On the economic incentives for taking bribes

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Abstract. This paper presents an empirical analysis of the factors affecting bribe taking by public officials. Factors influencing the acceptance of bribes include: the probability of being convicted, severity of punishment, government salary relative to private sector income, the demonstration effect, and the unemployment rate. Our results indicate that higher probability of being convicted discourages the acceptance of bribes as does more severe punishment. Low relative earnings, high unemployment, and the demonstration effect of aggregate advertising all lead to increased bribe taking.

1. Introduction

Rent-seeking through bribery creates inefficiencies when public officials delay their duties in anticipation of obtaining bribes. This induces individuals with higher discount rates to offer bribes to these officials. Those unwilling or unable to offer bribes face delays or are even denied service. There is an alternative approach which suggests that bribery may lead to an improvement in efficiency. An increase in the prevalence of bribery may lead corrupt public officials to expedite their duties (Lui, 1985).

The literature of rent-seeking contains frequent references to the welfare implications of corruption in the public sector (see Rose-Ackerman, 1978; and Tollison, 1982). According to Hillman and Katz (1987), bribery creates a simple transfer of rents from monopoly interests to corrupt officials 'and draws real resources into the activity of becoming an official who is in a position to receive these bribes.' Appelbaum and Katz (1986) argue that the total social costs of rent seeking include expenditures on both rent seeking and rent avoiding activities.

From an individual perspective, the incentives for bribe taking have been compared to profit maximization. Dallard (1988) investigates the discrepancy between private and social motives within this framework. Cadot (1987)

* The authors are solely responsible for the views expressed and any remaining errors. Oak Ridge National Laboratory does not necessarily support our conclusions.
models corruption as a gamble whereby government officials indulge in risky behavior every time they ask for a bribe. The influence of market structure on corruption is studied by Rose-Ackerman (1975). Lui (1986) posits that as corruption becomes more widespread in a market, it becomes harder to identify corrupt officials effectively.

The discussion above indicates the emergence of a substantial literature on various theoretical aspects of rent seeking through bribery. The unfortunate absence of empirical studies on these particular issues owes primarily to the apparent dearth of data. For example, we are not likely to determine the number of public officials who have engaged in bribe taking because undetected participants have no incentive to divulge the truth. Nevertheless, empirical analyses are important, not only for evaluation of existing theory, but also for analysis of trends and subsequent formulation of public policy. To get some idea of the magnitude of the problem, more than one thousand individuals in the U.S. were indicted in 1985 for abuse of public office.¹

This paper provides an empirical study of the economic incentives for taking bribes. The behavior of public officials is studied at the Federal, State, and Local levels for the years 1970–83. Factors influencing the acceptance of bribes include: the probability of being convicted, severity of punishment, government salary relative to private sector income, the demonstration effect, and the unemployment rate. Our results indicate that higher probability of being convicted discourages the acceptance of bribes as does more severe punishment. Low relative earnings, high unemployment, and the demonstration effect of aggregate advertising all lead to increased bribe taking.

The layout of the rest of the paper is as follows: Section 2 outlines our theoretical framework, data and estimation procedures are in Section 3, results are in Section 4, with conclusions forming the last section.

2. Theoretical framework

The decision to accept bribes can be viewed within the same conceptual framework which has been applied to participation in other illegal activities.² In the model of criminal activity proposed initially by Becker (1968) individuals maximize expected utility. Becker’s model implies that lawbreakers have engaged in a rational choice based on the expected costs and benefits of their actions.

The marginal costs of bribe taking include the expected value of resulting punishment. This will be determined by three primary factors: (1) the subjective probability of arrest, (2) the probability of conviction given arrest, and (3) the severity of punishment. Stigler (1970) argues that increased punishment would almost always lead to increased deterrence while Witte (1980) finds that ‘both the expected certainty and severity of punishment’ have significant deter-
rent effects on criminal behavior. Marginal costs of bribe taking also include implicit costs of alternative employment opportunities. Earnings in other occupations are sacrificed when one becomes a public official; however, employment and earnings as a public official are put at risk by corrupt behavior.

Benefits of such behavior must certainly include the value of anticipated bribe receipts which will be determined by the value of rents which the corrupt public official is in a position to obtain. This is likely to vary with the level of government. Individual characteristics will weigh heavily in the calculation of expected benefits of bribe taking. Davis (1988) emphasizes the importance of 'differing attitudes toward the future.' The timing of corrupt behavior, payoff, and punishment suggest that high individual discount rates will be associated with greater bribe taking. These theoretical considerations form the basis for our estimation equation given below.

3. Data and estimation

Data for our study consist of separate annual observations at the Federal, State, and Local levels for the years 1970–83. Ideally, the dependent variable would be the actual number of public officials who took bribes; however, monitoring of public corruption is far from perfect. We employ the proportion of all government employees who are convicted of bribery as a proxy for the incidence of bribe taking and denote this variable as (CONV). All data on arrests and convictions come from the Sourcebook of Criminal Justice Statistics.

The subjective probability of arrest will be affected by government policing activities which we measure as the real police expenditure per government employee (PEXP). The probability of being convicted given arrest is given as the ratio of convictions to indictments in each year (JUDGE). A greater probability of being convicted should discourage the acceptance of bribes. More severe prison sentences for misconduct should also discourage bribe taking. The severity of punishment (TERM) is measured by the average prison term for embezzlement taken from Federal Prosecution of Corrupt Public Officials.

Appelbaum and Katz (1987) indicate the importance of 'the difference between the regulator's income as a regulator and his opportunity costs elsewhere' in determining rents. Earnings of public officials are calculated as the total payroll divided by the number of employees by the level of government. Alternative earnings are measured as the average income of a private sector group of white collar professionals, middle grade accountants. Relative income (RELCIN) is obtained by subtracting government employee earnings from alternative earnings. Implicit costs will also be represented by the national unemployment rate (UR). These two terms may represent either the costs of choosing
employment as a public official (potential bribe taker) or a portion of the expected costs of corrupt behavior. An increase in RELINC or a decrease in UR indicate rising costs of this occupational choice but a decline in expected costs of being caught.

At this level of aggregation it is difficult to control for relevant personal characteristics; however, it is possible to incorporate general determinants of tastes or the discount rate. Individual preferences with regard to present consumption may be influenced by the demonstration effect of mass advertising. Consistent with the theoretical arguments of Davis (1988), an increase in total real annual advertising expenses (ADVRL) should result in an increase in bribe taking.

The poolability of different levels of government contained in our sample is evaluated with separate F-tests rejecting the equality of a simple intercept across subsamples but failing to reject stability of other estimated coefficients. Accordingly, we employ the pooled cross-section fixed effects model to estimate

$$CONV = f(JUDGE, TERM, PEXP, RELINC, ADVRL, UR, FED, STATE, LOC)$$

(1)

where FED, STATE, and LOC are dichotomous variables representing the levels of government. Under the fixed effects model, the error term is homoskedastic and nonautocorrelated so that OLS yields estimates that are BLUE (see Johnston, 1984: 396–407).

4. Results

Table 1 shows the results of estimating three variations of equation (1). Estimated coefficients in version (1.1) retain their signs and significance under alternative specifications. Version (1.2) introduces the total real advertising expenses, ADVRL, lagged one period to indicate the demonstration effect of accumulated exposure to mass advertising. Version (1.3) includes the real police expenditure per government employee, PEXP, which is lagged one period under the assumption that enforcement expenditures in the previous period affect current incentives to take bribes. Both current and lagged values of JUDGE and TERM are included to avoid the imposition of additional constraints on agent expectation formation. Natural logarithms are taken of all variables with the exception of the level of government terms.

The estimated coefficients on lagged JUDGE and current TERM have the expected signs. Specifically, greater probability of being convicted and higher prison terms discourage bribe taking. The policing variable (PEXP) is insignifi-
Table 1. Determinants of bribe taking – Dependent variable: CONV

<table>
<thead>
<tr>
<th></th>
<th>(1.1)</th>
<th>(1.2)</th>
<th>(1.3)</th>
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<tr>
<td>JUDGE</td>
<td>0.193</td>
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<td>-0.061</td>
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<td>(0.477)</td>
<td>(-0.189)</td>
<td>(-0.152)</td>
</tr>
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<td>-1.165*</td>
<td>-1.125*</td>
<td>-1.101*</td>
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<tr>
<td></td>
<td>(-2.982)</td>
<td>(-3.093)</td>
<td>(-2.790)</td>
</tr>
<tr>
<td>TERM</td>
<td>-1.183*</td>
<td>-0.969*</td>
<td>-0.961*</td>
</tr>
<tr>
<td></td>
<td>(-2.533)</td>
<td>(-2.185)</td>
<td>(-2.119)</td>
</tr>
<tr>
<td>TERM (-1)</td>
<td>0.297</td>
<td>0.147</td>
<td>0.153</td>
</tr>
<tr>
<td></td>
<td>(0.622)</td>
<td>(0.328)</td>
<td>(0.335)</td>
</tr>
<tr>
<td>PEXP (-1)</td>
<td></td>
<td></td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.176)</td>
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<td>RELINC</td>
<td>0.587*</td>
<td>0.418*</td>
<td>0.417*</td>
</tr>
<tr>
<td></td>
<td>(4.613)</td>
<td>(3.034)</td>
<td>(2.975)</td>
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<tr>
<td>UR</td>
<td>0.802*</td>
<td>0.923*</td>
<td>0.924*</td>
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<tr>
<td></td>
<td>(2.163)</td>
<td>(2.649)</td>
<td>(2.606)</td>
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<td>ADVRL (-1)</td>
<td>1.714*</td>
<td>1.716*</td>
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</tr>
<tr>
<td></td>
<td>(2.392)</td>
<td>(2.354)</td>
<td></td>
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<tr>
<td>FED</td>
<td>-6.764*</td>
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<td>-15.224*</td>
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<tr>
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<td>(-3.497)</td>
<td>(-3.830)</td>
<td>(-3.734)</td>
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<tr>
<td>STATE</td>
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<td>-17.150*</td>
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<td>(-4.809)</td>
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<td>LOC</td>
<td>-8.605*</td>
<td>-16.864*</td>
<td>-16.808*</td>
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<td>(-4.641)</td>
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<td>F Value</td>
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<td>629.187</td>
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<tr>
<td>n</td>
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</table>

t-statistics are in parentheses.
(*) indicates significance at .05 level.

cant. Studying the post-release activities of former inmates, Witte (1980) finds that increased probability of being caught has a greater deterrent effect than a similar increase in the severity of punishment. It must be remembered that our dependent variable does not account for those bribe takers who have escaped justice; therefore, the estimated effects of enforcement variables should be interpreted with caution.7

An increase in the relative private sector earnings (RELINC) leads to greater bribe taking by public officials. This supports the popular argument that relatively underpaid employees are more likely to engage in misconduct. Raising the salaries of these officials discourages bribe taking by increasing the cost of being caught.

The estimated coefficient on UR is also positive and significant but suggests a somewhat different consideration of costs. High rates of unemployment can lead to greater bribe taking by reducing the opportunity costs of devoting individual resources to corrupt activities or obtaining public sector positions. Al-
ternatively, this cyclical nature of the incidence of bribery may reflect a rise in bribery offers during downturns for legitimate business activities.8

The demonstration effect denoted by ADVRL is significant and in the hypothesized direction throughout. An increase in the volume of advertising apparently leads to greater corruption by raising individual rates of discount.

5. Conclusions

In this study we find that incentives for public officials to accept bribes are generally consistent with previous empirical findings regarding other forms of criminal behavior. Our results indicate that increased probability of being convicted, harsher sentences, relatively high private sector earnings, high rates of unemployment and advertising-induced present-orientedness all encourage more frequent bribe taking. Some of these findings lead to familiar implications for public policy.

More importantly, we are able to provide initial empirical insights into an area of significant theoretical interest. The success of rent-seeking activities depends crucially on the incentives for public officials to participate in rent providing activities, legal and illegal. While these preliminary results should be interpreted with sufficient caution it is our hope that further empirical research using data at a lower level of aggregation will be forthcoming.

Notes

1. These numbers do not include the bribe takers who were able to escape detection or were able to circumvent the legal process.

2. While empirical studies of bribe taking are lacking, there has been a great deal of empirical work on other types of crimes, for example, see Goldberg and Nold (1980), Leamer (1983), Witte (1980), Witte and Schmidt (1979).

3. One difficulty is the limited data gathering resources. The other problem stems from the fact that the bribe takers do not have an incentive to reveal their true behavior.

4. The U.S. Department of Justice does not publish separate data on average sentences for bribery. Of all the published statistics on punishment, embezzlement closely matches the activities likely to be conducted under bribery.

5. Both as a matter of standard econometric practice and because of the theoretical consideration regarding the value of rents which officials in different levels of government may be in a position to generate.

6. Denoted as model II(a) in Johnston (1984: 397). Also see Hsiao (1986). The estimated coefficients of FED, STATE, and LOC variables will represent intercepts for the respective levels of government.

7. This word of caution is especially appropriate for JUDGE and PEXP.

References


U.S. Bureau of Census (annual). *Statistical abstract of the U.S.*


