arrangements is the extent to which bureaucrats take into account the aggregate consequences of their own individual rent-seeking behaviour. As shown in (9), a bureaucrat's payoff from such behaviour depends on both the bribe rate that he sets (i.e., b, the share of profit extracted from each entrepreneur in return for each license) and the bribe base that is available to him (i.e., $\widehat{\epsilon}$, the fraction of entrepreneurs in each region who are willing to pay bribes). From (6), the latter is determined according to $\widehat{\epsilon} = \mathcal{E}(B)$, where $B = Mb$ (the total share of profits that an entrepreneur must forfeit in return for all of the requisite licenses). In the case of a centralised bureaucracy, entrepreneurs in any particular region obtain different licenses from different officials, each of whom chooses his own bribe demand, b, taking as given the bribes demanded by others and hence the total rate of extortion, B, that each firm suffers. As a result, each official perceives that his own corrupt behaviour has no influence on $\widehat{\epsilon}$. By contrast, in the case of a decentralised bureaucracy entrepreneurs in a particular region obtain all of the different licenses from the same official who therefore recognises that $B = Mb$ when choosing b. Consequently, each official now perceives an influence of his rent-seeking on $\widehat{\epsilon}$. This distinction between administrative structures has important implications, as we reveal below.

Let b^C and b^D denote, respectively, the optimal bribe rates under centralised and decentralised bureaucracies. The former is computed as the value of b that maximises P in (9), taking as given $\widehat{\epsilon}$. That is,

$$1 - \beta'(b^C) = 0. \tag{10}$$

The latter is computed as the value of b that maximises P in (9), subject to $\widehat{\epsilon} = \mathcal{E}(Mb)$ in (6). That is,

$$\mathcal{E}(Mb^D)[1 - \beta'(b^D)] + M\mathcal{E}'(Mb^D)[b^D - \beta(b^D)] = 0. \tag{11}$$

In each of the cases it follows from the properties of $\beta(b)$ that $b^i < b^*$ and therefore $b^i - \beta(b^i) > 0$ $(i = C, D)$, implying a positive payoff from bribery.[14]

[14] That $b^D < b^*$ may be seen from (11) which implies that a bureaucrat's payoff is decreasing at b^* (since $\beta'(b^*) > 1$ and $b^* = \beta(b^*)$).

It is also evident that the optimal bribe rate is constant in each case, as we claimed earlier.

A comparison of (10) and (11) yields the following result.

Proposition 2 *The bribe rate under decentralisation is lower than the bribe rate under centralisation.*

Proof. Recall that $\varepsilon'(\cdot) > 0$, together with $b^i - \beta(b^i) > 0$ $(i = C, D)$. Suppose that $b^D \geq b^C$. Then (10) would imply $\beta'(b^D) \geq 1$, in which case (11) would require $M\mathcal{E}'(Mb^D)[b^D - \beta(b^D)] \geq 0$ which is never satisfied. Hence $b^D \geq b^C$ cannot be true. Suppose, alternatively, that $b^D < b^C$. Then (10) would imply $\beta'(b^D) < 1$, in which case (11) would require $M\mathcal{E}'(Mb^D)[b^D - \beta(b^D)] < 0$ which is satisfied. Hence $b^D < b^C$ is the only feasible outcome. ■

The intuition for this result is that bureaucrats with regional authortiy for the provision of licenses recognise that the bribe rate they set influences the bribe base they can exploit. Specifically, each official takes account of the fact that an increase in the amount of bribe demanded reduces the number of bribe-paying firms in the region (or regions) over which he has jurisdiction. The effect of this is to temper the demand for bribes, an effect that is absent when license provision is centralised and bureaucrats treat the number of potential bribe payers as given.

Given the above, it is straightforward to deduce the growth implications of alternative bureaucratic structures.

Corollary 2 *Growth is higher under decentralisation than under centralisation.*

Proof. The growth rate is $g = G(B) = (Mb)$, where $G'(\cdot) < 0$. Since $b^D < b^C$, then $B^D < B^C$ so that $G(B^D) > G(B^C)$. ■

The fact that bribe payments are lower when license provision is decentralised than when it is centralised means that the cost of undertaking the advanced investment project is also lower in the case of the former than in the case of the latter. A lower cost of this more productive venture encourages a greater number of firms to take it on, which leads to a higher rate of capital accumulation and a higher rate of growth.

The foregoing results provide an illustration of how the effects of corruption may depend on the administrative structure (degree of centralisation) for implementing public policy. As mentioned earlier, there is a close resemblance between these results and certain others that have been obtained in

a different context that relates to the behavioural aspects (degree of organisation) of bureaucratic rent-seeking. The seminal contribution on this was provided by Shleifer and Vishny (1993) who argued as follows. Suppose (as in our analysis) that, in order to conduct business, individuals must acquire various types of governmental good (licenses, permits, certificates, etc.) that are complements to each other and that are provided by different government agencies or departments. Under such circumstances, the extent to which public officials are organised in their extraction of bribes can have an important influence on the consequences of bribery. In the case of disorganised (or non-coordinated) rent-seeking, each bureaucrat acts as an independent monopolist, supplying his own governmental good in exchange for a bribe which he chooses so as to maximise his own illegal income without taking into account the negative externality that this imposes on the demand for other governmental goods and the bribe-taking capacity of other bureaucrats. By contrast, in the case of organised (or coordinated) rent-seeking, bureaucrats act together as a joint monopoly, choosing bribe payments that maximise their total illegal income whilst internalising any externalities. The implication is that the level of bribes will be lower, the provision of governmental goods will be greater and the scale of distortions will be smaller when corruption is organised than when it is disorganised. Our analagous result in the present paper is that corruption is less harmful when bureaucratic authority is decentralised than when it is centralised. Note that, in each of these cases, we treat bureaucrats as behaving in exactly the same way - that is, acting independently so as to maximise their own bribe income without any coordination or collusion between them. Nevertheless, by empowering public officials with regional jurisdiction, decentralisation in our model produces exactly the same rent-seeking behaviour as would occur under organised corruption. This is because the problem facing an independent regional official - maximise P in (9) subject to $\widehat{\epsilon} = \mathcal{E}(Mb)$ in (6) - is identical to the problem facing an organised syndicate of officials with the objective of maximising either the individual payoff of each of its members or the aggregate payoff of all of its members. The outcomes in the two cases are observationally equivalent, even though the behavioural assumptions are quite different.

6 Conclusions

This paper has sought to make a theoretical contribution to the literature on corruption, decentralisation and economic performance. Like any analysis of this kind, one needs to be clear and precise in defining what type of corrupt activity and what aspect of decentralised reforms are being studied. As

regards the former, our focus has been on bureaucratic malfeasance in entry regulation and the effects of this on the costs of doing business. As regards the latter, our attention has centred on the deconcentration of administrative powers such that entry regulation is localised, being under the jursidiction of regionally-appointed officials. With these terms of reference in mind, we proceeded to develop a macroeconomic model for the purpose of comparing and contrasting the implications of alternative government structures for rent-seeking behaviour and, with this, economic growth.

Our analysis illustrates a potentially important channel through which decentralisation can curb corrupt activity and foster growth performance. This is by transforming a system of numerous monopoly suppliers of different governmental goods to all regions into a system of single monopoly suppliers of all types of governmental good to particular regions. The effect of this is to temper the demand for bribes as each local monopolist recognises his influence over the local bribe base. In turn, this creates a more a favourable business climate, within which more productive investment takes place. As indicated, this result is akin to, but quite distinct from, the argument that corruption is less harmful when it is organised (coordinated) than when it is disorganised (uncoordinated). The intuition is the same, but the similarity stops there. Indeed, our analysis exemplifies how commonplace terminology - the interchangeable use of organised (disorganised) corruption and centralised (decentralised) bureaucracies - is not very helpful and can create confusion: the association is exactly the opposite in our case.

In many developing countries (where corruption is endemic, central governments are unwilling to cede power, and local governments lack capacity to implement policies) decentralisation is much less advanced than in high-income countries, being close to the type of administrative deconcentration on which we have focused. Nevertheless, our analysis suggests that even this limited form of decentralisation can bring benefits. This result is established without appealing to the potential disciplining effects of inter-jurisdictional competition or improved democratic accountability that have been proposed previously and that may be missing in developing countries.

References

Ades, A. and R. Di Tella, 1999. Rents, competition and corruption. *American Economic Review* 89, 982-993.

Aidt, T.S., 2003. Economic analysis of corruption: a survey. *Economic Journal* 113, 632-652.

Aidt, T.S., J. Dutta and V. Sena, 2008. Governance regimes, corruption and growth. *Journal of Comparative Economics* 36, 195-220.

Akai, N., Y. Nishimura and M. Sakata, 2007. Complementarity, fiscal decentralisation and economic growth. *Economics of Governance* 8, 339-362.

Akai, N. and M. Sakata, 2002. Fiscal decentralisation contributes to economic growth: evidence from state-level cross-section data for the United States. *Journal of Urban Economics* 52, 93-108.

Altunas, Y. and J. Thornton, 2012. Fiscal decentralisation and governance. *Public Finance Review* 40, 66-85.

Arikan, G., 2004. Fiscal decentralisation: a remedy for corruption? *International Tax and Public Finance* 11, 175-195.

Azfar, O., 2001. Corruption and the delivery of health and education services. Working Paper No.01/01, Centre for Institutional Reform and the Informal Sector, University of Maryland.

Bardhan, P., 2002. Decentratlisation of governance and development. *Journal of Economic Perspectives* 16, 185-205.

Bardhan, P. and D. Mookherjee, 2000. Capture and governance at local and national levels. *American Economic Review* 90, 135-139.

Bardhan, P. and D. Mookherjee, 2005. Decentralisation, corruption and government accountability: an overview. Working Paper No.152, Institute for Economic Development, University of Boston.

Besley, T. and A. Case, 1995. Incumbent behaviour: vote-seeking, tax-setting and yardstick competition. *American Economic Review* 85, 25-45.

Blackburn, K., N. Bose, and M.E. Haque, 2006. The incidence and persistence of corruption in economic development. *Journal of Economic Dynamics and Control* 30, 2447-2467.

Blackburn, K., N. Bose, and M.E. Haque, 2011. Public expenditures, bureaucratic corruption in economic development. *Manchester School* 79, 405-428.

Blackburn, K. and G.F. Forgues-Puccio, 2007. Distribution and development in a model of misgovernance. *European Economic Review* 51, 1534-1563.

Blackburn, K. and G.F. Forgues-Puccio, 2009. Why is corruption less harmful in some countries than in others? *Journal of Economic Behaviour and Organisation* 72, 797-810.

Blackburn, K. and G.F. Forgues-Puccio, 2010. Financial liberalisation, bureaucratic corruption and economic development. *Journal of International Money and Finance* 29, 1321-1339.

Blackburn, K. and J.Powell, 2011. Corruption, inflation and growth. *Economics Letters* 113, 225-227.

Blackburn, K. and R. Sarmah, 2008. Corruption, development and demography. *Economics of Governance* 9, 341-362.

Blanchard, O. and A. Shleifer, 2001. Federalism with and without political centralisation: China versus Russia. *IMF Staff Papers* 48, 171-179.

Bodman, P. and K. Ford, 2006. Fiscal decentralisation and economic growth in the OECD. Macroeconomics Research Group Working Paper, University of Queensland.

Brennan, G. and J. Buchanan, 1980. *The Power to Tax: Analytical Foundations of a Fiscal Constitution.* Cambridge University Press, Cambridge.

Bruess, F. and M. Eller, 2004. Fiscal decentralisation and economic growth: is there really a link? *Journal for Institutional Comparisons* 2, 3-9.

Brunetti, A., G. Kisunko and B. Weber, 1997. Institutional obstacles to doing business: region-by-region results from a world-wide survey of the private sector. Policy Research Working Paper No.1759, World Bank.

Campos, N.F., D. Ralitza and A. Saleh, 2010. Whither corruption? A quantitative survey of the literature on corruption and growth. Discussion Paper No.8140, Centre for Economic Policy and Research.

Cai, H. and D. Treisman, 2004. State corroding federalism. *Journal of Public Economics* 88, 819-843.

Cai, H. and D. Treisman, 2005. Does competition for capital discipline governments? Decentralisation, globalisation and public policy. *American Economic Review* 95, 817-830.

Celantini, M. and J-J. Ganuza, 2002. Organised vs. competitive corruption. *Annals of Operations Research* 109, 293-315.

De Mello, L. and M. Barenstein, 2001. Fiscal decentralisation and governance: a cross-country study. Working Paper No.WP/01/71, International Monetary Fund.

Dreher, A., 2006. Power to the people? The impact of decentralisation on governance. Working Paper No.06-121, KOF Swiss Economic Institute.

Dziobek, C., C.G. Mangas and P. Kufa, 2010. Measuring fiscal decentralisation - exploring the IMF's databases. Working Paper No.WP/11/126, International Monetary Fund.

Ebel, R. and S. Yilmaz, 2002a. Concept of fiscal decentralisation and worldwide overview. Working Paper No.30346, World Bank Institute.

Ebel, R. and S. Yilmaz, 2002b. On the measurement and impact of fiscal decentralisation. Policy Research Working Paper No.2809, World Bank.

Edwards, J. and M. Keen, 1996. Tax competition and Leviathan. *European Economic Review* 40, 113-134.

Ehrlich, I. and F.T. Lui, 1999. Bureaucratic corruption and endogenous economic growth. *Journal of Political Economy* 107, 270-293.

Enikolopov, R. and E. Zhuravskaya, 2007. Decentralisations and political institutions. *Journal of Public Economics* 91, 2261-2290.

Fisman, R. and R. Gatti 2002. Decentralisation and corruption: evidence across countries. *Journal of Public Economics* 83, 325-435.

Fisman, R. and J. Svensson, 2007. Are corruption and taxation really harmful to growth? firm level evidence. *Journal of Development Economics* 82, 63-75.

Fjeldstad, O.-H., 2004. Decentralisation and corruption: a review of the literature. Working Paper No.10, Chr. Michelsen Institute.

Gupta, S., H. Davoodi, H. and R. Alonso-Terme, 2002. Does corruption affect income inequality and poverty? Economics of Governance 3, 23-45.

Gupta, S., H. Davoodi and E. Tiongson, 2001. Corruption and the provision of health care and education services. In: Jain, A. (Ed.), *The Political Economy of Corruption*. Routledge Publishers, London.

Gupta, S., M. Verhoeven and E. Tiongson, 1999. Does higher government spending buy better results in education and health care?" Working Paper No.WP/99/21, International Monetary Fund.

Gupta, S., M. Verhoeven and E. Tiongson, 2001. Public spending on health care and the poor. Working Paper No.WP/01/127, International Monetary Fund.

Gurgur, T. and A Shah, 2005. Localisation and corruption: panacea or pandora's box? Policy Research Working Paper No.3486, World Bank.

Gyimah-Brempong, K., 2002. Corruption, economic growth and income inequality in Africa. *Economics of Governance* 3, 183-209.

Hall, R. and C. Jones, 1999. Why do some countries produce so much more output per worker than others? *Quarterly Journal of Economics* 114, 83-116.

Huther, J. and A. Shah, 1998. Applying a simple measure of good governance to the debate fiscal decentralisation. Policy Research Working Paper No.1894, World Bank.

Iimi, A., 2005. Decentralisation and economic growth revisited: an empirical note. *Journal of Urban Economics* 57, 449-461.

Jain, A. 2001. Corruption: a review. *Journal of Economic Surveys* 15, 71-121.

Kaufmann, D., 1997. Corruption: the facts. *Foreign Policy* 107, 114-131.

Kaufmann, D., A. Kray and M. Mastruzzi, 2007. The worldwide governance indicators project: answering the critics. Policy Research Working Paper No.4149, World Bank.

Keefer, P. and S. Knack, 1997. Why don't poor countries catch up? A cross-national test of an institutional explanation. *Economic Inquiry* 35, 590-602.

Knack, S. and P. Keefer, 1995. Institutions and economic performance: cross-country tests using alternative institutional measures. *Economics and Politics* 7, 207-227.

Kyria, A.P. and O. Roca-Sagales, 2011. Fiscal decentralisation and government quality in the OECD. Economics Letters 111, 191-193.

Lederman, D., N. Loayza and R, Soares, 2005. Accountability and corruption: political institutions matter. *Economics and Politics* 17, 1-35.

Lessmann, C. and G. Markwardt, 2010. One size fits all? Decentralisation, corruption and the monitoring of bureaucrats. *World Development* 38, 631-646.

Li, H., L.C. Xu and H. Zou, 2000. Corruption, income distribution and growth. *Economics and Politics* 12, 155-182.

Lin, J.Y. and Z. Liu, 2000. Fiscal decentralisation and economic growth in China. *Economic Development and Cultural Change* 49, 1-21.

Litvack, J., J. Ahmad and R. Bird, 1998. Rethinking decentralisation in developing countries. Working Paper No.21491, World Bank.

Martinez-Vazquez, J. and R. McNab, 2003. Fiscal decentralisation and economic growth. *World Development* 31, 1597-1616.

Mauro, P., 1995. Corruption and growth. *Quarterly Journal of Economics* 110, 681-712.

Mauro, P., 1998. The effects of corruption on growth, invsetment and government expenditure: a cross-country analysis. In: Elliott, K.A. (Ed.), *Corruption and the Global Economy*. Institute for International Economics, Washington D.C.

Meon, P.G. and K. Sekkat, 2005. Does corruption grease or sand the wheels of growth? *Public Choice* 122, 69-97.

Mieszkowski, P.M. and G.R. Zodrow, 1989. Taxation and the Tiebout model: the differential effects of head taxes, taxes on land rents and property taxes. *Journal of Economic Literature* 27, 1098-1146.

Mo, P.H., 2001. Corruption and economic growth. *Journal of Comparative Economics* 29, 66-79.

Montinola, G.R. and R.W. Jackman, 1999. Sources of corruption: a cross-country study. *British Journal of Political Studies* 32, 147-170.

Murphy, K., A. Shleifer and R. Vishny, 1991. The allocation of talent: implications for growth. *Quarterly Journal of Economics* 106, 503-530.

Neeman, Z., M.D. Paserman and A. Simhon, 2006. Corruption and openness. Working Paper, University of Boston.

North, D., 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, New York.

Oates, W.E., 1972. *Fiscal Federalism*. Harcourt Brace Jovanovich, New York.

Oates, W.E., 1993. Fiscal decentralisation and economic development. *National Tax Journal* 46, 237-243.

Oates, W.E., 2005. Toward a second-generation theory of fiscal federalism. *International Tax and Public Finance* 12, 349-373.

Paldam, M. 2002. The big pattern of corruption, economics, culture and seesaw dynamics. *European Journal of Political Economy* 18, 215-240.

Pellegrini, L. and R. Gerlagh, 2004. Corruption's effects on growth and its transmission channels. *Kyklos* 57, 429-456.

Prud'homme, R., 1995. The dangers of decentralisation. *World Bank Research Observer* 10, 201-220.

Rajkumar, A. and V. Swaroop, 2008. Public spending and outcomes: does governance matter? *Journal of Development Economics* 86, 96-111.

Rauch, J.E. and P.B. Evans, 2000. Bureaucratic structure and bureaucratic performance in less developed countries. *Journal of Public Economics* 76, 49-71.

Rose-Ackerman, S., 1999. *Corruption and Government: Causes, Consequences and Reform*. Cambridge University Press, Cambridge.

Rubinfeld, D., 1987. The economics of the local public sector. In: Aurbach, A. and M. Feldstein (Eds.), *Handbook of Public Economics*. North-Holland, Amsterdam.

Sachs, J.D. and A.M. Warner, 1997. Sources of slow growth in African economies. *Journal of African Economics* 6, 335-376.

Salmon, P., 1987. Decentralisation as an incentive scheme. *Oxford Review of Economic Policy* 3, 24-43.

Sarte, P.-D., 2000. Informality and rent-seeking bureaucracies in a model of long-run growth. *Journal of Monetary Economics* 46, 173-197.

Schneider, A., 2003. Decentralisation: conceptualisation and measurement. *Studies in Comparative International Development* 38, 32-56.

Seabright, P., 1996. Accountability and decentralisation in government: an incomplete contracts model. *European Economic Review* 40, 61-89.

Shah, A., 2004. Fiscal decentralisation in developing and transition economies: progress, problems and promise. Policy Research Working Paper No.3282, World Bank.

Shleifer, A. and W. Vishny, 1993. Corruption. *Quarterly Journal of Economics* 108, 599-617.

Sonin, K., 2010. Provincial protectionism. *Journal of Comparative Economics* 38, 111-122.

Svensson, J., 2005. Eight questions about corruption. *Journal of Economic Perspectives* 19, 19-42.

Tanzi, V.,1996. Fiscal federalism and decentralisation: a review of some efficiency and macroeconomic aspects. In: Bruno, M. and B. Pleskovic (Eds.), *Annual World Bank Conference on Development Economics*. World Bank, Washington D.C.

Tanzi, V. 1998. Corruption around the world: causes, consequences, scope and cures. *International Monetary Fund Staff Papers* 45, 559-594.

Tanzi, V. and H. Davoodi, 1997. Corruption, public investment and growth. Working Paper No.WP/97/139, International Monetary Fund.

Thieben, U., 2003. Fiscal decentralisation and economic growth in high-income OECD countries. *Fiscal studies* 24, 237-274.

Thieben, U. 2005. Fiscal decentralisation and economic growth in rich OECD countries: is there an optimum? *Economic Bulletin* 41, 175-182.

Tiebout, C., 1956. A pure theory of local expenditures. *Journal of Political Economy* 64, 416-424.

Thornton, J. 2007. Fiscal decentralisation and economic growth reconsidered. *Journal of Urban Economics* 61, 64-70.

Treisman, D., 2000. The causes of corruption: a cross-national study. *Journal of Public Economics* 76, 399-457.

Treisman, D. 2002. Decentralisation and the quality of government.

Treisman, D., 2007. What have we learned about the cause of corruption from ten years of cross-national empirical research? *Annual Review of Political Science* 10, 211-244.

United Nations, 2000. Government Decentralisation: A Study of Country Experiences. United Nations Population Fund, New York.

Vo, D.H., 2009. The economics of fiscal decentralisation. *Journal of Economic Surveys* 24, 657-679.

Wei, S., 2000. How taxing is corruption on international investors? *Review of Economics and Statistics* 82, 1-11.

Weingast, B., 2009. Second generation fiscal federalism: the implications of fiscal incentives. *Journal of Law, Economics and Organisation* 11, 1-31.

World Bank, 1997. *Helping Countries Combat Corruption: The Role of the World Bank*. World Bank, Washington, D.C.

World Bank, 1999. *The Anti-Corruption Handbook*. World Bank, Washington, D.C.

World Bank, 2006. *Anti-Corruption in Transition III: Who is Succeeding and Why*. World Bank, Washington , D.C.

Zhang, T. and H. Zou, 1998. Fiscal decentralisation, public spending and economic growth in China. *Journal of Public Economics* 67, 221-240.

Zhang, T. and H. Zou, 2001. The growth impact of intersectoral and intergovernmental allocation of public expenditure: whit applications to China and India. *China Economic Review* 12, 58-81.

Zodrow, G.R., 1983. *Local Provision of Public Services: The Tiebout Model After Twenty-Five Years*. Academic Press, New York.