Doğuş Üniversitesi Dergisi, 7 (2) 2006, 141-149

CORRUPTION AND TAX EVASION

YOLSUZLUK VE VERGİ KAÇAKÇILIĞI

Sacit Hadi AKDEDE
Adnan Menderes University,
Faculty of Economics and Administrative Sciences

ABSTRACT: Corruption and tax evasion problems have been investigated separately before. Tax evasion is also considered to be a corrupt behavior itself. However, in this paper, corruption is taken to be a bribe taken by a government official and tax evasion is defined as an illegal act to avoid paying taxes by violating tax laws. An interesting research question would be to see whether corruption can induce tax evasion in individuals ? It is found in the paper that the size of bribe can negatively affect tax evasion. It is shown that when a bribe is sufficiently large, taxpayers prefer to pay their taxes voluntarily, not to evade taxes.

Keywords: Corruption, Tax Evasion.

ÖZET*: Yolsuzluk ve vergi kaçakçılığı sorunları literatürde daha önce ayrı ayrı incelendi. Vergi kaçakçılığı da bir yolsuzluk olsa da, bu makalede yolsuzluk devlet memurunun rüşvet alması ve vergi kaçakçılığı da mükellefin yasalara aykırı davranarak ödemesi gereken vergiyi ödememesi olarak tanımlanmıştır. Bu makalede yolsuzluğun vergi kaçakçılığını özendirip özendirmeyeceği teorik olarak araştırılmaktadır. Teorik model, istenen rüşvetin yüksek olması durumunda vergi mükellefinin vergi kaçırmayacağını matematiksel olarak göstermektedir.*

Anahtar Kelimeler: *Yolsuzluk, Vergi Kaçakçılığı .*

1. Introduction

Corruption is an old problem. As long as human beings are on the face of the earth, it will be a persistent problem too. I will define corruption here as an illegal activity of a government official to gain a personal benefit. Even though it is an old problem, it is a relatively fresh investigation area for economists. Tax evasion is also an old problem too; people don't want to pay taxes if they find a way to do so. Tax evasion is defined as an illegal act to avoid paying taxes by violating tax laws. So at first glance, corruption seems to be a problem of only governments and government officials, whereas tax evasion is a problem of private individuals. Their broad definitions (corruption in the private sector and among individuals) which I will not touch, however, prove otherwise. In the economic literature, both problems have been addressed separately in depth. Their combined studies, however, remain to deserve further empirical and theoretical analysis.

Corruption, in the existing literature, is modeled in many different ways. Some studies claim that corruption might improve efficiency and help growth. Economists have shown that, in the second best world when there are pre-existing policy induced distortions, additional distortions in the form of smuggling, black marketing, etc. may actually improve welfare even when some resources have to be spent in such activities (Bardhan, 1997). Bardhan (1997) quotes Nathaniel H. Leff (1964) as "if

the government has erred in its decision, the course made possible by corruption may well be better the one".

Another efficiency argument in favor of corruption is to look upon it as "speed money", which reduces delay in moving files in administrative offices and in getting ahead in slowing queues for public services. These models allow the possibility for the corrupt bureaucrat to practice discrimination among clients with different time preference (Bardhan, 1997).

In most of the literature, however, corruption is seen to create inefficiencies. Mauro (1995) showed that corruption is found to lower investment, thereby lowering economic growth. Shleifer and Vishny (1993) argue that corruption would tend to lower economic growth, and Rose-Ackerman (1978) warns of the difficulty of limiting corruption to areas in which it might be economically desirable. Murphy, Shleifer, and Vishny (1991) argue that countries where talented people are allocated to rent seeking activities tend to grow more slowly. In the present paper, the growth effects of corruption and tax evasion will not be discussed per se. Efficiency and distributive effects, however, will be very apparent. As will be explained in the following pages, the understanding of corruption, in this paper, is different from that of existing literature: the government official is not selling a publicly provided private good with a bribe added to official price, instead he is stealing the tax money of private individual with the knowledge of that private individual.

Most models of corruption used the principal-agent framework as a tool to study it (Rose-Ackerman, 1975, 1978, Klitgaard 1988, 1991). Most others, however, assumed that the principal-agent framework is given (Shleifer and Vishny, 1993, Benarjee, 1997) and extended the model to emphasize a specific point that is considered to be important by particular authors. For example, Sheleifer and Vishny (1993) look at the corruption with and without theft of government good, accepting a priori that the principal-agent framework is in work. They also look at "the industrial organization of corruption" and conclude that corruption is higher if government offices provide the public good independently, meaning each of them are behaving like a profit maximizing monopolist separately as opposed to centralization of government offices.

Tax evasion is (has been) being studied intensively in the literature. Allingham and Sandmo (1972), and Kolm (1973) are excellent survey studies about tax evasion. Alligham and Sandmo (1972) claim that the tax declaration decision is a decision under uncertainty and assume that the tax-payer's behavior conforms to the Von Neumann-Morgenstern axioms for behavior under uncertainty. And they maximize the expected utility of the representative tax-payer, taking into account optimal tax evasion under uncertainty and risk. Their comparative results state that an increase in the penalty rate will always increase the fraction of actual income declared and that an increase in the probability of detection will always lead to a larger income being declared. Srinivasan (1973) uses the same type of model to study tax evasion. Unlike the Allingham and Sandmo model, this model uses expected income as an objective function to maximize, taking into account tax evasion and risk of it (penalty). The results of both models, however, are remarkably similar: the optimal proportion by which income is understated decreases as the probability of detection increases.

As can be seen from the summary above, corruption and tax evasion models look at the problem from their own perspectives. Corruption models don't take account the fact that individuals can be induced to evade taxes when, say, bribery exists among tax collectors, a government official, and conduct the analysis in the absence of government corruption. Tax evasion itself can be considered a corrupt activity and corruption can include tax evasion conceptually. In this paper, however, corruption is taken to be a bribe taken by a government official. An interesting research question would be to see whether corruption can induce tax evasion in individuals, and whether the government's effort to prevent both evasion and corruption can be viable. The problem can be investigated from several different perspectives. On the same line of research would be to look at the determinants of wage structure among the government officials and try to find the determinants of bribery. My intuition for that if the detection probability is sufficiently low and bribery is an expected activity in the society (low expectation for getting punished for bribery), some government official will find it optimal to take bribes even if they get paid efficient wages, well above their reservations wages. One interesting study on this line is McLaren (1996). In that paper, McLaren looks at the fiscal corruption among government officials and observes that the firm chooses its level of compliance with the regulation (this can be taken compliance with the tax code); simultaneously the inspector chooses his level of effort. If the latter catches the formers violation, the inspector can report it, causing the firm to be fined, and receives a fraction of the fine as a commission; if it is more profitable to collude with the firm, the inspector reports no violation, and splits the saving with the firm. If collusion occurs, there is some probability that it will be discovered and an extra fine charged to the firm and the inspector fired. It is clear in this setting that a rise in civil service compensation can have a perverse effect on civil service performance, if corruption is occurring in equilibrium. A rise in the inspector's salary is like a rise in his fine for bribery, since that is what he will lose if he is caught and fired. Thus, a rise in his salary makes it less profitable, in expectation, to take a bribe; but in an equilibrium with corruption, unless the salary goes up far enough to make the inspector give up on bribery altogether, the bribe is his return to effort; thus, his inspection effort rationally drops. Paying a corrupt civil servant high wages actually induces "sloth". It may either raise or lower firm compliance; if the inspector does catch a violation, he will require a bribe higher, to compensate him for the higher risk. But because he is not trying very hard, it is less likely that he will catch a violation. The net effects on the firm's incentives are ambiguous.

In another paper by Besley and McLaren (1993), the problem of inspector effort is assumed away, but the government faces an additional complication: although tax inspectors may have an incentive to collude with taxpayers to conceal taxable income, not all potential tax inspectors have the inclination. Some may well be predisposed to honesty and not willing to accept a bribe at any price. Ideally the government would like to employ only those, but ex ante it can not distinguish between them and corruptible ones. Thus the government faces not only the moral hazard problem, but also an adverse selection problem, which can be parameterized by the fraction of potential inspectors who are corruptible in the pool from which the government hires. Besley and McLaren (1993) start modeling by calling that fraction γ. And they consider three optimal wage structures depending on the particular circumstances. First, there is minimum value for the inspectors' wage, called the efficiency wage, at which it will not be worthwhile for a corruptible inspector to accept a bribe. This must be strictly above the wage the inspector could

receive in her next-best alternative occupation, reservation wage; further the efficiency premium wage premium must be an increasing function of q, the probability with which bribery will go undetected. If the inspectors are paid the efficiency wage, they all refuse bribes, and all tax owed are collected; if they are paid the reservation wage, the corruptible ones always take bribes, but a fraction (1-q) of the time they are caught and replaced, with the evaded taxes recovered by the government. In their model, clearly the optimal wage would never be above the efficiency wage, or between that and the reservation wage. Finally, it is conceivable that the optimal wage could be below the reservation wage, since at least the corruptible potential inspectors are willing to work for less than their opportunity wage, knowing that they will be able to make additional income from bribery. The authors call the wage at which corruptible inspectors will just make their opportunity income when bribery is taken into account, the capitulation wage. If the government pays this, it is giving in to the problem of bribery altogether since it will be accepting an entirely dishonest workforce that will be accepting bribes all of the time. In this case, it will collect revenues only when it catches bribery in action, or (1-q) of the time. In the Besley and McLaren (1993) model, it turns out that each of these wage levels can be optimal under different circumstances. If γ is small, the reservation wage is optimal, since it would not be worth paying a premium to all inspectors just to motivate honest behavior in a tiny minority of them, and it is not worth economizing on the wage by passing less than the reservation wage if that will convert an almost entirely honest inspector force into an entirely dishonest one. If γ is large and q is small, it is worth paying the largely corruptible the small premium required. Thus, efficiency wages are optimal. If γ and q, however, are both large, efficiency wages are too expensive to be attractive, and paying reservation wages would simply allow most of the inspector force to enjoy bribery rents most of the time at the government's expense. The government might as well lower their wages to reclaim those rents; thus, capitulation wages become optimal.

As for the relationship between corruption and tax evasion, which is the main interest of this paper, Tanzi and Davoodi (2001) state that economies characterized by a great extent of corruption are argues to be plagued by substantial tax evasion activities as well. Since empirical literature is so scarce about tax evasion and corruption, few theoretical papers find that corruption among tax enforcement agents increases income tax evasion since the effective penalty declines, providing a theoretical argument for a positive link between tax evasion and corruption. Bowles (1999) Sanyal et al. (2000) and Sanyal (2002) show that tax revenues may decline with the income tax rate in the presence of corrupt tax officials and investigate the impact of alternative reward schemes on the behavior of corrupt tax officials and the level of corruption.

In terms of interactive models of tax evasion and bureaucratic corruption, recent studies of Goerke (2006) and Acconcia et al. (2003) deserve a brief review. Goerke (2006) states that firms may evade taxes on profits and can also avoid fulfilling legal restrictions on production activities by bribing bureaucrats. It is shown in his paper that the existence of tax evasion does not affect corruption activities at the firm level, while the budgetary repercussions of tax evasion induce less corruption. Policy measures that alter the gains or losses from corruption have a non-systematic impact on tax evasion behavior.

Acconcia et al. (2003) consider a simple economy where self-interested taxpayers may have incentives to evade taxes and to escape sanctions, by bribing public officials in charge for tax collection. It is found in the paper that larger fines for evasion will increase tax compliance with ambiguous effects on corruption while larger fines for corruption reduce corruption at the cost of reducing tax compliance.

2. The Model

All the models we looked at so far are not particularly helpful for our purpose we are about to lay out. One interesting research problem would be to look at the interaction between bribery and tax evasion. Bribery and tax evasion can, of course, exist independently: if there is no bribery, it does not necessarily mean that there is no tax evasion. However, it would be interesting to see how bribery affects tax evasion and how tax-payers would be inclined to pay bribes to maximize their expected income. Therefore, our model will combine the tax evasion problem with corruption, namely bribery. There are three different groups of people in the model, individual tax-payers, tax collectors, and inspectors. Tax collectors can be considered to be low level inspectors too, who have the chance to investigate the tax returns of the individuals and they are the first people who come the contact with the tax-payers. Inspectors can be considered to be high level government officials and they both audit the individuals and inspect tax collectors. As can be seen from the set up that inspectors are principals and tax collectors (low level inspectors) are the agents. Therefore the principal-agent problem is given in the model. The society in which our model is operating is expecting some level of corruption, meaning there is an expectation that government officials are to some degree corrupt. Each group of people are trying to maximize their income: individuals are trying to maximize their expected income after taking into account bribe and penalty in the case that they are caught, tax collectors are trying to maximize their bribe and the principal is trying to maximize government revenue. In this model, we will put the principal problem aside, hoping to include this problem explicitly into the model in another paper. Therefore we will focus on the interaction between tax collectors and individuals. This interaction could have been modeled in a game theoretic framework by exploiting the mechanics of "coordination" problem and we would have come up with multiple equilibria, some of them stable and some unstable. However, this would create an analytical difficulty and complexity if we would want to include the "principle's" problem into the model. The interaction between these groups would have been modeled in a dynamic setting as well, taking the time horizon of the tax collectors, which can be a topic for a totally different paper.

2.1 The Individuals' Problem

Individuals are trying to maximize their expected income, taking into account that tax collectors ask for bribes according to individuals' taxes. Therefore, bribe (B) is a function of tax (T), and therefore income (Y), and probability, p(n), with which a tax evasion or bribery will get caught, B=B (T,p(n)). Bribe is taken away from the tax to be paid and for the tax payer it is lump sum. Probability depends on the resources allocated to inspection, namely, the number of high level inspectors, n, in our case here, but it can be extended to the effort level etc. too. Penalty function (penalty multiplier) is a function of bribe and the ratio, γ, by which the taxable income is reduced. Now we have $B = B(T, p(n))$, since $T = \theta Y$, then $B = B(\theta Y, p(n))$ where θ is the proportional income tax rate and Y is income, which is exogenous. We can assume that the partial derivative of bribe function with respect to probability is

positive although it can be negative too. And we will also assume that bribe is an increasing function of tax, therefore income, although it can be a decreasing function of tax and income too.

P=Penalty function (penalty multiplier) and $P = P(B, \gamma)$, again we assume that both argument of this penalty function have positive partial derivatives. Now the representative individual will maximize his expected income, E[I], taking into account both uncertainty and risk. Now we have

$$Max \quad \begin{matrix} E[I] = p(n)[Y - T(Y) - B - \gamma P(B,\gamma)Y] \\ +(1-p(n))[Y - B - \{(1-\gamma)\theta Y\}] \end{matrix} \tag{1}$$

with respect to γ. We are assuming that this maximized expected income is greater then Y-T(Y), otherwise the taxpayer will not give bribe and will not evade (now in this case we are assuming again that if the tax collector ask for a bribe and if the taxpayer does not give it, then the taxpayer will not evade since the collector will pay a special attention to catch it. The first order condition is:

$$\begin{aligned} \frac{\partial E[I]}{\partial \gamma} &= p[P(B,\gamma) + \gamma \partial P(B,\gamma)/\partial \gamma]Y + (1-p)Y\frac{\partial T}{\partial \gamma} \\ &\equiv \phi(\gamma, Y, p, B) \text{ (lets say)} \end{aligned} \tag{3}$$

It is assumed that for an interior solution second order conditions satisfy $\partial\phi/\partial\gamma < 0$. Also, it is also assumed that $\phi(0, Y, p, B) > 0$, therefore $P(B,0)$ must be sufficiently small. Now to get the comparative static results, it can be evaluated that

$$\partial\phi/\partial\gamma = -p\left[2\partial P/\partial\gamma + \gamma\left(\partial^2 P\right)/(\partial\gamma)^2\right]Y - (1-p)Y^2\left[\left(\partial^2 T\right)/(\partial\gamma)^2\right] \tag{4}$$

$$\partial\phi/\partial p = -[P(B,\gamma) + \gamma(\partial P/\partial\gamma)]Y - Y(\partial T/\partial\gamma) \tag{5}$$

$$\partial\phi/\partial B = -p[(\partial P/\partial B) + \partial[\partial P/\partial\gamma]/\partial B] \tag{6}$$

Now lets assume that the tax on income is a positive, increasing, and convex (non linear) function of income. Lets also assume that penalty multiplier is a positive, increasing, and convex function of γ. It is also assumed that penalty multiplier is positive, increasing and a convex function of bribe, B. Under these conditions it is clear that $\partial\phi/\partial\gamma < 0$, $\partial\phi/\partial p < 0$, $\partial\phi/\partial B < 0$

Result. After maximizing the expected income of the taxpayers with respect to γ, if the maximized expected income, E[I], is greater than Y-T(Y), then the taxpayer will give bribes and evade taxes. If this happens, the following comparative result holds

$$\partial\gamma/\partial B = -\frac{\partial\phi/\partial B}{\partial\phi/\partial\gamma} < 0$$

when bribery increases, tax evasion will decrease.

If however, maximum expected income, E[I]< Y-T(Y), then the taxpayer will refuse to pay bribe and will not evade taxes, knowing that if he evades, he will get caught by 'angry' tax collector.

Now we can look at the tax collector's problem.

2.2 The Tax Collector's Problem

The tax collector will try to maximize his bribe, taking into account to get caught and pay penalty. Then his expected income, expected bribe is

$$\text{Max}\, E[B] = B - p(n)P(B,\gamma) \tag{7}$$

Even though one would think that there would be a different penalty function for the tax collector, since bribe and tax evasion are happening at the same time, it is assumed that it is the same penalty function for the tax collector as taxpayer.

Unless we have an explicit form of the penalty function, we can not solve for maximum amount of bribe. But it is clear from this function that if the inspector wants this tax collector to stop taking bribes, then he has two policy options to arrange. He will either increase the probability of detection or increase the penalty or both. If he increases the penalty too much without increasing the penalty rate, it can induce the tax collector to keep taking bribes since probability is low. Therefore, there should be an optimal combination of the two which can not be known a priori without further empirical work. In this separate income maximization problem, the taxpayer and tax collector can not be settled down with a mutual beneficial bribe, tax evasion combination. It is likely that there will be a conflict between the two, namely the tax collector and the taxpayer. For example, bribe maximizing bribe level for the tax collector is not likely to be an optimal point for the taxpayer. They will be going back and forth between optimal bribe and tax evasion points. What is interesting is that if they collude and behave like a single agent against the inspector, then they will solve the bribe and tax evasion problem simultaneously. Now we can model that behavior.

3. Collusion

The taxpayer's income is:

$IP =$ the taxpayer's income (expected)

$IP = E[I] - (Y + T(Y))$ where $E[I]$ is equation (1) above

The tax collector's income is

$IC =$ The collector's income (expected)

$IC = B - p(n)P(B,\gamma)$

The combined income, TI (expected)

$TI = IP + IC$

After some algebraic manipulations, we get

$$TI = T(Y)Y(p-1) - 2T(Y)(p-1) - 2pP(B,\gamma) \tag{8}$$

Now after maximizing this equation (8) with respect to B and γ, we can have two first order conditions.

$$\partial TI/\partial\gamma = T(Y)(p-1) - 2p[\partial P/\partial\gamma] = 0$$
$$= \partial P/\partial\gamma = T(Y)(p-1)/2p \quad (8.1)$$

$$\partial TI/\partial B = \partial P/\partial B = 0 \quad (8.2)$$

Now we have two equations and two unknowns and we can solve for both B and γ if we know the explicit forms of the functions. As can be seen from these two equations, B and γ will depend on probability of detection. And that probability can depend on many things in real life applications (we assumed here that it depends on the number of inspectors).

4. Concluding Remarks and Further Research

In some countries, this collusion can really happen on purpose because the tax collector can "collect" small bribes from small businesses and the tax inspector can deliberately reduce the probability by keeping their number sufficiently low. They do it so because after working in a high level public inspection institution for a number of years, they transfer to the "big" businesses with more profitable positions. By keeping their number sufficiently low, they control the supply of their knowledge deliberately and gain a reputation in the sense they are not corruptible. After changing their position from the public office to private companies, they go with their "insider information" and cause the higher level tax evasion or lobbying which might increase the inefficiencies.

4.1 Further Research

Inspector's revenue maximization problem can be included into the model explicitly. And in terms of separate income maximization, we, in this model, assumed that causality is coming from the tax collector in terms of bribe generation. The taxpayers, however, can see bribes as the tools of tax evasion. And this can be modeled by including γ into the bribe function. This can make things more complicated. There will be a simultaneous determination of bribe and γ even when we try to maximize expected incomes separately.

References

ACCONCIA, A., D'AMATO, M. & MARTINA,R. (2003). Corruption and tax evasion with competitive bribes. *Centre for Studies in Economics and Finance Working Paper* no.112. University of Salerno, Italy.

ALLINGHAM, M. & SANDMO, A. (1972). Income tax evasion : a theoretical analysis. *Journal of Public Economics*, pp. 323-338.

BARDHAN, P. (1997). Corruption and development: a review of issues. *Journal of Economic Literature*, September, pp. 1320-1346.

BENARJEE, A. (1997). A theory of misgovernance, *Quarterly Journal of Economics*, pp. 1288-1331.

BESLEY, T.J. & MCLAREN, J. (1993). Taxes and bribery: the role of wages incentives. *The Economic Journal*, January, pp. 119-141.

BOWLES , R. (1999). Tax policy, tax evasion and corruption in economies in transition, 67-86, in: E.L. FEIGE, & K. OTT (eds.) *Underground Economies in Transition-Unrecorded Activity,Tax Evasion, Corruption and Organized Crim*e, Ashgate.

GOERKE, L. (2006). Bureaucratic corruption and profit tax evasion. *CESifo Working Paper* no. 1666. [Avilable from: <<http://www.CESifo-group.de>>].

KLITGAARD, R.E. (1998). *Controlling corruption*. Berkeley, University of California press.

KLITGAARD, R.E. (1991). Gifts and bribes. In: Richard Zeckhauser ed., *Strategy and choice*, Cambridge, MA, MIT press.

KOLM, S.C. (1973). A note on optimum tax evasion. *Journal of Public Economics*, 2 (3), July, pp. 265-270.

MAURO, P. (1995). Corruption and growth. *Quarterly Journal of Economics*, 110 (3) August, pp. 681-712.

MCLAREN, J. (1996). Corruption, black markets, and the fiscal problem in LDCs. *Eastern Economic Journal*, vol. 22, No 4, Fall, pp. 491-502.

MURPHY, K.M., SHLEIFER A., &VISHNY, R.W. (1991). The allocation of talent: implications for growth. *Quarterly Journal of Economics*, CVI, pp. 503-530.

ROSE-ACKERMAN, S. (1975). The economics of corruption. *Journal of public economics*, IV, pp.187-203.

ROSE-ACKERMAN, S. (1978). *Corruption: a study of political economy*, NewYork, Academic Press.

SANYAL,A. GANG,I.N. & GOSWAMI,O. (2000). Corruption, tax evasion and Laffer Curve, *Public Choice* 105 (1-2), pp. 61-78.

SANYAL, A. (2002). Audit hierarchy in a corrupt tax administration : a note with qualifications and extensions. *Journal of Comparative Economics*, 30 (2), 317-324.

SHLEIFER, A. & VISHNY R.W. (1993). Corruption. *Quarterly Journal of Economics*, August, 108 (3), pp. 599-617.

SRINIVASAN, T.N. (1973). Tax evasion: a model. *Journal of Public Economics*, 2, pp. 339-346.

TANZI, V. & DAVOODI, H.R. (2001). Corruption, growth, and public finances, 89-110, in: K. J. ARVIND (ed.) *Political Economy of Corruption*, Routledge.