

A Theory of the Reform of Bureaucratic Institutions¹

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Abstract

By bureaucratic institutions or bureaucracy, we mean the rules and regulations that are implemented by government agencies. Burdensome bureaucratic institutions are leading obstacles to economic development and therefore the target of economic reform of many countries in today's world. In this paper, we provide a theoretical framework to analyze the reform of bureaucratic institutions. The analysis shows the key to the reform is to properly incentivize the incumbent generation of bureaucrats, whose cooperation is needed to reform the bureaucracy. However, a simple buy out strategy of reform may not always work. Under certain conditions, a delegation strategy that grants incumbent bureaucrats the decision rights to initiate and to reap the benefit of reform can be successful.

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1. Introduction

By bureaucratic institutions or bureaucracy, we refer to the formal and informal rules and regulations that government agencies implement. Examples are the regulations that certain businesses have to be approved by some government agencies before they can operate. Excessive and burdensome bureaucratic institutions are the leading factor that hampers economic development in many countries. In fact, the post-socialist transition that is undertaken in many countries covering a third of the world population today is in essence a massive reform aiming at reducing the bureaucratic institutions in these economies.

While much has been written about the inefficiencies of bureaucratic institutions and the necessity for massive reforms of the bureaucracy, there has been few works on how to induce changes in bureaucratic institutions.² This leaves many interesting questions unanswered. For example, what are the difficulties of reforming bureaucratic institutions? Given that reforms, by definition, are welfare improving, why is it that simple buy-out plans of bureaucrats do not always work? Why is it that we often observe a surge of corruption of bureaucrats during economic reforms whose very aim is to reduce the influence of bureaucracy?

The first intended contribution of this paper is to provide a simple theoretical framework to understand the bureaucracy and the reform of it. Bureaucracy, we argue, is sustained by over-lapping generations of bureaucrats. Knowledge and decision rights (power) are transferred from one generation of bureaucrats to another. Given this structure of the bureaucracy, there are two kinds of inefficiencies in a bureaucracy. The first inefficiency arises because self-interest bureaucrats abuse their power

²For example, Kornai's (1992) comprehensive analysis of the formerly socialist systems exposes how bureaucratic control leads to various economic problems in these economies.

to regulation economic activities by taking bribes from private agents. The second inefficiency is that the bureaucrats in power do not typically promote the ablest successors within their agencies. Instead, they take bribes before making the succession decision. Both inefficiencies can be termed as the agency problems of the bureaucracy, since they stem from the bureaucrats' self-interest divergent from that of the bureaucracy as a whole.

Based on the analytical framework, we are able to examine the reform of the bureaucracy. A reform, rather than a revolution, is initiated by the top leadership aiming to restructure the bureaucracy in order to improve the efficiency of the economy. Under the reform, many bureaucratic agencies must be eliminated, while other agencies need to be restructured to provide useful services for private agents (e.g., investors) in the economy. Therefore, the top leadership would prefer not to simply close all offices indiscriminately. But the top leadership needs cooperation of bureaucrats in order to reform. While there are many reasons why their cooperation is needed, our model focuses on one in particular: information imperfection. In our model, the leadership is unable to observe directly the productivity of offices and discern which offices should be closed and which are to be restructured.

A general conclusion of the analysis is that the key to reform the bureaucracy is to properly deal with the current generation of bureaucrats in power, whose cooperation is needed in order to break or to change the chain of succession of bureaucrats. We show that a one-time buy-out strategy of the bureaucrats in power to induce them to close their agency may not always work. The reason is that in many cases, it is important to induce efforts of some bureaucrats to restructure their agencies. In this case, the buy-out strategy causes many bureaucrats who should pay efforts to restructure their agencies to close them instead.

The focus of our analysis is on a delegation strategy of reform, i.e., to grant bu-

bureaucrats the rights to reform and to reap the benefit of reform. It is a decentralization approach to reform as observed in many countries. By giving bureaucrats the rights to initiate a reform and at the same time, loosening monitoring of the bureaucrats, such a reform induces bureaucrats to either close their agency or to restructure it. By making the socially efficient choice, bureaucrats can obtain higher bribes from investors who expect to face reformed bureaucracy. The cost to them is that they either have to pay efforts to restructure the agency or, in the case of closing the agency, lose bribes from young generations of bureaucrats that they normally obtain. Under the condition that the pre-reform, the bureaucracy was tightly monitored, so that the increase in payoff to bureaucrats associated with the delegation strategy is high, such a strategy of reform may be successful.

An implication of the analysis is an explanation of the observation that in many countries undergoing reforms of their bureaucracy, there is a surge in corruption juxtaposed with rapid reform. According to our theory, this is due to the delegation strategy of reform that is a common element of reforms in many countries, where the top reformist leadership does not have strong enough political capital and detailed knowledge to dictate details of the reform. Delegating the rights of reform to local bureaucrats becomes a natural choice. This explanation of corruption during reform is in contrast to existing theories, which all focus on corruption in static and stable bureaucracies. Their main conclusion is that corruption impedes economic growth.³

³See Rose-Ackerman (1975), Rose-Ackerman (1978), Gould and Amaro-Reyes (1983), Lui (1985), United Nations (1989), and Klitgaard (1991), Shleifer and Vishny (1993) for arguments along this line. Mauro (1995) and Wei (1997) provide empirical support on this view by conducting mostly cross-country analysis. Le (1964) represents a minority view arguing that moderate corruption can improve efficiency. Bardhan (1997) provides a recent survey of existing literature. Recently, Acemoglu and Verdier (1994) and Banerjee (1994) present careful models on how corruption and associated inefficiency arise. But it seems to us that there have been few efforts addressing corruption

In the next two sections, we provide a model of bureaucratic institutions and then analyze the conditions under which the buy-out strategy works. The focus is on the delegation strategy of reform. In section 4, we discuss the results and extend the basic model along several dimensions. Section 5 concludes the paper.

2. The Model

2.1. Three Classes of Agents

There are three classes of agents in the model. The first class is the top leadership, denoted by T . Given that the focus of our analysis is on the reform of the inefficiency of the bureaucracy, we assume that T is a "good person," who is interested in maximizing social welfare through a successful reform. This approach is partly supported by the observation that unlike career bureaucrats, T is subject to direct monitoring by the general public through democratic election and therefore is more likely to have aligned interest with the general public.

The second class of agents comprises overlapping generations of bureaucrats. Each bureaucrat lives for two periods: first as an "apprentice" of an office and then the "chief" of the office when he obtains the full control right of the office. Let B_t indicate the bureaucrat who is in control in period t . B_t 's economic life starts at the beginning of period $t - 1$.

Entrepreneurs comprise the third class of agents. Like bureaucrats, there are also overlapping generations of entrepreneurs. Let E_t be an entrepreneur born at time t . Without losing generality, we assume that neither bureaucrats nor entrepreneurs

in the context of institutional change.

discount future utilities.

2.2. Entrepreneurs' Investment

E_t makes an investment k at the beginning of period t and the investment pays o° stochastically at the end of periods t and $t + 1$. At each time of payoff $^{\circ}$, with probability $\pi^1(k_i)$, the gross payoff $^{\circ}$ is R , a constant; otherwise it is 0. In other words, the investment k is intended to increase the chance of success of the investment rather than the conditional payoff $^{\circ}$. We make the assumption that k only affects π^1 but not R in order to accentuate the damage of a bad bureaucracy on investment incentives of entrepreneurs. Given this assumption, k is not observable and deductible from output R so that bribes or taxes are contingent on gross output R and are directly incentive-reducing.

We will maintain the following technical assumptions:

Assumption 1: $\pi^1(0) = 0$, $\pi^0(0) = 1$, $\pi^0(k) > 0$, and $\pi^{00}(k) < 0$.

It turns out that the most interesting case in our analysis is where the probability function π^1 is highly concave, i.e., having rather rapidly decreasing returns to investment. Consequently, we will maintain the following assumptions:

Assumption 2: $\pi^1(k)$ is a decreasing function of k .

2.3. Agency Problems within the Bureaucracy

By agency problems within the bureaucracy, we mean that bureaucrats do not share the objectives of the top leadership T , the principal of the bureaucracy. Moreover, since T cannot fully observe activities of bureaucrats, the bureaucrats tend to engage in activities damaging the interest of T . We specifically model two types of agency problems. The first type arises because B_t is in control of the office and therefore can prevent both E_{t-1} and E_t from reaping the return on their investments. That

is, bribery from entrepreneurs to bureaucrats arises. For simplicity, we will assume that the bureaucrat can make a take-it-or-leave-it offer in negotiating the amount of the bribe.

To control this type of agency cost, T employs random and direct monitoring of the bureaucrats. We model a very simple monitoring technology. At the end of each period, with probability q_0 , T investigates whether B_t has taken a bribe. If B_t is found to have taken a bribe b , he will have to pay a fine of $F(b)$. We assume that the fine function is $F(b) = b^2$. The simple functional form should not change our main conclusions in any qualitative way. At the end of period, the fine is rebated in a lump-sum fashion to the entire population.⁴ Under such an anti-corruption policy, B_t chooses to maximize $b - q_0 b^2$, so the optimal bribe B_t demands is $b = \frac{1}{2q_0}$ and the associated payoff to B_t is $b = \frac{1}{4q_0}$.

Throughout our analysis, we shall assume that T 's direct monitoring forms a binding constraint on the amount of the bribe. That is, the total net profit is bigger than the bribe so that it is worthwhile for the entrepreneur to bribe the bureaucrat. Also, for our analysis, we shall assume that q_0 is the exogenous steady state intensity of direct monitoring. For technical convenience, we shall focus on changes in q_0 rather than changes in $F(\cdot)$. To summarize, in the following discussions involving q , we have

Assumption 3: $R > \frac{1}{2q}$.

The second kind of agency problem is called nepotism, which arises because a senior bureaucrat has power to choose his successor and aspiring junior officials have to compete for the position.⁵ Therefore, we assume that before B_{t+1} inherits power

⁴We assume that the fine is evenly distributed among all agents, so that there are no incentive consequences. We can allow the fine to be paid back to the investing entrepreneur without any qualitative changes in the following analysis.

⁵In our model, for simplicity, we assume away competition among junior bureaucrats. In general,

from B_t , he has pay a "tribute" to the old.

Avoiding the details of modeling nepotism, we simply assume that the "tribute" is a constant (θ) proportion of the junior official's expected future bribe. The "tribute" is a perk enjoyed by the senior official. Since it is unlikely that there are well-functioning capital markets to finance junior bureaucrats' pursuit for future power, θ is likely to be much less than 1.

2.4. The Steady State of the Bureaucracy

We can now analyze the steady state the bureaucracy, i.e., the situation without reform. The conclusion is consistent with conventional wisdom. That is, a tighter monitoring of bureaucrats improves the efficiency of the bureaucracy and social welfare. The intuition is that bribes to bureaucrats siphon off returns to entrepreneurs, who then have less incentive to invest.

From our previous analysis, E_t has to bribe B_t in period t and then B_{t+1} in period $t + 1$ in the amount of:

$$b = \frac{1}{2q_0} \tag{1}$$

Consequently, B_t expects to get a payoff of $b + q_0 b^2 = \frac{1}{4q_0}$ with probability $\frac{1}{2}$ and 0 otherwise from each project and there are two projects existing during B_t 's reign of the office.

How much will E_t invest? E_t will maximize her expected return, which is

$$2^{\frac{1}{2}}(k)(R - b) - k;$$

since she does not discount the second period payoff.

such competition can be important.

The first order condition for k becomes:⁶

$$2^{1^0}(k_0)(R_i - \frac{1}{2q_0}) = 1: \quad (2)$$

Notice that given the existence of the bureaucratic office, the expected social welfare from investment k is

$$2^{1^0} R_i k$$

which requires that the first best investment level satisfy

$$2^{1^0}(k)R = 1: \quad (3)$$

Comparing equations (2) and (3), we conclude:

Proposition 1 Given the existence of bureaucratic offices, a higher q_0 leads to higher investment, higher output, and higher social welfare.

Can a tighter monitoring policy of the bureaucracy be Pareto improving, so that both bureaucrats and entrepreneurs prefer tighter anti-corruption policies? In the real world the answer is likely to be no, since otherwise popular political demand should have already produced stricter policies. In our model, however, the answer may be yes. The intuition is that an increase in q may increase k so much that the higher success rate 1^1 leads to more frequent bribes, which more than compensates for the lower amount of each bribe. It turns out that this situation does not arise when q is not too low. Assumption 5 rules out this unlikely case. We shall maintain this assumption for the remainder of the paper.

Assumption 5: $q > \frac{103}{i^{1100}}$, for $k > 0$:

Lemma 1 Under Assumptions 1 to 5, an increase in q_0 makes the entrepreneur better off, but the bureaucrat worse off, i.e. $(\frac{1}{4q})^0_q < 0$.

⁶The second order condition is guaranteed by our convexity assumption on 1^1 :

3. Strategies of Reform

Suppose that at $t = 0$, a reformist leader T assumes power. The intended market-oriented reform involves changing the role of the bureaucracy.⁷ We identify two general objectives of such a reform: to eliminate those unproductive bureaucratic offices and to restructure those potentially productive ones. Correspondingly, suppose there are two types of offices. The first type office does not provide any value-added to investment projects as modeled above and cannot be restructured. This will be called the low type office and the reform intends to close such offices. The second type can be restructured during a reform so that with the service of the office, the positive return to an investment becomes Rv with $v > 1$. Restructuring such offices requires efforts of a bureaucrat equivalent to a monetary cost c . Let us call this the high type office.

The model is concerned with a fundamental difficulty of reform, i.e. the top reformer does not have sufficient political and administrative capacity to implement a reform. To analyze this difficulty of reform, we focus on the issue of information. Suppose that T cannot distinguish between the two types of offices and cannot force a bureaucrat to make efforts to restructure. T only knows that a certain proportion of offices are of the high type.⁸ Furthermore, suppose T has limited capacity so that he cannot observe the output of each office.

Facing limited capacity, in general, T can adopt one of two broad approaches to

⁷As Kornai (1992) argues, bureaucratic coordination is a key feature of many non-market economies.

⁸This informational asymmetry is our way of formalizing why T needs bureaucratic cooperation during reform. See section 5.1. for other reasons why this might be true.

reform. He can order the bureaucrats to close all offices without any restructuring. We call this a sweeping reform. Alternatively, he can provide incentives for bureaucrats and delegate the rights to reform to them. We call this a decentralized reform. In the following, we discuss strategies to implement a decentralized reform.

3.1. Buying Out Bureaucrats

A simple strategy to implement a decentralized reform is to buy out bureaucrats. In such a strategy, T compensates bureaucrats who choose to close their offices immediately. We show that such a buy-out strategy may or may not induce a successful decentralized reform. Suppose that the monetary compensation is m . In order for a B_0 in a low type office to decide to close the office, it must be:

$$m > \frac{1(k_0)}{2q_0} + \theta \frac{1(k_0)}{2q_0} = (1 + \theta) \frac{1(k_0)}{2q_0}$$

where k_0 is the amount of investment defined in equation (2), since without closing the office, B_0 expects to get bribes from E_{i-1} , E_0 , and B_1 .

Meanwhile, in order for the buy-out strategy to be successful, m cannot be too high. Otherwise, a B_0 in a high type office will also choose to close the office. We have

$$m \leq \frac{1(k_0)}{4q_0} + \frac{1(k_H)}{4q_0} i_c + \theta \frac{1(k_H)}{2q_0};$$

where the first term is the expected bribe from E_{i-1} and the second term is that from E_0 with k_H being the new and increased investment level associated with successful restructuring, i.e.,

$$2^{1^0(k_H)}(Rv_i \frac{1}{2q_0}) = 1:$$

Clearly when c is non-trivial, both conditions cannot be satisfied simultaneously.

Proposition 2 If $c < (1 + 2\theta) \frac{1(k_H)j - 1(k_0)}{4q_0}$, then a buy-out strategy that offers m to those bureaucrats who decide to close their offices will induce a successful decentralized reform, where $m \geq \left((1 + \theta) \frac{1(k_0)}{2q_0}; \frac{1(k_0)}{4q_0} + (1 + 2\theta) \frac{1(k_H)}{4q_0} - c \right)$.

In addition to the condition specified above, there are other constraints that may prevent a buy-out strategy from being feasible. In particular, T is likely to face a tight budget constraint during the reform period so that he does not have the funds to buy out B_0 's. Furthermore, even if T can borrow against future tax raises in order to finance the buy-out strategy, the taxes will fall on future productive investors and this may not be desirable.

3.2. The Delegation of Rights to Reform

An important approach to reform is through delegating the rights to reform to bureaucrats in charge of bureaucratic agencies, i.e., to grant individual bureaucrats the decision rights to reform and to reap the benefit of reform. Such a reform strategy is different from that of a sweeping reform in which the top leaders issue a mandate to close or to restructure bureaucratic agencies.

A key component of the delegation strategy of reform is to grant bureaucrats rights to benefit from reform. In order to do so, the monitoring policy within the bureaucracy must be relaxed. Suppose that the monitoring policy is relaxed from q_0 to q^* for period 0 and bureaucrats are granted autonomy to initiate reforms, i.e., either to close or to restructure their offices. Let us analyze the decisions of bureaucrats in each type of office.

For a B_0 in a low type office, without reform (i.e., he keeps the office open), he

will obtain bribes from both E_{i-1} and E_0 and a "tribute" from B_1 :

$$\left[\frac{1(k_0)}{4q^a} + \frac{1(k^a)}{4q^a} \right] + \textcircled{R} \left[\frac{1(k^a)}{4q_0} + \frac{1(k_0)}{4q_0} \right] \quad (4)$$

where the first term in square brackets is the sum of bribes B_0 obtains from E_{i-1} and E_0 ; the second term is the "tribute" paid by the young bureaucrat; k^a is the amount of investment made by E_0 anticipating that the office will stay open, i.e.,

$$1^0(k^a) \left(2R_i - \frac{1}{2q^a} - \frac{1}{2q_0} \right) = 1:$$

Alternatively, if B_0 chooses to reform (i.e., to close the office), he will benefit from higher bribes due to higher investments but will lose the "tribute" from B_1 who will change career. B_0 's total payoff[®] is:

$$\left[\frac{1(k_0)}{4q^a} + \frac{1(k_c)}{4q^a} \right] \quad (5)$$

where k_c is the amount of new investment by E_t anticipating the closing of the office, i.e.,

$$1^0(k_c) \left(2R_i - \frac{1}{2q^a} \right) = 1:$$

Apparently, $k_c > k_0 > k^a$. Therefore, in order to induce B_0 in the low type office to reform (close the office), it is necessary and sufficient that

$$\frac{1(k_c) - 1(k^a)}{4q^a} > \textcircled{R} \left[\frac{1(k^a)}{4q_0} + \frac{1(k_0)}{4q_0} \right]; \quad (6)$$

which means that the increase in current bribe due to higher investment associated with reform should offset the loss of "tribute" from the young generation of bureaucrat.

For a bureaucrat in a high type office, he has three choices: close the office, keep the office open without restructuring, and keep the office open with restructuring. Apparently, the choice between the first two is the same as that analyzed above. Meanwhile, if a B_0 in a high type office takes the third option, his total payoff is:

$$\left[\frac{1(k_0)}{4q^a} + \frac{1(k_R)}{4q^a} \right] + \theta \left[\frac{1(k_R)}{4q_0} + \frac{1(k_H)}{4q_0} \right] \geq c \quad (7)$$

where k_R is the investment by E_0 during reform:

$$1^0(k_R) \left(2Rv \geq \frac{1}{2q^a} \geq \frac{1}{2q_0} \right) = 1$$

and k_H is the investment by E_1 after the reform:

$$2^1 1^0(k_H) \left(Rv \geq \frac{1}{2q_0} \right) = 1:$$

Therefore, under the condition that a B_0 in a low type office decides to close his office, we need the following condition to induce a B_0 in a high type office to restructure:

$$\frac{1(k_R) \geq 1(k_C)}{4q^a} + \theta \left[\frac{1(k_R)}{4q_0} + \frac{1(k_H)}{4q_0} \right] > c: \quad (8)$$

Therefore, we have:

Proposition 3 The necessary and sufficient conditions for a delegation strategy of reform characterized by $(q_0; q^a)$ to be successful are

$$\frac{1(k_C) \geq 1(k^a)}{4q^a} > \theta \left[\frac{1(k^a)}{4q_0} + \frac{1(k_0)}{4q_0} \right] \quad (6)$$

and

$$\frac{1(k_R) \geq 1(k_C)}{4q^a} + \theta \left[\frac{1(k_R)}{4q_0} + \frac{1(k_H)}{4q_0} \right] > c: \quad (8)$$

where k_c and k_H are investments by E_1 when the $o_{\pm ce}$ is closed and restructured, respectively; k^a and k_R are the investments made by E_0 anticipating the low type $o_{\pm ce}$ to stay open and the high type $o_{\pm ce}$ to be restructured, respectively.

We can obtain several comparative static results from Proposition 3. Consider a decrease in q^a . Both investments k_c and k^a will be lower, resulting in an ambiguous effect on whether B_0 in a low type $o_{\pm ce}$ chooses to close the $o_{\pm ce}$. However, with the lower q^a , B_0 can benefit even more from the difference between k_c and k^a , since in effect, a more relaxed control of corruption means he is given a larger share in the efficiency improvement. Overall, we show that last factor dominates the ambiguity of the first effect.

Similarly, consider the implication of an increase in q_0 for condition (6), the steady state anti-corruption policy. The first effect is that k^a is higher, since E_0 expects to pay fewer bribes to B_1 in period 1. The higher k^a means that B_0 has more bribes in period 0 and creates a stronger incentive for a B_0 in a low type $o_{\pm ce}$ not to reform. However, from Lemma 1, a higher q_0 also means that B_1 obtains less expected bribes. This translates into a lower "tribute" paid to B_0 . We can show that under certain conditions, the second effect dominates the first.

Corollary 1 Ceteris Paribus, 1) a lower q^a makes the delegation strategy of reform more likely to be successful. 2) When θ is sufficiently large and c sufficiently small, a higher q_0 makes the co-opting strategy more likely to be successful. 3) When c is sufficiently small, a smaller θ favors the success of the delegation strategy of reform.

We can also study the consequence of a successful delegation strategy of reform. If a reform based on the above co-opting strategy is successful, then a bureaucrat in the low type $o_{\pm ce}$ expects to get more bribes than before the reform. However,

compared with the pre-reform situation, the investment level in the low type $o_{\pm ce}$ will increase, since entrepreneurs expect that their $o_{\pm ces}$ will be closed. After the reform, the investment level will increase further due to the final elimination of the low type $o_{\pm ce}$. By the same argument, bureaucrats in the high type $o_{\pm ce}$ will also get higher bribes and the investment level in their $o_{\pm ce}$ will also increase during the reform and will increase further when the reform is successful and the anti-corruption policy is tightened.

Proposition 4 During the implementation of a successful delegation strategy of reform, the amount of expected payoff to bureaucrats in both types of $o_{\pm ces}$ goes up. The level of investments in both $o_{\pm ces}$ will increase during reform and increases further after the reform.

4. Extensions and Discussion

4.1. The Need for Bureaucratic Cooperation during the Reform

In our formal model, a key assumption is the information asymmetry between the reformist T and the incumbent bureaucrats B_0 . This asymmetry makes the cooperation of bureaucrats important. In fact, our formal analysis can be extended to a much wider range of circumstances. What is essential to our theory is the premise that the cooperation of lower-level bureaucrats is very important if one is to implement significant institutional change.

There are two broad categories of reasons why bureaucratic cooperation is needed. The obvious one is that bureaucratic skills are often indispensable for institutional changes. Many reform measures have to be implemented by lower-level bureaucrats. Take the issue of mass privatization. All detailed operations, from checking book

values of state enterprises and issuing vouchers to organizing auctions of shares, have to be performed by the bureaucrats. Aside from incentive issues, the incumbent industrial bureau officials are the least costly human resources for these tasks. In general, such bureaucratic capital is a resource that can be utilized efficiently by the reformers.

The second reason for the importance of bureaucratic cooperation during the reform is based on the top reformers limited political capital. The top reformer must amass a critical amount of political support for the reform. Incumbent bureaucrats, through their familiarity with politics, are potentially formidable foes of reform who need to be placated.

4.2. The Political Cost of the Delegation Strategy of Reform

Our formal analysis omits any discussion of the political cost of the delegation strategy of reform. Our theory focuses on the economic costs of such strategies in the form of decreased incentives for entrepreneurs to invest. However, there are also significant political costs. In a delegation strategy, bureaucrats getting "golden handshakes" seem like a vestige of the past, and a counterexample to what reforming politicians usually preach. The presence of such examples can create public cynicism and dissatisfaction with the reform process. For instance, in China, corruption was a leading cause of the Tienanmen incident. In other formerly socialist economies, corruption was often regarded as a "second-generation" problem of transition.⁹

It seems that the marginal political cost of corruption associated with a delegation strategy of reform increases very fast with the level of corruption. Mild levels of corruption can be easily tolerated by the general public so long as the economy grows fast. Extremely high levels of corruption even in rapidly growing economies can lead

⁹See Transition, June, 1995.

to extreme political responses, from voting out the government to military coup d'etat. This leads us to believe that our theory is more relevant to cases where corruption levels are low before the reform and a mild increase of corruption is enough to provide the incentives for bureaucrats to comply with the reform.

5. Conclusion

In this paper, we theorize the reform of the bureaucracy. The theory emphasizes the difference between the bureaucracy and individual bureaucrats. The bureaucracy is sustained by overlapping generations of bureaucrats, while the bureaucrats, like managers of modern corporations, have interests diverse from that of the bureaucracy. Thus, agency problems exist within the bureaucracy. The key to reforming the bureaucracy is to incentivize the incumbent bureaucrats either to close or to restructure their agencies. In this regard, the reform of the bureaucracy is like a long-term investment. The one-time cost is that associated with dealing with the incumbent bureaucrats. The benefit is from better institutions that last for generations.

Using this simple framework, we analyze various strategies of reform of the bureaucracy. The focus is on a delegation strategy that grants incumbent bureaucrats the decision rights to initiate and to benefit from reform. It involves a temporary relaxation of monitoring of bureaucrats. Under certain conditions such a decentralized strategy of reform can be successful. An implication of the analysis is an explanation of why in many countries, a surge in corruption co-exists with reforms. Corruption in these cases is a result of loosened control of bureaucrats upon whom the autonomy of reform is granted. This explanation is in contrast to conventional views of corruption,

which are concerned with only static bureaucracy rather than the reform of it.

Appendix

A.1. Proof Lemma 1

$$\left(\frac{1}{q}\right)^0 = \frac{1^0 k_q^0}{q} i \frac{1}{q^2} \quad (a1)$$

From the first order condition (2), we get

$$k_q^0 = i \frac{1^0}{q(2qRv_L i - 1)^{100}} = i \frac{1^{02}}{q^2 1^{00}} \quad (a2)$$

Plugging (a2) into (a1), we have

$$\left(\frac{1}{q}\right)^0 = i \frac{1}{q^3} \left[\frac{1^{03}}{1^{00}} + 1^0 q \right] < 0:$$

The last inequality is from Assumption 5.

A.2. Proof of Corollary 1

Define

$$D = \frac{1(k_c) i - 1(k^a)}{q^a} i \frac{1(k_c) + 1(k^a)}{q_0}$$

Clearly, $\frac{\partial D}{\partial q} < 0$. Therefore, a lower q makes the co-opting strategy more likely.

For an increase in q^a , we know that $1(k^a)$ will be higher, since k^a will be higher. k_L is independent of q^a . Therefore, the second term in D will be higher. As for the effect of an increase in q^a on the first term, we have

$$\left[\frac{1(k_c) i - 1(k^a)}{q^a} \right]_{q^a}^0 = i \frac{1(k_c) i - 1(k^a)}{q^a 2} + \frac{1}{2(q^a)^3} \left[i \frac{(1(k_c))^3}{1(k_c)^{00}} i - 1(k_c) q^a + \frac{(1(k^a))^3}{1(k_c)^{00}} + 1(k^a) q^a \right] < 0:$$

The last inequality is by assumption 2.

Finally, we can study the effect of a change in q_0 on D : The only terms affected by q_0 are $\frac{1(k^*)}{q^*}$ and $\frac{1(k_c)+1(k^*)}{q_0}$. k_L increases with an increase in q_0 by Proposition 1. At the same time, the second term decreases with an increase in q_0 by Lemma 1. Similar to A.1., we have

$$\frac{\partial D}{\partial q_0} = \frac{(1(k^*))^3}{2q_0^2 q^{*100}(k_c)} + \left[\frac{(1(k_c))^3}{(q_0)^3 1(k^*)^{100}} + \frac{1(k_c)}{q_0^2} + \frac{(1(k^*)^{100})^3}{2(q_0)^3 1(k^*)^{100}} + \frac{1(k^*)}{q_0^2} \right]:$$

Notice that both $1(\cdot)$ and $\frac{103}{100(k_c)}$ are increasing functions of k by assumptions. Therefore, we have

$$\frac{\partial D}{\partial q_0} > \left(\frac{1}{2} \frac{q_0}{q^*} + \frac{3}{2} \right) \frac{(1(k^*))^3}{(q_0)^3 1(k^*)^{100}} + 2 \frac{1(k^*)}{q_0^2}:$$

which gives the condition in Corollary 1.

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