PROMOTION CONTRACTS AND SUPPORT FOR THE
SOVIET REGIME[*]

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This paper analyzes the relationships between the dynamics of political support for the Soviet regime, as revealed in party membership, and economic policy. Soviet regime is considered as the rule of the bureaucracy that captures rents through collective control over state property and job assignment. Theoretical model focuses on the equilibrium in the "political labor market", where the ruling bureaucracy acquires services and political support of activists in exchange for deferred promotion into rent-paying positions. This exchange is facilitated by the implicit contract between the party bureaucracy and activists (party candidates). The major implication of the model is that the stability of a Soviet-type one-party regime is consistent with high income inequality and strengthened when the ruling bureaucracy pursues active investment policy. The model also reveals conditions under which the ruling bureaucracy opts out of the contract and initiates transition to a regime based on private property and political competition. Incentive compatibility and time consistency problems inherent in the implicit contract between the bureaucracy and the activists may accelerate the movement toward regime change. The long-run trends in the communist party recruitment in the USSR and the end of the Soviet regime in 1991 are shown to be consistent with the model.

Introduction

Non-democratic regimes die hard. They are swept away by popular revolutions, often followed by years of civil wars, or forcefully removed by foreign powers. The rapid and peaceful demise of the Soviet regime in 1991 is a rare and surprising exception to the rule. A popular view holds that the end of the Soviet system was predetermined by its poor economic performance in the last two decades of its existence. Although the series of studies initiated by Abram Bergson establishes decelerating trend in the postwar Soviet economy beyond reasonable doubt, this is only a part of the answer. A low rate of economic growth is neither a necessary nor sufficient condition for transition to democracy. To the contrary, non-democracies are generally associated with lower rates of economic growth (Barro 1999) while the probability of transition to democracy is positively correlated, ceteris paribus, with higher levels of GDP per capita (Feng and Zak 1999). Moreover, rational rulers may deliberately block technological and institutional modernization if ensuing change threatens to eliminate their political rents (Acemoglu and Robinson 2002).

An explanation of the demise of the Soviet system is therefore to be placed in a broader political-economic context. An enticing option is to assign the Gorbachev's misguided reforms the role of the major trigger of collapse as, for example, Ellman and Kantorovich (1992, 1998) do. Importance of this factor as a proximate cause notwithstanding, it does not explain why numerous twists and turns in Soviet policy and ideology did not lead to the same final result earlier. By focusing on errors, this sort of explanation leaves little room for rational choice of involved agents. A more fundamental approach would be to look into the sources of stability of a non-democratic regime and the limits of its sustainability through the analysis of costs of and benefits for the rulers and

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their subjects. Harrison (2002) makes an important step in this direction by modeling the Soviet system as a game played by the dictator/planner and the producer. Harrison shows that the system has two equilibria: one with a high level of coercion applied by the dictator to the producer and a high level of effort exerted by the producer in response; another with zero coercion and effort. The second equilibrium – which is the equivalent of the system collapse – realizes when, due to increasing monitoring costs, the dictator abandons coercion since it no longer brings positive net returns.

The Harrison model creates a framework within which economic and political variables can be put together, and it explains the end of the Soviet regime as an optimal outcome for the agents, given the system of incentives and exogenous factors. In this paper, I make a step further in the same direction. First, I propose to look at a broader scope of options for the rulers. Theoretically, the "outside option" of privatization always existed but certain parameters apparently predicated the rulers' choice in favor of non-inheritable collective property rights. From this perspective, a Soviet-type system may "shut down" when the net benefit for the rulers is still positive but falls short of what the private-property alternative is expected to yield. Second, I will go inside the black box of coercion. In Harrison (2002), as well as in most other economic models of non-democracy, the ruling agent - the dictator - is essentially the "only guy with a gun in town," while the cost of maintaining the "gun" (coercion/monitoring) is determined exogenously. In reality, the ruling agent is more complex. It is a bureaucratic hierarchy with a sizeable elite on top and a lower stratum of the agents who provide the actual monitoring services on the shop floor, in the field, and in the streets. The regime stability is determined by the system of incentives for both layers of the hierarchy. In particular, the monitoring agents should have incentives

to provide services at a finite cost and support the regime politically rather than to seek takeover, to become "roving bandits," or to defect to a foreign power. A large share of the monitoring costs are then the costs of enforcing the contract between the ruling top and the monitors.

The central idea of the model developed in this paper is that the stability of a Soviet-type regime rests on a sort of social contract. One party to such a contract is the "bosses" – the ruling state-party bureaucracy, who needs loyal agents to supervise (elicit effort from) the working population. The other party is the "activists" – younger members of the communist party, people able to fulfill this task, in search for career paths toward high incomes. Total control by the bureaucracy over the economy and a significant bureaucracy premium – the difference between bureaucratic rents and the wages of the working population – creates an incentive for an activist to enter the contract with the bosses. The terms of this contract assume that activists volunteer their services to the incumbent bureaucrats, thus allowing the latter to increase their rents. Activists are paid back with the deferred promotion into rent-paying positions. The incumbent bosses have either to retire or to create new positions to accommodate the activists whose contracts have reached maturity. The contract is beneficial for the bosses and the activists because it maximizes expected lifetime incomes for both groups.

The major implication of the model is that the regime stability is consistent with high income inequality and strengthened when the ruling bureaucracy pursues active investment policy (under reasonable assumptions about production technology). Econometric analysis of the data on party membership in Soviet republics in 1956-68, confirms that the equilibrium number of activists is positively affected by the bureaucracy premium (Lazarev

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2003). The absolute level of economic development does not matter. However, expectations of sustained economic growth, as well as the inability to fully control wages and the absence of external threats to the political power of the ruling bureaucracy, make the parameters of the promotion contract inconsistent with the bosses' participation constraint and precipitates transition to a regime based on private property rights and political competition. The end of the Soviet regime can be interpreted as an implicit consent of bosses and activists not to renew the contract.

The discussion proceeds as follows. Section I introduces the notion of political labor market and describes the political-economic exchange between the ruling bureaucracy and the population in the Soviet institutional framework. A formal model of an implicit contract between the rent-maximizing bureaucracy and the career-seeking activists is developed in Section II. In this section, I analyze the characteristics of the equilibrium in the political labor market, the limits of the regime's sustainability, and discuss the effects of time inconsistency in the promotion contract under various institutional settings. Section III interprets the long-run trends in the communist party membership in the USSR from the developed theoretical perspective and argues that the end of the Soviet regime in 1991 was consistent with the optimal contract reaching the bosses' participation constraint. Section IV concludes.

I. Bureaucratic hierarchy and promotion incentives in the Soviet Union

Non-democratic regimes are conventionally viewed as based on coercion. Voluntary support for the government is often added as a partial substitute to coercion. Support is costly: the rulers buy it with public goods or transfers. If the rulers value only power per se as in Grossman and Noh (1994) and Wintrobe (1998), then they can be expected to evolve, in the long run, into welfare-maximizing "benevolent dictators." If the rulers attempt to protect their wealth from forceful redistribution (Acemoglu and Robinson 2000) or destruction (Feng and Zak 1999) by revolutionaries, then they have to give up its political power. Both approaches capture certain features of non-democratic regimes but cannot explain the durability of numerous "predatory" regimes that extract rents from the population and are characterized by high inequality. The assumption of unchallenged power of the dictator in McGuire and Olson (1996) simply bypasses the problem of the regime stability by leaving no active role to the population.

For a rational, net-revenue maximizing ruler, who only uses political power as an instrument of revenue-collection, public expenditure is simply a tax refund that makes the population better off, while reducing political rents.[1] Associated transaction costs will normally make the net welfare effect strictly negative, leaving a rational population disinterested in the current regime. If we follow consistently the positive perspective and assume economic rationality of all involved agents, then we have to look for less costly, in terms of power and rents, mechanisms of raising support.

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[1] Defense and criminal law enforcement seem to be important exceptions. However, these can be considered as a part of the costs associated with revenue production, insofar as they protect the tax base from rival predators (foreign aggressors and domestic bandits).

A non-democratic regime, dictatorial or oligarchic, is a political – and often also an economic – monopoly, but paradoxically it creates no impassable barriers to entry to the ruling stratum on the personal level. This feature creates the possibility to raise support in a way that is consistent with the rationality of political-economic agents: by admission of volunteers to the lowest rank of the ruling hierarchy with a possibility of subsequent promotion to higher-paid positions. The support obtained in exchange for the promise of deferred promotion brings about no immediate losses for the rulers from transfers to the population. To the contrary, it can increase political rents. By recruiting agents from the population, incumbent rulers provide an incentive for aspirants to the rent-paying positions to volunteer as monitors/supervisors eliciting higher effort from the working population. In other words, the rulers can buy support in the national *political labor market*. Since the payments are made in obligations, doing so does not reduce the rents in the short run.

The effectiveness of the service-for-promotion exchange depends on the extent to which the bureaucracy is capable of controlling the sources of income and, therefore, the paths of upward job mobility. The Soviet regime created the most favorable conditions for such a control by establishing a state monopoly on the ownership of productive capital. The nomenklatura system of job assignment,[2] run by the ruling party, provided an institutional mechanism for awarding "promotion tickets" in exchange for loyal service. Soviet-type one-party regime is essentially a system of political-economic exchange between the "bosses", who hold governing positions (party bureaucracy proper), and the "activists," the aspirants to these positions. The border between the two groups is hard to define in a precise way and

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2 Voslenskii (1984) used the term nomenklatura to label the Soviet ruling bureaucracy itself. Although this usage of the word has become popular, I use it in a narrower sense of appointment

it could change over time. Before World War II, the distinction between the "candidates" – new recruits on probation – and the full party members drew the formal line. As the party was growing, the class of actual activists came to include a part of rank-and-file full party members. However, the relative positions of the two groups remained essentially the same. The bosses enjoyed salaries and benefits well in excess of the average level, while the activists retained ordinary jobs. The activists were required to pay dues, work more, and render additional services, in particular, supervisory services. What Soviet propagandistic literature used to say about a worker joining the party can be interpreted as: more effort, additional duties, promotion to a position in the party bureaucracy or industrial management in the future.[3]

In the short run, the cost of the contract is borne by the activists. Formal admittance to the party does not make them better off immediately. Their positions yield a lower utility than that of an ordinary worker. Moreover, the probability of being promoted in the future may be quite low, because the demand for monitoring agents typically exceeds the number of rent-paying positions. However, high inequality, which is the easier to maintain the poorer the country, makes pursuit of a bureaucratic career a game with high stakes.

Bureaucracy bears its share of costs, too. An incumbent has to repay the debt to activists by retiring. As long as the bureaucracy is a collective proprietor, a bureaucrat's

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control, which is more accurate historically.

[3] For example, a 1970s Soviet sociological review purports: "Once you become a communist, you assume voluntarily an additional heavy duty to lead the others." A characteristic career path of a new working class party recruit is described in the following manner: foreman – student in an engineering school – head of the planning department in a large enterprise. The next step would be further up the ladder of industrial management or to an entry-level position in the party bureaucracy. Eighty percent of party bureaucrats of that period followed this career path

benefits are largely *ex officio*. The possibilities to accumulate personal wealth are narrow and therefore post-retirement payments are negligible in comparison to the wage or rent income. Therefore, retirement is a gloomy prospect for a bureaucrat, especially if he internalizes the utility of his descendants.

Incentives for incumbent bureaucrats to enter the contract are determined by returns to the activists' service and the cost of these services – the rents forgone due to "early" retirement in compliance with the contract. Without the contract the bosses expect to stay in office longer, possibly indefinitely long (if they are hereditary autocrats or private proprietors), but the additional rents produced by the activists' services are lost. Therefore, the bosses are to choose between the "gold today" and the "eternal life:" higher rents versus longer tenures.

Recent political-economic models of the ruling party in a Soviet-type system describe party recruitment process differently. Schnytzer and Sustersic (1998) in their study of socialist Yugoslavia assume that the party membership is a demonstration of loyalty that comes in exchange for the rents distributed to the population. Gershenson and Grossman (2001) treat admission to the Party as immediate cooption to the ruling elite. The costs of cooption are borne by the incumbent elite, whose budget is fixed. Thus the direction of transfer in both models is top-down, and the high party membership signifies the stability of a regime, which comes at the expense of bureaucratic rents. The political science literature seems to agree with this conclusion, focusing on the decline of party membership in the last two years of the Soviet regime as a major indicator of its weakness (e.g., Gill 1994). It is difficult, however, to see any imminent threat to the regime at the right end of the graph of

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(*Rabochii*; pp. 225-234).

the Soviet Communist party membership (solid lines in Figure 1 and Figure 21). The party underwent five apparent recessions in its history. Each recession involved larger contractions of total membership than the last one, yet none caused the regime to collapse. An opposite line of reasoning points to the steady growth of party ranks as the cause of the collapse: the party became too large. By the late 1980s, the party incorporated about one tenth of the adult population of the USSR. However, it would have been quite natural for a monopolistic party to strive to recruit the total population into the cohort of activists. From this perspective, ten percent was by no means a large number.

Following the approach developed here, party membership per se is not indicative of the regime's strength. What matters is the parameters of the implicit contract between the incumbents and the activists. The dynamic of the latter – party candidates in the Soviet parlance (dashed lines in Figure 1 and Figure 2) – is completely different form the dynamic of the total party membership. The first period, roughly coinciding with Stalin's leadership, is characterized by relatively high and volatile rates of activist recruitment. The second period is characterized by stable low numbers and declining trend. In the years preceding the end of the Soviet regime, the number of candidates was approaching zero. These patterns are generally consistent with the notion that the political stability of a non-democratic regime is linked to the support of activists. In the subsequent sections, I develop a formal model of the implicit contract between the bureaucracy and the activists and demonstrate that the number of activists results from the equilibrium in the political labor market and that the end of the regime can be explained as the optimal contract reaching the bosses' participation constraint.

II. A model of promotion contract

2.1. Basic assumptions

Let us consider a population with the size normalized to unity that consists of two groups: the bosses and the workers. The bosses' incomes are essentially political (bureaucratic) rents. Individual rents are identical and equal R. The bosses retire after T_b years in office. The rest of the population, the workers and the retired bosses, earn uniform wage, W, which is substantially lower than the political rent: $W << R$. A part of the working population, the activists, provide additional services that benefit the bosses by increasing their rents: $R = f(N_a) > R_0 > 0$, where $f(N_a)$ is the activists' "rent-production function" such that $f'(N_a) \geq 0$ and $f''(N_a) \leq 0$; and R_0 is the bureaucrats' potential per capita rent in the absence of activists.[4] R_0 and W are positive and assumed exogenous. The bosses and the activists comprise small fractions of the total population: $N_b << 1$,[5] $N_a << 1$.

Activist service requires extra effort on the part of the workers who choose to enlist as activists. No immediate compensation is offered for the service. Each activist volunteers a unit of extra effort. However, the workers are heterogeneous in their idiosyncratic distaste for activist service – the disutility of the extra effort that the activist service calls for. This disutility has an income equivalent of ω_i, which is an inverse measure of an individual's predisposition (or ability) for activist service. It is distributed within the population with c.d.f. $Z(\omega)$ such as $Z(0) = 0$. The population is homogeneous with respect to all other

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[4] R_0 measures the bureaucrats' own productivity in rent-collection. R_0 is generally greater than zero, since a rational worker will *not* fight corruption or resist predatory taxation beyond the level that equates the losses form the latter and the costs of enforcing the rule of law at the margin.

[5] For all practical purposes, the share of bosses in the total population can be assumed to be of the order of one percent or less.

behavioral parameters. In particular, all agents are risk-neutral and discount the future exponentially at the rate r.

Following the approach outlined in the previous chapter, I assume that the terms of and the returns to the activist service – and consequently the number of activists at any given moment in time – are determined by an implicit contract between the bosses and the activists. This contract offers the participating activists a possibility of promotion into a boss position after T_a years of service and limits the bosses' tenures to T_b years in order to facilitate promotion.[6] The probability of promotion is π. Therefore, at the time the contract matures, πN_a activists become bosses, while $(1-\pi) N_a$ rejoin the ranks of ordinary workers.

All agents maximize the expected utilities of residual lifetime incomes. The contract satisfies the participation constraints as long as (a) an activist's disutility is compensated by expected rents after the end of service and (b) extra rents due to activist services compensate incumbent bosses for the loss of rents after retirement. In the absence of contract-based exchange between the bosses and the working population, the former never retire (T_b is infinite)[7] and acquire the rents equal to R_0, while the latter earn W forever. There is no

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[6] Instead of assuming fixed activist effort, variable disutility of service, and random promotion, we could assume that the workers' heterogeneity in ability translates into differential productivity in the capacity of an activist, in the spirit of the rank-order wage tournaments (Lazear and Rosen 1981). In the latter model, entry-level employees can compete for promotion to a higher-wage level by exhibiting varying levels of effort, and the winners – top N performers – get promotion with probability 1. Both incentive schemes have similar effects as long as an individual worker has little information on the actions of the others and the distribution of ability within the population. Implications would differ with respect to the properties of the bosses: under my approach, average ability of the bosses equals the population average, while wage tournaments should produce an elite in terms of ability. Discussion of this issue goes beyond the scope of this paper.

[7] Infinite tenure means practically that the bosses are able to bequeath their positions at their discretion.

outside option for a worker: the only way to achieve a level of income exceeding W lies on the bureaucratic career track and it requires activist service.

As far as the contract design is concerned, the bosses behave as a single entity – the representative boss. The contract designed by the incumbent boss is offered to every worker who is not and have never been before an activist.[8] Although the boss dictates the terms of the contract to the activists, he cannot force a worker to enlist as an activist. He has to choose the contract terms in anticipation of known voluntary response from the workers, given the chosen values of T_a, T_b, and π. Neither boss has a full control over the workers' wage, W, and therefore accepts it as an exogenous parameter.[9] The optimal contract is a subgame-perfect equilibrium in the boss-activists strategic interaction where the boss is the prime mover. The contract is life-long. Once written, it is supposed to be non-renegotiable. However, the contracts offered to successive cohorts of activists may differ.

2.2. Supply of activists

The choice problem facing an individual worker involves a comparison of two life-time income profiles. The first assumes permanent stay in the ordinary worker position and

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[8] The accuracy of the assumption of no reentry into the ranks of activists depends on the extent of factional struggle within the ruling party. Swings in the power struggle may let previously purged activists restart their careers. Thus, for example, almost all surviving victims of the Cultural Revolution in China (1966-1976) were eventually rehabilitated (Lee 1991).

[9] Theoretically, a single boss, who combines political and economic power, could endogenize wage in the present context. However, the division of responsibility within the ruling bureaucracy makes it practically impossible to align the contract design by political leaders with wage setting decisions by production managers (planners), even if the latter belong to the stratum of bosses in terms of my model. Maxim Boycko et al. (1995) argue that the separation of control rights from cash-flow rights under centrally planned economy was the major source of economic inefficiency of the Soviet system. In the theoretical framework I adopt, it results also in political inefficiency by preventing the designers of the promotion contracts from controlling wage. I discuss

receiving certain income. The second consists of the period of costly activist service of duration T_a, uncertain promotion to the higher-income boss position thereafter, and retirement after T_b years in office if promoted respectively. Worker i makes the choice to become an activist if the expected income along the bureaucratic career path exceeds the income as an ordinary worker, given his personal ability:[10]

(1)
$$\int_0^{T_a}(W-\omega_i)e^{-rt}dt + \pi\int_{T_a}^{T_a+T_b}Re^{-rt}dt + (1-\pi)\int_{T_a}^{T_a+T_b}We^{-rt}dt \geq \int_0^{T_a+T_b}We^{-rt}dt$$

Inequality (1) yields the cutoff level of disutility $\omega*$ that determines activist participation:

(2)
$$\omega^* = \pi(R-W)\frac{1-e^{-rT_b}}{e^{rT_a}-1}.$$

The supply of activists – the number of workers for whom $\omega_i < \omega^*$ holds under a given contract – is then the left tail of the distribution of the disutility from the activist service:

(3)
$$N_a^s = Z(\omega^*).$$

For the purposes of tractability, I will consider in the following a linear approximation of Z. Consequently, $N_a^s = \zeta\omega^*$, where ζ is a constant. Such an approximation is sufficiently accurate as long as $N_a << 1$. In addition, time is measured in units of the term of activist service, T_a, that is, $T_a \equiv 1$.[11] Then the supply of activists is expressed as:

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this issue further in Section 2.6.

[10] Post-retirement income flows are not included in the expression, since they are identical for all agents by assumption.

[11] This approach is justified by the fact that the activist service is typically institutionalized (for example, as a probationary period for a new party member or the length of military service for a recruit) and its duration is fixed at least in the short run. By contrast, the tenures are seldom regulated explicitly and its actual length fluctuates as a result of policy changes or political perturbations. Note

(4) $$N_a^s = \pi\kappa(R - W)(1 - e^{-rT_b}),$$

where $\kappa = \zeta / (e^{-r} - 1)$.

It is can be easily verified that the supply of activists increases in the expected rents (boss rent[12] and tenure, and the probability of promotion) and decreases in the value of the next best alternative for a worker (workers' wage):

(5) $$\frac{\partial N_a^s}{\partial R} > 0, \ \frac{\partial N_a^s}{\partial T_b} > 0, \ \frac{\partial N_a^s}{\partial \pi} > 0, \ \frac{\partial N_a^s}{\partial W} < 0.$$

Relative magnitudes of comparative static effects (5) depend crucially on the length of boss tenure. The supply of activists is linear in π and the boss premium, $\Delta R = R - W$. However, these effects wane as T_b approaches zero:

(6a) $$\frac{\partial N_a^s}{\partial \Delta R}, \ \frac{\partial N_a^s}{\partial \pi} \sim (1 - e^{-rT_b}) \to 0 \text{ as } T_b \to 0.$$

The reverse is true with respect to the effect of T_b: as T_b increases the supply of activists becomes increasingly inelastic in the length of boss tenure:

(6b) $$\frac{\partial N_a^s}{\partial T_b} = \kappa \Delta R \pi e^{-rT_b} \to 0 \text{ as } T_b \to \infty.$$

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that a change in the term of activist service ceteris paribus translates, by rescaling the time axis, into an increase in the rate of future discounting and a decrease in the length of boss tenure in an equal proportion.

[12] Boss rent, R, as introduced in Section 2.1, is a function of the number of activists. However, an individual worker has no information on the outcomes of the current and future recruitment campaigns at the time he or she is making the decision to become an activist. Therefore, R in the expression for the supply of activist should be interpreted as an exogenously determined expectation of rent, which does not generally satisfy $R = f(N_a)$. This identity should hold in the long-run equilibrium, but since the regimes of the type discussed here are relatively short-lived, we can

Therefore, the supply of activists responds primarily to the changes in the expected duration of boss tenure under "young" regimes, such as communist regimes in USSR and China in their early decades, which are characterized by short tenures due to factional struggle and frequent purges. Under mature regimes, characterized by longer and stable tenures, the supply is likely to be affected only by the changes in the boss premium and the probability of promotion.

2.3. The bosses' problem

At the core of the representative boss's choice problem is the tradeoff between additional rents provided by the activists and the limitation of tenure that the provision of incentives for the activists implies. The bosses, entering the contract with the activists, seek to maximize their residual life-time rents:

$$(7) \qquad \overline{R} = \int_0^{T_b} f(N_a) e^{-rt} dt$$

To achieve this goal, they choose the probability of promotion, π, and the length of tenure, T_b, taking into account the workers' response expressed in the form of the supply of activists (4). An additional stationarity constraint to their problem results from the necessity to balance the inflow of promoted activists and retiring bosses:[13]

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assume that the long-run equilibrium is never reached.

[13] Although imbalance is possible and, in fact, Soviet and Chinese data do reveal fluctuations in the size of their ruling bureaucracies, I focus in the following on the stationary regime determined by (10), as a benchmark, and treat the changes in the number of bosses as temporary deviations from stationarity. Possible causes of such deviations are discussed later in Section 2.6.

(8) $\qquad \pi N_a = \dfrac{N_b}{T_b}$.

Combining (8) and (4), and rearranging the terms obtains:

(9) $\qquad N_a = \left[\kappa N_b \Delta R \left(1 - e^{-rT_b}\right)/T_b \right]^{\frac{1}{2}}$.

Hereafter, I refer to the combined constraint (9) as the "feasible supply of activists."

The representative boss's problem is then:

(10) $\qquad \underset{T_b}{\max} \displaystyle\int_0^{T_b} f(N_a) e^{-rt} dt$

subject to (9).

The bosses' objective function (7) can be characterized by the lines of equal levels of residual lifetime rents in the (T_b, N_a) plane – *isorents*. The optimal solution to the problem (10) – an equilibrium in the regime's political labor market – is attained at the point of tangency of an isorent and the feasible supply curve in the (T_b, N_a) plane that corresponds to constraint (9). Replacing the left-hand side of (7) with an arbitrary constant, integrating the expression, taking logs, and rearranging term obtains an algebraic expression for the isorent:

(11) $\qquad N_a = f^{-1}\left(\dfrac{rC}{1 - e^{-rT_b}} \right)$,

where C is an arbitrary constant and f^{-1} denotes the function inverse to $f(N_a)$.

The properties of isorents and feasible supply curves are analyzed in detail in Lazarev (2003). It also shows that the equilibrium number of activists that solves the bosses' problem (10) is affected by exogenous changes in rents and wages in the same way as the supply of activists, and also increases in the number of bosses:

$$(12) \qquad \frac{\partial N_a^*}{\partial R} > 0, \ \frac{\partial N_a^*}{\partial W} < 0, \ \frac{\partial N_a^*}{\partial N_b} > 0.$$

Theses derivatives can jointly be interpreted as a positive effect of expected rent – the product of the boss premium and the probability of promotion on the equilibrium number of activists. A typical configuration of an isorent and the feasible supply constraint that determine the equilibrium in the political labor market is presented in Figure 3.

Further analysis of the equilibrium in the political labor market of a non-democratic regime calls for additional specific assumptions about the properties of the activists' production function, $f(N_a)$. Section I argues that activists in the Soviet Union served as labor supervisors. Activists-supervisors, whose function is to elicit a higher level of effort from fellow workers, can be considered as a sort of labor-augmenting technology. Then the activists' rent-production function is:

$$(13) \qquad f(N_a) = F\{K, (1+aN_a)L\},$$

where K is capital, L is labor, a is a productivity parameter. $F(K,L)$ is the production function of the economy such that: $F_K > 0$, $F_L > 0$, $F_{KK} < 0$, $F_{LL} < 0$, $F_{KL} > 0$.

Lazarev (2003) shows that the effects of changes in labor and capital (investment policy) depend on the properties of the elasticity of output with respect to the number of activists:

$$(14) \qquad X(N_a) = aN_a F_L L/F.$$

The latter are determined by the production technology. The sign of

$$(15) \qquad \frac{dX}{dK} = aL \frac{F_{LK}F - F_L F_K}{F^2}$$

depends on the degree of substitutability between labor and capital. The closer the inputs to perfect complementarity, the higher the derivative of the marginal product of labor with respect to capital, F_{LK}, the more likely it is that the derivative (15) is positive. Since less-than-unitary elasticity of substitution is the only practically relevant possibility on the macroeconomic level, $dX/dK > 0$ can be presumed.[14] An important implication is that public investment in physical capital calls for increasing numbers of activists. The reverse is likely to hold with respect to increases in the labor force, since activists-supervisors are technically substitutes for "crude" labor: $dX/dL < 0$.

2.4. Bosses' participation constraint and regime change

Let us turn to the discussion of conditions that make the equilibrium in the political market unattainable. An alternative to the regime with collective ownership and rotation of the ruling bureaucracy is the one that is based on private property rights and lacks the support of activists. Rational bosses will choose not to renew the contract with the activists if the latter option promises absolute advantage over the former. Let us assume that the bosses have a time horizon of T_m, which is determined exogenously and reflects the perceived stability of the regime. T_m may be infinite (if the current regime is believed to be everlasting) and in any case $T_m > T_b$. The bosses choose to enter in a promotion contract with the workers at a moment $T=0$ if the rents accumulated over the period of tenure, T_b, are expected to exceed those in the absence of activists (R_0 per period of time for T_m periods):

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[14] Numerous empirical studies show that the elasticity of substitution between labor and capital is typically less than one for most modern economies. In particular, this applies to the Soviet economy (Weitzman [1970], Easterly and Fisher [1995]).

$$(16) \qquad \int_0^{T_b} f(N_a)e^{-rt}dt \geq \int_0^{T_m} R_0 e^{-rt}dt .$$

Integrating, taking logs, assuming $f(N_a) >> 1$ (activist services contribute significantly to the bosses' capability to collect rents), and rearranging term gives:

$$(17) \qquad N_a \geq f^{-1}\left(R_0 \frac{1-e^{-rT_m}}{rT_b} \right).$$

Expression (17) defines approximately the lower boundary of a region in the (T_b, N_a) plane where the contracts acceptable for the bosses are located. The point of tangency between the participation constraint curve and a feasible supply curve is the boundary optimal contract. At this point the bosses are indifferent between maintaining the contract and the change of regime (Figure 4). Its location is determined by the productivity of activists captured by the parameters of the function, f, and the bosses' perception of the regime's durability, T_m. In particular, it follows from (17) that insecure geopolitical environment and/or internal instability, by decreasing T_m, depress the participation constraint curve and expand the region of acceptable contracts, adding flexibility to the regime. Conversely, a declining threat of aggression or uprising causes the region determined by (17) to shrink, thus making it more likely that the bosses choose not to enter in the promotion contract and abandon one-party regime.

Another important effect is the expectation of economic growth entering through the change in the effective rate of future discounting, r. Higher expected rates of growth reduce r and shift the participation constraint curve up. If the expected rate of growth equals the subjective rate of future discounting, then the effective rate, r, becomes zero and the argument of f^{-1} in (17) becomes infinite, leaving no space for acceptable contracts. This

implies that bureaucratic regimes are incompatible with expectations of permanent high rates of economic growth. This does not mean, however, that any improvement in economic performance affects the participation constraint. An unanticipated increase in the level of output (e.g. an unusually good harvest) modifies the bosses' behavior temporarily and causes short-term deviations from the equilibrium. For example, the bureaucracy can create new positions funded from the surplus and promote the current cohort of activists without retiring a group of incumbents. This change inflates the activists' expectations of tenure length, shifting the supply curve upwards. Subsequent relative slowdown results in a higher turnover within the bureaucracy that corrects for the deferred retirement in the previous period. Therefore, macroeconomic fluctuations can produce a quasi-stationary regime dynamic, while expectations of sustained economic growth lead to the abolition of the regime by the bosses.

It can be easily observed that it is not only the change in the bosses' expectations that affects the location of the participation constraint can cause the regime change but also a downward shift of the supply curve. An increase in wage is of particular importance in this context. As was noted earlier, wage setting in a most centralized command economy is a matter of economic decision-making. This a process institutionally separated from the design of optimal contracts for the political labor market. The industrial bureaucracy may find it beneficial to increase wages to stimulate higher productive effort on the part of ordinary workers, especially when the productivity of activists-supervisors does not yield desirable results. Paul Gregory (2003) argues that the efficiency wage considerations were not foreign to the Soviet leadership, and their influence on the economic policy was notable. Therefore, economic efficiency and political support are generally contradictory objectives.

While pursuing the former, bureaucrats-managers can lower boss premiums. This depresses the supply of activists to the point when the bosses' participation constraint can no longer be satisfied.

Finally, the ability of the ruling bureaucracy to raise support in the political labor market depends on its ability to control the paths of upward income mobility. Thorough control is never possible. Two major avenues lead to higher incomes that are, at least in part, independent from the bureaucratic control: higher education and shadow economy. In a small and primitive economy, this problem can be contained. A more complex economy requires, on the one hand, more human capital. This brings about opportunities for higher incomes for "apolitical" professionals. On the other hand, there is more space for illicit economic activity, especially in services. Both undermine the regime by carrying off potential activists, who respond to economic incentives outside of the state-controlled economy. Therefore, modern economic development produces downward pressure on the supply of activists and sets the natural limits to the growth of bureaucratic regimes.

2.5. Institutions and enforceability of promotion contract

The major problem with the implicit contract between the incumbent bosses and the activists is its time inconsistency. The contract benefits both parties at the time of signing as long as the participation constraint is met. However, the bosses have an incentive to renegotiate the contract at the time it reaches maturity. If the expected regime stability, reflected in T_m, is high, the bosses expect a significant loss of rents due to retirement.[15] The

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[15] A contract "signed" during hard times (uprising, war, etc.), when expectation of T_m goes down momentarily and the demand for activists experiences additional upward shift, is most likely to be renegotiated. As soon as the power is restored "normal" T_m rebounds and a downward revision of

activists may or may not accept renegotiation. At the first glance, they are facing a take-it-or-leave-it choice. Their past services are sunk costs that should have no impact on the activists' decisions made at time T_a. Therefore they are better off accepting the revised contract. In the reality, however, the cheated activists are likely to demand "justice,"[16] and the bosses' ability to coerce rebelling activists into submission is crucial in determining how far the bosses can go in breaking the contract.

Breach of contract can take one of the two forms. First, the bosses can promote a lower share of activists than the latter expected. Second, the bosses can stay in office longer and increase the activists' term of service correspondingly. In either case, the promotion rate falls and the boss tenure increases. The bosses are strictly better off in the short run. The immediate effect of these changes on the supply of activists is positive if the effect of a longer tenure exceeds that of the decreasing turnover. However, repeated breach of contract makes the prospective activists understand that the tenures of the incumbents are growing at the expense of the future cohort of bosses. Moreover, the activists, once cheated, tend to extend their tenures once they get promotion.[17] This chain of contract violations results in a non-stationary drift down and to the right from the equilibrium in the (T_b, N_a) plane. Restoration of the status quo calls for either a reduction in the number of bosses or a sort of

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promotion rate can take a form of massive purge of excess activists. This happened in the Soviet Union after the end of the forced collectivization of peasantry (1929-33) and after the World War II.

[16] Empirical and experimental research in behavioral economics shows that sunk costs do influence decisions profoundly in the situations similar to the described one. This effect is often explained with a reference to the notion of fairness (Joll et al. 1998).

[17] If the bureaucracy is a multi-layered hierarchy, as it really is, its higher-ranking officials have better chances to overstay in office, because they are protected from the pressure from below by intermediate levels, and the smaller size of higher layers makes it easier to establish mutual-protection networks. Formation of cliques causes the "clogging" of promotion channels. Therefore,

"Ponzi scheme." The former strategy leads to a gradual contraction both in the number of activists and in the number of bosses. In the latter case, new boss positions, created for the activists whose contracts reach maturity, are paid for by hiring yet larger number of new activists. Along this expansionary path, the system reaches eventually the bosses' participation constraint.

The prevailing type of contract violation and, consequently, the pattern of regime evolution is a function of the political institutions that the ruling bureaucracy creates. Various types of institutional arrangements can be grouped into major categories: dictatorship and oligarchy. The problem of collective action within the ruling bureaucracy motivates the choice between the two.

On the one hand, it is beneficial for the bureaucracy *as a whole* to maintain the equilibrium terms of the promotion contract. On the other hand, it does not pay for any particular boss with a narrow interest to keep a promise to retire, especially for one who is near the end of tenure. The benefit from staying one more year in office is greater than the immediate loss from the shrinking supply of activist services that ensues. Therefore, the key factor that prompts contract violation is the free-riding among bureaucracy, and its senior members in particular. The free-rider problem can be mitigated by entrusting dictatorial power to a member of the bureaucracy with an encompassing interest. The dictator is able to force the bosses into retirement as they reach the announced terminus of tenure. In this context, dictatorship can be regarded as a political institution that serves the primary goal of enforcing contract compliance. Dictatorship also coordinates the bureaucracy more effectively than a looser oligarchic rule, thus increasing total revenue and per capita rents.

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hierarchy effects an additional deceleration of job mobility.

Finally, the dictator with a secure power ("stationary bandit") has the means for and incentives to is capable of maintaining a system of orderly distribution of benefits that prevents wasteful competitive rent seeking within the bureaucracy (Olson [1993]).

On the other hand, absolute dictatorship, however beneficial it may be for the stability of bureaucratic rule, imposes additional costs on the bosses. Dictators by definition cannot be controlled, and one can become a "disloyal patron" to the bureaucracy, as Joseph Stalin did in the late 1930s (Rigby 1990). Oligarchy, with its distribution of power within the ruling bureaucracy, involves no costs of this type and creates an environment that is more suitable for a risk-averse boss. For these reasons, a dictatorial solution is more likely to emerge when a high level of coordination is a vital necessity for the survival of a regime and when it depends crucially on activist services: during or on the eve of a war or an uprising; in poorer societies, where inequality is high and/or when developmental challenges call for massive investment. To the contrary, the lower the threat to the bureaucratic rule and the more productive the economy, the more readily the bosses choose an oligarchic regime with less coordination and less rigorous contract enforcement. Whenever this happens, the one-party regime sets a course toward abolition.

III. Life-cycle of the Soviet regime

Promotion-contract model obtained considerable support from the estimation of panel data on party membership over a short period of time, 1956-68 (Lazarev [2003]). In this section, I apply the model to interpret the Soviet political-economic dynamics in the long run. Available data on administrative employment and salaries of administrative employees in conjunction with the data on total employment and average wages give some

idea of trends in factors influencing the supply of activists. Although employees in the administrative sector are not synonymous with bosses in terms of the model, data on this occupational group is likely to reflect general trends in the size of the bureaucracy and in bureaucratic rents. These variables can be used to construct a single indicator that captures both positive and negative incentives for a potential party entrant. This indicator, expected rent, R^e, is the product of administrative wage premium (ratio of average salary in administration, W_a, to the average nominal wage in the economy, W) and the a priori probability of promotion. The only suitable indicator of the latter in the longitudinal national data is the ratio of administrative sector employment, E_a, to the full party membership, P. Thus:

$$R^e = (W_a/W)(E_a/P).$$

Expected rent approximates the argument of $Z(\cdot)$ in the supply of activists in (3) up to a linear transformation and is, therefore, an aggregate supply indicator.

Figure 5 displays the dynamics of candidate recruitment against major indicators of the supply and demand for activists – expected rent and investment rate, respectively. It can be observed that movements of index number of candidates per labor force correspond largely to those of investment index. The major exception is the years of the World War II and its aftermath, when activists were needed primarily in the army, not in the economy.[18] Variation of expected rent is lower and its relationship to activist recruitment is less apparent. However, the period of the largest increase of expected rent in 1930-1933

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[18] Correlation between the two series in the post-war period should be higher, since the equipment removed from defeated Germany as reparations is probably not accounted for in the data.

coincides with the period of the fastest increase in candidate/labor ratio.[19] The remaining

five decades of bureaucratic rule are characterized by downward trends in both candidates

and expected rents. The latter is mostly due to a gradual increase in general wages. The last

five years of the regime – Gorbachev's period – is a notable exception: candidates and

expected rents set onto diverging trajectories. Declining investment rates since the early

1970s, resulting from diminishing returns to public investment,[20] depressed the demand for

activists. At the same time, retirement protraction should have overweighed increase in

expected rents.

Although no systematic data on tenures and turnover rates are available, it is well

known that the upper tiers of the bureaucracy were purged three times in the first forty years

of the regime: in 1929-30, when Stalin came to power, in 1937-38 (the Great Terror), and in

mid-1950s after Stalin's death. Each of these episodes was preceded by 3-7 years of

dramatically declining rates of promotion to full party membership, signaling a breach of

contract by the party bureaucracy. In all three cases, dictatorship was able to enforce

promotion contracts and reinvigorate candidate recruitment.[21] On the average, bureaucratic

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[19] Full party membership did not exceed administrative sector employment until mid-1930s. This implies that the probability of promotion was close to unity in that period. Anecdotal evidence suggests that full party membership indeed gave an unconditional right to fill an administrative or managerial position. The head of the Central Party Control Committee (KPK) reckons in 1936: "One who has a party membership card can enter <any office>. Once in there, he would demand a job…" and get an appointment even he has a criminal record. (RGANI.6.1.15.37)

[20] Gorbachev's reforms aimed at giving autonomy to state enterprises can be considered as an indication of declining interest of the ruling bureaucracy in public investment.

[21] The assessment of the Great Terror, widely accepted in the literature, is that it was Stalin's attempt to dispense with his political enemies. A number of facts suggests, however, that the main objective of the Great Terror was to promote the activists, many of whom had been waiting for promotion for about a decade. First, there is no clear pattern in the incidence of Terror, except for the hierarchical rank of a victim. Second, the primary engine of turnover was "Party democracy" that

tenures in this period could rarely exceed two decades and often ended with demotion, imprisonment, or even death (until 1953). With Khrushchev's removal in 1964, the Soviet bureaucracy dropped out of dictatorship, thus gaining security from its excesses, but the new oligarchic regime was unable to enforce promotion contract. Upward mobility, especially into the bureaucratic elite, became notoriously low in the 1970s (Clark 1989, Farmer 1992). In the early 1980s, top bureaucratic positions were occupied by people who entered the ranks of bosses in the late 1930s and 1940s. Thus boss tenures had increased up to approximately four decades. The reverse side of this was increasing expectations of length of service for the activists enrolled in the 1970s or considering joining the party in the 1980s. Given the long and growing queue of activists, chances for promotion became virtually zero. Attempts to solve the problem of a shortage of new activist by offering them more relaxed service requirements led only to further accumulation of overdue debt, represented by a steadily increasing party membership (Figure 1 and Figure 2).

There were apparently certain concerns within the bureaucratic elite by the mid-1980s about the regime setting on an unsustainable trajectory. The last party General Secretaries, Yuri Andropov in 1982-84 and Mikhail Gorbachev from 1985, restarted the

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allowed rank-and-file party members to criticize their bosses and nominate candidates to replace them. A recurrent theme in the party press of that time – blaming uncovered "enemies of the people" in the regional party committees for obstructing promotion of "young cadres" – is consistent with the "democratization" drive of the Terror and its purpose to revitalize promotion. Third, most accusations in 1937-1938 belong to an abstract "enemy of the people" category, indicative of the indifference about the crimes of ousted bosses. To the contrary, corruption and mismanagement accounted for a substantial share of expulsions from the party and almost one half of all dismissals of regional party administrators in the earlier period. Thus the Terror was not Stalin's crackdown upon his political enemies and/or inept administrators and managers. Finally, the end of the Terror in early 1939 coincided with a huge financial injection that almost doubled local party budgets and office sizes. (RGASPI.17.75.1.1-12.) This latter fact can be interpreted as a massive repayment of overdue

practice of forcing high-ranking party bureaucrats into retirement. These activities reached the highest point by the late 1980s. They must have become scarily similar to the Great Terror for the bosses, causing their growing discontent that eventually erupted in the abortive putsch of August 1991. The main beneficiaries of the acceleration of bureaucratic mobility under Gorbachev were "young cadres" in their forties and fifties who had been stuck in mid-rank positions for a decade or more. In the oversized party, this moderate increase had little impact on recent recruits. At the same time, introduction of the freedom of small enterprise and removal of salary ceilings in the state enterprises opened new and potentially lucrative outside options for activists. The supply of activists fell to the point where the incumbent bosses were no longer interested in maintaining the contract.

Although the reduction in the number of activists in 1987-90 was moderate in comparison to some earlier periods, it was sufficient for the system to reach quickly its lower boundary – the bosses' participation constraint. At the same time, the bureaucracy itself got an outside option. The end of the Cold War gave it new sources of rents associated with international credit and international trade. It also reduced the burden of military spending. Therefore, the ruling bureaucracy experienced a positive income shock that increased its rents, even though the rates of economic growth in the USSR were low and falling.[22] Given the proximity of the participation constraint, the new sources of rents, even if minor and transitory, were sufficient to cross it over. It would be an exaggeration to say that the end of the Soviet regime was absolutely smooth and welcome by everyone. Yet,

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debt to the activists that was sufficient to restore peace between the bosses and the activists.

[22] It is tempting to hypothesize that if the same opportunities had opened in mid-1950s – the earlier period of dramatic decline in the number of activists – the Soviet Union would have been ancient history by now.

relative ease of radical institutional change in the country with enormous army and secret police, and a tradition of ruthless political repression, makes it clear that no significant economic interests remained in favor of renewal of the contract.

Subsequent political democratization and privatization was a natural and probably the only feasible transition solution. It auctioned off state property and most bureaucratic positions in a quasi-competitive way that was acceptable for both the bosses and the activists. On the one hand, it allowed the Soviet bureaucrats, who had the incumbency advantage in the privatization process (Alexeev 1999), to convert their *ex officio* control rights into legally protected private property rights. On the other hand, it gave a chance of "promotion" into entrepreneurs to a part of the population most actively seeking opportunities for upward mobility. All in all, the old bureaucracy won the privatization match scoring two to one: by the mid 1990s, after the end of mass privatization and the first phase of democratic transition, former nomenklatura appointees accounted for about two thirds of the top positions in Russian business and government (see Lazarev [2001] for a review of empirical studies). In 1999, former communist party membership was still associated with a significant wage premium (Ingo Geishecker and John Haisken-DeNew [2002]). A majority retained old positions or occupied similar ones; many moved across institutional boundaries. The new elite has the same face as the earlier ruling bureaucracy, but it has got a new personality. It is no longer a collective owner of the country and has neither the ability nor the need to pay for activist services with promotion contracts.

IV. Conclusion

This paper offers a new perspective on the economic foundations of a Soviet-type one-party regime and the conditions of its sustainability, focusing on the processes within the ruling bureaucracies rather than on personal dictatorship. Collective bureaucratic control rights over the economy, as opposed to private property rights, create the possibilities for the incumbent bureaucracy to "buy" support and rent-augmenting services of the activists, aspirants to the rent-paying positions, in exchange for promises of deferred promotion. The more thorough this control, the more rents can the bureaucracy capture by controlling the paths of upward income mobility in the society, the closer its position is to the monopsony in the political labor market. Institutional forms that facilitate the political-economic exchange of this type vary historically and across countries. What they all have in common is the turnover within the hierarchical ruling stratum. In the Soviet Union, like in many other modern non-democratic regimes, one-party rule and centralized appointment control implemented the mechanism of the promotion-for-loyal-service exchange. The role of activists was played by candidate members of the ruling party, who competed for the promotion into the ranks of the ruling bureaucracy.

Implicit contracts underlying the exchange between the activists and the ruling bureaucracy provide participation incentives for both. The activists have an opportunity to achieve higher than average income levels and the bureaucrats increase their rents due to the effort-eliciting supervisory services of the activists. Efficiency of this exchange is a function of the income gap between the working population and the bureaucrats, but it also depends on the production technology. Activists' supervisory service is essentially a labor-augmenting technology. In an economy with a low elasticity of substitution between labor

and capital, this produces a positive correlation between the bureaucrats' demand for activists and public investment.

The cost of the promotion contract for the bureaucrats, which is their limited tenure, can offset its benefits. The bureaucrats seek to renegotiate the contract in order to capture additional rents, probably at the expense of long-term stability of the regime. The implicit promotion contract is not self-enforcing, and dictatorship is necessary to keep the regime dynamics on a quasi-stationary path. However, in the absence of an extreme threat to the regime, the costs borne by individual bureaucrats under dictatorial rule are excessive, and they choose an oligarchic rule. The latter is unable to keep the tenures of incumbents from rising, and the contract eventually ceases to be beneficial for both the potential activists and the bureaucracy. Once this happens, the bureaucracy abandons collective proprietorship and hierarchical organization, since these are merely the instruments that facilitate borrowing of services and political support from activists. Soviet political-economic dynamics is consistent with this theoretical scenario and suggests an explanation of its peaceful end in 1991 as the choice of its ruling bureaucracy "approved" by the workers.

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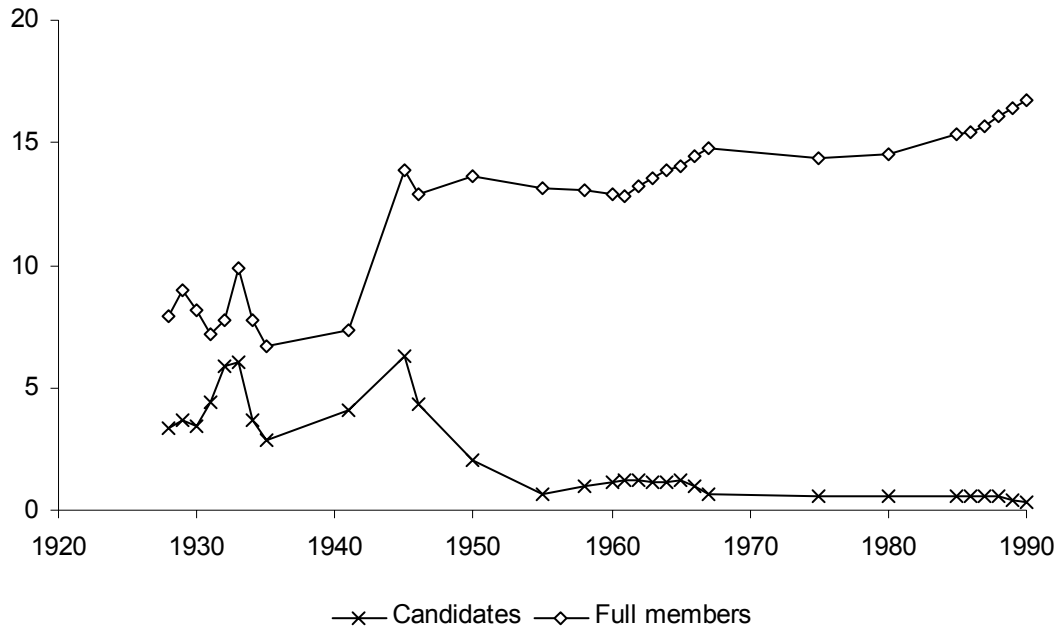
Figures

Figure 1. Party membership in the USSR, 1920-1990.

Sources: Rigby (1968), Ezhegodnik BSE (1971-1990).

Figure 2. Party membership in the USSR, percentage of labor force, 1928-1990.

Sources: Party membership: see Figure 1. Labor force: *Narodnoe khoziaistvo*.
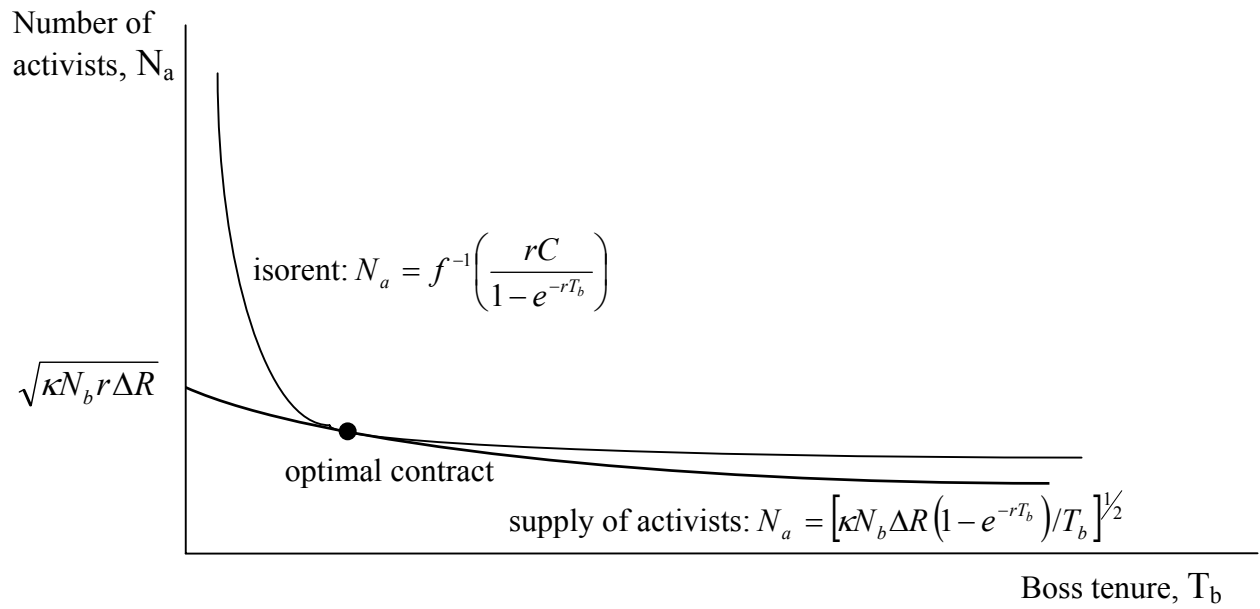
Figure 3. Geometry of a promotion contract.

Number of activists, N_a

isorent: $N_a = f^{-1}\left(\dfrac{rC}{1-e^{-rT_b}}\right)$

$\sqrt{\kappa N_b r \Delta R}$

optimal contract

supply of activists: $N_a = \left[\kappa N_b \Delta R \left(1-e^{-rT_b}\right)/T_b\right]^{1/2}$

Boss tenure, T_b

Figure 4. Bosses' participation constraint and the point of regime change.

Number of
activists, N_a

Bosses' participation constraint: $N_a = f^{-1}\left(R_0 \dfrac{1 - e^{-rT_m}}{rT_b} \right)$

$\sqrt{\kappa N_b r \Delta R}$

regime change

supply of activists: $N_a = \left[\kappa N_b \Delta R \left(1 - e^{-rT_b} \right) / T_b \right]^{\frac{1}{2}}$
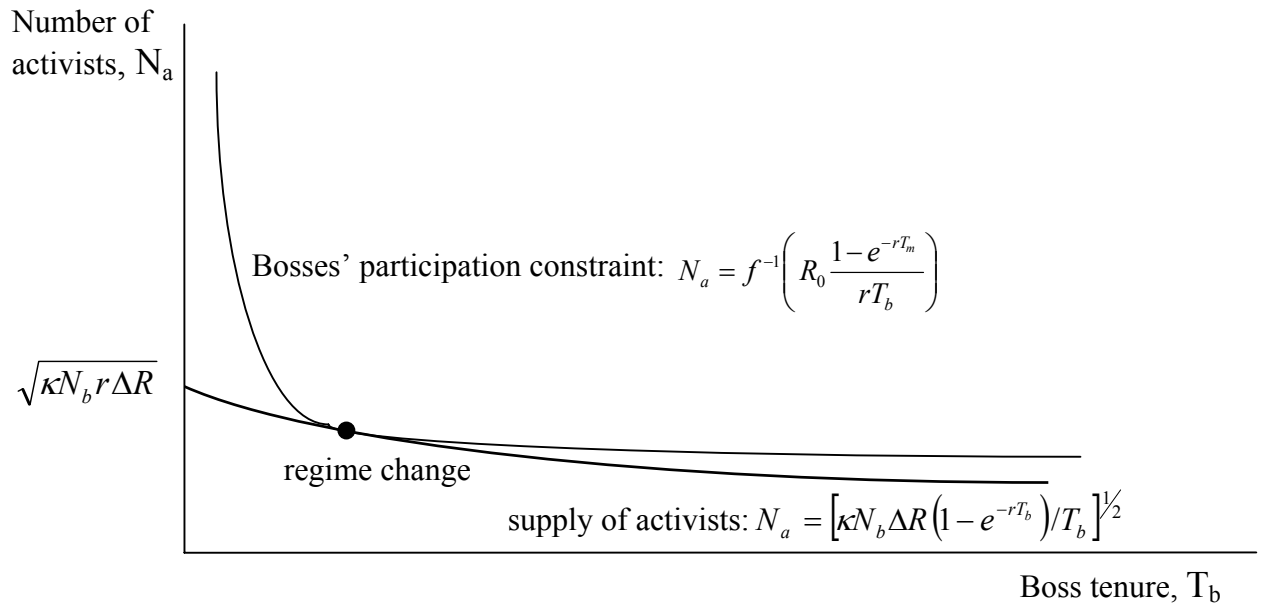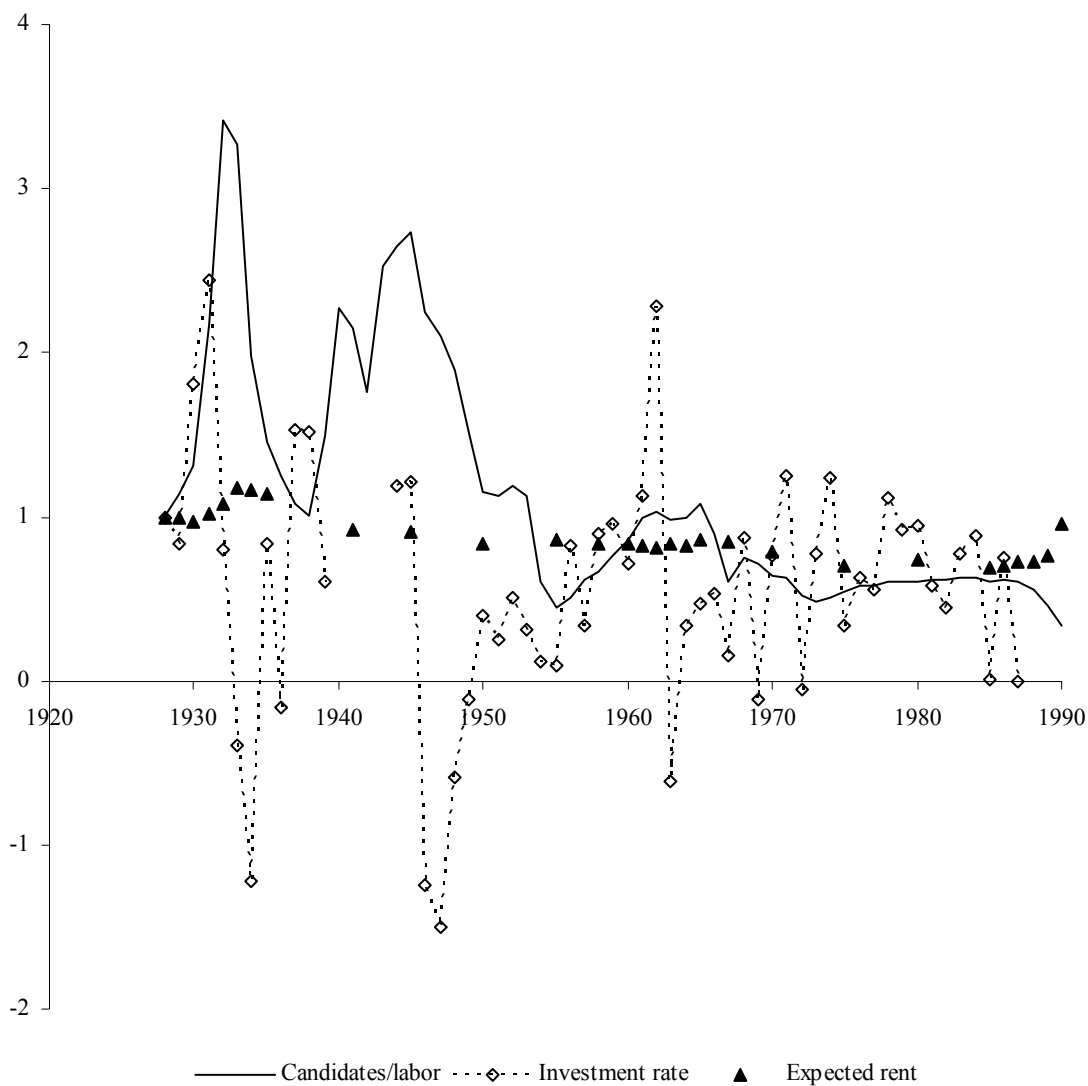
Boss tenure, T_b

Figure 5. Political-economic dynamics in the USSR, 1928-1990.

Indices: 1928=1.

Sources: Candidates, labor: see Figure 2; investment – Easterly and Fisher (1995); expected rent - calculated by the author from various sources.