Towards a Theoretical Framework for
an Analysis of Corruption

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Abstract

This is a conceptual paper on the analytics of the phenomena of economic corruption. And it is very much a working paper, begging comments. The paper concentrates on what appears on first reflection a redundant question -what is the impact of corruption? The almost knee jerk answer is loss of income. However, when modelling economic corruption we run into the problems of determining the questions of: loss of income for whom - the principal, the agent, the state, the consumer, the economy? - how? and by how much?

We will argue here that an economic analysis of corruption must explain how a two agent phenomena, say a principal agent problem, has macro implications. Contrary to much of the literature, especially that on Pakistan, our solution suggests a three agent model to explain micro to macro transmissions of corruption. Our framework draws upon institutional theory, rent seeking and DUP literature, and the analytical device of tradeables and non tradeables borrowed from international trade theory.

The format of this paper is the following. In the following theoretical section, we will summarily examine some representative, formal, theoretical literature on corruption in Pakistan[1]. There are two sets of problems with this literature. One it offers a very narrow definition of corruption, whereas we feel the need to proffer one comprehensive framwork for analysing a wider typology of corruption phenomena. Two, the literature does not explain the analytics of the transmission of corruption from a two agent interaction to the macroeconomy. In the next section we will posit our own contribution towards a theoretical framework for basing an analysis of corruption on, making no claims for comprehensiveness, and merely marking a conceptual direction.

A Summary Analysis of some Representative Formal Theoretical Literature on Pakistan

While there is considerable discussion of the phenomena of corruption in Pakistan, [see eg. Transparency International 1996], there is very little formal economic analysis. Theoretical analyses, on which hypotheses about corruption must be based, estimates made, and then only solutions offered, are even more scanty. Shahid Alam offers the only such formal theoretical framework in print as yet, [1989, 1990].

Alam accepts the usual definition of economic corruption as 'Sacrifice of the principal's interest for the agent's'. Based on this, the taxonomy of corruption that he addresses is somewhat narrow. It can be cost deceasing for agents, price enhancing of rationed goods by officials, benefit enhancing for agents beyond legal sanctions, and benefit appropriation by officials.

Alam's theoretical framework is even more narrowly based on corruption by an official. The net benefits of corruption for the official are equal to the gross benefits minus the probabilities of detection, transfer, and dismissal multiplied by their costs. The central question for Alam then is to determine the sets of factors contributing to this equation, aversion to corruption, and those that increase the benefits and decrease the probabilities of detection, transfer, and dismissal and their costs.

The accepted aversion to corruption factors for officials in the literature are taken to be ascriptive ties pressurising officials to transfer benefits, low real wages, and demonstration effects. Amongst the net benefit enhancing factors, Scott argues that legislation is universal while demands are parochial and so are met through corruption, [1969]. Leroy adds a twist on Pareto optimality, that corruption is perceived to make someone better off, without perceiving to make anyone worse off, [1985]. And of course monopoly of power can significantly contribute to increasing the net benefits of corruption [Alam 1989].

Alam finally goes from behavioural arguments to debunking hypotheses about the positive impact of corruption in low income countries (LICs). Leffhas argued that in many LICs market prices are set by the state, so corruption actually increases allocative efficiency by efficient producers offering actual market price for goods, [1964]. Nye argues that corruption facilitates capital formation in LICs, [1967]. And Bayley holds that nepotism increases public employment as a substitute for defficient public works, [1966]. Alam's theoretical counter arguments are well made.

Corruption cannot increase allocative efficiency because corrupt officials will avoid increasing tatonement for fear of detection, [Alam 1990]. Corruption cannot increase capital formation because it lowers tax revenues, [Alam 1989]. And excess employment simply leads to underemployment [Alam 1989].

We would like to extend Alam's work in three respects. One, Alam has a narrow definition of corruption. Two, a broader definition of corruption must then be used to give a more comprehensive model of agent's behaviour. Three, this model of agent's behaviour must include the impact on the economy.

(i) The definition of corruption as just official corruption is too narrow. There at least two other broad categories of corruption. There is purely private sector corruption, with both principal and agent in the private sector. Then there is the wider question of corruption of the political mandate, when promised goods and services are not delivered. A more comprehensive definition of corruption must at least include these three broad categories of public, private, and electoral mandate.

(ii & iii) If corruption is perceived as a principal agent problem, then the impact of public sector corruption on the macroeconomy is quite clear. The transmission mechanism from micro to macro in the case of public sector officials is at least a loss of the state's income, in the taxonomy of the four cases dealt with by Alam. The question arises that when we deal with private sector corruption, what, if any, is the transmission mechanism from micro to the macroeconomy. If both the principal and the agent are in the private sector, this becomes a purely private transaction, then is there an impact on the macroeconomy, on consumers, producers, and the state? And what is the nature of this impact? Further, by analogy, what, if any, is the transmission mechanism from micro to the macroeconomy of corruption of the political mandate. If the principal is the political candidate, and the agent is the voter, does the public sector transmission mechanism apply here, or the private sector one?

Finally there is the old chestnut of policy implications. A theoretical framework to analyse corruption must attempt to establish causality on which to base policy. In the following section we will posit a contribution to such an analytical framework.

Towards a Theoretical Frame Work for Analysing Corruption

A Redefinition of Corruption

For a more comprehensive definition of economic corruption we will make some simple assumptions and then pose a set of necessary conditions to define corruption.

Assume:

Two agents A and B in a purely private market

A contracts to sell good/service x to B

If A defaults, (in terms of quantity, quality, timing, price, or credit conditions), or

If B defaults, (in payment conditions)

This now constitutes a breach of a purely personal contract.

The question now is, how does breach of a purely personal contract become corruption?

For this we will posit three sets of necessary conditions:

(i)   Externalities in the private sector.

The public must be affected by the breach of a personal contract between A and B. This implies that at least a third agent C must be affected by the breach of contract between A and B, which constitutes an externality. This makes corruption a three agent game.

(ii)   The public sector, and state credibility

If either of the two agents, A or B, is the state, again based on Condition (i), a breach of contract between them must affect the public.

(a)   If A is the state and defaults, B the member of the public loses. This is still a two agent game.

(b)   However, if A is the state and defaults, B as a private agent loses, but additionally agent C will now be reluctant to contract with state A. So the state loses credibility, for example by a run on the banks,

or the central bank, or popular demonetisation, or inflationary expectations, which we regard as very important forms of macro corruption. Therefore again in a personal breach of contract between A and B, C is necessarily affected, and the externality makes it a three agent game even in the public sector.

(iii)   Hobbesian political contracts

If A as a political candidate promises political and economic goods and services to their voters B and C. Examples of political goods are liberty, representation, participation, and equity. Examples of economic goods are employment, income, basic needs, and social and physical infrastructure. And if then A reneges on the political contract, affecting B and C, then analogous to (ii) we have an important form of macro corruption. Note that the contract breached this time is not a personal contract between two agents, but a political contract with at least three agents, making it a three agent game in the political sector.

So we have defined corruption as a breach of contract with externalities, constituting at least a three agent game. And the typology of contracts that we consider significant are private, public, and political.

Of these three types of contracts, interestingly economic literature on political contracts (iii) is perhaps the most developed, as public choice theory. Arrow's Impossibility Theorem combined with voting paradoxes give a powerful argument that in a democracy majority political demands will be defeated and so the political contract breached by a number of factors, [1951]. In essence this is a five part argument. One, voter's information on their own issues is not sufficiently detailed given the current information flows in liberal democracies. Two, political candidates information on broader issues that transcend their constituencies is again not suffiently detailed in this system. Three, in a three party game the majority will of the voters will not be dominant and minorities will cut them out. So A will be defeated by B, who will be defeated by C, producing the phenomena of cycling majorities. Four, the order of introducing bills in parliament significantly determines their probability of acceptance, which gives the speaker of the parliament who tables the bills strong dictatorial powers. Five, the bureaucracy which implements policy does not have an incentive system which is related to performance, in that they cannot be sacked easily.

The second type of contract that is well dealt with in economic literature is private contracts (i) with externalities. Institutional theory as represented by Coase, Demsetz, Posner and North argues that institutions

evolve to internalise externalities, [Coase 1937, Demsetz 1967, Posner 1977, and North 1992]. For example, joint property has high transaction costs which inhibit investment and productivity, which moves property rights towards private property over time. There is also a large allied literature on transaction costs and their minimisation, based on moral hazard, monitoring, supervision, enforcement, search costs, efficiency wages, and screening, [see eg Cheung 1969, Braverman and Stiglitz 1972, and Mahmood 1991].

However the models of institutional theory and transaction costs do not suit our problem of corruption very neatly because most of this literature is a two agent problem, with a principal and an agent, with the principal seeking to minimise costs. Our definition of the problem of corruption demands a theory of a breach of contract between two agents A and B with externalities for a third agent C - that is a three agent problem with externalities. We will attempt to lay out some basic building blocks for such a theory in the following subsection.

Breach of Contract with Externalities - A three and four Agent Game.

We will try to trace the analytical steps through which corruption can emerge.

Assume: Agent A contracts to sell good x to agent B, amidst competition from other sellers.

The usual contractual conditions apply, of quantity, quality, time, price, and credit. So demand is given by buyer B and agreed to by supplier A. Now we will argue that corruption can emerge through supplier A in turn offering to buyer B supply based on a number of contingent conditions. We can investigate a number of possible cases.

Case-1: Private Sector Externalities Constituting Corruption

Assume: A offers to supply x at the lowest price, cutting out competing suppliers, but on the contingent condition that for example the quality will be lower than stipulated in the formal contract. If B is a wholesaler in turn merchandising/retailing to consumer C, as the usual stylised market transactions work, C believes the quality to be standard as advertised or stipulated by an external monitoring agency such as the state or a standards bureau which we will call agent D. However, the quality is actually lower through contractual collusion between A and B, for example safety standards in cars or construction work.

Tradeables and Non Tradeables

Now we need to detail what has happened through this transaction. For this we can use an analytical device from trade theory of tradeables and non tradeables. So for instance in international trade, commodities are traded, but national parks may not be so readily tradeable. We can apply this concept of tradeables and non tradeables to the contractual conditions between A and B. Now what has happened in the contractual transaction between A and B, is that a contractual condition which was a non tradeable like quality because it was set by an external agent D, has become a tradeable. Resultantly agent C, the consumer, suffers an externality through an unperceived drop in safety.

Abnormal Profits and Rent

Further, A has secured a contract at the lowest price, by offering supply based on a contingent condition of turning a non tradeable quality since set by an external D, into a tradeable. Resultantly, both A and B split an abnormal profit, by the extent of the lowered cost of producing lower quality, which is over and above the normal profit based on producing standard quality set by D.

There is a further question of how to categorise this abnormal profit created by turning a non tradeable contractual condition into a tradeable. Ricardian rent theory, and rent seeking literature argue that rent is earned on commodities with inelastic to fixed supplies, [Kreuger 1976). Now a non tradeable has an inelastic supply. However, if a commodity is absolutely not traded it has a zero market price. Therefore our inelastic supply non tradeable contractual condition of quality cannot earn any rent. So standardised safety in cars or construction, stipulated by an external D, is not traded, has no price, and earns no rent. However, when A and B now convert this contractual condition of safety from a non tradeable into a tradeable, it now earns a rent. Note that safety earns a rent now because it is traded but still in inelastic supply - that is it is not fully competitively traded. If it were fully competitively traded, supply would become elastic and the rent would cease. So contractual collusion between A and B to convert a non tradeable contractual condition like safety into a tradeable, earns them a rent over and above normal profits. And consumer C suffers an externality through an unperceived drop in safety.

This case then shows the possibility of corruption in a purely private sector market transaction. Corruption in the private sector has been defined as a breach of contract between A and B with an externality affecting C.

Here we have shown that there is a formal contract between A and B with some contractual conditions which are non tradeables like quality, for example (safety standards) stipulated by an external agent like the state D. A and B can collude through a real contract to convert the non tradeable contractual condition of quality into a tradeable lowering quality (lowering safety below set standards), and thereby earning rent over and above normal profits. So the real contract breaches the formal contract, and consumer C suffers an externality of an unperceived drop in quality (lower safety).

Case-2: The Public Sector, Justice and State Preferences

We can now apply the base case of the private sector to the public sector by analogy.

Assume: That the state A has contracted to supply commodity x to individual B.

But A can also supply this same commodity x to another individual C.

The commodity x can be seen for instance as justice, or a school. The contractual condition can be seen as a just preference for B and not C.

Then justice is given by the logical statement:B R C (ie B is

preferred to C)

And injustice is given by: C R B

Since justice is a non traded good, B R C is a non tradeable, has no price, and so will earn A no rents.

However if A is now willing to convert the non tradeable contractual condition of a just preference of B R C, to a tradeable, then C R B also becomes a possiblity. Just preference is converted from a non tradeable to a tradeable, and now earns rent. The rent will be earned because both B and C will now compete for A's preference by paying for it. The rent can take a pecuniary form, or the form of a vote for candidate A.

So this case shows the possibility of corruption in the public sector. Public sector corruption was defined as a breach of contract between state A and individual B, with an externality for C. In this case A takes a contract of a just preference for B which is a non tradeable contractual condition, and converts it into a tradeable of a possible preference for C, which allows it to

earn a rent. B and C now bid for state preference because it is a tradeable rather than a non tradeable just preference.

Case-3: Political Contracts and Preferential Votes.

Case 2 of public sector contracts extends simply to politic contracts. The example of horse trading for a majority on the floor is : obvious three agent game with externalities.

Assume: A is a political incumbent, with a contractual condition of preference for a political party or platform B. And C is an alternative political party, or' platform, with both B and C vying for majority.

Now A can   B R C, or

C R B

So political preference which is a non tradeable contractual condition earning no rents can be converted into a tradeable earning rents. B and C will then bid for A's political preference. This is a breach of a political contract by A, with externalities for both B and C.

Causality and Policy Implications

We have defined corruption as a breach of contract between two agents with externalities affecting third and fourth agents. Significant forms of these contracts are taken to be private contracts, public contracts, and political contracts.

The base private sector model is a four agent game. Agents A and B enter into a formal contract for good x with some contractual conditions given as non tradeables like quality standards set by an external agent like the state D. Breach of the formal contract takes place when A and B collude to convert the non tradeable contractual condition of say a stipulated quality standard into a tradeable of lower quality. The conversion of non tradeable contractual conditions like quality into tradeables allows both A and B to earn rents over and above normal profits. These rents are based on relatively inelastic supply of the converted non tradeables. Were the supply to become fully elastic and quality fully traded, the rents would cease. Agent C the final consumer of good x suffers an externality through an unperceived loss in quality.

The base case of private contracts extends by analogy to the case of public contracts with a three agent game. State A contracts to deliver good

x to B. The contractual condition is a just preference by A for B over agent C. This contractual condition is breached by A converting the non tradeable just preference of B R C, which earns no rents into a possible unjust preference of C R B, which now earns a rent. B and C then bid for state A's preference.

The case of public contracts extends simply to political contracts. The case of horse trading for a political majority on the floor is a simple three agent game. Political incumbent A has a political contract in a preference for party or platform B over C. The non tradeable contractual condition of B R C however earns no rents for A. This non tradeable contractual condition of B R C can now be converted into a tradeable possibility of C RB which now earns a rent. Both B and C then bid for As vote.

The question then is, what are the enabling factors which allow this conversion of non tradeable contractual conditions into tradeables which earn rents and imply externalities for third and fourth agents. In each of these three cases of private, public, and political contracts we feel that the single most significant enabling factor is the high transaction costs of monitoring, supervision and enforcement of the contractual conditions by the agents affected by externalities and the state. The specific transaction cost which is extremely high is access to timely justice. In the case of the breach of the private contract consumer Cs recourse to consumer protection legislation and timely rulings would inhibit future collusive breaching of non tradeable contractual conditions such as quality between agents A and B. In the case of the breach of public contract again, access to timely appeal and rulings against unjust preferences would inhibit state As breaching of the public contract. In the case of the breach of the political contract, legislation and timely rulings will inhibit the threat of floor crossing.

So the single most effective solution to this three and four agent game of breach of contractual conditions by converting non tradeables into tradeables to earn rents, is reducing the transaction costs of access to justice.