State Bipolarity, Kin Organizations and Violent Collective Action

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Abstract

The paper seeks to explain state failures. To do so, we focus on non-market forms of interactions in the public sector that allow officials to move into high or low effort levels, a kind of state tendency to bipolarity or manic depression. The activity level actually 'chosen' will have important consequences for the overall non-state economy. The paper outlines reasons why low effort and high corruption levels are likely to go together and increase the risks for possible rise in violent conflicts. It further describes mechanisms that show how non-formal institutions may impact corruption, state activity levels and possible economic gains from joining violent rebellion.

A. Introduction

State failures are partly characterized by an inability of the state to supply the citizens with a minimum of public output and services, and partly by a rise in violent rebel organizations. In the following I will in an informal manner analyse some of the mechanisms that make a public bureaucracy shift its activity level and thereby its supply of public output, and outline some of the interaction potential between developments in the state bureaucracy and voluntary, violent collective action.

Our explanations will to some degree shadow Bates et al. (2002) by distinguishing between lethargic, violent and productive equilibriums. But the lethargy is rooted in the public sector and the focus will be on the interactions between the regular individuals that populate the bureaucracy and the violence-wielding organizations. The organizations that populate most existing models that seek to explain the coexistence of state failures (fiscal crises) and violent rebellions (such as in Bates et al. (2002) or Azam (2008)) are perfectly centralized. Any organizational output relies, however, on the cooperation of a large number of individuals. If the apparatus is not there, a politician can do nothing, not even steal, nor may a rebel initiate any violent action. Our focus here then will be on the individuals who populate the public bureaucracies and the (potential) violent rebel organizations.

Most of the time I will assume, as do Bates and Azam, that some kind of economic motivation is a main driver. Hence, corruption will be part of the story. At the same time I will point to phenomena that are difficult to explain with that motivation narrowly interpreted. Regarding the behaviour in public bureaucracies, we assume that most of the time effort levels are sufficiently low to make task-solving motivation important.[1] Among regular economic motivating factors we emphasize the prospects for promotion.

The paper starts out by presenting a mechanism that allows a bureaucracy to move (for simplicity) just into two effort equilibriums, one 'high' and another 'low'. While a bureaucracy may be partitioned into several parts with a fairly low degree of interaction (and therefore may contain sub-apparatuses that have adjusted to different effort levels), a state bureaucracy is sufficiently centralized to make effort levels

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[1]   Beyond a certain effort level, increasing marginal disutility of effort will set in, as is the regular assumption in most economics models.

likely to spill over from one part to another most of the time. Effort levels at the higher rings are, of course, exceptionally important. The bipolarity mechanism outlined here may not be compatible with the dominating principal-agent models applied when analysing bureaucracies in many situations. This is not only because of the utility function suggested above, but even more by the way information is spread and shared in the public apparatuses. Given the importance of the principal-agent models for most economics explanations of organizational behaviour, I will sketch some of the points of contention.[2]

Following Kornai (1971), we assume that almost any 'real' activity, input or output, is shadowed by some informational input or output. Some activity units, particularly within public administration, produce information only. Monitoring, whether mutual, as among agents in any real activity centre, or specialized, as in a public auditing unit, is an important part of the information gathering. With low-activity levels, less information gathering and less effective monitoring are taking place. Hence it becomes easier to get away with rule-breaking behaviour, such as corruption. The public structure fragments and the single official may 'corner' his decision field for private purposes, at the same time as the expected value of punishment for rule breaking decreases.

We then look at the interaction between public bureaucracies and organizations outside the bureaucracy. In the first case we look at organizations where an individual public official in principle may be a member: a private company, an aid-financed NGO, a political party or a kin-based organization. Such outside membership may increase the alternative costs of making hard efforts as a public official. If widely spread, such organizations may pull the bureaucracy into a low effort equilibrium. Membership in organizations that have direct influence on promotion and employment processes, such as kin-based organizations or political parties, may have an exceptionally strong effect. Activity levels here are mainly *competitive* to the activity level in public organizations.

We then look at the relationship with the regular private sector economy when public officials are not private sector members. Here we point mainly to *complementary* mechanisms. They may work in both directions: Increased private output increases tax income, that may, for example,feed public promotion ladders, public sector average wage levels or in other ways boost public sector morale and contribute to increasing effort levels. On the other hand, increased public output

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2   This does not imply any general criticism of principal-agent models that clearly are useful in many situations. Since they are so important for economists' thinking in this field, it is helpful for the understanding of our assumptions to relate them to the ruling ones.

or service supply will tend to increase private sector output. Increased efforts among customs officials or better public port infrastructure may significantly reduce private sector transport costs and increase its output (Sequeira and Djankov 2009), as will of course better public roads or rails. In some cases we have increasing returns in private and public sector effort levels. Increased efforts among students increase the effects of increased teacher efforts. Together they increase the public supply of educational output. There are, of course, competitive relations too: In the final analysis, domestic resources and output are finite and will have to be divided between the private and public sectors (and the foreign sectors). It is also well established in economic research that in a number of situations a partial increase in tax rates will cause decrease in private sector activity levels. Presumably, more eager tax officials that are able to collect more taxes from a given set of rates may partially have similar effects, although such increased efforts will normally go together with general productivity increases in the private sector.

We finally look at the interaction between the public sector and the potential prevalence of anti-government violent organizations. To do so, we look at both the internal interactions in the public sector and its direct forms of interactions with the formal private sector. But a key mechanism linking state behaviour and the formation of rebel organizations is the strength and character of informal organizations of which the kin-based ones appear to be the most important.

B. Public organizations and state failure

While the main aim of this paper is to sketch a kind of general equilibrium model of GDP levels, corruption frequencies and conflict probabilities, its most original and disputable part is likely to be its analysis of the behaviour of officials in the public sector. Hence, most of the analytic efforts will be expended here. Most of the empirical evidence alluded to will also refer to bureaucratic behaviour in the public sector. Like the theoretical analysis, the empirical evidence will be presented in an exploratory, informal manner.

The supply of and upkeep of public output or service, as well as the implementation of any kind of public rule or law, demand some kind of action by a public bureaucracy. If that is missing, the public outputs will not be forthcoming and the laws will not bind. Hence the issue of how public bureaucracies work, is crucial in determining whether a state is failing or not. The important role of working public bureaucracies for the overall economic output has been demonstrated empirically in Evans and Rauch (1999). Nevertheless, the role of bureaucracy has often receded into the background when state failures are discussed. In Rotberg's (2004: 7) catalogue of state failure characteristics, the specifics of bureaucracy behaviour are mentioned only once: 'The bureaucracy has long ago lost its sense of responsibility and exists solely to carry out the orders of the executive and, in petty ways, to oppress citizens.' In Bates' analyses (2008a, 2008b, Bates et al. 2002) that explore the same terrain as we cover here – the interaction between the behaviour of the state and the behaviour of violent, organized rebel groups – the collective action problems on the parts of both bureaucracy and rebels are assumed solved so that all the organized parties may be considered as centrally directed (Bates 2008a: 16).

In economic analyses, the state's modes of operation have most of the time been assumed given or exogenous. Its capacity to supply public goods and services has mainly been determined by long-run and slowly moving factors such as the competence levels of the public employees. Hicks' (1969:12-13) view that the long-run equilibriums of public bureaucracies are at low – but essentially stable – activity levels has been, I believe, widely shared. In the short run it is considered constrained by public expenditure decisions or its capacity to borrow and tax.

Hicks also pointed out, however, that when a society needs to accomplish some exceptionally large tasks extraordinarily fast, such as wars or

large rescue operations, public organizations would be asked to solve them. Somehow there appears to be built in some capacity for short-run expansion in the way public apparatuses work. Apparently, public organizations may operate at widely different activity levels even at a given distribution of competence and education levels.[3] There has to be considerable slack. The steep decline of production in the former Soviet Union – all production was organized by public bureaucracies – has on the other hand revealed the downward capability of public bureaucracies when exposed to shocks.

At present, most countries possess a stock of educated labour power to populate a state apparatus with sufficient competence for it to perform its major tasks. Nevertheless, the performance often appears to be far below its capability, sometimes so far that outside observers judge it as 'failed'. How to explain this?

1. Fragile activity levels in public bureaucracies? A bootstrap theory

Let us assume that a typical public employee's utility function is individualistic and defined over the set of tasks she encounters[4]:

$$U = U\,(pT,\ w,\ e,\ \tilde{o}),\qquad\qquad (1)$$
$$+\ +\ -\ ?$$

where U is a utility measure, p is the probability of solving the task, T a measure of the size of the task, w the wage level and e is an indication of the bureaucrat's own effort level, $\tilde{o}$, an index of the other task-solving bureaucrats' efforts. To solve a task increases the utility as does an increased wage level; increased own 'efforts' reduces it, while the effect of $\tilde{o}$ may be undecided.

The solution of the task can in general not be accomplished by a single official alone, however, so the probability of success also hinges upon and increases with the efforts of the other members of the task group. That increases the typical official's utility. But the direct effect of increased efforts of the others, $\tilde{o}$, hinges upon the characteristics of the bureaucratic process itself, and becomes, of course, more involved than the formulation of (1) may suggest. I will not develop a formal theory here, but it will have to involve a system of equations where the wage level has to be decomposed into the value of expected promotion and existing wage. The wage (through the expected value of promotion) may then be

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3 When Evans and Rauch (1999) found that the degree of 'Weberianness' had strong impact on growth, they had adjusted for levels of higher education. There the 'Weberianness' indicator reflected the degree to which merit and long-run employment contracts were emphasized in the main public bureaucracies.

4 To state the obvious: (1) is not to be understood as a rigorous mathematical function, but simply as a mnemonic device.

considered to be a function of the probability of successful task solving, own efforts compared to others' efforts, non-public sector wages and so on.

The transaction technology of the public apparatus is characterized by the fact that most transactions inside a bureaucracy have low monetary costs, they are almost free, but at the same time forced.[5] That is, you may not refuse to engage in communication with other officials who have the right to communicate with you. That applies in both directions in a hierarchy as well as in some pre-specified horizontal links. Orders in particular are supposed to be obeyed, not bargained and haggled over, as long as the apparatus is working. The low cost of transacting implies that if few other officials are sending messages for you to respond to, you will have little work to do. If many are contacting you, it may be difficult to refuse to get involved with the actual tasks. The transaction technology of public organizations then functions much like an assembly line (Akerlof 1976), although public officials, if cooperating, have a much larger scope for pretending to work than a worker on the assembly line.

While orders and other forms of pure information may be sent directly across several hierarchic layers without any direct interaction between the officials, the actual execution of tasks presupposes direct interaction between officials, often belonging to different steps in the hierarchic ladder.[6] Since any state is centralized, we may assume that there exists a *path* that connects the interactions between any set of public employees. Hence, any shock that hits one part of the state apparatus may impact the whole mass of interactions between public officials, but shocks that are hitting the apex are likely to spread faster.

If we for simplicity assume i) that officials may either choose to be committed to solving a task or not, ii) any task solution involves at least two officials, drawn randomly from the population of state officials, we will expect a committed official on average to prefer to engage another committed official, and a non-committed to engage another non-committed one. The (expected) utility of the choice of being committed will increase with the size of the (perceived) fraction of the population who are committed.

We may add a number of reasons why this is likely to be the most common situation: If you have chosen a non-commitment strategy and you

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[5]   In some New Public Management systems, where sub-units are supposed to estimate their 'unit' costs and cover the value of the units delivered to other sub-units through charges, this may not longer be wholly true.

[6]   This implies that interaction between officials in public organizations has many of the characteristics of so-called 'non-market interactions' (cf. Glaeser and Scheinkman 2003) that have received much attention in econometrics and mathematical economics recently. Our discussion will be wholly informal, however.

have to engage with a committed official in the execution of a task, you will be revealed to her as lazy. You may then risk harassment and non-promotion in case she is a superior. On the other hand, if you choose to be committed, the subjective costs of working hard are lower if the other who is engaged in doing it is also committed. Moreover, in the frequent situations where there are complementarities in work input and also increasing returns, both the probability of solving the tasks well and the value of the tasks resolved per unit of time in (1) will increase. In this case the prospects for promotion, in case she is a superior, will increase. If she is non-committed, on the other hand, the subjective costs of efforts will increase, task output will decrease and the impact on possible promotion will be uncertain.

These mechanisms are reinforced if we somewhat accessorily look at the choices in a wider setting. Note that the number of tasks that arrive to any pair of task solvers will depend on the average rate of task completion (cf. Akerlof's assembly line metaphor). If you then as a non-committer join another one, your pair will clog up the line, harassment is likely and the prospects of promotion dim. On the other hand, if everyone else is working slowly and you happen to be in an 'energetic' pair, few tasks will arrive, and your output will stall in the next pair. In fact, little will be accomplished. Your bureaucratic surroundings are likely to be annoyed and exceptional efforts may even have negative impact on the probability of promotion.

Summing up, it is plausible[7] then that two similar state bureaucracies where the officials possess the same average level of formal competence in the aggregate may behave in widely different manners. The state may show symptoms of a bipolar disorder. The situation can be illustrated in the following simple 'Schelling diagram' (Schelling, 1973):

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[7]   Since the preference constellation is not formally fully specified above, the argument is somewhat loose. One specification of the situation will be as a 'battle of the sexes' game, but other less symmetric specifications are also possible. Similar situations have been analysed for corruption by Sah (1989, 2005). An analysis and specification of utility distributions in the actual situation outlined above have been presented in Andvig and Moene (1993).

Figure 1: Simple bipolarity
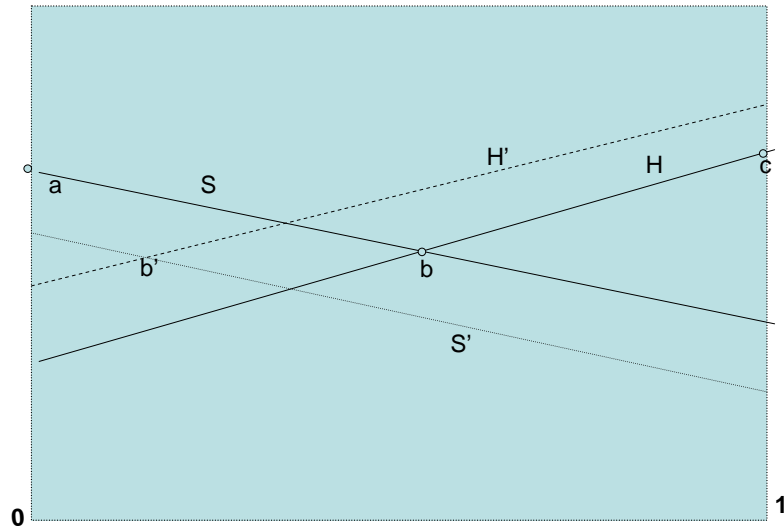
On the horizontal axis we have the fraction of hard-working, or committed, officials, **H**, ranging from 0 to 1. By implication, the fraction of slow workers, 1 – **H,** is ranging from 1 to 0. Depending on the specific interpretation of the diagram, the fraction may represent the actual or perceived fractions. On the vertical curve we have the expected utility of officials. The S-curve indicates the expected utility of the slow choice for the last official making a choice for the whole range of possible mixture of hard and slow workers. The H-curve indicates similarly utility for the hard working choice given the possible fractions. In line with our assumptions that officials like to meet like-minded ones, S is decreasing and H increasing as the fraction of committed officials increases.

There are three equilibrium situations: **a**, where all officials choose to go slow, **c** where all will work hard, and **b** where it does not matter what you choose. The first two situations are stable, that is, if anyone by chance makes the 'wrong' choice, no one is tempted to follow. The **b**-equilibrium is unstable, however. Given that mixture, if one additional official starts to work hard, everyone will in the end be doing so. If one more starts to work slowly, on the other hand, the state apparatus will slide down to the **a**-equilibrium.

Some of our assumptions may be regarded as rather artificial, particularly when combined. For example, it appears somewhat artificial to make the agents decide on effort levels before they make a task and not coordinate them afterwards when the preferences are defined over a set of tasks. Here we may reformulate the bureaucratic game in an

evolutionary direction, however, where we start out with a distribution of committed and non-committed bureaucratic 'types' where the number of the type with the highest expected payoff will increase. We may then get another interpretation, but basically the same result as the one outlined in diagram 1.[8]

Let us note that we at the outset allow officials at different hierarchic levels to participate in solving the same task. Hence the analysis is not based on the kind of asymmetric information assumed in principal-agent games that have become dominant in the economics approach to the study of bureaucracies (cf. Dixit, 2006).

To better grasp the implications of the theory sketched in diagram 1, let us look at the adjustment in the case where an external shock to the relative rewards of commitment takes place – for example due to a shift in political leadership. The dashed lines indicate the new reward lines.[9] If the shift takes place when the public apparatus is already in **a**- or **c**-equilibrium the officials' behaviour will not shift except in cases where the shocks are exceptionally large, but their utility levels will.

If the initial situation is not in equilibrium, and I will not expect it to be since any state apparatus is likely to be in a process of adaptation to former shocks, the consequences of the shift will be more significant. For example, if the initial mixture of committed and non-committed officials was between **b** and **b'**, the public sector will shift direction after the political shock. While it before would move towards the slow, 'soft' – state equilibrium of non-action, the mixture would now move towards the fast, 'hard' – state equilibrium. We may also note that the same set of bureaucratic reforms may give none or large effects depending on the initial situation. The same applies, of course, with negative shifts in the hard effort utilities. If the initial situation was in **b'** or between **b** and **b'** with **b** as the new unstable equilibrium, the public apparatus would then slide down to the low effort equilibrium – the final outcome may become a state of state 'failure'.

2. Principal- agent models and the bipolar state

Our model of the state produces an exceptionally high degree of fragility in effort levels. It is a caricature, but highlights some mechanisms I believe are important. To some degree we have disregarded some of the hierarchic features of public organization when we look at the aggregate behaviour of state officials as determined as their non-

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8   For a textbook exposition of a couple of evolutionary games useful for studying our boot-strap game, see Chapter 2 in Bowles (2004).
9   The S- and H-curves are not independent, so an upward shift in the H-curve would normally demand a downward shift in the S-curve, given our assumptions.

market interactions. Hierarchy has simply been regarded as a set of technological restraints that channel otherwise voluntary, 'non-market interactions'. This may be somewhat naïve. How does it depart from more commonly accepted economics approaches?

The dominant approach to economic behaviour inside hierarchies has been the principal-agent games. The main situation studied is when a committed superior (a principal) meets a lower-ranked non-committed employee and develops the lowest cost incentive scheme in the situation, modelled so that the agent may choose to become hard-working (or non-corrupt) after all, while still willing to stay employed. Note then that the fragility theory predicts that most encounters of members in hierarchic organizations are either when both are committed or non-committed while the typical encounter in principal- agent games is between a committed and a non-committed. By implication that should also be the most frequent one if the principal-agent theories are the most appropriate.

The most obvious, head-on difference is to be found in the underlying preference structure, however: If meeting a committed principal, an agent would then actually *prefer* to work hard according to our theory.[10] No specific incentive scheme to induce work efforts in the situation should be necessary. The reason for choosing the hard-work strategy when the principal is hard working, would according to our line of reasoning partly be that the subjective labour costs will be lower and the prospects of promotion would be higher, a very strong motivational drive in most formal organizations.[11]

Not only is the motivational structure different, so is the informational structure too. In principal-agent games, the agent possesses information unavailable to the principal that the agent may manipulate to the disadvantage of the principal. In the task-focused model of a bipolar

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[10] Let Vij (h , s) be the utility of official i when she meets the slow official j where h is the hard-working and s, the slow-working strategy. In Andvig and Moene (1993), where a number of activity equilibria were outlined, we assumed i) Vij(h h) P Vij(h s), ii) Vij(ss) P Vij(sh), iii)Vij(ss) P Vij (h,s) and iv) Vij(hh) P Vij(sh) where P means 'is preferred to'. If i is an agent and j is a principal, we see how iv) breaks with the principal-agent assumptions. The agent here will prefer to work hard when meeting a hard-working superior. Note that the ranking here is not complete, i.e. I have not stated whether Vij(hh) P Vij(ss) or the other way around. In Andvig and Moene (1993), we assumed that v) Vij(ss) P Vij(hh) if we included the subjective disutility of harder effort for agent i in the Vij(hh). There are, of course, a number of situations where Vij(h s) P Vij(hh): in bureaucratic battles or in rent-seeking contests (which have become more common in New Public Management structures) it is better to meet a lazy than a hard-working contender, but within the same unit this is more exceptional..

[11] Note that we in diagram 1 assume that the typical bureaucrat does not hit an effort level where increasing marginal disutility sets in, although with our assumptions the effort level has to increase when the fraction of committed officials increases. To adjust to increasing marginal utility of effort as the bureaucracy increases its share of hard workers, we could make the H-curve decline when the fraction of committed officials passes a certain threshold. This would not shift the equilibrium, however, as long as the H-curve is above the S-curve when **h** = 1.

state, officials at different hierarchic levels participate in the solution of the same task. Hence the information is not in general distributed asymmetrically across the hierarchic layers. The combination of informed principals and the possible prevalence of committed agents may be considered naïve; that we cut away the main problems of hierarchic organizations. Nevertheless, it may fit many situations better than the more cynical view of agents' behaviour in the principal-agent models.

Moreover, in some of the situations we have in mind, where the states are hardly functioning, it is equally naïve to assume that they are populated with committed, hard-working principals. In such public organizations, the payoffs of officials in positions as principals (i.e. in disciplining positions) may only be remotely related to the efforts of agents. Hence their incentives for making efforts to create and implement incentive schemes that may induce efforts from their inferiors are likely to vary with the overall 'drive' in the public apparatus. Therefore, to make the principals' behaviour reasonable they should participate in some high effort equilibrium among themselves. But then, why should the agents' behaviour be different?

3. Modification of the bipolar model: Heterogeneous officials

The equilibrium outcome that all state officials are either committed or non-committed is of course too extreme. It is partly built on the unrealistic assumption that all officials are equal. With heterogeneous individuals, the fast and slow equilibriums may be composed of mixed populations of committed and non-committed individuals.

In Andvig and Moene (1993) we assumed that some of the subjective costs that the officials experienced when choosing the hard-working or committed strategy were independent of whether they performed a task together with a committed or non-committed individual. These costs were distributed in a bell-shaped way across individuals, that is, most individuals were clustered around a typical subjective cost level. We were thinking of effort costs then. If they were not too high, stable high and low effort equilibriums would again arise, but they would both be mixed with individuals choosing the opposite strategy. It is reasonable to assume that at least some of these costs are independent of the other agents' behaviour.

For our problem – to elucidate mechanisms that may cause a state to 'fail' – a different interpretation of effort or commitment costs may be useful. One may consider the costs associated with choosing the high effort strategy with respect to labour input to the formal state apparatus to be the alternative costs of not engaging fully in competing non-

state activities.[12] In this case too, we may assume that costs are uni-modally distributed across officials where individuals are clustered around some typical costs. Presumably, these activities may to some degree be combined with formal state positions at the same time as they compete with their proper execution. The alternative costs may either be due to non-participation in outside-the-state networks such as political parties, close or distant family networks or a host of collective action groups. Moreover, the alternative costs may be missing investment efforts in preparing for employment in non-governmental organizations.

An additional advantage of emphasizing the distribution of alternative costs to commitment is that it allows more convincingly for a larger vari-ation in cost levels across countries than pure subjective, quasi-phy-siological effort costs do. Again, if the level of these costs is not too high, we will be led to a situation outlined in the following diagram:

Figure 2. Bipolar state with internal equilibriums

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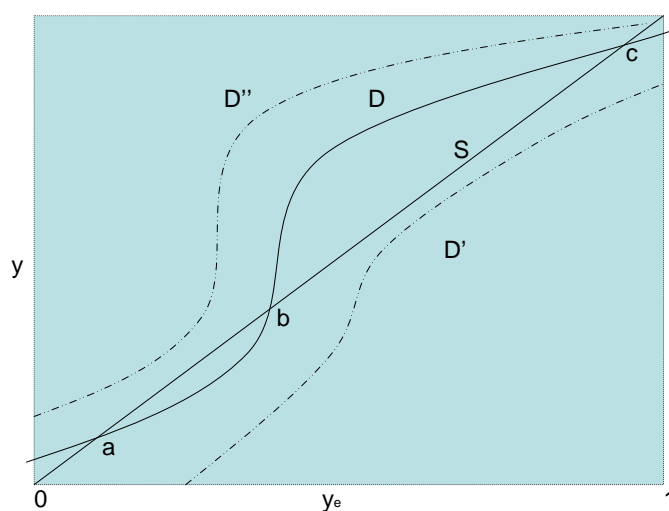
[12]   While it is somewhat simplistic in this context, as a first approximation we may assume that all activities an official does in a kinship context are 'unproductive', and all efforts inside the public apparatuses are 'productive'. Formal modelling of the consequences of this division of activities between productive and unproductive ones under a number of different incentive systems was presented in Haavelmo (1950). A brief English exposition may be found in Thalberg (1987). The initial inspiration is Pareto (1971, original English translation is from 1927).

The actual fraction of committed officials, **y,** is given on the vertical axis and the expected fraction of committed officials held by the officials, y_e , is given on the horizontal axis. The S-line indicates the potential equilibrium positions where the expected and actual fractions are equal. The starting point is a D-curve that yields bipolarity. Here, **a** is the stable low-commitment equilibrium, **c** the stable high-commitment equilibrium, while **b** is the unstable one. Since the D-curve is below the S-curve between **a** and **b,** it means that fewer officials than the actual number want to work hard (since they are pessimistic about the likelihood of meeting committed partners) and the actual number slides down. Between **b** and **c** we have the opposite situation and the number of committed officials increases. This is like the situation outlined in figure 1, but if the fraction dips below **a** we reach officials who have so low-commitment costs that it more than compensates for the low prospects of meeting other hard-working officials in that situation. Above **c** we are in the opposite situation: officials who have so high effort costs that they will prefer to stay non-committed even in (hypothetical) environments composed mostly of hard workers.

The D''-curve indicates a situation where the alternative costs to commitment have decreased so much for the various individuals that there is only one stable equilibrium; one where all officials are committed. The D'-curve reflects a situation where the alternative costs have increased so much that all officials are going slow. Note that unlike the hard core of the pure subjective labour costs, the alternative costs of effort in formal organizations for each official will not be independent of the distribution of the other officials' alternative costs.

4. The role of structure: Cross-task and inter-temporary issues and incentives

The high activity equilibrium, **c**, in figure 2 relied on the assumption that officials had decided on their activity level *before* they met their task partner. The reason why most officials will stick to their high activity choice there is that the probability of meeting a partner that has made the same commitment is so high that it does not pay to choose the low-activity commitment in the hope of meeting a partner having made the same choice.

It may, however, appear somewhat unrealistic to assume pre-commitment in this context. One may rather expect that the task partners may adjust their behaviour to that of their partners. This opens up for the possibility that the equilibrium may be invaded by officials following an opportunistic strategy; that is a strategy where the official chooses a high activity strategy if she meets a partner that works hard

and a slow activity strategy if meeting a slow working partner. This strategy should dominate the alternatives. Compared with the pre-committed high activity she gains in case she meets a low-activity partner, and compared to the low-activity strategy she gains when meeting a fast worker.

Let us now imagine that we stay in the **c**-equilibrium reached through the pre-committed strategies and the effort costs of the agents are distributed in a bell-shaped way, but now some agents are allowed to follow an opportunistic strategy and adjust to their partner's behaviour. All of those who meet a slow-working partner have now no reason to change strategy since only people with high effort costs will choose to work slowly in this situation. But some, who have pre-committed to high activity levels despite fairly high effort costs because of the high expected probability of meeting a hard-working official, may now try to test out a slow-working strategy and the **c-**equilibrium will now tend to slide downwards to the left.[13]

Does this mean that the hard-working equilibriums are without practical or theoretical interest? There are at least two ways to 'save' the high effort equilibrium. One is when *effort costs* are *not* crucial. This may happen either because the efforts are not in any case so high that increasing marginal disutility of efforts kicks in whether it is because the subjective costs of efforts as such are low or because of the lack of importance of kin or political party networks. That is, the **c** -equilibrium may either be relevant when it may be reached without the officials driving themselves into effort levels where increasing marginal disutility of effort sets in, or it may only be reachable in countries where the alternative costs of efforts in the formal sector in terms of income (goodwill) foregone in kinship or political networks are not too high.

Another way to see whether **c**- like equilibrium may be stable is to complicate the tasks so that they may no longer be solved by bilateral matchings of officials. That is, if it is reached, it may stick due to a number of *structural features*. What we have in mind here is not the formal structure of the state as such. That is surprisingly similar everywhere, but the fact that any task group is embedded in a larger structure. This structure makes it difficult for a small group of officials to make a mutual adjustment of effort levels without coordinating their actions with outside groups. For example, let us regard a situation where all officials at the outset follow a hard-working strategy except for the co-worker sharing the task with the opportunist, who has a

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[13]   With the strong assumption v) about effort costs as described in footnote 9, Andvig and Moene (1993) showed that the fast-working equilibrium would not be stable. Only the slow-working one would be so.

high disutility of effort. This pair should then follow a low-effort strategy. If they do so in a higheffort structure, they are, however, likely to be penalized..

In the preceding, we have argued that in task-based interactions between public officials where officials at different levels of the hierarchy participate, the key information that may be manipulated is not between the bureaucratic layers, but across tasks. Whether an official tends to be linked to the same task over time or not becomes significant. Likewise, it becomes significant whether his task group will communicate with other task groups for prolonged periods of time. Most public organizations are characterized by long multi-period interactions between the same officials. This implies that his choice of non-commitment when meeting another non-committed is likely to be registered.

When both officials sharing a task are non-committed, this is likely to be quite visible to neighbouring task groups, when the environment is composed of high commitment units that deliver input to or input from the task group. In this setting it is more reasonable to fix a strategy for a number of periods and not to respond immediately with low activity if the other chooses to stay uncommitted for that single period.

The importance of the promotion, demotion, hiring and firing strategies becomes more visible in this multi-period setting. While wage rates are quite fixed and may rarely be used to elicit desirable behaviour, these strategies are important in determining the officials' lifetime earnings. The combination of long-time (often life-time) employment and wage levels tied to a promotion ladder makes the combination of promotion, demotion, hiring and firing strategies a strong brew of incentives. For example, while firing may be rare in most public organizations, perceived risks of being fired may nevertheless have strong effect because its effects on the long-term employment contracts.

While we so far have assumed that the effects of the choice of strategies by the officials that engage in task-determined meetings are symmetrical, it is clear that only a subset of officials has the power to fire, promote, demote and recruit. Their choices will have effects on a larger number of officials and an even larger number of task completions. If the distribution of committed and non-committed officials in this subset is the same as for the whole population of officials and they prefer other officials to have the same degree of commitment as themselves, their interaction with officials without employment powers will yield the same aggregate result as before.

But here we have found a lever that may move a state apparatus towards low or high achievement equilibriums in more 'economical' ways: the criteria of hiring, firing, promotion and demotion that are actually applied by officials with employment power. In addition to influencing the behaviour of the officials where leaders engage directly in their task solving, the centralization of the state implies that information about their behaviour tends to propagate quickly through the public apparatuses, and may modify behaviour widely. Still, a shift of top leaders from a non-committed to a committed team may not be sufficient to turn any low-activity equilibrium of a state apparatus. Inter alia, any new leadership must be expected to last and be able to supply a sufficient number of new promotion and job opportunities based on effort-inducing criteria: Will commitment and ability to actually solve the tasks the officials get engaged in as officials pay off in the long run?

When interpreting figure 2 and the shifts in the D-curve, the key alternative costs to commitment strategies that shape the shifts will now pertain to the officials with employment power. That is, what are the costs for your standing in outside-the- state relationships if you ruthlessly base your promotion decisions on the basis of achievements or standing of the promoted officials within the set of public organizations? Clearly, these too are likely to vary considerably across countries. I will return to factors that are likely to impact their variation.

5. Kin organization, foreign aid and state commitment

The negative effects of outside commitments on effort levels may become very strong in cases where the employment function in practice is located outside the state. In most cases this happens when kin-based organizations are exceptionally important in the political system or in the organization of other forms of collective actions. They may consist in tribal networks (Kenya), in more ad hoc 'clans' (Azerbaijan) or in political parties, seemingly formal but in practice based on personalized neighbourhood, friendship or network structures.

Thus, kin organizations are not the only informal way the employment function may be located outside the public sector. Formal political parties without strong kin-based selection of leadership may in practice also become deeply involved in the employment and promotion practices in the public sector, as we know from the Scandinavian countries. Anders (2005) describes how even foreign and international aid organizations have set deep marks on the employment and promotion practices of the public bureaucracies in Malawi.

One reason for the overall expected negative effects on effort levels of such practices is that the outside agencies will have less immediate interest in their agents' behaviour inside than outside the frame of the public apparatuses. The resulting loss of internal control and weakening of internal positive spillovers in activity levels make it easier for officials at all levels to get involved in non-state economic activities and move the employment function outside the public apparatuses. A driver may be employed at the ministry not so much for his driving skills, but because of his extensive up-state market network useful for selling the pharmacy products from the shop of a higher official's wife. External distractions may have similar effects on the bilateral task matchings between officials at the same hierarchic levels. How negative the effects of any outside allocation of the employment function become, may of course vary with the character of the outside organization.

Note that unlike direct, subjective costs of efforts as such, the alternative costs of high efforts made by any official within the formal frame of the state in terms of value lost due to his resulting lower efforts expended within the kin organization, political party, and so on, will be more strongly influenced by what the other public officials are doing. [14] Presumably, the more efforts the other officials expend within kin or party organizations, the higher will be the alternative costs of only expending efforts within the formal state framework.[15]

6. Asymmetric effects of downwards and upward shifts in state activity?

So far I have assumed that upwards and downwards shifts in activity levels are rather symmetric. It simply means that public officials shift effort levels with respect to an undifferentiated mass of tasks. Being undifferentiated, there is no reason why we should expect anything but symmetry when average efforts move up or down.

Let us now distinguish between pure information output and the rest. In his book *Anti-equilibrium* (1971), Janos Kornai makes an attempt to construct a language that could be applied to describe any economy in- and outside equilibrium;[16] from a fully centralized planning economy to a fully-fledged market economy together with a multitude of

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[14]   A moving literary description of increasing alternative costs of staying committed is Armah's novel *The Beautiful Ones Are Not Yet Born* (1968) from Ghana. Here his family is increasingly blaming the hero's honesty as his colleagues work less and increase their corruptly acquired income.

[15]   Taking this into figure 1, it means that both the H and S curves will be steeper, and the distance between them at $h = 0$ should be wider.

[16]   Kornai, together with the most theoretically versed economists at the time, recognized that economic theory did not present really satisfactory analyses of market economies outside equilibrium.

other organizational mixes without bringing in any non-scientific ideological connotations. Few have adopted his language, but among its interesting features it proposed a duality characterizing any economic organization or system of organizations (such as the state). In Kornai's language they should all be divided into a control sphere and a sphere of 'real' processes. The control sphere was mainly producing, processing, transmitting and storing information, while in the real sphere economic goods and services were made, consumed, stored and transported and so on. Any real process or activity was controlled in the control sphere

While not fully adopting Kornai's language, let us note that in any matching made for any deliberate task solving, additional information about the characteristics and motivations of the agents and tacit information about the nature of the task are likely to be collected in the matching. The characteristics of this information often make it difficult to convey or to be gathered by outsiders without considerable information loss. It is a case of Hayek's tacit information. This is particularly the case when the agents involved themselves want to hide this information. The most efficient monitoring of agents' behaviour is then the mutual one by agents doing tasks jointly and their neighbouring groups. As the activity levels and the corresponding rates of task completion vary in the government, so will this joint product of information emissions.

 To the degree superiors do not get involved in sharing tasks with their inferiors or the number of tasks per unit of time is reduced, they will suffer a direct information loss. Since a significant share of activities in an organization consists in pure information activities (or control processes in Kornai's terminology); any variation in activity rates is also likely to impact the size and precision of information streams.[17] In low-activity equilibriums this causes additional loss of control by the superiors. A low- activity level state is likely to be difficult to manage. The mutual monitoring of public employees as public agents is weakened. Moreover, the upwards and downwards transmission of information streams is a precondition for keeping a hierarchy alive.

Hence, if a state moves towards low-activity equilibrium, the control activities will weaken, partly due to a slackening of the rate of completion of control and information tasks proper, partly as a side product of the general slackening. This implies that both horizontal and vertical information streams become sparser. In particular, even com-

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[17] Particularly in high effort equilibriums, control sphere activities may crowd out activities in the real sphere, as can be observed in many New Public Management systems. This has been an important feature of public health, school , research, defence and police administration in Norway.

mitted officials with employment power will be unable to base their decisions on merit. They will not know.

The state fragments, and will not be able to react quickly and in a general way on central signals about any potential increase in the expected utility of high commitment choices. The different sub-units may respond quite differently. Hence we should expect upwards shifts in state activity levels to be slower and more fragmented than the downwards movements, but the prevalence of a formal hierarchy of decision-makers with employment powers at any modern state presents a lever that to some extent may speed up eventual movements out of low-activity equilibrium on a broader scale.

7. Activity spillovers between different state agencies

The distinction between control/information and output-oriented tasks is still rather abstract and general. Disregarding the arrangements at the political level, any modern state is in practice divided into a surprisingly similar set of agencies assigned with comparable tasks and aims across countries, but often with varying average rates of commitments among their employees.[18] Some agencies' effort levels are likely to have much stronger impact on the other public organizations, however, and some are clearly more important than others for the underlying issue we address: the interaction between the behaviour of the state and the eventual rise in violent collective action groups.

Political leadership institutions are likely to be the ones with the strongest spill-over effects, as we have already indicated. Politicians have the top formal employment power.[19] Their own degree of commitment is displayed in direct interactions with other public officials and the criteria they apply when employing, firing, promoting or demoting top bureaucrats impact most public organizations. But their behaviour also sends signals directly to lower order officials through rumours and media stories. Shocks at the political level may then change the direction in the whole state apparatus. Since the set of political institutions and the politicians' behaviour –particularly their shifts towards predatory behaviour – have received great emphasis in recent research when explaining state breakdowns, [20] I will not pursue the matter here. We may just note that any of the politicians' capacity to do anything deliberate, whether good or evil, is limited by the ca-

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18   In Andvig and Moene (1993), we also studied the interaction between two arbitrary agencies with different distributions of effort costs, but then abstractly. They could have been any kind of agency.

19   Note that unlike regular bureaucrats, politicians are supposed to interact with a host of non-formal organizations in rather unspecified manners.

20   Researchers like Robert Bates (2008 a,b), Paul Collier (2009) and Buena de Mesquita (2005) have all emphasized characteristics of top level political games when explaining state breakdowns.

pacity of public organizations. To destroy that capacity, intentionally or not, may sometimes have more harmful consequences than any deliberate predation. It is variation in that capacity that is the theme here and despite the obvious importance of political predation, I will try to look at public bureaucracies as much in isolation from the political institutions as possible.

Tax authorities and the central internal monitoring institutions such as the state auditors are otherwise the institutions with the most obvious spillovers. Let us consider the distribution of tax resistance capabilities (and strength in motivation) in the population as given.[21] For any such distribution a tax administration in high- activity equilibrium would be able to collect more taxes than in a state of low equilibrium. To sustain any overall high-activity equilibrium outside the tax administration the state will need a sufficient tax income and a transmission process of it so that the state is able to pay regular salaries to its public officials. This will normally demand:

1) Committed tax officials and officials in the associated administrations. If the tax income is not sufficient and/or the loss during its transmission is too large to pay regular salaries[22], the individual costs of staying committed increases for the officials all over the state apparatus.
2) Apart from committed auditors, it will require that politicians do not interfere with the transmission and skim off too large amounts.[23]

From the point of view of avoiding the low-activity equilibrium it is vital that the economic value of employment power should not be undermined. This implies not only that the state's revenue is sufficient to pay acceptable wages, but that it is able to keep up the economic value of promotions and have a sufficient number of promotion and employment slots available. With a sufficient number of valuable promotions slots open and tied to efforts, the incentive effect is strong.

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[21] The resistance capability is not equally distributed across groups and countries. It is affected by many other factors including tax rates, the set of institutions in the private sector and the economic policy it is exposed to..

[22] The potential problem here may be illustrated with the famous study on leakage in Uganda, made by Reinikka and Svensson (2006). They found that 87% of the capitation grants for non-wage expenditures to a sample of schools disappeared on their way through the public sector. Expenditures meant for teachers' salaries were not skimmed off to the same extent, though.

[23] The main contributors to the leakages described by Reinikka and Svensson (2006) were in fact politicians at somewhat lower levels. In developing countries with extensive poverty, public revenues are one of the few sources of income that is large enough – due to its centralization – to make anyone really rich if he diverts sufficient amounts of it. The temptation is obvious. Collier and O'Connell (2008) refer to a number of episodes where high level African politicians – with examples from Kenya, Nigeria and Chad – have illegally skimmed off such amounts that they have had significant effects on state behaviour and growth.

Corruption in tax administrations (which should include customs in countries where civil wars tend to arise) is an important reason for insufficient public revenue as is embezzlement in the transmission from collection to intended endpoints of funds. We will return to further impacts of corruption on state activity levels and on the opening up for the rise of non-state violent organizations.

What happens in case sufficient public revenue does not reach its intended salary payment destinations? Obviously, the alternative cost of staying committed will increase. In figure 2, the D-curve will move downwards. The impact on activity levels will depend on the size of the shift and the location of the initial equilibrium. If the state was in low-activity equilibrium the effect would be modest, as would the effect from high-activity equilibrium be, given that the shift is sufficiently small. If, on the other hand, the shift induces a movement from high to low-activity (or commitment) equilibrium, the effect on state behaviour will be strong.

What will the officials do? In order to keep up their accustomed standard of living they may now either spend more time on non-state activities, or they may, where possible, do their own private taxation, that is, collect bribes or exert extortion.[24] The movement towards effective fragmentation of the state will then be reinforced.

Note that this process will be influenced by the effective income expectations of the public officials. Hence, non-sustainable income expectations may prove extraordinarily expensive in a poor country through their effects on effort levels.

8. Variation in state agencies' effort levels and the state's exposure to civil war risks

A key characteristic of a state that has 'failed' is that it has lost its ability to physically control some significant share of its recognized geographical space. Competing, potentially hostile organizations arise that may have capabilities to apply violent means in an organized way to control parts of that space.[25] Let us disregard the impact state policies may have on the strength of grudges against the state and their relative occurrence in the population, and look at more technical mat-

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[24] There probably is an element of private taxation in most forms of petty corruption in poor countries. Weber Abramo (2008) found that petty corruption as registered through household questionnaires practically disappeared in countries with GDP/capita above 10 000$.

[25] Most countries have some smaller pockets, typically, urban slum areas that are partially controlled by violent organizations such as youth gangs or organized crime units, mafias. In addition, more beneficiary organizations may operate outside the boundaries of the authorities' control and be, in the main, self-policed: some monasteries and some farming communities composed of members of religious sects or secular utopian organizations. The social and geographical spaces considered here are obviously too insignificant to characterize the state's overall degree of spatial control, however.

ters that may strengthen the state's physical and effective control of a given area.

The first condition is that the state must possess sufficient information about the population and its activities in order to effectively police the area: knowing the issues that may trigger violent collective actions, the possible loci for rebellion, and eventually to be able to identify, locate and possibly punish or 'bribe' potential leaders. The second is to possess sufficient violent means to win any likely violent contest whatever the size and efficiency of the rebel or violent crime organization.

The police and military are of course key when it comes to legally apply the violent instruments for control, but for the first task of collecting information a large number of public institutions are involved. Here, as elsewhere, most of the monitoring made by the public officials is done simultaneously with their task solving. Let us consider the role of the primary schools. They constitute the backbone of the state apparatus in most low-income countries, particularly in rural areas, where most rebellions are likely to emerge. In addition to their teaching, committed teachers will collect information about their students' family situations. Teachers may be checking their identity or in fact give them identity in the many areas where systematic birth registration in fact is almost absent. The schools will be aware of most of the activities taking place in their communities whether there are local famines, or impassable roads due to local floods – active teachers will somehow bring the information to the appropriate authorities. Teachers at secondary schools may also observe nuclei of rebel groups, potential rebel leaders or ethnic tensions at their schools.

On the other hand, teachers may also become practically absentee officials carrying out almost none of their assigned tasks, and local schools may disintegrate into shadow institutions. The consequence is that the state in practice withdraws from these communities. This withdrawal will often be linked to the general low activity– high corruption equilibriums of the state. One major reason for teacher absence will be financial spillovers from the tax administration: that wages may not have been disbursed either due to a slow disbursal process, lack of means due to corrupt and/or slow tax collectors, or the teachers' wages may simply have been embezzled. In any case, the teacher may have to go to the relevant administrative town and stay there for a while to speed up the disbursal of, or to recover the stolen, wages.[26]

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[26] The teachers' political loyalty may in the worse case (for the government) switch from the government to the rebels. If so, they will naturally not do any informal monitoring of their neighbourhoods for the government. The importance of such switches for the progression

Let us now take a look at the organizations directly involved in security, the *police* and the military. Compared to other public bureaucracies, a distinguishing characteristic of the activities of the police in both peaceful and more violent settings is their spatial focus, and how they are operating in a quite unstructured bureaucratic environment. They are supposed to respond to situations as they occur or search for breaches of the law at their own initiative. Normally, the police do not have to wait for informational inputs from other parts of the administration, only from the public. So there are few direct activity spillovers to the police from the rest of the bureaucracy; while there are some from the police to the courts and prison administrations. Monitoring the many different forms of crime implies some kind of (weak) control of space.

Most of the monitoring of the non-state environment that is performed by the police takes place as a consequence of its regular task solving: chasing criminals, crime scene investigations and so forth. Compared to other bureaucracies, they thereby gain a more fine-masked knowledge of the location of a wide set of behaviours across space, which may prove useful also for assessing the likelihood of possible rise of rebellion or larger organized crime units. Like any other public bureaucracy, there are internal mechanisms in the police that may stimulate the officers into high or low activity levels during normal, non-conflict situations. In periods of calm, officers may remain at their police stations most of the time and therefore getting access to less information about the area they are supposed to patrol. In high gear, the police may investigate a large number of cases, patrol intensively and build up a larger knowledge base about their area of responsibility. Like other public bureaucracies, their low-activity levels may be tied to state-wide developments: insufficient tax base, inefficient or corrupt disbursement of wages, severe corruption in procurement, and so on. Slow-moving courts may also tie the effort levels of the police down.

But the police have a legal monopoly on violence in peacetime situations. This monopoly may easily be misused in the often hectic situations that the police are supposed to handle. Open-ended situations and the legal monopoly on violence make large parts of the police respond to unpaid wages by increased extortion. Unlike most other public organizations that display queue-like behaviour, corruption may not induce lower, but rather higher activity levels of the police.

When teachers are confronted with unpaid wages they mainly withdraw from teaching (at the same time as they try to collect some bri-

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of the Mau Mau rebellion in Kenya is lively described in Anderson (2005, e.g. pp. 71–72).

bes from it) and their average activity level declines. The police, on the other hand, are likely to develop a two-pronged 'strategy'. Some will intensify their monitoring of space and become more active as they will look out for more income-generating situations. Their environment will present the police with more tasks as it becomes more violent and as the complementary, informal monitoring from schools, forestry officials and other parts of the public administration recede.[27] If violence increases to non-controllable levels, non-committed police may, however, move into their camps or stations and reduce their activities as a response to increased danger.

Organized crime units will be allowed to grow since they often are generous bribe payers. They may also become active competitors to the police, particularly if their violence capabilities are allowed to match those of the police. They may e.g. start providing competing security packages. As the public loses trust in the police, it will be more unwilling to cooperate with them, supplying less relevant information. It becomes difficult even for well-intentioned policemen to fulfil their task of serving the public. The state loses its grip on the area, despite high but corrupt efforts of the police. A number of quantitative studies indicate that along several dimensions the police are the most corrupt public bureaucracy and, maybe even more importantly in this context, are *considered* by the public to be the most corrupt in most non-rich countries (Andvig and Fjeldstad 2008).

Moreover, both responses imply a de facto decentralization or fragmentation of police response. All in all, the effect is that the value of the information from the police's scanning of their environment will be impaired and not useful from the point of view of the political leadership. Its main interest would be whether some large-scale violent rebellions are to be seen on the horizon. Knowing this, many poor countries may invest in a small, but high quality secret police that are specialized in collecting information and relieved from the task of keeping public order.[28]

As violent conflicts shift in intensity and scale, the role of the police and the police organization itself may be substantially modified. In many countries, the police have paramilitary divisions or are paramili-

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27 So far, we have applied the terms 'commitment' and 'activity levels' synonymously. This may sometimes be misleading. Here they diverge. Non-committed police may become quite active. Other fragments of public bureaucracies may have similar responses. It is, of course, possible to interpret activity rates outlined in the discussion around the Schellling diagram in a more metaphoric sense as 'the effort level of a public official that works in the direction of his/ her organization's stated purposes'.

28 For example evaluating the post-election violence in Kenya 2007-08, the thorough Waki Commission (http://www.eastandard.net/downloads/Waki_Report: 278) found the specialized intelligence apparatus, Kenya Security Intelligence Machinery (KSIM), to have understood the situation well and made sensible advice while the regular police systematically had bungled in their understanding as well as in their deeds.

tary organizations, assigned to handle intermediate scales of conflict, but at the high scale end of violence, the military will have the main responsibility to defend the political elite against potential rebels; and the roles of the police will again change as it will be subject to coordination with the military and subordinated to it.

In this paper, however, we are not going far in explaining the process and characteristics of violent conflicts, or in studying their effects on the state, the private economy and the rebel organizations. Only some of the preconditions for their emergence will be presented.

Seen from the state and the military, the most important additional role for the police during conflicts would be to collect information that makes it possible to discriminate between participants, their degree of participation, and non-participants. Such discrimination is essential to discourage negative individual incentives to participate in rebellious, violent collective action. This is the ideal. In practice we can often observe the police's involvement in the following action sequence: general slowing of public sector activity – lower or unpaid wages for the police – police corruption – less crime solving – less cooperation with the public – more police brutality/corruption – more fragmented police and lower regime legitimacy – a weakened state apparatus. Both the motivation for and the ease in establishing clusters of rebel groups are likely to increase.

The military, on the other hand, is often quite popular and considered relatively non-corrupt in peacetime. Like the police, it is assigned two major roles. On the one hand, it is to serve the public by protecting the citizens against external violent threats and outbreaks of large-scale violent disorder that may more or less randomly pose a risk to their lives and livelihoods. It is also involved in organizing massive population transfers and the construction of improvized infrastructure in connection with large-scale natural disasters, i.a. by providing stricken areas with food supplies and vital equipment. On the other hand, the military is supposed to protect the political elite against large-scale, violently expressed discontent among the citizens, and to assist the elite in its competition with other country elites. Seen from the point of view of ordinary citizens, the military is also capable of inflicting considerable collective harm.

From our point of view, the military is a less complex organization than the police. Under regular, non-conflict conditions it has little interaction with the non-state environment. Hence, the scope for corrupt transactions is limited, and the ones that occur are not likely to trigger any increase in undesirable activity levels before civil war-like conditions have erupted. Given the little interaction with the public, the

state internal mechanisms such as the ones outlined in our Schelling diagrams, are likely to determine effort levels in the military too. On the whole, military employees are likely to follow the overall rates of activity in the state, but with a lag due to its relative isolation. As long as no major unrest has evolved, no visible impact of shifting effort levels in the military can be observed.

Like other public sectors, the activity levels and corruption rates in tax collection are likely to have impact on the military. As usual, in situations of slow effort and extensive corruption in the tax department giving rise to low or missing salaries, the lack of financial means for promotions and relevant equipment will give the effort levels among soldiers and officers a serious dip. The effect may become stronger in the military compared to other public organizations since the military is not constrained by daily incoming tasks given by the non-state environments. Aware of the importance of the military for their own survival, the state-managing elites will , however, tend to protect the budgets of the military in conflict-threatened environments. Given this protection, its relative isolation makes it possible to shield the military from other forms of state-wide declines in activity. It may then stay at higher levels than other parts of the public apparatus.

If the soldiers and officers are sufficiently hard hit by lack of finance, however, they may use their violence capabilities to initiate visible extortion schemes, such as arbitrary construction of road blocs and some other tactics normally employed by the police or it may exert less visible blackmail at the political level.[29] For prospective rebels, predatory activities of this kind indicate state weakness. The prospects of any rebellion, be it military or political, would hinge upon the perceived state of the military and its likely way to respond.

9. Some remarks on regular state and non-state interactions

The heuristic model suggested above was based on matchings internal to the state. Only in this case could we argue that high-activity agents preferred to meet other high-activity agents and low-activity agents other low-activity ones, where the forced complementarities of the transaction technology were an important part of the story. This transaction technology is surprisingly similar across countries. At the outset, we suggested that we may find similar features in many forms of

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[29]   At the political level the military leadership may, like other parts of the elite, also embezzle large funds actively and thereby contribute to the financial squeeze of the military organizations they themselves lead. This triggers commitment problems further down. Since an elite is not a decision unit, it may succumb to defection where the leadership's interests are undermined by the single actor's embezzlement. Extortion by the military leadership is based on their (partial) control of the military instruments of violence. In coup environments, leading military officers will be part of what Bueno de Mesquita et al. (2003) designate as the selectorate, hence they will become politicians themselves.

state–non-state interactions, too. Various forms of state regulation may enforce similar transaction technology. Student–teacher interactions may be a case in point. Here we may even have increasing returns: If a student is taught by a non-committed teacher, the educational output may be close to zero, as would be the outcome of meetings between a committed teacher and a non-committed student. Careful and fast form filling at both the private business and public official ends may be an advantage for both.

Nonetheless, essential state non-state matchings often display a wholly different structure. Taxpayers interacting with tax officials are likely to prefer to pay as little as possible whether they meet a sloppy or eager tax official. A criminal would prefer to interact with low-efficiency police while the crime victim would prefer the opposite, and so on. Where the rules sanctioned are considered legitimate, the general public would approve of hard-working, sanctioning officials, but, nevertheless, the individuals directly interacting with them would often prefer sloppy ones. Hard efforts in tax avoidance will imply lower efficiency in the tax collection. Here we do not have the teacher–student complementarity either.

In traditional macroeconomic theory – the classical area that studies economic interaction between the public and the private sector – the state is mainly considered exogenous and the effects studied are those of state action on the private sector: taxes reduce private activity; public expenditures may increase it, or cause changes in private sector prices. Central banks may manipulate money stocks, exchange or interest rates, but these may also be determined through interaction between private sector activity and public expenditure.

By somewhat speculatively allowing systematic variation in the effort levels in public bureaucracies, some of the traditional economic mechanisms outlined for the state– private sector interaction need to be modified. In some cases, the regular results appear, only reinforced. Consider, for example, an exogenous increase in export prices for coffee in a small economy where export of coffee is a major source of income. The income increase boosts the effort rates in public sector in general, including in the tax administration. The size of the uncontrolled, informal sector will then shrink and a secondary rise in public income takes place together with increased investment in the private coffee exporting sector. Human capital gets built faster, as will public infrastructure and public security. Particularly the latter will give a secondary boost to private investment. The implementation of whatever regulatory structure that is formally valid will become firmer. Presumably, the majority of these public rules make sense and on average contribute to the level of private output.

A negative shock to coffee prices as well will give the opposite effect. The aggregate effect may become larger when the multiplier effects in the private market economy, are reinforced by internal effort multipliers in the public sector. The state may eventually get stuck in a low level equilibrium position exposed to potential, violent rebellions, i.e. become a 'failed' state. That said, there are some situations where the covariance will be negative. For example, we know from a number of OECD countries that increased unemployment levels in the private sector may reduce the absentee rates in the public sector.

Let us now move on and look at the mechanisms outlined and see how they may be applied as partial explanations of corruption and civil war phenomena. As pointed out in Andvig (2008), corruption and armed insurrections are very different phenomena, but they both deal with state–non-state interaction. And they are both connected to low-activity, 'failed' state equilibriums, I will argue here.

10. Empirical indications of effort variation

This section will present a potpourri of observations of state behaviours that may indicate covariance in cross-state effort variations present in our diagrams.

Clear-cut empirical documentation of broad movements in effort levels within the state bureaucracy is however not easy to come across. Effort levels of labour input are generally difficult to ascertain even when the resulting output is measurable (cf. Shapiro and Stiglitz 1984) that it rarely is in the public sector.

We have already referred to work done by Evans and Rauch (1999, 2000). Put briefly, they found (1999) that indicators of bureaucratic performance were most strongly influenced by what we have considered effort-inducing structural features of the bureaucracy: emphasis on merit, non-interference by outside agencies and long career paths. As indicators of bureaucratic performance they used indicators of corruption and red tape. Evans and Rauch (2000) showed that the same structural features had surprisingly strong positive effects on the countries' growth rates.[30]

If we accept that both public and private output and corruption and effort levels are positively associated, Blackburn et al. (2005) and Haque and Kneller's (2007) econometric results are suggestive: countries tend empirically to cluster around a couple of equilibriums: one with

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[30] I will return to the role of corruption in failed states. While effort levels and corruption propensities are empirically correlated (in a negative way), that is not so obvious from a theoretical point of view. I have already argued why I believe that bureaucratic effort levels (and thereby public output) and private output on average covariate positively.

high GDP, high public investment and low corruption levels, another with low GDP, low public investment and high corruption levels. This confirms the multiple equilibrium approach to corruption directly, but it may also, weakly, confirm the multiple equilibrium mechanism in public sector effort levels outlined here. Public sector aggregate output is not a variable, however, since indicators of it are not available.

Historically most of the state's activities in the central planning countries were reflected in measurable output. These countries displayed a wide version in effort levels over time, partly giving a wide variation in their growth rates. While the standard judgment of the growth rates of the Soviet Union in the 1930s has been adjusted downwards from about 12% to 6% in some estimates (Easterly and Fischer 1995), the evidence is strong that the Soviet bureaucracy in this period and throughout World War II was working at high intensity levels under a strong incentives (positive and negative) regime.[31] With basically the same institutional structure, the public apparatuses more or less gradually slowed down into a Hicksian equilibrium of the 'easy life' under Brezhnev with basically zero growth.

An even stronger indication of measurable macro-fragility of public apparatuses occurred when the whole economic bureaucracy of the planned – Soviet Union- influenced – economies was exposed to signals that set their bureaucratic survival in doubt. While their economies still were basically ruled by public bureaucracies, production, that is the public bureaucracy output, declined strongly. The size of the GDP decline compared to its 1989 level ranged from 14% in Uzbekistan to 75% in Georgia (Andvig 2002: 59). On average the public bureaucrats now would choose low-activity levels in their economic interactions. The former criteria for recruitment, promotion and demotions within a given frame of state organizations could not survive under these circumstances and therefore broke down. The contrast to the high, positive growth rate experienced during the market transition organized by China's party- and state bureaucracies is particularly striking.

An even more indirect form of evidence of the effects of macro-variation in state activity levels on economic performance has been present in a few recent analyses of economic growth by Jones and

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[31]   The estimates of Soviet growth rates remain controversial. Sachs (2000) refers to growth rates in the 1930s around 8%, increasing to 9.4% in 1948-1958. A detailed description and analysis of the Soviet managerial incentive structure from its manic phase is found in Granick (1972). A literary witness may be found in Bek's novel *The New Promotion*, published in Germany in 1971. The spirit of the times may be most succinctly expressed by Stalin himself in his old declaration of high incentive intensity intent: 'to burn up cadres[managers] like coal.' By killing a large number of public officials Stalin created an extraordinary large number of promotion slots. Hopefully, this incentive device will never be applied systematically again.

Olken. They (Jones and Olken 2005) first study the economic effects of change in top political leadership: What are the effects on the growth rates of unexpected deaths (sudden illness or accidents) of national leaders when in office. They found a significant change in growth rates before and after the event. The effects were more pronounced after change in autocratic leaderships.[32] A single individual could, of course, by himself have only minor impact. Since in most of the cases the private sectors are either significant or dominating, the impact of any central leadership individual would be through the bureaucracy he/ she directs.

In another paper, Olken and Jones (2008) explore internal variation of growth rates across time for a large number of countries. They found a significant variation of growth rates in most countries. Even the on average slowest growing countries, the 'failures' have had spurts of growth where they have become among the fastest growing in the world. To the degree variations in the effort levels in the public sector are a significant ingredient in growth variation, as shown in Evans and Rauch (1999), these variations are compatible with the existence of mechanisms that allow significant short-run effort variation in any 'modern' state.

An important line of research has revealed significant variations in effort levels of public employees measured by local variation in absentee rates among teachers and health personnel. In data from random visits to random samples of health clinics and schools in Bangladesh, Ecuador, India, Indonesia, Peru and Uganda, Chaudhury et al. (2006) found that, on average, 19% of teachers and 35% of health personnel were absent. [33]Head teachers were absent more frequently than regular teachers, and doctors were more away than nurses. Nor had higher wages any impact on absentee rates, throwing further doubts (in addition to the fact that the higher ranked were more absent) as to whether any principal-agent-like mechanism were at work, at least on the lower levels of the hierarchy.

The absentee rates were higher in regions with lower GDP levels and lower literacy rates. These effects were stronger in schooling than in health institutions. This, together with the overall higher absentee rates among personal in the latter, reflects that health personal have greater prospects of earning income outside their regular hours, showing the impact of outside distractions on government output. The

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[32] With their indicator of leadership quality, one standard deviation improvement of leadership quality causes a 2.1% increase in growth rates.
[33] Cultural or institutional factors were also likely to be influential. Indian absentee rates were fairly high compared to those of Uganda, particularly when taking GDP rates into consideration.

negative impact of higher absentee rates on the outcome of students' learning was significant (Chaudhury et al. 2006).

C. Failed states and violent collective action groups

The set of characteristics of state failure so far discussed is displayed by the modus operandi of the state itself: The state fails by being unable to deliver sufficient amounts of public goods and services through the inaction of public officials.

The existence of violent collective action groups directed against the political leadership of the state is a phenomenon outside the state. In theory, a state may be hard and fairly efficient and still have violent collective action groups operating on its territory. Their existence violates a core characteristic ascribed to any state, however: the monopoly of legitimate use of violence in a territory. If competing organizations arise that break that monopoly, they ipso facto represent a failure of the state according to some definitions.[34] When analysing collective action groups, I will mainly follow standard approaches. They have been organized around free-riding issues (Olson 1965):

Assume that all members will achieve higher utility if the collective action (rebellion) is implemented and succeeds, but that active participation implies substantial costs for the individual. Some of these costs are the same whether the action succeeds or not. The typical situation for this type of collective action, however, is that the expected individual costs will be higher if the group does not succeed. This will only reinforce our argument in the following. But the higher utility associated with victory accrues whether the individual participates or not. Since the potential group is large, the outcome will be the same whether the typical individual joins or not. If he does, he has to pay the costs of participation. Hence, he will free-ride and not participate. Everyone will make the same reasoning and no collective action will take place.

This result is obviously absurd, since voluntary, collective actions do take place. Nevertheless it points to some real difficulties. Moreover, the importance of collective action should not be confined to actual, empirically registered movements. As pointed out in Medina (2007: 3–19), potential rebellious, violent collective action is probably fore-

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[34] If this definition is strictly adhered to, most states will 'fail'. Parts of Harlem were for a long period partly outside government control. Few will define the USA as a failed state in that period for that reason. Like activity levels in general, the physical control of space will often be more or less, not either or.

most in any ruler's mind, and particularly so by rulers with weak legitimacy who dispose weak instruments of force. In the following I will outline how Olson's dilemma may be partly circumvented in the context of *violent* action groups and how the state's behaviour may impact the solutions.

1. Free-riding and violent collective action

The most frequently used practical solution to the free-riding dilemma was not much discussed by Olson: create a *paid bureaucracy* to serve the members' interests. Thereby considerable increasing returns may be gained. Most efforts are made by the paid bureaucrats who are compensated by wages. Regular members pay only a small fee. Most trade unions are organized this way,[35] but this practical solution does not solve the theoretical dilemma: Why pay the fee, if the gains made by the trade union's efforts have to be shared by non-members? Moreover, violent collective actions directed against the formal state may not in any case be left to a small bureaucracy. A large fraction of the members have to participate in the actual fighting. That major task cannot be delegated to a bureaucracy.[36]

A second way to overcome the free-riding issue is to hand out positive *selective incentives* conditional on participation. Some are tied to the process of fighting itself:

* The consumer goods baskets handed out to the fighters are important and will be handed out whether the group in the end wins or not. It is easy here to discriminate between participants and non-participants.
* Possible allowance to loot may generate positive selective incentives, but this is likely to have negative effects on the organization's prospects of winning the conflict. Moreover, negative selective incentives are even more typical and closely related to the violence:
* Even in civil wars where the loss of life among civilians is extremely high, the conditional probability of being killed is considerably higher when joining a violent group than if one stays uncommitted.

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[35] Alternatively, one may regard trade unions not as any collective action group, but rather as a way to organize *potential* collective actions (strikes) and their bureaucracies as a costly signalling device for such actions.

[36] Most of the fighting I have in mind is taking place in areas of poverty. Violent rebel groups have to ensure the access of food, accommodation and clothing to its fighters. Hence, it is possible to consider participation in their fighting as a kind of wage contract and the rebel army as a bureaucracy. Only the members who support the fighting without receiving consumer goods baskets may then be considered voluntary members of a collective action group.

* Particularly for non-fighters, the members may receive strong se-
lective penalties from the authorities in areas controlled by the gov-
ernment.[37]

Some conflicts last for so long with apparently so uncertain outcomes
that the motivation for the violent collective action by the members
may appear to be the process of fighting itself and the incentives it
may yield.

The free-rider issue may be circumvented by the use of *force*. By the
very nature of its violent form, force can be more easily applied to mi-
tigate the free-rider problem in rebel movements than other forms of
collective action: members may also be recruited by force since they
may be prevented from quitting by the same instrument.

The major aim of any violent contest is nevertheless to win it. A major
motivation for joining any violent collective action voluntarily is the
members' assessment of the prospects of winning and of what the out-
come would be in case of victory or defeat. Regarding the prospects of
winning, the argument is simple: If the probability of winning is low,
it makes no sense to join. However, if the prospects are good, the free-
riding issue will reappear:

Even if a victory means that my situation will improve a lot, it does
not follow that I will join if the aim can be achieved without my par-
ticipation. Again, for me to join any violent collective action, some of
the positive gains have to be conditioned selectively on my participa-
tion. This has to be considered against the punishment I will meet as
conditioned on my participation in case of defeat. Gains and losses
have to be weighed together with my assessments about the probabil-
ity of victory or defeat. That is, if my calculus is wholly based on the
effects on myself. Naturally, as the probability of the success in-
creases, the expected, individual gain from these end-state utilities
also increases. As the number of participants increases, the likelihood
of winning also goes up. Given these considerations, we may draw a
similar 'tipping model' diagram as figure 2, except that the variable on
the horizontal axis now, y_e, is the 'expected fraction of the potentially
winning violent coalition that may participate' and on the vertical axis
y is the 'actual fraction that participates':

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[37] In the Mau Mau conflict the members of the Kikuyu tribe who didn't join the rebels, but
joined government forces could receive high rewards in terms of land. In areas at least
partly controlled by rebels, non-members may be the ones who receive punishment. Ka-
lyvas (2006) have studied the systematic punishment distribution hinging upon the par-
ties' degree of physical control in the contested territories.

Figure 3. 'Tipping' mechanisms of violent group membership
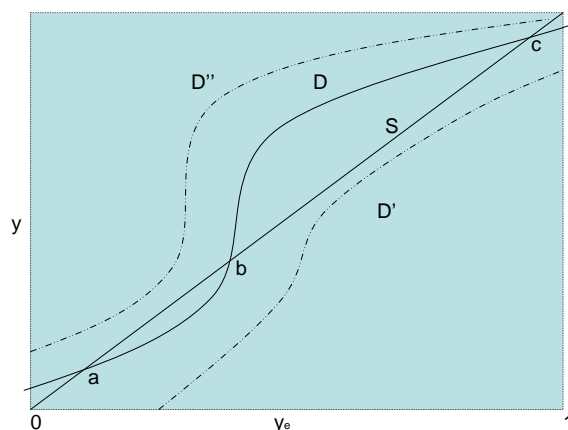
The S-line indicates potential equilibrium positions where the actual membership rate is equal to the desired one. The solid D-line is the starting point for the analysis. Here the point **a** is the stable minimum level of participants in violent collective actions in the society in question. They could either be committed enemies of the regime that will fight whatever, or a stable level of organized crime members. **b** is an unstable equilibrium. With expected membership below that point, the size of the violent group will shrink until it reaches **a**. With expectations above, the group will expand till it reaches **c**.

The s-shape of the D-line is based on an assumption that the potential group members' strength of motivation, or threshold for participation, differs but is concentrated around a typical value. The distribution of motivational strength may be based on different assessment of winning probabilities, of expected excludable benefits across individuals or sub-groups during the fighting or after victory, varying degree of risk avoidance, different objective risk situations, different experiences with state predation generating a distribution of hostility, and so on. The number of possibilities is large, but need not be specified at this stage. [38] Whatever the main motivation, it is likely that the individuals' thresholds of participation will vary.[39]

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[38] While Wood (2002, appendix) emphasizes distributions of a number of emotive or other-regarding motives, Medina (2007) focuses on individuals' (sometimes expected) self-regarding utilities.

[39] To assume that the distribution is bell-shaped may be rather unrealistic in a number of situations. For example, if the motive for violent collective action is the individual members' greed, a small number may operate close to a diamond mine and realize exceptional gains while the rest may expect more uniform gains. The distribution may then be unimodal, but skewed. If it is revenge for government collective atrocities, a large number of distributions is possible. Generally, we should expect different groups, such as different tribes, or leaders and followers, to be exposed to different selective incentive and punish-

Following Medina (2007: 136–139), it is reasonable to believe that the location of **b** will be determined by the size of selective incentives and punishments. The larger the selective gain of participation for the participants in case of success is compared with the selective costs of participation in case of failure; the closer is **b** to origo. Roughly put, this means that it is less likely that the violent group in question will unravel, and more likely that it will be drawn towards its maximum size. If **b** moves to the north-east in the diagram, however, the area where potential revolutionary expectations will be frustrated by reality has increased.

2. The interaction between the size of violent groups and state effort levels

In what ways will changes in the state effort levels impact violent collective action? Let us consider the high effort equilibrium of the state. Except in the case where the state has a clearly predatory leadership and applies the state's bureaucratic efficiency for purely exploitative purposes, this will mean:

i) A fairly *high supply of public goods and services*. This again implies little may be gained for the average citizens through leadership changes achieved through violent collective action if the later is not predatory in intent. This would impact negatively on any recruitment to the collective action.[40]

ii) A higher fraction of committed state officials (particularly committed army officials) implies that the *probability of winning a contest* is lower. Hence, not only is the value of a successful contest (compared to the state before the pre-rebel act) lower, the expected value of any gain naturally decreases when the probability of reaching it goes down while the expected value of any loss-connected group punishment increases, but to a lesser extent.

iii) A higher fraction of committed state officials will mete out more precise *selective punishment* to active participants. If the theory of collective action outlined above, where we take free-rider issues seriously, is correct, this is an extremely important mechanism. To have the full motivational effect, both rewards and punishments should be allocated precisely between participants and non-participants.

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ment schemes, hence, to have different threshold distributions. In such cases we may get more complicated D-curves, for example a bimodal one with four equilibrium points.

40 Strictly speaking, if all potential participants have only self-regarding utilities, only selective incentives, excludible utility gains achieved by the individual conditioned on his participation, should matter. In practice, a substantial fraction of prospective members of violent collective action groups will be other-regarding. Hence, the extent of expected aggregate welfare improvement will be part of the motivation and increase expected membership.

While most selective rewards will be handed out by the collective action group in case of success, most of the punishment will be meted out by the state during the fighting period whether the venture is successful or not. To successfully discriminate, the state needs fine-grained information. We have already seen how important a wide set of monitoring activities is for a state to rule an area. Like any other state activity, monitoring may be performed at high or low effort levels. Performed at low levels, the state will be less able to mete out selective punishment. If punishment is not imposed selectively, not only will the effect of the punishment to prevent recruitment to the violent collective be smaller, punishment wrongly meted out to non-participants may stimulate recruitment of other-regarding individuals to the rebellion. By being unable to discriminate, harsher aggregate punishment may be considered necessary to make the same preventive effect on self-regarding potential members. The public apparatus that is most important for handing out selective punishment to supporters of the rebels is, of course, the police. [41] To fight it as a collective unit, the military will be the most important body.

As long as the state is in high effort equilibrium, it has the capacity to act deliberately on its knowledge that violent group membership is cumulative in nature. Hence, it is likely to make substantial efforts to prevent it from growing and in most cases, the state will succeed. The potential of violent rebellion remains invisible to external observers, but may still be important in the political leadership's mind. If, on the other hand, the state is in low effort equilibrium, but still no larger-scale, violent collective action has arisen, the situation is different: While the political leadership may try to let the situation stay that way, it does not possess the necessary instruments. At the same time as the low effort equilibrium of the state apparatus stimulates forces that reduce the individual thresholds of participation for prospective members of violent collective action groups, the state loses capability to carry out any deliberate policy, including rebellion prevention.

So far we have seen that changes in the state effort levels are likely to have strong impact on possible growth of violent collective action groups. The mechanisms sketched out in figure 2 will obviously impact the ones sketched out in figure 3. Moreover, under certain conditions, the state may use its knowledge about their conditions for growth through deliberate policy interventions.

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[41] International organizations and foreign powers are also likely to lack the necessary fine-grained information and will therefore tend to operate in a similar manner as a weak state but for different reasons. The colonial police in Kenya were unable to locate Mau Mau supporters without the assistance of local informants who had strong self interests when identifying them. One of the consequences was that violence was meted out in a non-discriminating fashion.

What about the violent action groups: Will their size and behaviour have impact on the state's effort equilibrium? Here, a natural question to ask is whether a civil war may shake a state out of a high- into a low-activity equilibrium or the other way around? Or may it rather reinforce the entrenched, ruling equilibrium? Moreover, assuming that the state bipolarity theory is useful, do the rebel leadership groups have any instruments for deliberately moving the state into low effort equilibrium and hence increase their own prospects for victory? If our theory is correct, the last situation may rarely arise, however, since if the state is in high effort equilibrium, potential violent action groups will only be small and local and not possess any policy instruments to speak of in the first place, except maybe terrorist ones.

The first question is then whether the *threat* of violent rebellion may move the state apparatus from a low effort to a high effort equilibrium. It is reasonable to hypothesize that threats against the state's survival might increase the share of its employees who become committed. The effect of wars on the strength of the state has become an important subject in historical sociology. Based on European experience, Tilly (1992) has famously argued that the European state apparatuses hardened because of a number of interstate wars. However, the same seems rarely to have been the outcome of the large number of intra-state wars that took place in the post-colonial period, although survival apparently was at stake here too.[42] Why not? An obvious hypothesis is that a substantial fraction of state officials in civil war situations identify with the rebel group. It then becomes difficult to have a sufficiently large fraction of committed officials to tip the state into high effort equilibrium. Moreover, unlike members of the rebel group, large fractions of state officials are likely to keep their positions or improve them in case of defeat. By assumption, the rate of task completion is low at the outset and demands smooth cooperation between the officials involved. With increased political differences, faster completion rates appear implausible.

Summing up, if our model framework for catching the interaction between the state and violent rebellion is appropriate, the behaviour of the state appears to have significant impact on the rise in violent collective action, while the effects from the behaviour of rebel groups on state capacities are uncertain at best. Most (among the few) cases of significant changes in the direction of high effort states after sustained periods of violent rebellions have taken place when the rebellions have been victorious. The most striking recent case here is Rwanda.

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[42] The civil war in China is an obvious exception. The Kuomintang state was able to create a committed apparatus at Taiwan after their defeat. Otherwise, it appears that when any post-conflict hardening has taken place it has been associated with the cases where the former rebel groups have conquered the state. Candidates here are Mainland China, Vietnam, and to a lesser degree Rwanda and Uganda.

Representing a minority, relatively high efficiency was a condition for the rebel group to be victorious. For the same reason (its minority political basis), the threat of rebellion is likely to remain an important part of the motivation among the present state officials to stay committed to high efforts.

3. Kin-based links between low state effort equilibriums and violent collective action?

We have looked at the effects of variation in state efficiency for possible rise in violent collective action groups. The effects worked partly through the welfare of citizens, partly on the prospects for a military victory of non-state organizations. Surprisingly, the effects went in one direction – from the state – and the argument appeared to be quite general as it did not specify any institutional structure outside the state and the rebel group(s). It is obvious, however, that neither organization works in an economic or institutional vacuum. One of the clearest results from the econometric research of civil wars is that low GDP/capita increases the risk of their outbursts. We have linked this to low- commitment levels in the public sector, but there are of course many other factors at work.

Until fairly recently, the prevalence of ethnic divisions was considered to have only minor effects on the actual triggering of civil wars according to most quantitative studies. This result has been modified lately.[43] Bates (2008a: 9–10) now considers ethnicity and violence as jointly 'produced' by state failure. Here I will look at some aspects of kin-based organizations that at one hand makes it more difficult to populate formal state organizations with a high fraction of committed officials and at the other hand may ease the creation of violent compared to peaceful forms of collective action. Kin-based organizations and values are particularly prevalent in a number of African countries[44], but have strong impact in most poor countries. In some, they may have a basis in specific ideology, but everywhere family units dominate primary production units, which makes it 'natural' to apply similar modes of person-based organizations in other contexts . Often larger scale income redistribution and informal insurance schemes and access to land are based on individuals' position in kin-based nomenclatures.

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[43]   The confidence researchers had in this negative result is somewhat surprising given the obvious lack of correspondence between the statistical indicator for ethnicity used (an old indicator of the number of tribal units within a country borrowed from Soviet ethnography) and the strength of ethnic divisions.

[44]   Compared to other regions, Africa has an oversupply of civil wars, about 50% of the ones between 1970 and 1994 [check reference, Bates 2008a?]. Alesina and Guiliano (2007: 41) note that the two sub-Saharan countries in their sample have the strongest expression of family values, as recorded in the international social value surveys.

A key problem with kin-based organizations and values, from the viewpoint of formal organizations, is that they may create divided loyalty. This makes it

i) more difficult to create and maintain high effort equilibrium if status and efforts inside kin organizations become main criteria for *hiring, firing and promotions* in the public sector, supplanting merit and formal competence. In extreme cases, whole, large groups with a certain shared kin affiliation may be defined as unemployable. Hence, significant sources of talent remain untapped. The existence of working kin organizations may further

ii) increase the officials' counterproductive efforts – always present as a possibility – inside the bureaucracies to *block rivals' accomplishments*.

iii) Duties owed inside kin contexts tend to *increase absentee rates*, except when the officials are serving their own kin or neighbours, as shown in Chauduri et al. (2006). They may also in other ways reduce the efforts spent inside the public organizations.

iv) It drains the public sector of income by creating illegal transfers from high income employees to their kin hinterlands.[45] As pointed out in Andvig (2006), extensive kin-based organizations and ideology tend to go together with extensive corruption in the public sector.

The prevalence of kin organizations that criss-cross the private and public sphere may also – at least up to a point – stimulate violent forms of collective action. We have already pointed out some of the mechanisms:

a) By weakening the effort levels in the public sector it increases the rebel probability of winning violent contests, and therefore makes it easier to recruit new members.

b) The use of kin-nomenclature simplifies the restriction of public goods that result from eventual victory to members of the collective action groups. When allocation to jobs in the public sector is heavily influenced by kinship and some kin groups are denied access, the individual route to riches and power through public employment, with subsequent private taxation (corruption), may be blocked for their members. Hence, not only does the prevalence of kin distinctions make it easier to exclude non-participants from sharing the collective prize, the value of the individual prizes may also be larger. It will be more to gain by violent collective action by members of excluded kin groups.

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45 Several interesting models that bring this behaviour into a wider context have been constructed by Azam, e.g. Azam (2008).

c) On the other hand, the government should also be able to hand out punishment more accurately with a publicly recognized and observable kin classification system.[46] [47]

d) The combination of a) and b) mitigated by c) creates links between kin-based organizations and the propensity to violent collective action. There are other factors likely to favour kin-based organization of collective forms of violence such as established norms of reciprocity.[48]

e) Kin-based organizations may also more easily create negative selective incentives against free riding. On the other hand, the kin nomenclature may also make it easier for the authorities – at a given effort level – to punish members for active contributions selectively if the nomenclature and the fighting are public and easy to recognize.[49]

f) Compared to other potential violent action groups based on poverty levels or class, kin groups with an economic basis in agriculture or urban slum areas are naturally clustered geographically, which makes it easier to search forms of organization that enable geographical control, that is, organizations that may more easily apply violent instruments at an early stage. [50]

g) Compared to other potential violent action groups based on poverty levels or class, kin groups have the advantage of encompassing both poor and rich members. The rich may then finance the conflict labour of the poor and to some degree lessen the financial restraints on fighting that may restrain collective action groups when all the members are poor.[51]

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[46] Anderson (2005) shows that it was possible for the British to restrict punishments to members of the Kikuyu tribe during the Mau Mau rebellion. That, combined with the fact that most of the expected gains in case of victory would be restricted to members of that tribe, prevented any multi-tribe rebellion. That the British were unable to distinguish between supporters and non-supporters in many situations fuelled the conflict, however.

[47] Another countervailing factor is that the officials of ruling kinship coalition now may risk to loos their public sector jobs and may now have stronger incentives for high efforts choices. Why this potential hardening of the state rarely has been observed is somewhat puzzling, but may be due to the all the negative kinship mechanisms outlined here.

[48] Habyarimana et al. (2007) usefully classify arguments for why intra-ethnic provision of public goods is higher than cross-group provisions. In their experiments with respondents from Ugandan slum areas they found that the higher intra-ethnic ability to develop reciprocity, including a willingness to mete out negative sanctions, was the most effective mechanism, if the reciprocity was acted out in public.

[49] If the violent organization is secret and criminal, kin-based organizations may be more difficult to penetrate and will have an advantage on this score too, cf. well-known data about mafia organizations.

[50] In Europe, the working class movement only began to look for a development of geographically based working councils when the expected conflict level was extremely high under or just after World War I. As the working class power ebbed in 1920-21, the emphasis on local, geographically based power also declined (Maier 1975: 150). Collective ownership to land based on kin groupings is in various ways an important source of conflict in a number of African countries.

[51] In a model where there are class division in each ethnic group, and class conflicts and ethnic conflicts are both possible, Esteban and Ray (2008) show that this is a key mechanism that may make ethnic conflicts the salient ones. At the early stages, the existence of fairly rich supporters, such as the Koinange family, might have been important for the triggering of the Mau Mau rebellion – as their withdrawal might have been for its demise.

D. Corruption, state failures and low effort equilibriums

A violent rebellion is a violation of the core institutional rule that the state has a monopoly on force, including its lawful delegation. It comes as a direct challenge to that rule. Corruption, on the other hand, represents numerous breaks to a myriad of rules that agents of the state are supposed to adhere to, but which they violate (or challenge) when pursuing their private interests. In both cases, however, the violation may be motivated by the individuals' private economic interests or by their adherence to non-state loyalties.

 Both sets of behaviour may reflect related forms of state weakness and are included in our intuitive notions of what constitutes a state 'failure'. In the case of rebellion, it is the strength of the physical force apparatus and the state's overall monitoring capacity that may appear sufficiently weak to leave it open to challenge. In the case of corruption, the monitoring apparatus may appear so weak or unreliable that agents expect to get away with their violations undetected or at least unpunished. Seen from the point of view of economic theory, they raise two questions, however: Why will anyone ever join a violent rebellion; why will not every public official always engage in corrupt transactions?

The focus here will be on possible links between corruption and the state officials' effort equilibrium. Unlike the case of the relationship between effort level and the rise in violent collective action groups, the relationship here is essentially two-way: corruption contributes to forces that tend to move the state into lower efforts, and low efforts stimulate corruption. This clearly appears to be empirically the case, but it is not obvious:

It is possible to imagine a hard-working bureaucracy that is thoroughly corrupt: The potential bribe giver (the 'client') may be willing to pay an official more if he makes large efforts on his behalf. Thus, it may pay off to be a hard worker. Since the superior of the official in a corrupt state will tend to receive a large share of the corrupt proceeds, he will tend to employ and promote officials that collect more bribe income, and who, in this case, happen to be the hard-working ones. The lower officials, on the other hand, know that their superior collects from a larger number of inferiors, and is able to amass much lar-

ger proceeds than they are. Hence they are eager to get promoted. The most hard-working ones are likely to succeed in such a system.

As far as I know, it has to my knowledge never been observed on a wider scale, however. In certain situations corruption may speed up specific procedures, but on average it pays to go slow in order to collect, and experienced observers interpret slow-working bureaucracies as signalling corruption. Why this is so, again, is not so obvious. Specification of queuing models can elucidate part of the economics of the story (cf. Andvig 1991), but sociological mechanisms such as corruption's ability to destruct 'corporate coherence and esprit de corps' (Evans and Rauch 1999: 750) may be even more important. After all, a major output of the state is to 'produce' and implement a set of public rules. In addition to services like public education and health, these rules are the stated aim of public bureaucracies while a large fraction of corrupt transactions are based on the fact that citizens and enterprises are willing to pay public officials *not* to follow them. When done on a regular basis, these rules cease to have effect, and the state in fact withdraws from its arena. It fails.

1. An example of corruption as a partial state failure

Let us highlight the relationship between corruption, effort levels and the supply of public output; this time by presenting a stylized example instead of sketching a general model:

Imagine a tropical country that needs to tax imports to finance its public sector, so import taxes are fairly high. Unlike many other countries, the political leadership intends to apply the import taxes to redistribute income from rich to poor, and it also has some environmental and employment concerns. Hence the country fixes the tariff rate on refrigerators to 20% and washing machines to 40%.[52] Assume that washing machines and refrigerators weigh about the same and are imported in containers that have to be opened and inspected in order to determine their contents.

Regard an importer who ships a container of washing machines (legal tariff rate 40%). Against a false declaration the customs officer reclassifies them as refrigerators (20%). The importer and official divide the proceeds so that the importer pays in fact 20% in taxes while the customs officer receives 10% as bribes, an effective tax rate of 30%. In this situation it is not in the interests of the customs officer to slow the shipment, although it will take time to negotiate the deal. But it is in

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[52] Alternatively, we may imagine the political leadership to be predatory and to reflect the relative power of the rich. Hence, it will prefer to tax the poor, which here would mean that the rates on refrigerators vs. washing machines are switched. Needless to add, that is what leadership in most poor countries do.

the interest of the custom officer(s) as well as the importer involved to keep the transaction as secret as possible: The overall state system of monitoring is weakened since the authorities will not know that a container of undesirable washing machines is moving through their harbour. In addition, the state will have lost the 20% income that could have been spent on guns or schoolbooks.

Whether the superior officer is lazy or corrupt, the corrupt transaction has been easier to perform if the internal monitoring system is weak. Here, low effort levels at the higher ranks give increased scope for corrupt transactions. Low effort level may in this way be said indirectly to contribute in *causing* the corrupt transaction, while the latter is weakening the state's ability to monitor its environment as well as its tax base and thereby, possibly, effort levels in other parts of its apparatus.

Let us now look at the situation where the importer has refrigerators in her container and is entitled to pay only 20% of the value of the goods in tariffs. The custom officer may still demand 10% in bribes. Now the effective tariff rate including bribes will be 30%. To be able to collect bribes on this shipment, the customs officer will seek to delay the paper handling, insisting that the importer is cheating and really is importing washing machines, but wants to avoid taxes. The importer and custom official have opposite interests in this case. The harbour will be clogged with refrigerators.

Marginally, this corruption-induced slowing down of task completions in the customs contributes negatively to productivity in the private economy. Note, however, that while a corrupt superior in the former case was completely useless for the lower official's bribe collection, he is now essential to extort the bribe from the importer since the latter now will try to complain.[53] He needs the superior's cooperation to make his threat credible: if the bribe is not paid, the goods will be reclassified as washing machines and hence 40% tariffs have to be paid.

In this case, low effort levels in the state surroundings of the corrupt transaction are not an active cause for the slow movement of the goods across the customs. Here it is the corrupt transaction itself that directly *causes* a slowing down of the effort levels in the harbour. More importantly, the main 'output' of the state's involvement here: the rule that 'import of washing machines should carry 40% and re-

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[53] In practice, custom officials may need the cooperation of international shipment inspection bureaus that the country's authorities may have hired to keep up the taxable income from imports. While exporters and importers may share a common interest in classifying goods fraudulently to minimize tariff rates, custom officials and employees may sometimes collude to move in the opposite direction. Bureau Veritas has, for example, once been expelled from Madagascar for engaging in illegal transactions of this kind (Razafindrakoto and Rimbaud, 2007).

frigerators 20%', would be completely undermined by the combination of corrupt transactions in the two situations. The combination of extensive corruption and low effort levels at the import points has made the state unable to implement it. In this line of activity, the state has become weak. It has failed to implement its own rules.

2. Low effort levels and corruption

Let us now look at the broader stylized ('ideal type') situations of interaction between corruption and effort levels in high versus low-activity equilibriums, beginning with the low equilibrium situation.

Here the rate of task completions is comparatively slow both internally and in relation to the non-state public. This implies that the officials will be less task-motivated, and sharing less work, they will know less about the work of the others. The rate of mutual monitoring between officials will be low, which will by itself facilitate corrupt transactions. Since the latter often will be of the first harbour kind, they will be difficult to detect since they will be of advantage to all directly involved. Colleagues and the immediate superiors will often be the only ones in a position to detect them. Low-activity equilibriums will also be characterized by few promotions, and few based on task completions. Hence, officials will tend to look for other strategies in order to improve their economic lot. Complaining importers in the second position will only get a slow response. In fact, the slow rate is a condition for corruption.

As pointed out above, low rate in tax collection is an important characteristic of low state activity equilibriums. Low activity in tax collection and its slow and sloppy disbursement to other parts of the public apparatuses make it difficult to pay officials in other government sectors sufficiently high and regular wages. They again have to think about other ways than task completion in order to gain their income. Corruption in tax collection (cf. our first harbour case) and embezzlement in the disbursement process, will strongly exacerbate the problem. Public officials will then have to fend for themselves. Teachers, nurses, and so on, will have to do their own private taxation, i.e. to demand bribes for their economic survival.[54]

A public sector job becomes an unpaid licence to collect.[55] To receive such licence payment is still needed, however. Superiors who control

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[54] It is an interesting, but unexplained fact that such tax collecting anarchies seem to generate extremely uneven distribution of income among public employees.

[55] The licence to get a job is often not free. On the contrary, an informal licence may be quite expensive and in the case of exceptionally profitable positions, such as many jobs in the customs, may constitute more than 100 times the official wages of the job in question (Andvig 1999).

the employment function may now amass considerable income through direct job selling and the subletting of rights to job selling, that is, their control of promotions.[56] When capitalized this way, the pressure on inferiors to do the primary corrupt collection naturally increases since they now have to cover the capital costs. To keep this structure going, the major preoccupation of the state becomes quite predatory; to collect as much income from the non-state citizens as possible. At the same time it will be effectively decentralized, or rather compartmentalized. Even when its very survival is threatened, the collective actions necessary to bring the state out of high corruption–low activity equilibriums are difficult to achieve.

3. High-activity equilibrium and corruption rates

Let us now take a look at the *high-activity equilibrium*, and its conditions for the growth of corruption transactions and their potential feedbacks on that equilibrium. In this situation, the non-state environment will normally feed the state with a stream of new tasks. Adding those to the internally generated ones, most government officials are staying quite busy. That includes tax collectors, so sufficient income is generated to keep wages and promotion probabilities at acceptable levels. Task motivation is widespread and sustainable.

The frequent interaction during tasksolving and the high effort levels in the control processes make each official exposed to significant monitoring from the control institutions and – more importantly from colleagues, who often are the only agents likely to be able to know whether a given transaction has been corrupt or not. In particular, superiors and inferior officials are doing many tasks together. In this setting, it becomes difficult to make potential corrupt transactions with the non-state environment sufficiently secret to ensure low risk completions of corrupt deals. If exposed, they are likely to be fired, and even suspicions may easily reduce promotion probabilities.

It does not follow that no corruption is taking place in this situation. Some administrative bodies make decisions or possess information that is extremely valuable to private agents where it is very difficult to

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[56] Incidentally, this feature of job selling may also be observed in states that have not moved this far into a low-activity trap, but where corruption has become quite organized. Its classic description is Wade (1982) and it has been commonly observed in otherwise fairly well functioning countries in South Asia. One of the likely reasons for its evolvement is that it allows considerable transfers of corrupt income upwards at the same time as it reduces the risks and transaction costs for the superiors in states where there are some policing of corruption. If a higher official has to stick his hand into every corrupt transaction of his employees, he will be involved in a considerably larger number of corrupt transactions than his subordinates. Even if the risk of being caught may be small at each transaction, the cumulative risks for a superior will be quite high. In caste systems like India's this job selling has the additional advantage that higher officials, let us say in the police, who usually are from 'cleaner 'castes, may avoid becoming dirty.

identify transactions as corrupt or not. Here, corruption arise quite frequently, but mostly with limited feedback effects on activity levels since the high risk areas, such as building regulation and public procurement, normally involve only a few public employees whose behaviour has limited potential for imitation by other agents in the public sector (often only specialists within municipal bureaucracies are involved), but the economic values involved are substantial. Note that we here disregard what takes place at the political level.

4. Shocks and co-variant shifts in corruption and effort-levels

The extent and severity of corruption across countries vary considerably. One reason is that corruption like the state's effort levels are phenomena that are likely to stick at different equilibrium levels (Andvig and Moene1990). For the single country, this also implies that corruption levels may move from one equilibrium level to another given the right kind of shock. While both are likely to be influenced by a host of cultural factors, partly determined outside the government apparatuses, it is also for that reason difficult to believe that most equilibrium shifts are due to sudden changes in citizens' attitudes or values. It is, for example, difficult to envision that the non-state population would suddenly and by itself be more willing to pay bribes. Shocks hitting the state apparatus are a different matter.

Since both the management structure and the distribution of income collected are centralized, the state is particularly sensitive to negative shocks that hit its tax collection or at the political level. Here, shocks may cause sudden shifts in the income and activity levels of the public officials. This will cause an immediate increased demand for corrupt income on the part of government officials, followed by a weakening of the monitoring structure that will eventually cause an upward shift in the actual corruption propensity. Typical negative shocks are:

1) In smaller, poor nations a sudden *decrease in export prices* may significantly decrease the tax base, reducing public sector's wages and the number of promotion slots, shifting the officials' attention away from task solving to bribe collection. Here, the number of jobs in the private sector will also decline, making out-migration from the state difficult.

2) *Deliberate retrenchment*, for example due to fiscal considerations or ideological shifts in a state geared towards expansion, may also cause a sudden decline in promotion probabilities. In addition to causing an exodus of state officials to relevant employment possibilities in the private sector, a decline in task-directed effort levels combined with increased search for more or less illegal -at the job-

search for external economic opportunities including bribes may be induced.[57]

3) The centralized character of the state implies that *shocks hitting or emitting from the top leadership* may, as we have already seen, have significant effects on the activity levels in both the private and the public sector. As remarked by Bates (2008a), a centrally placed politician who embezzles significant parts of the state's income, creates a negative shock both through the effects of the income that disappears and through the signal the act sends down throughout the hierarchies. The leadership is watched by all officials.

Shocks of this kind will contribute to any observed co-variation between the effort levels and corruption rates in the public sector. Presumable the effects on effort levels should occur faster since it is easier for an official to reduce her effort level than to organize and complete new sets of corrupt transactions.

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[57] Here I should add that in states with fairly strong control processes and where principal-agent models are the most relevant ones, the opposite result would be predicted: the fear of losing the job could eliminate corruption like in the Shapiro-Stiglitz (1984) model. This is a stronger mechanism in the first example, where the employment in both the state and non-state sectors is turning down. But it presupposes the existence of principals that may not hold when the state weakens

E. Conclusions and summary

Bates et al. (2002) explained state failure by means of a game where the violence apparatus is separated out as an acting, centrally directed unit. In a peaceful equilibrium, citizens spend their time on leisure and work, pay taxes that the military receives and make efforts to uphold the rule of law. If the taxes are insufficient to satisfy the specialists in the wielding of violence, another equilibrium results: The military will seek to coerce tribute from the citizens, the citizens will spend time on violence and refuse to pay taxes. Production will decrease, partly because more time has to be spent on violence (defensive or aggressive), partly because the citizens will seek to shield themselves from public and private sector predation.

This is a 'state failure'- equilibrium. Whether this will occur or not hinges upon whether it will be 'profitable' for the violence specialists to start coercive tribute collection in a peaceful situation compared to what they receive in regular taxes – with due consideration to the expected decline in future tributable output that will be the outcome in the resulting succession of violence equilibriums.

The observable outcomes compatible with this game are not different from what we have outlined above: corruption increases and output declines go together with an increased propensity to violence. Large-scale embezzlement at the political level seems an important triggering mechanism, but others are also possible. Bates et al. (2002) take better care of output responses from the private sector since their model, in this sense is a more genuine general equilibrium model. We do not specify production but simply assume that private sector production and public sector effort levels co-vary in the aggregate due to dominant complementarity, so we may focus on variation in public sector effort levels only.

The main thread of our analysis of state failure is the following. There are three major symptoms of state failure: Low effort (or commitment) levels among public employees, extensive corruption and rise in violent rebel group(s). The idea of the paper is based on an assumption of multiple equilibrium effort levels among public employees. Effort and corruption levels are co-variants, but have a causal effect on the feasibility of constructing violent collective action groups through their effects on the probability of winning violent contests and, thereby, for the recruitment to violent groups. The feedbacks from these on the effort levels among public employees appear weak, but the potential

existence of strong kin-based coordination devices outside the state and the violent groups may connect them in different ways. I argue that they tend to undermine high effort equilibriums and stimulate corruption in the public sector, while in some ways ease the recruitment to violent groups.[58]

In a related paper (Andvig 2010), I argue other reasons why explanations of violent rebellions should take corruption phenomena into consideration. The main argument here is that if one finds that rebellions are mainly motivated by economic profit, one must ask why the rebels will not seek employment in the existing public apparatus and collect their predatory income there?

We have left many important issues related to state failure aside. We have, e.g., not studied the feedback impact of the fighting itself on preferences, on ability to mete out selective rewards in case of victory, and so on. Moreover, we have not discussed the political level in any systematic manner: Whether the country's political system is a democracy, dictatorship or anything in between is left aside. The focus has been on the lower ranks.

The idea is that if the public sector for one reason or another has moved into a low commitment or effort equilibrium, politicians have lost most of their control. Whether their intentions are good or bad, the outcome is almost the same: helplessness. With this helplessness, there often follow detrimental economic and political outcomes for the population at large. We have exaggerated it here, but when the major tool of the population in large, complex societies for organizing regular collective action, namely the state, almost becomes useless, the outcome is misery. There is no one to blame. In such situations, the words of Indra's daughter (August Strindberg, 1901) seem apt: 'Life is evil! Men are to be pitied!'

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[58] In Andvig (2006, 2008), I study the effects of kin organizations on corruption and argue that we should expect them to increase corruption in most circumstances.

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