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# Commissars and cars: A case study in the political economy of dictatorship

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We use unique archival data on the allocation of vehicles, i.e. cars and trucks, in the 1930s by a three-person commission of top Soviet officials for an empirical investigation of resource allocation by a dictatorship. Two distinct models of dictatorial allocative behavior, namely, an economic planning model and a political gift exchange model, are considered. We use censored regression and ordered probit to show that the political gift exchange model is supported strongly by the data, but the economic model is rejected. Moreover, the political model explains better the rejection of petitions rather than their success, suggesting that the dictator preferred unconstrained decision-making discretion. We argue that the dictator used gift exchange to purchase loyalty against uncontrolled market exchanges and that political bias in resource allocation was undermining the dictator's power in the long run. *Journal of Comparative Economics* **31** (1) (2003) 1–19. University of Houston, Houston, TX 77024, USA; Hoover Institution, Stanford University, Stanford, CA 94305, USA.


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## 1. Introduction

Governments have the power to allocate resources to economic and political agents either to stay in power or to maximize economic welfare. It is often presupposed that a

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democratically elected government opts for welfare-maximization, while a dictator aims to maintain political power. However, the allocation decisions of both types of government are influenced by both considerations. Rational incumbent politicians could use their allocative power to buy votes in a democratic election. A dictator, facing no threat of election loss, may still have to invest in buying loyalty; the violent deaths of a long line of powerful dictators, from Julius Caesar to Nicolae Ceausescu, suggest that repression alone is not sufficient.

Intertwining political and economic objectives complicate the empirical identification of the motives for governmental decision-making. Econometric separation of decisions dictated by public interest and economic efficiency from those due to political calculation can be quite complicated, as the long debate about the allocation of federal grants by the Roosevelt administration in the 1930s demonstrates.[1] Study of dictatorships is even more challenging because of their closed nature. The Soviet command economy is a typical example; resource-allocation motives of the simple consolidated dictatorship of the Stalin era are still terra incognita, although more structurally complex periods before and after it are better known.[2] To the best of our knowledge, no empirical analysis of resource allocation by any dictatorship, using primary data, has been undertaken. Moreover, the dictator's encompassing interest in the national economy can lead to an equilibrium whereby politically motivated decisions are also economically efficient. A stationary bandit, i.e., a powerful dictator seeking to maximize the long-run tribute from the economy, fosters economic growth (McGuire and Olson, 1996). Therefore, the task of separating political and economic determinants of resource allocation by a dictatorship can be insoluble if the time horizon is sufficiently long.

However, as Olson (1995) rephrased Keynes, in the long run, Stalin is dead. Unlike the theoretical stationary bandit, whose power is unchallenged by definition, a real-world dictator is never safe. He must be concerned in the short run with threats to his power, caused by exogenous shocks or resulting from earlier faulty policies. In this situation, there is no perfect match between politics and economics, and patterns of decision-making and adjustment to shocks do matter. Modern dictatorial regimes tend to be short-lived in historical perspective and probably fail to reach equilibrium, given the frequency of shocks to the system. Such a non-stationary dictator may opt to invest available resources to buy loyalty of his subjects, even though the pursuit of this short-term goal hampers long-term strengthening of power through productive investment in the economy. In this setting, the choice between economic and political investment can have significant consequences. Therefore, identification of the motives of dictatorial decision-making is a meaningful and, as we attempt to show in this case study, feasible task.

This paper deals with an almost pure laboratory case of microeconomic decision-making by a dictator. We use the recently opened Soviet archives to study the allocation of one relatively homogeneous good, vehicles, consisting of automobiles plus trucks, in

[1] These studies, starting with Wright (1974), show that slight changes in the estimation or sampling techniques may reverse conclusions of earlier researchers. See Wallis (1998) for a recent overview of the literature.

[2] Berkowitz (2001) finds that the Russian government in the presidency of Boris Yeltsin allocated export licenses to reward political loyalty. Harris (1999) finds that, in the power struggles of the 1920s, Stalin wooed regional authorities with offers of large construction projects in return for political support.

1933 by the top decision-makers in the highest agency of Soviet government, the Council of People's Commissars. We chose vehicles as an extreme case of a deficit commodity. Relatively few vehicles were produced, they were priced well below equilibrium, and they were among the most highly centralized of producer goods, sought by virtually all consumers ranging from the bureaucratic elite to individual enterprises. The records of vehicle requests and their disposition are well preserved in the archives.[3] We study the official retail allocation of vehicles directly by the dictator, unfiltered by planning and advisory agencies. Vehicle allocation provides direct insights into how the Soviet dictator decided which claims to grant and to deny. We test two models of dictatorial behavior, namely, an economic planning model and political gift exchange model, and find strong support only for the latter. We also find that the political gift exchange model explains better those petitions that were rejected than those that were successful, which suggests that the dictator favored unrestricted discretion unfettered by rules.

This paper proceeds as follows. Section 2 describes the institutional framework of vehicle allocation in the Soviet economy of the 1930s. Two models of allocation by the Soviet dictator are specified in Section 3. These models are used to generate hypotheses about the signs and relative magnitudes of various attributes of petitions in Section 4. Estimation procedures are described and the results are presented in Section 5. Section 6 concludes with strong empirical support for resource allocation based on political considerations.

## 2. Vehicle allocations: Institutional framework

Allocation of new vehicles in the Soviet economy of 1930s was directed through two quite different processes, both operated by Team Stalin, consisting of the leaders of the Soviet state and Communist party who comprised the collective dictator (hereafter, D). All vehicle-allocation decisions were made by a three-person commission consisting of the Chairman of the Council of People's Commissars, V. Molotov, and his two deputies. The three members of the Molotov Commission belonged to the Communist Party's elite, ten-person *Politburo*. We have no documentary evidence that would allow us to identify private interests pursued by the commission members. Hence, we assume that the Molotov Commission is indistinguishable from D.

The regular wholesale process, based on quarterly plans, accounted for the larger part of allocations. Two dozen or so designated corporate consumers, i.e., ministries and regional authorities, submitted requests from their subordinates to the Molotov Commission, which processed their claims with the assistance of various planning organizations, including the State Planning Commission (*Gosplan*) and issued supply plans. Then, the producer's supply organization delivered vehicles to successful claimants.[4] A smaller but still

[3] We used the documents from the files of the Council of People's Commissars (Ministers) (State Archive of the Russian Federation, *Fond* 5446), the State Planning Commission, Gosplan (Russian State Archive for the Economy, *Fond* 4732) and the Ministry of Heavy Industry (Russian State Archive for the Economy, *Fond* 7622), as well as relevant portions of the minutes of the Communist Party Politburo (RGASPI, formerly Central Party Archives, *Fond* 17, *Op.* 3).

[4] We analyze this process in detail in Lazarev and Gregory, 2002.

significant part of the output was distributed through the retail process by ad hoc decrees and orders. Under the unwritten rules of this retail distribution, anyone could submit vehicle requests directly to the government, or to Molotov personally, for allocations from a special reserve fund or at the expense of planned quotas of other consumers. The relative weight of the retail process varied from quarter to quarter and increased, on average, throughout 1930s. In 1940, it accounted for more than 30 percent of vehicle transactions.

We focus on the retail allocation of vehicles by the Molotov Commission, because it provides direct insights into D's decision-making, uninfluenced by pressure groups and advisory bodies. To the contrary, the wholesale process was largely determined by conflict and collusion among a few preferred customers. The heads of ministries participating in the wholesale allocation were members of the ruling clique; their political influence was positively correlated with branch priority.[5] Although their influence was achieved through D's deliberate appointment policy rather than free competition of interest groups, we cannot distinguish readily between political and economic motives in viewing the outcomes of wholesale allocation. On the other hand, retail petitions were reviewed solely by the Molotov Commission, sometimes by its members individually. Powerful ministers seldom appeared as retail customers. Instead, they maintained their own reserve funds from the stocks allocated to their ministries. Furthermore, the role of the State Planning Committee was limited to optional declarations of support for some favored petitions. Ministers could also support specific petitions.

The aggregate statistics presented in Table 1 show that wholesale and retail distribution were quite different processes. The sectoral distributions of wholesale allocations and of retail requests and allocations are uncorrelated, demonstrating that the retail allocation neither simply served unsuccessful wholesale bidders nor was used to correct minor planning errors.[6] The wholesale numbers alone cannot reveal the goals that the decision-makers were pursuing in each process. The data necessary to analyze the determinants of resource allocation are available only for retail distributions, which was arguably an independent process and managed directly by D.

Our data set extracted from the texts of petitions, letters of support, allocation orders, and correspondence submitted to the Molotov Commission in 1933 covers 92 percent of extant requests by civilian customers for that year,[7] a total of 557 observations. The small number of petitions by the military were not included, since we presume that military allocations were separate and recorded elsewhere due to top secrecy.[8] For each case, we identify the number of vehicles requested, the number granted, the attributes of the organization, petitioner, and supporter, e.g., level, location, branch, as well as the

[5] For example, Ordzhonikidze, the head of the top-priority Ministry of Heavy Industry, was one of the most important members of Team Stalin from the late 1920s to his death in 1937. Stalin's brother-in-arms, Voroshilov, headed the military office, which was the most important non-economic branch of government.

[6] Soviet planning literature, e.g. Strumilin (1958), suggested that the ultimate *raison d'être* of retail distribution and reserve funds, in particular, was to correct for inevitable minor planning errors or to make allowances for possible production failures.

[7] The remaining eight percent had some important information missing, often because of illegible handwriting.

[8] We know that Defense Minister K. Voroshilov was officially a member of the Molotov Commission before 1933, and probably remained in charge of military retail allocation afterwards. His signatures appear incidentally in the 1933 documents, in particular, for imported cars.

Table 1
Retail and wholesale allocation of vehicles in 1933 by branch, percent of annual total

| | Allocated through wholesale process (quarterly plans) | Requested from retail process | Actually allocated through retail process |
|---|---|---|---|
| Agriculture and food industry | 45.4 | 9.7 | 12.3 |
| Heavy industry | 17.9 | 2.2 | 1.1 |
| Army | 13.8 | N/A | N/A |
| Control agencies | 6.6 | 3.7 | 6.2 |
| Civil administration[a] | 5.0 | 35.6 | 20.5 |
| Transportation and communications | 4.2 | 14.5 | 6.0 |
| Light industry | 2.0 | 0.3 | 0.5 |
| Timber and small-scale industry | 2.0 | 10.4 | 2.7 |
| Construction | 1.0 | 1.5 | 1.9 |
| Party | 0.9 | 3.0 | 12.5 |
| Foreign trade | 0.8 | 3.2 | 7.4 |
| Social services (health care, education, etc.) | 0.2 | 6.4 | 8.9 |
| Public organizations | 0.1 | 1.6 | 4.7 |
| Arts and media | 0.1 | 6.6 | 8.8 |
| Research institutions | 0.0 | 1.3 | 6.4 |

*Source*. Archives of the Council of Ministers of the USSR. Calculations by the authors.

[a] Civil administration, regional and local *Soviets*, submitted primarily requests on behalf of local enterprises and municipal services.

characteristics of the petition itself, most importantly, the type of argumentation used by its author.[9]

Paradoxically, retail allocation produced a greater number of documents than did the wholesale process, mostly due to the lack of barriers to entry. The Molotov Commission used its own small staff, consisting of an adviser on transportation with the easily remembered name of Gorbachev (probably unrelated to Mikhail Gorbachev) assisted by two secretaries, to process all applications. Gorbachev processed most petitions himself in a most cursory fashion, typically underlining the name of the petitioner, the number requested, and sometimes the stated use, prior to sorting into categories. Most of the information transmitted by petitioners, e.g., often quite detailed calculations and explanations based on production needs and impending plan failures, was not even passed on to the decision-makers, creating a substantial waste of information. The orders that had been personally reviewed by Molotov, about 50, reveal much more attentive reading than those processed by Gorbachev, but Molotov himself was apparently unable to keep track of the details of distribution of even one commodity, albeit a very important one.

[9] Petitions contain no data on the petitioner's existing fleet, and there is no evidence that the dictator ever requested such information. Lazarev and Gregory (2002) have shown that gathering reliable fleet information was too costly and such information was easily distorted. This fact excludes outright the theoretical possibility that the dictator was motivated by altruism. Without fleet data, a dictator intent on equity would be unable to determine who needs more.

## 3. Modeling the dictator

### 3.1. The general framework

We consider two alternative models of dictatorial allocation, namely, economic planning and political gift exchange. Both models assume a rational dictator who allocates vehicles to maximize his total payoff from vehicle distribution. Each allocation of vehicles as a response to request $i$, $V_i$, brings D some payoff, $P_i(V_i; W_i)$, where the parameter, $W_i$, characterizes the weight of the petition. Thus, the relative expected payoff from an allocation to a given claimant depends on the properties of the petitioner and petitioner's organization, as well as on the attributes of the request itself. Our data set is opaque with respect to the petitioners' behavior, revealing almost no information about their motives in claiming specific amounts. Therefore, we regard amounts claimed as exogenously determined self-constraints.[10]

According to this formulation, D's maximization problem is:

$$\max \Sigma P(V_i; W_i) \quad \text{where } i = \{1, I\} \text{ and } I \text{ is the total number of requests;} \tag{1}$$

subject to:

- D's resource constraint $\Sigma V_i = V_a$, where $V_a$ is total number of vehicles available; and
- the claimants' self-constraints $V_i \leqslant R_i$, where $R_i$ is the requested amount.

The optimal interior solution equates marginal payoffs in every allocation so that we have

$$P'\left(V_i^*; W_i\right) = P'\left(V_j^*; W_j\right), \quad \forall i, j. \tag{2}$$

The true optimal allocation is unobservable because, due to the discrete nature of the commodity and the constraints, $V_i$ can take on only integer values in the range $\{0, R_i\}$.[11] In the following sections, we make specific assumptions about D's payoff function, $P(V_i; W_i)$, depending on whether it applies to the economic planning or the political gift exchange model.

### 3.2. The economic planning model

Vehicles were a highly scarce and important input for virtually all branches of industry. In particular, the collectivization of agriculture from 1929 to 1932 led to a dramatic decline in the number of horses, which had been the principal tractive power for agriculture and local transportation. Vehicles were needed desperately as substitutes but were produced in small numbers in 1933. Therefore, D had to pay considerable attention to their allocation to prevent a collapse of output, which could undermine D's power. Moreover, the small

[10] We can treat the amount claimed as a claimant's maximum capacity in a given proposed use, or as a maximum want. In other words, it is assumed that $P(V_i)$ is flat when $V_i > R_i$, which is the requested amount.

[11] The proportion of interior solutions in our data set, i.e., claimants getting less than they asked for but more than zero, is a small but significant 16 percent. From this, we infer that $P(V_i; W_i)$ is strictly concave, which is a necessary condition for interior solutions at least for some $i$'s.

scale of vehicle production meant that distribution could be monitored carefully. These factors suggest that D could aim at distributing vehicles in the most beneficial manner for the economy, that is, behave in the short-run as a stationary bandit.[12]

In the economic planning model, D maximizes the utility of output given by

$$P(V) = U\big(F_1(V_1), \ldots, F_i(V_i), \ldots, F_I(V_I)\big), \tag{3}$$

where $F_i$ is agent $i$'s production function.[13] From the extensive Soviet planning literature, e.g., Levine (1959), Montias (1959), and Gosplan (1980), we know that D did not believe in diminishing returns and assumed fixed production coefficients. Therefore, we can assume linear production functions given by

$$F_i(V_i) = W_i V_i,$$

where $W_i$ is the D's estimate of the productivity of vehicles in the use implied by the $i$th request, that is,

$$W_i = E_i / R_i, \quad \text{where } E_i \text{ is expected output.}$$

Assuming a CES utility function, we obtain

$$P(V) = \Sigma A_{k(i)} (E_i V_i / R_i)^{\theta}, \tag{4}$$

where $A_k$ denotes the relative preference for the $k$th industry's output[14] and $\theta \in (0, 1)$.

Solving the optimization problem yields the following optimal allocation conditions:

$$A_{k(i)} (E_i / R_i)^{\theta} \theta V_i^{\theta - 1} = \lambda \quad \text{for } \forall I, \text{ where } \lambda \text{ is the Lagrange multiplier.}$$

By taking logs and rearranging the terms, we arrive at a testable specification of the model:

$$\log(V_i) = 1/(1-\theta) \log(\theta A_{k(i)}/\lambda) + \theta/(1-\theta) \log E_i - \theta/(1-\theta) \log R_i. \tag{5}$$

We can interpret the process, underlying the economic planning model, as an auction, whereby D allocates resources to subordinate managers who offer the highest bids in terms of output–input ratios (Olson, 1995). The major uncertainty for D is expected output $E_i$. The only immediately available information about $E_i$ is the text of the petition that can be regarded as an investment project proposal. The economic planning model suggests that D should take into account the production capacity of the claimant, consider economic reasons used to substantiate the claim, and pay special attention to letters of support from the claimant's superior or planning agencies, because they make claims more credible. Thus, expected output, $E_i$, is a function of specific attributes of the $i$th petition.

[12] Both trucks and cars were regarded as an investment good to be paid out of special investment accounts. Cars were rarely allocated for private consumption. Even famous writers, e.g., Serafimovich and Prishvin, felt it necessary to justify their claims by a production need, e.g., a car would aid them in collecting materials for their new books, when asking Molotov for a car.

[13] More precisely, it is the projection of the $F_i(V)$ production function onto the vehicles plane, i.e., the partial functional dependence between output and vehicles input.

[14] We assume that every claimant belongs to some industry producing a final output that is valued by D as such. Non-economic agencies, e.g., army, police, and arts, produce valuable services; therefore they are treated as industries. Consequently, the notation $k(i)$ indicates that every request $i$ is submitted by a claimant belonging to some industry $k$.

### 3.3. The political gift exchange model

Our data are from 1933, a year which constituted a short interlude between two periods of highly coercive policies, namely the Great Break (1929–1932) and the Great Purge (1937–1938). During this interim period, D was compelled by economic and social upheavals to retreat into relative liberalization. In this setting, D could have concluded that acquiring additional loyalty was less costly than sustained repression. Thus, we can model vehicle distribution during this period as a gift exchange, in which vehicles are given to those agents whose loyalty is particularly important. The Soviet dictator distributed vehicles at below-equilibrium prices in return for loyalty, much in the same way that managers exchange above-equilibrium wages for increased work effort, an arrangement labeled partial gift exchange by Akerlof (1982). Our data provides only one snapshot of the process, which is normally a repeated game involving trust and reciprocity. Consequently, we can focus only on a single act of gift-giving rather than on its dynamics. Following Camerer (1988) and Offer (1997), we interpret D's gifts of vehicles as regard signals intended to persuade agents of D's willingness to maintain patronage and to elicit agents' cooperation. The problem D must solve is to distribute scarce gifts optimally among numerous claimants.

Gift exchange is likely to prevail over market transactions when the market is thin and high search costs make it difficult for agents to obtain goods through anonymous interactions (Kranton, 1996). Soviet vehicle distribution provides a favorable setting for gift exchange. Lazarev and Gregory (2002) show that the limited Soviet quasi-market for new and used vehicles created strong incentives to look for gift exchange.[15] D was even more constrained. By prohibiting civil freedom and democracy, D was cut off from political markets where it could buy support,[16] and was left only with gift exchange. Additionally, the scarcity and flair of all vehicles, even trucks, made them perfect gifts.

In the gift exchange model, D seeks to maximize the expected returns from gift giving, assuming the ability to assess the relative importance of petitioners in terms of potential loyalty and support. We assume that D's return, namely, the loyalty that accrues with the allocation of vehicles to a claimant, is proportional to the claimant's utility increment from receiving the gift. D expects the agent to pay back with more support the better claims are satisfied. The claimant derives unitary utility from complete satisfaction of a declared want, i.e. $V_i = R_i$, and zero utility from being allocated nothing, i.e., $V_i = 0$. Between these extremes, the claimant's utility $U$ is a monotonic projection of relative satisfaction of the claim, $V_i/R_i$, onto $U = (0; 1)$. D weighs utility derived from awarding vehicles to claimant $i$ according to relative importance or political weight, $W_i$. Using the same

[15] Semi-legal markets for some goods like timber and construction materials were quite developed and played a significant role in allocation. This was not the case for vehicles. A number of first-time petitioners in our sample report that they were approaching the government only after they discovered that it was impossible to buy a vehicle elsewhere.

[16] The Soviet government had access to international political markets, e.g., the exchange of foreign aid for support in the United Nations analyzed by Lundborg (1998). Although Lundborg treats this as gift exchange, conditions of rivalry and perfect observability of political support bought by the aid, e.g., voting in favor of USSR proposals in the UN sessions, make foreign aid allocation a quasi-market activity. On the contrary, at home, there was neither an apparent competitor nor an immediate valuable response from D's beneficiaries.

assumptions about the shape of the utility function as in the economic planning model, D's payoff function becomes

$$P(X) = \Sigma E_i (V_i / R_i)^{\theta}. \tag{6}$$

Solving the maximization problem in a similar fashion, we derive the following equation:

$$\log(V_i) = 1/(1-\theta)\log(\theta/\lambda) + 1/(1-\theta)\log W_i - \theta/(1-\theta)\log R_i. \tag{7}$$

Equation (7) differs from the economic planning model, of Eq. (5) in that $W_i$ replaces $E_i$ and explicit industry effects $A_k$ are absent. Without loss of generality, we can define the relative importance of a request in the economic planning model as

$$W_i = A_k E^{\theta}.$$

Hence, the two model specifications are formally identical, differing only in the meaning and composition of $W_i$.

It is convenient to assume that $W_i$ is a multiplicatively-separable function of request attributes $Z_{ij}$ and an error term $\varepsilon_i$. The error term appears because of D's imperfect information, limited information-processing capabilities, and, possibly, some voluntarism in decision-making. Then we have the following equation for the estimation of both models:

$$\log(V_i) = \text{const} + \boldsymbol{Z}_{ij}\beta_j - \theta/(1-\theta)\log R_i + \varepsilon_i. \tag{8}$$

This specification allows us to test a single nested model involving all relevant attributes in $Z_j$, and draw conclusions on the basis of juxtaposing expected and estimated effects of relevant variables.

## 4. Testable hypotheses

The two models allow us to generate hypotheses concerning the sign, significance and, at times, the relative magnitude of various attributes of the petitioner and of the petition. For the reader's convenience, we provide a list of hypotheses in Table 3 alongside a summary of estimation results.

In the economic planning model, we expect industry branch variables and attributes that could be used to evaluate relative productivity to have significant effects. The significance of branch effects, $A_k$, is a necessary condition for the economic model, with the magnitude of effects depending on the priority of the branch. Although explicit branch priority specifications are not available, we can draw some information on ranking from the wholesale allocation (Table 1, column 1). We expect branch effects to be ordered in approximately the same way, when branches are of comparable size. In particular, we expect a stronger effect for heavy than for light industry, which were roughly the same size, while the former had much higher priority. Even when the industry size effect obscures preferences, most branch coefficients should still be statistically significant.

Expected output can be approximated by the combination of the territorial, i.e., national, republican, regional, or local level of the petitioner's organization and its position in the

economic management hierarchy.[17] Thus, we expect significant positive effects for both territory and hierarchy level variables. Other productivity-related attributes include the economic rationale of the request[18] and support from the petitioner's superior, typically, the ministry, planners, or top leaders of the party and state. These attributes should have significant positive effects because they increase the credibility of submitted claims. Support by planners is likely to have the largest positive effect, since planners supposedly have the most precise and complete information about productive capacity.

Additionally, the petitioner's ability and/or right to buy the requested number of vehicles could have positive effects. Although Soviet economic agents generally faced soft budget constraints (Kornai, 1980), financial constraints were used to filter out ungrounded claims. A special governmental decree of 1933 stated that only agents who had money to buy could submit claims for vehicles, although some exceptions were allowed. Therefore, confirmation of adequate funds might be significant. The claimant's right to vehicles was typically asserted by referring to favorable preliminary decisions or to unimplemented decisions. In the economic model, information that a petition had already received favorable reviews should increase its relative weight.

The logic of the political gift exchange model suggests that attributes related to economic efficiency are irrelevant. What is important is whether the petitioner is able to contribute directly to D's hold on power through an input of loyalty. Therefore, the gift exchange model predicts that only variables that characterize political institutions, i.e., party, civil administration, army, and control organs,[19] will have significant positive effects. Celebrity status should also have a positive effect in that top scientists, artists, and literary figures influence public opinion both within and outside the country. Level in the territorial hierarchy should have a positive effect because it is related directly to the political weight of the claimant. Level in the management hierarchy is unlikely to be significant as are other variables specific to the economic planning model.

Indicators of close connections to D and to D's immediate circle should have positive effects because loyalty is typically personalized. Membership in D's club can be characterized by whether one of D's immediate associates supports the petition or by whether the petitioner signs the request with his own name, rather than the name of the organization, to suggest a personal acquaintance with the decision-maker. Support by top leaders should have a very strong positive effect. Direct political rationale, such as the strategic importance of the claimant's territory, e.g., borderland or territory with dominant non-Russian population, or production unit, e.g. enterprise catering to military or defense industry, and more or less explicit pledges of allegiance, e.g., promises to struggle for

[17] We assign numbers to various levels by powers of ten to represent the difference in size between adjacent levels; for example, we let enterprise equal 10 and ministry equal 10,000.

[18] Of the economic arguments used to substantiate claims, the most frequent were calculations of the anticipated effect on plan fulfillment and cost reductions, and reference to particular economic conditions, such as the lack of alternate transportation. Since each category appears in a relatively small number of cases, we use one aggregate variable, denoted economic argument, to capture this effect.

[19] Harris (1999) argues that, insofar as the Central Committee of the Communist Party was comprised largely of regional officials, their loyalty was essential to the leader's power. On the other hand, loyalty of the agents providing repressive services is crucial for the dictatorship. Our category designated control organs includes various law enforcement and political control agencies, the absolutely largest of which is the secret police, OGPU.

socialism or similar slogans that can be interpreted as promises of support for the regime, could have positive effects in the gift exchange model. However, the fact that the petitioner must make such arguments explicitly may reveal outsider status and, hence, may actually signify relatively low political weight.

Finally, D's choice in the political model may be affected by the claimant's location. Petitions, originating in the capital city of Moscow, should have a positive effect insofar as close proximity to the locus of decision-making in a dictatorial system is an advantage, which is supported by Ades and Glaeser (1995). Anecdotal evidence indicates why proximity does matter. Moscow petitioners had better information and understood the rules of the game better; they had better chances of arguing their cases directly before the Molotov Commission and of finding appropriate sponsorships.[20] In the economic model, two political variables, namely, petition signed by name and Moscow location, should have negative effects. The informal nature of the petition in the first case should influence negatively a rigorous economic planner. Claimants based in Moscow, already overcrowded with small garages, would also have been considered suboptimal in terms of economic efficiency.[21]

Two variables, namely, log of amount claimed and the attribute New Organization, should have the same effect in both models by construction. The former should be strictly negative following from Eq. (8) and the assumptions about the shape of D's payoff function. Newly established organizations definitely possess no vehicles, which gives them a priority over other claimants who make less credible statements about the lack of transportation. Then, D can expect that a vehicle allocated to a new organization will bring higher marginal payoff, *ceteris paribus*, in terms of either loyalty or output, respectively.

## 5. Estimation

Our estimation strategy is determined by the fact that the optimal solution $V_i^*$, given by Eqs. (5) and (7), is a continuous and unbound latent variable. The presence of self-constraints prevents us from observing true optimal allocations falling outside of requested amounts. Therefore, observed decisions to satisfy requests in full, i.e., $V_i = R_i$, are right-

[20] A delegation from the Young Communists League from the remote city of Poltava spent two weeks in Moscow seeking support for their request for vehicles and finally got a meeting with Molotov's deputy, Rudzutak. Although they left with a promise to consider their request at the next meeting, they got nothing and there is no indication that their request was ever examined. The reverse happened to TASS, a news agency located in Moscow, whose request was initially rejected because of a large number of vehicle-allocation decisions made just before its submission. A month later, TASS director sent to Kuibyshev, Molotov's deputy, a letter revealing that the petitioner was very well informed: "Our application is in your [office]... There were no autos earlier; now they are available, and we need a new resolution." This time the claim was accepted. The importance of proximity is emphasized by the fact that all sorts of non-Moscow organizations, from regional administrations to single large enterprises, sought to improve their position by establishing representative offices in Moscow.

[21] For example, in late 1932, the Ministry of Control reported to the government that its investigation had revealed more than a hundred garages in Moscow, mostly belonging to small bureaucratic organizations, where vehicles were used inefficiently. The ministry proposed to merge these garages and sending redundant vehicles to production enterprises located outside of Moscow.

censored. The discretization effect, which can be neglected in the interior of the response variable range, is crucial at its left end. All requests that should be allocated optimally for some fraction of the time, or, more generally, an amount less than some lower threshold, must be considered as zero, i.e., $V_i = 0$. Therefore, our sample is also left-censored so that we use censored regression, with the censoring on both ends of the response variable range.[22]

We hypothesize that decision-makers used either truncation or rounding to perform discretization. In the case of truncation, the amount actually allocated is the integer part of the optimal amount, so that we have

$$V_i = Y \quad \text{if } Y \leqslant V_i^* < Y + 1.$$

Zeros are observed when the optimal allocation is just below one, and the requested amount is given in full when $R_i \leqslant V_i^*$.

In the case of rounding, the optimal amount is rounded to the nearest integer number so that we have

$$V_i = Y, \quad \text{if } Y - 0.5 \leqslant V_i^* < Y + 0.5.$$

In this case, zeros are observed when the optimal allocation falls short of one half, and the requested amount is given when $V_i^* \geqslant R_i - 0.5$.

The relatively small share of uncensored observations and the discretization effect suggest that a rough categorization of outcomes is a valid option for estimation. Hence, we use also an ordered probit model with a three-value response variable: received nothing, received less than claimed, received all that was claimed. Consequently, we have

$$Y_i = \begin{cases} -1, & \text{if } V_i^* < 1 \ (V_i = 0), \\ 0, & \text{if } 1 \leqslant V_i^* < R_i \ (1 \leqslant V_i < R_i), \text{ and} \\ 1, & \text{if } V_i^* \geqslant R_i \ (V_i = R_i). \end{cases}$$

In all three versions, we use the composite amount of vehicles claimed as the $R$ variable. The response variable $V$ in the censored regression estimation is constructed in the same fashion. We consider vehicles, rather than separate car and truck models, for the following reasons. First, a large proportion, 24%, of all petitions request both cars and trucks. Petitions were examined as a whole, which is how they appear in the listings prepared by Gorbachev for the Commission, and they were rejected or accepted mostly as a package. Thus, we cannot treat allocated trucks and cars in the cases of mixed claims as independent variables, even if these commodities were completely unrelated and claims were bundled for no particular reason. Second, cars and trucks, in their function as regard symbols, were highly substitutable. Claimants never expressed the idea of substitutability explicitly, but we have ample evidence that D did consider cars and trucks as substitutable.[23]

[22] Right-censored observations, i.e., claims that were satisfied completely, comprise 14 percent of observations; 70 percent of observations are left censored, i.e., claimants got nothing.

[23] The output of the automobile industry was always given in public reports as the number of vehicles, rather than separated into cars and trucks. The same practice was followed in draft distribution plans. Petitioners were sometimes given more trucks than they asked for and less cars or vice versa. In one extreme case, the Chuvash

The composite vehicle variable is constructed as a weighted sum of cars and trucks. A natural choice for the weighting coefficient is the price of cars relative to trucks, but the official disequilibrium price is not a reliable indicator of relative scarcity. A more direct scarcity measure, although far from perfect, is the ratio of trucks and cars available for retail allocation. Fortunately, both approaches yield the same ratio of about one to two. We apply this coefficient to the whole data set, ignoring variations of the trucks to cars ratio over the four quarters studied, during which time the price ratio was constant.

Table 2 provides the complete censored regression and ordered probit estimation results. For the readers' convenience, Table 3 provides a qualitative summary of the most robust estimated effects to compare with our hypotheses. Signs listed in the rightmost column of Table 3 generalize the results of the two variants of censored regression and ordered probit. The results offer impressive support for the political gift exchange model. All the effects crucial for the discrimination between the two models conform to the predictions of the political model. Petitioners who were part of D's club enjoyed the best chances of success. Support by top leader, celebrity status, and signed by name attributes have the strongest effects, regardless of the estimation method used. Proximity to D, i.e., Moscow location, also has a positive but less strong effect.

None of the attributes important for the economic planning model, namely, major industrial branch, hierarchical level, support by planner, economic reasoning, or right/ability to buy, enters the estimated model with the expected sign or significance. Most striking are the negative effects of support by planner, or economic reasoning, and of the statement of right/ability to buy. Significant positive branch effects are restricted to control agencies and party, as predicted by the political model, and, quite unexpectedly, to foreign trade.[24] The economic branch variables are jointly insignificant. The joint probability for the effects, specific to the economic model to have the expected signs is practically zero. Therefore, we conclude that the political gift exchange model not only dominates in the retail allocation of vehicles but that the pattern of decision-making exhibits an anti-economic component.[25]

It is hard to believe that the unexpected signs of the economic variables suggest D's outright opposition to economic efficiency. Rather they should be interpreted as indicative of D's reluctance to be constrained in decision-making. Rules, implying some sort of impersonal constitution independent of D, diminish the power of discretion, and, hence, the political payoff from gift-giving. In fact, rule-based allocation cannot be considered as a gift at all, because it lacks the personification that makes the gift valuable (Offer, 1997). Factors important in the context of economic planning are explicitly or implicitly bound to

autonomous republican government was given 20 cars instead of the 10 trucks requested as the republic's reward for economic achievements. In addition to indifference about the kind of gift, the idea of substitutability could come from D's idiosyncratic engineering perspective, namely, if technological distance between a car and a truck is not large and most are produced in the same plant, all vehicles are basically the same.

[24] The latter effect can be interpreted as an indication of corruption. The Ministry of Foreign Trade was the government's agent implementing the state monopoly of foreign trade and the main producer of some specific export goods, e.g., oriental rugs. At this time, several officials of the ministry were accused of bribing local administrators, which suggests that they could establish reciprocal gift exchange with governmental officials by using their effective control of the resources that D planned to exchange for strategic imports.

[25] Because of the complete failure of the economic model, we do not report here the results of separate estimation of economic and political models.

Table 2
Estimation results

| | Censored regression | | Ordered |
|---|---|---|---|
| | Truncation | Rounding | probit |
| Claim | −0.148 (0.126) | −0.181 (0.143) | −0.121** (0.041) |
| Management level | 2.460e–05 (7.380e–05) | 2.270e–05 (8.390e–05) | 3.270e–05 (2.370e–05) |
| Territorial level | 3.269e–04** (5.170e–05) | 3.813e–04** (5.890e–05) | 5.300e–05** (1.630e–05) |
| **Branch** | | | |
| Agriculture | −0.078 (1.060) | −0.097 (1.214) | −0.039 (0.328) |
| Heavy industry | −1.114 (1.254) | −1.304 (1.432) | −0.323 (0.414) |
| Control | 1.933** (0.899) | 2.036** (1.024) | 0.655** (0.290) |
| Transportation | −0.099 (0.892) | −0.086 (1.020) | 0.020 (0.296) |
| Light industry | −1.268 (1.325) | −1.474 (1.511) | −0.276 (0.430) |
| Small-scale industry | −2.599** (1.151) | −2.994** (1.315) | −0.788** (0.378) |
| Construction | −0.948 (1.493) | −1.062 (1.705) | 0.096 (0.447) |
| Party | 1.189** (0.601) | 1.342** (0.683) | 0.360* (0.195) |
| Foreign trade | 2.603** (1.302) | 2.845** (1.491) | 0.757* (0.425) |
| Social services | −0.870 (0.781) | −1.032 (0.889) | −0.199 (0.252) |
| Public organizations | −1.868** (0.870) | −2.170** (0.992) | −0.399 (0.277) |
| Arts and media | 0.274 (0.785) | 0.323 (0.896) | 0.169 (0.255) |
| Research | 1.076 (0.808) | 1.238 (0.921) | 0.449* (0.260) |
| **Rationale** | | | |
| Economic argument | −0.912* (0.484) | −1.014* (0.550) | −0.201 (0.155) |
| Pledge of loyalty | −2.121** (0.825) | −2.425** (0.937) | −0.581** (0.251) |
| Right/ability to buy | −1.471** (0.669) | −1.666** (0.763) | −0.531** (0.212) |
| Strategic significance | 2.367* (1.396) | 2.685* (1.597) | 0.633 (0.465) |
| **Support by** | | | |
| Planner | −1.212 (0.986) | −1.337 (1.124) | −0.309 (0.316) |
| Superior | 1.364* (0.795) | 1.557* (0.906) | 0.558** (0.258) |
| Top leader | 2.628** (1.195) | 3.128** (1.371) | 0.895** (0.390) |
| **Other attributes** | | | |
| Celebrity | 3.564** (1.286) | 4.150** (1.476) | 1.140** (0.402) |
| Located in Moscow | 1.128* (0.700) | 1.179 (0.799) | 0.383* (0.225) |
| New organization | 1.663* (0.922) | 1.880* (1.050) | 0.587** (0.304) |
| Signed by name | 2.087** (0.598) | 2.361** (0.684) | 0.661** (0.189) |
| **Ancillary parameters** | | | |
| Constant | −2.096** (0.811) | −2.821** (0.923) | N/A |
| Scale factor | 3.038** (0.267) | 3.470** (0.307) | N/A |
| Cut point 1 | N/A | N/A | 0.744** (0.250) |
| Cut point 2 | N/A | N/A | 1.433** (0.254) |
| Likelihood ratio | 155.2 | 157.3 | 122.2 |
| Pseudo-$R^2$ | 0.145 | 0.143 | 0.130 |

*Notes*. Standard errors are in parentheses. Asterisks denote significance level in that * indicates 10 percent and ** indicates 5 percent. The significance level in all likelihood ratio tests is below $10^{-5}$. Branches are listed in the order of diminishing share in the distribution plans. Civil administration is omitted as a reference group in branch.

Table 3
Expected and estimated effects of petitions attributes (summary)

| | Expected effects | | Estimated effect |
|---|---|---|---|
| | Economic planning | Political gift exchange | |
| Amount claimed log($R$) | $< 0$ | $< 0$ | $< 0$ |
| Level in economic management hierarchy | ++ | 0 | |
| Territorial level | + | + | + |
| | Conform to planners preferences | Unrelated to planners preferences | Unrelated to planners preferences |
| **Rationale** | | | |
| Economic argument | + | 0 | – |
| Pledge of loyalty | 0 | +? | – |
| Right and/or ability to buy | + | 0 | – |
| Strategic significance | 0 | + | + |
| **Support by** | | | |
| Planner | ++ | 0 | (–) |
| Superior | + | + | + |
| Top leader | + | ++ | ++ |
| **Other attributes** | | | |
| Celebrity | 0 | ++ | ++ |
| Petitioner located in Moscow | – | + | + |
| New organization | + | + | + |
| Petition signed by name | – | + | ++ |

*Notes.* Signs summarize censored regression and ordered probit results in Table 2. Double plus denotes relatively stronger positive effect.

formal rules, and references to rules imply that the petitioner does not belong to the club of loyal clients. The negative effect of the pledge of allegiance, which is an explicitly political type of reasoning, can be explained either from the same club-membership perspective or by the lack of credibility of such a pledge. By comparison, another sort of political argument, namely, the strategic importance of a claim, could be verified easily by the decision-makers, who watched all strategic projects closely. Therefore, the effect should be positive.

Additional support for the gift exchange model is provided by the coefficients for the amount claimed at the top of Table 2. This coefficient is between $-0.12$ and $-0.18$, which translates into setting $\theta$-approximately equal to 0.1 in the utility function specifications in Eq. (8). Under the economic planning interpretation, this coefficient implies a very high degree of risk aversion. This is implausible for a dictator who launched numerous risky construction projects throughout the 1930s. Under gift exchange, rapidly diminishing marginal payoffs are quite likely, since the very act of giving is of foremost importance, while the size of gift is secondary. Thus, the expected payoff from the allocation of the first unit is much larger than from additional units.

Table 4
Success vs. failure: actual and predicted outcomes

| | | | Success | Failure | Total |
|---|---|---|---|---|---|
| All | Actual | | 176 | 381 | 557 |
| observations | Censored regression | Truncation | 103 (58.5%) | 285 (74.8%) | 388 (69.7%) |
| | | Rounding | 110 (62.5%) | 266 (69.8%) | 376 (67.5%) |
| | Ordered probit | | 33 (18.8%) | 371 (97.4%) | 404 (72.5%) |
| Favorites | Actual | | 157 | 379 | 536 |
| excluded | Censored regression | Truncation | 82 (52.2%) | 290 (76.5%) | 372 (69.4%) |
| | | Rounding | 87 (55.4%) | 273 (72.0%) | 360 (67.2%) |
| | Ordered probit | | 13 (8.3%) | 374 (98.7%) | 387 (72.2%) |

*Note*. Numbers in parentheses indicate percentage shares of correctly predicted outcomes.

Our results are affected by the small and peculiar group of favorites, which total 21 petitions; these claimants enjoy top-level support and/or celebrity status.[26] To control for the potential distortion introduced by their presence, we ran the regressions on a sub-sample with the favorites excluded. Although not reported, the results show that the favorites effect is minor. Most coefficients do not change significantly, with one exception being that the effect of Moscow location dwindles away. This indicates significant covariances in which the triad of personal significance, personal connections, and physical proximity to the dictator are linked.

The explanatory power of these statistical models yields an additional insight into D's decision-making. In order to obtain comparable and easy-to-interpret numbers, Table 4 presents a simple aggregate goodness-of-fit measure by translating the continuum of predictions into a dichotomy of outcomes. Success in obtaining vehicles denotes any positive allocation, whereas complete failure represents a zero allocation. For both the complete data set and the subset excluding favorites, Table 4 provides the actual number of successes and failures, alongside the outcomes predicted by each of the three estimation methods. The numbers in parentheses give the percentages of correctly predicted successes or failures. We find an unequal ability to explain outcomes, common to all versions of the model, in that failures are explained better than successes.[27] The difference is the largest when favorites are excluded. When the censored regression is used, only about one half of successful outcomes, 82 cases under the truncation assumption and 87 cases under the rounding assumption, are explained. On the other hand, failures are predicted correctly in about three quarters of cases, 290 and 273 cases, respectively. Thus, the process resembles a lottery with a pre-selection of participants. The rules for admission are fairly clear, if we interpret predicted failures as those who were not admitted, but the final outcome is decided by chance, unless the participant is a celebrity or manages to get support from the top.

[26] This is similar to the Nevada effect in the studies on the political economy of New Deal spending, discussed in Wallis (1998).

[27] Censored regressions provide relatively balanced predictions. The ordered probit model has a stronger bias towards predicting failure, although its overall predictive power is somewhat better than that of the censored regression.

Indeed, the 1930s was a time of lotteries in Russia,[28] but there is no need to resort to idiosyncratic preferences to explain this fact. Lotteries could serve the interests of a dictator quite well. First, D can favor particular petitioners by increasing the number of lottery tickets for that petitioner, as in the case of those with high-level supporters. Others, with general credentials sufficient to pass D's screening, enter the lottery with an uncertain chance of success, but with their incentives enhanced by the prospect of winning a scarce deficit good. Even completely random allocation strengthens D's authority, because it may look purposeful to uninformed claimants. If so, D's apparent inclination towards lotteries is well in accordance with D's aversion to rules and, in fact, reveals a preference for unconstrained discretion in decision-making.

## 6. Conclusions

Our analysis characterizes a dictator allocating one of the scarcest resources using a gift exchange rather than an economic planning model. If the dictator is influenced by short-run political considerations and the political influence of his clients is not strongly correlated with their economic importance, such resource allocation implies systematic drift from economic efficiency, even in the absence of competitive rent-seeking. Inefficient allocation undermines economic performance which, in turn, diminishes political power. The fact that our data cover a relatively small share of total transactions does not undermine the importance of our finding. We can infer that the larger wholesale process was subject to the same bias and that the relative weight of direct allocation by the dictator grew over time, peaking in the late 1930s and possibly remaining at a high level thereafter. If this trend were not restricted to cars and other perks, the devolution of the command economy started before industrial and regional interests allegedly took over the Soviet government in the 1970s.

There are alternatives to gift exchange to ensure loyalty and non-opportunism of the dictator's agents. Dictators can use direct exchange of rents for services in a sort of a feudal system whereby recipients of benefices assume certain responsibilities and are bound by a vassal's oath so that they have an implicit contract with the dictator. In fact, the Communist Party used such an exchange mechanism. The party member paid for certain privileges and better chances of promotion with his dues and labor services, and the dictator monitored beneficiaries and penalized disloyalty by withdrawing rents. Our study of vehicles does not reveal such a mechanism of exchange, which implies that the costs of monitoring were prohibitively high. Under this condition, gift exchange is the only viable option for acquisition of loyalty, as in labor contracting, if monitoring of effort is too costly. A further analogy with labor markets is that some claimants should be left out of the gift-exchange club, just as part of labor force is left unemployed. In fact, the size of the club should be relatively small, since the capacity of the dictator to distribute resources directly is limited.

[28] Deficit commodities were often available for regular household consumers only through lotteries. The vehicle allocation process was not unlike one of these consumer goods lotteries, even though this one involved a good that combined qualities of producer and consumer goods and was traded with largely institutional customers.

If loyalty is not only to someone but also against someone, that is, if the dictator faces a rival, gift exchange is inadequate because it provides no mechanism to prevent defection to a rival, but excludes a substantial number of potential supporters. Although Stalin was not yet an absolute autocrat in 1933, there was no serious political rival to Team Stalin, despite the fact that the failure of the first five-year plan placed it under considerable pressure. The dictator's most feared and enduring rival would have been perceived to be as freedom and independence of action, namely, a market-like system of mutually-beneficial bilateral transactions among agents. Independent actions in quasimarkets, in which even high level agents participated, were never defeated despite relentless efforts of governmental inspection and repressive agencies (Belova, 2001; Lazarev and Gregory, 2002). Market-like exchange constituted a permanent threat to the economic foundation of the dictator's power.[29] Conversely, binding economic agents to a single allocation network, which is managed by the dictator, strengthens political power, even in the absence of monitoring devices.

The larger the gift exchange network, the harder it is to exchange commodities in the market and the greater is the incentive to establish and maintain gift–exchange relations (Kranton, 1996). In our case, once the dictator began allocating strategic materials physically immediately after the 1917 Bolshevik revolution, it became relatively more beneficial to go to the dictator's store rather than to engage in costly market search. The dictator's immediate distribution of resources increased loyalty and, consequently, political power, but it had an unintended consequence. Local semilegal or illegal gift exchange networks emerged throughout the economy, alongside the dictator's network, compensating for absent markets and serving those not admitted to the dictator's club. These informal networks would eventually outlive the dictator and persist during the transformation period with the re-emergence of markets.

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