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Seductions of an Underdevelopment Trap: Systemic Impediments to Agricultural Reform in Russia

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Abstract

Despite ambitious agricultural reforms initiated by the federal government, inefficient and unprofitable producers predominate in post-Soviet Russia. However, in some regions, a more robust restructuring has taken place. Observing two Russian regions—one with substantially restructured agricultural production and one in which Soviet-style coordination predominates—we develop a model of the interactions between political and economic incentives that lead to these divergent outcomes. The model identifies region- and sector-specific characteristics that, while encouraging some regional governments to maintain Soviet-style redistribution structures and make producers forsake more efficient outcomes as more costly, push other regions to pursue reform.

Contents   Page

I. INTRODUCTION

The performance of Russian agricultural producers in the 1990s, the first decade of the agricultural reform, was not only disappointing but puzzling as well. The laws that laid down the foundation for individual farming were adopted for the first time by the last Congress of People's Deputies of the Soviet Russian Federation in 1990.[2] After the dissolution of the Soviet Union, the President of sovereign Russia issued a number of decrees that were to transform the collective farms, the dominant agricultural producers in Soviet times, into viable, profit-oriented entities.[3] Land and property of the collective farms were handed over to their employees, who were to choose to operate these assets either cooperatively or individually.[4] Blanket federal financing of collective agriculture was drastically curtailed. Subsidization of collective producers by the federal government fell from 10 percent of GDP in 1992 to about 2 percent of GDP in 1994 (Galbi, 1995).

These changes in legal structures and in the scale of state support were expected to trigger profound changes in the organization of agriculture. However, the large-scale nationwide distribution of land and property shares to the collective farm employees has not led to the expected reorganization of the sector along the lines of increased viability and efficiency. The number of newly created individual farms peaked in 1996 at an unimpressive 280,000 farms and then started to decline, reaching 270,200 in 1999.[5] At 2 percent of national agricultural output, individual farms continue to be marginal to national agricultural production. Nor have reforms led to a market-oriented restructuring of collective agricultural enterprises, which have been reregistered under new legal names, the most popular being the joint stock company (JSC). Most centrally, former collective farms remain dominant agricultural producers, even though the number of unprofitable enterprises increased from 5 percent in 1994 to 82 percent in 1998 (Goskomstat, 1997). Their total number has remained largely unchanged at 27,000, and their average landholding, while declining from 4,200 hectares to 2,900 hectares, is still large.

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[2] Starting with the Law on Peasant Farms (November 22, 1990) and the Law on Land Reform (November 23, 1990). For a detailed discussion of pro-reform agricultural legislation, see Brooks and Lerman (1994) and Wegren (1996).

[3] Presidential Decree (PD) No. 327, "On Immediate Measures for Implementation of Land Reform," and PD No. 341, "On Procedures for Reorganizing State and Collective Farms" (December 27 and 29, 1991, respectively).

[4] The legal framework was created by the laws and decrees mentioned above, as well as by PD No. 1767, "On Regulation of Land Relations and Development of Agrarian Reform in Russia" (October 27, 1993).

[5] Goskomstat (1998, p. 85) and Interstate Statistical Committee (1999).

The generally accepted explanation for the perseverance of unrestructured collective farms despite increasing rates of unprofitability is the emergence of systems of subsidies coordinated by regional governments (Epstein and Tillack, 1999). In many cases, regional governments have managed to reproduce Soviet structures for the coordination of inputs and to control markets for both inputs and outputs of collective farms, thus stunting the processes of market-oriented restructuring. However, this pattern has not been universal. In some regions, Soviet-style structures have not emerged, and agricultural enterprises have pursued restructuring. What incentives at the regional and enterprise levels explain these divergent paths of post-Soviet change?

In answering this question, this paper explores substantive characteristics of the agricultural sector in each region, as well as the overall role of agriculture in the regional economy, to understand the political and economic incentives that lead to divergent paths of sectoral change. In the analysis that follows, we consider two cases, Saratov Oblast and Leningrad Oblast. In Saratov, the regional government has acted to reconstruct Soviet-style coordination in the sector, and agricultural enterprises have undergone relatively little restructuring. In Leningrad, by contrast, the regional government has largely removed itself from direct coordination functions, and a much more active process of restructuring is under way. On the basis of empirical observations in Saratov and Leningrad Oblasts, we develop a formal model of the incentives for actors in each region and of the interactions between actors that determine the extent of reform in the sector.[6]

Until recently, the analysis of the effects of political configurations on economic outcomes has been the domain of political science rather than of economic analysis. Political scientists have been examining the dynamics of political and economic forces behind the successes and failures of reforms for generations, from the seminal work of Barrington Moore (Moore, 1966) to more recent insights by Robert Bates (Bates and Krueger, 1993; and Bates, 1989 and 1997), Peter Evans (Evans, 1995), and Barry Weingast (Weingast, 1992). In contrast, economists have only recently begun to examine the endogeneity of political actions to economic outcomes. Part of this discussion is dedicated to the examination of constraints that impede efficient outcomes of economic reforms. For example, Anne Krueger underscores the ability of politicians and bureaucrats to subvert the reform process, thereby undermining the incentives that govern economic actions and, ultimately, the economic development of nations (Krueger, 1993). More recently, economists have formally described how political and economic institutions interact not only to prevent the implementation of reform, but also

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[6] Alternative explanations of the regional differences in the pace of reform proved unsatisfactory. Historical levels of subsidization do not help understand the decision of local governments to finance agriculture. In a planned economy, all collective agricultural production was centrally financed, regardless of the profitability of enterprises, and local discretion in the decision to subsidize was minimal. Efforts to relate the present levels of subsidization of collective farms in the *oblasts* studied to the share of disposable budgetary resources of the *oblast* have not borne fruit, either (Freinkman, Treisman, and Titov, 1999).

to preserve suboptimal institutions or patterns of interactions--what Karla Hoff (2000) has called an underdevelopment trap.

The model in this paper examines when such "underdevelopment traps" do or do not occur in regional agriculture by examining the incentives for two sets of actors – regional administrators and collective producers. We identify a number of region- and sector-specific characteristics that determine the costs and benefits to regional elites from recreating Soviet-style coordination arrangements versus letting the market dominate exchanges in agriculture.

The relevant **sector-specific** characteristic favoring Soviet-style coordination is **the low complexity of inputs** needed for crop production.[7] Providing two main inputs, fuel and parts for agricultural machinery, discretely – twice a year for harvesting and sowing, not continuously as is the case with the majority of industrial processes – is within the capability of a subnational government, even when the national planning and distribution systems have been dismantled. For livestock, for example, such inputs as heat and fodder are needed daily, and re-creation of a coordination system for this subsector would be much more difficult. Therefore, the reconstitution of Soviet-type coordination in those regions where livestock production is dominant would be a much more costly proposition.

Another important characteristic that increases the benefits of creating Soviet-type coordination is **synergies between the agricultural production of collective agricultural enterprises and the individual household production of collective farm employees.** The use of subsidized inputs as means of transferring subsidies from the enterprise to its employees makes synergies between the collective farm and personal household production of employees factors in the sustainability of subsidization schemes. For example, in a grain-producing region, collective enterprises can pass fodder, grain, and hay to their employees for small-scale livestock production. The efficiency of such a two-tier subsidization notwithstanding, the effect of the subsidy is multiplied.

A number of **regional** characteristics have been identified as relevant for the propensity to reform. These include, first, **the share of agriculture in the gross domestic product of the *oblast* and the share of the population of the *oblast* involved in agricultural production;** second, **the share of top *oblast* officials skilled in Soviet-type distribution of resources;** and third, **the availability of key agricultural inputs within the *oblast* territory.**

The shares of the *oblast* GDP and the population involved in agricultural production are important politically because regional governments can reach larger shares of their population through the redistribution of resources and cross-subsidization, thus reaping larger political dividends. Economically, a larger agricultural sector allows a regional

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[7] The role of complexity of inputs in the pace of post-Soviet restructuring was first noted by Blanchard and Kremer (1997).

administration to obtain higher rents from the redistribution exercise and to justify the costs of reconstituting the coordination structures.

The second relevant characteristic, the skills in Soviet-style coordination, is shared by both the regional administration and the collective farm management (in the Soviet past, these people came from the same managerial pool and possessed similar skills). These skills prominently include the ability to coordinate the distribution of resources in a top-down manner between input providers and the producers. The breadth and efficiency of such redistribution schemes have traditionally determined the political and economic success of regional agricultural elites, and these elites do not to want to see these skills outlive their usefulness, which may threaten their positions of power. Also, the ability to reconstitute top-down redistribution schemes and remain at the helm of such an arrangement diminishes potential competition from management teams skilled at more market-oriented regulatory administration. The larger the share of the regional administration interested in the preservation of their skills and connections, the more likely and less costly is the maintenance of redistribution schemes.

The third relevant characteristic, the availability of inputs within the territory of the *oblast*, is important because the *oblast* government can provide tax incentives for the local input producers to deliver inputs to agricultural enterprises at subsidized rates. It is more difficult to arrange for such cash-free transactions with enterprises that are outside the jurisdiction of the regional government.

Considering the above-described characteristics, which can either lead to the preservation of inefficient outcomes or spur change at the regional level, it is important to note that the paper examines the problem as systemic – a much broader interpretation than is allowed by a clientelistic rent-seeking framework. For example, in the Saratov Oblast, the provincial government is making an effort to support all collective agricultural producers, not just a select group of clients; this points to the fact that this is not a case of an ad hoc rent-seeking, but an effort to preserve systemic political and economic relations that allow local administrators to enjoy a particular mix of political and economic benefits.

The paper is organized as follows. Section II presents empirical evidence of the paths of the Russian agricultural reform and its effects on collective farm employees in the more interventionist Saratov Oblast and the relatively laissez-faire Leningrad Oblast. In Section III, we present the formal model of the relationship between the government and the collective agricultural producers. The analytical solution is derived and discussed in Section IV. Section V presents policy recommendations and concludes.

II. EMPIRICAL EVIDENCE

In this section, we present some illustrations of differences in agricultural policies in the two *oblasts* of the study, and differences in production strategies chosen by collective agricultural enterprises and their employees.[8]

Data for the empirical analysis of the effects of agricultural reforms at the regional level were collected in two Russian *oblasts,* Leningrad and Saratov. Leningrad Oblast is located in the northwestern part of Russia. This *oblast* primarily produces vegetables, meat, and dairy products. Saratov Oblast, a black-soil, grain-producing region, is located in the central Volga. Within each of the *oblasts* a *raion* (district) has been chosen for a firm-level and a household level analysis: Vsevolozhsk Raion in Leningrad Oblast and Engels Raion in Saratov Oblast. Table 1 presents the summary data on both regions.

Table 1. Agricultural Output and Rural Population in Saratov and Leningrad Oblasts
(in percent)

	1990	1997
Share of agriculture in GDP		
Saratov Oblast	33	14
Leningrad Oblast plus St. Petersburg	...	3
Share of agriculture in the GDP of Russia	16	8
Share of rural population (in %)		
Saratov Oblast	26	32
Leningrad Oblast plus St. Petersburg	9	9
Share of rural population for Russia	26	27

Sources: Materials prepared for the meeting of the Administration of Saratov Oblast, October 1998, pp. 55–59; *Agriculture of Leningrad Oblast,* St. Petersburg, Pcterburgkomstat, 1997, p. 8; *Regions of Russia,* Moscow, Goskomstat, 1997. National–level data: *Sel'skoye Khoz'aistvo Rossii,* Moscow, Goskomstat, 1998.

A. Endowments: Production and Rural Population

In Saratov Oblast the share of agriculture in GDP is almost twice the national average. The share of the rural population is above the national average as well.[9] Agricultural production

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[8] This section relies heavily on Amelina (2000a, 2000b, and 2001).

[9] The share of rural population is a good measurement of the share of population involved in agricultural production in Russia, as the majority of rural Russians are engaged in agricultural production as their primary occupation.

and the share of the rural population in Leningrad Oblast (including the city of St. Petersburg) is less than half of the average for the country.[10]

Saratov Oblast is a grain-exporting region: on average, the *oblast* exports two-thirds of the grain it produces.[11] Leningrad Oblast is a regional player in terms of its agricultural production.

B. Government Policies: Post-Soviet Institution Building

The two *oblasts* differ dramatically in the role the former Soviet rural elites play in their current governance. In Saratov Oblast, all the leading political and administrative figures, including the Mayor of the capital city of Saratov, are former collective farm managers or other high-level Soviet agricultural administrators (Table 2).

Table 2. Careers in Soviet Agricultural Management of Chief *Oblast* Administrators in Saratov Oblast

Public/Administrative Post	Position in Agricultural Management Prior to Public/Administrative Post
Governors	
1991–96 Belich	Manager of a poultry farm
1996–current Ajackov	Manager of a collective farm, manager in the *oblast* Poultry Administration
First Deputy Governors	
1996–98 Dvorkin	Agronomist, leader of the Agrarian Party
1998– current Gorbunov	Collective farm manager, district-level administrator
Chairman of the *oblast* duma	
1994–current Charitonov	Collective farm manager
Mayor of Saratov	
	Former official in the *oblast* Poultry Administration

Source: Human Resource Department of the Office of the Governor, winter 1999.

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[10] Administratively, St. Petersburg is not a part of Leningrad Oblast, even though the city is the seat of the *oblast* government. Since the city is an integral part of the *oblast*'s economy, St. Petersburg is included in the GDP estimates for Leningrad Oblast.

[11] *The Concept of Agricultural Development of Saratov Oblast in 1997–2000*, Saratov, 1998.

By contrast, none of the key administrators in Leningrad Oblast have experience in Soviet agricultural management, except for those charged with the supervision of the agricultural sector.

Careers in Soviet agricultural management prepared current Saratov Oblast administrators for the task of adapting the Soviet-type redistribution systems to the market environment. The key skill includes the ability to organize the redistribution of resources among providers of industrial inputs (primarily fuel refineries), former collective farms, and a state-owned coordinating entity. Such a coordination arrangement helps preserve a cash-free distribution of resources despite pro-market shifts in federal agricultural policies.

The redistribution system currently in operation in Saratov Oblast is called commodity crediting. Figure 1 illustrates a typical commodity-crediting arrangement.

Figure 1. Commodity Credit Delivery Scheme
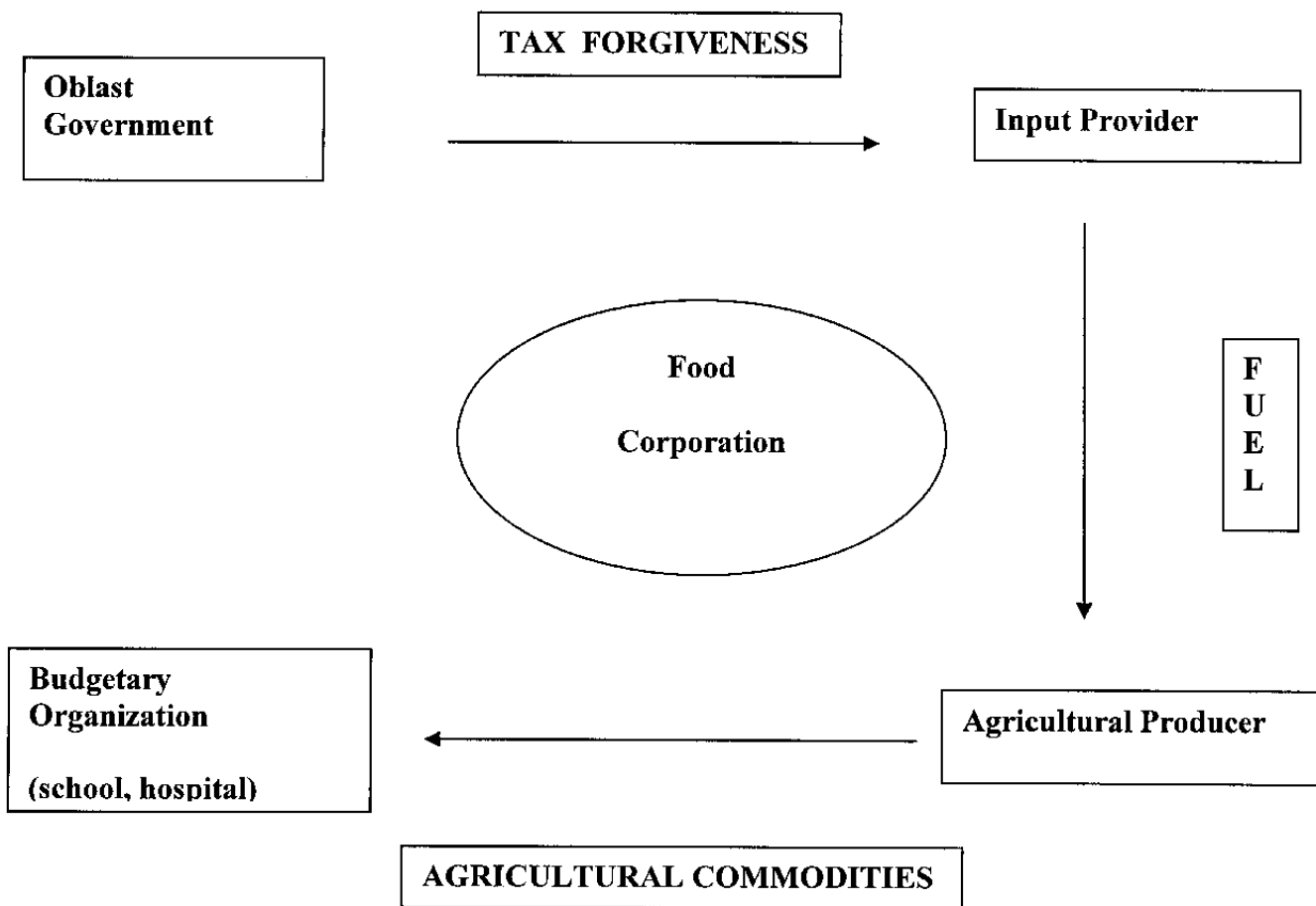
A state-owned food corporation signs agreements with oil refineries (the input provider in Figure 1) to sell fuel to agricultural producers at the time of sowing and harvesting. The government grants oil refineries tax breaks equal to the value of their oil deliveries to the agricultural producers at prespecified prices.[12] Agricultural producers pledge to repay commodity credits either in cash or in kind at the prices stipulated by the *oblast* government.

According to the estimates of the experts from Saratov wholesaling firms, in 1997 the Saratov Food Corporation handled 4.8 million tons of the 6.2 million tons of grain produced in the *oblast*. Official estimates are much smaller and are widely believed to be distorted.[13] In Leningrad Oblast, the role of the food corporation is very limited. Both official and unofficial estimates put its control over agricultural output at no more than 10 percent of the agricultural output of the *oblast*.[14]

The Leningrad Food Corporation is a price taker rather than a price maker, and its effects on the input and output markets is marginal. In contrast, the Saratov Food Corporation makes it possible for the *oblast* government to distort prices in favor of or against agricultural producers, to roll over debts of delinquent enterprises, or to enforce whole or partial debt repayment, depending on the *oblast* government's political imperatives and financial needs.

C. Collective Producers: Differences in Budget Constraint

Expectations of continued state support in one *oblast* and its credible curtailment in the other have led the enterprises to choose different restructuring strategies. In Leningrad Oblast, collective agricultural enterprises are making an effort to rein in their expenses, while in Saratov Oblast such an effort is much less evident. The differences in restructuring strategies are demonstrated in Table 3. The ratio of expenditures to sales shows that, on average, the enterprises in Saratov Oblast are not capable of covering their increasing variable costs with revenue. The total cost-to-sales ratio stood at an unsustainable 329 percent in 1996. Even the 1997 bumper crop year, which brought a 45 percent increase in sales, did not allow Saratov Oblast enterprises to generate sufficient revenue to cover even an incomplete list of variable costs.

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[12] Resolution of the Russian Government No. 82, "On the Activities of the Federal Food Corporation," January 26, 1995.

[13] A government document, places the desired market share for transactions carried through the corporation at 90 percent of total grain sales ("Concepts and the Program for the Development of the Agro-Industrial Complex in 1997–2000," Saratov, 1998, p. 28.)

[14] Interview with Yuri Priochod'ko, Chairman of the Oblast Agency for the Regulation of the Food Market, summer 1999.

Table 3. Ratio of Cost of Production to Sales, 1994–97

	Vsevolozhsk Raion, Leningrad Oblast				Engelskii Raion, Saratov Oblast			
	1994	1995	1996	1997	1994	1995	1996	1997
Total costs to sales	0.98	1.01	1.36	1.31	2.07	2.21	3.29	2.56
Variable costs to sales (fuel, fertilizer, seed, fodder, gas, electricity)	0.51	0.55	0.66	0.65	0.93	1.20	1.69	1.01

Source: Financial statements of the collective producers filed with the Departments of Agriculture of the Vsevolozhsk and Engels Raions, winter 1999.

In Leningrad Oblast, the situation is less dramatic: enterprises use two-thirds of their sales revenue to cover their variable costs, with the ratio increasing to 1.3 if all the expenditures are taken into account. Even though Leningrad Oblast data indicate a need for restructuring, the costs are nowhere near the unsustainable levels of the Saratov producers.

The dependence of Saratov enterprises on commodity credits has led to increased levels of indebtedness and deeper structural problems. There are added institutional costs as well, as employees/shareholders reconfigure their lives and livelihoods around the new constraints.

D. Employees: Sources of Income and Dependence on Subsidies

In the two regions of the study, the pattern of interactions between the collective agricultural producers and their employees in terms of channels and modes of remuneration has evolved in divergent directions. In Leningrad Oblast, the employees receive their wage payments primarily in cash, and their shareholding benefits are legally and contractually divisible from their wage payments. In Saratov Oblast, shareholding, lease, and wage payments are fused and de facto are a package of traditional socialist compensations disguised under new labels. These payments are made primarily in kind and are less dependent on the profitability of the collective enterprise and more on the need to provide sufficient inputs (fodder, grain, and hay) to sustain one cow privately held by each employee/shareholder throughout the year.

Subsidiary household production is a much more important source of income in Saratov than in Leningrad. Table 4 shows the average household income by income category for Leningrad and Saratov Oblasts. Income from farm employment in Leningrad constitutes 58 percent of the total household income, compared with 23 percent in Saratov. In Saratov, this is primarily nonsalary, noncash income, such as lease and ad hoc in-kind payments. The larger share of household income for the employees of the JSCs in Saratov comes from household agricultural production, primarily livestock and dairy, whereas in Leningrad the role of individual agricultural production is small.

Table 4. Employee Households' Income for Saratov and Leningrad, 1998

	Saratov		Leningrad	
	Rubles	Share in percent	Rubles	Share in percent
Total household income	11,602	100	23,206	100
Total farm income	2,694	23	13,355	58
Farm salary income	798	7	12,750	55
Farm other income	1,896	16	605	3
Off-farm salary income	3,065	26	5,664	24
Sales of household plot production	5,410	47	531	2
Other	433	4	3,656	16

Source: Household-level survey, Saratov Oblast, World Bank, 1999.

In Saratov Oblast, fodder, grain, and hay produced by the collective agricultural enterprise is used as inputs for meat and dairy household production of employees. There is no such synergetic relationship observable in the Leningrad sample.

The survey of employees/shareholders of the JSCs in Saratov Oblast confirmed that they receive inputs from the JSCs at highly subsidized prices (Table 5). Recalculation of the value of in-kind payments in market rather than internal JSC prices demonstrates that subsidies constitute almost half of the income employees receive from the JSC in Saratov Oblast, and only 3 percent of income in the case of Leningrad Oblast.

Table 5. Subsidy as a Fraction of Income Received from Collective Farms

	In-Kind Payments (Internal valuation, rubles)	In-Kind Payments (Market valuation, rubles)	JSC salary (rubles)	Subsidy component of revenue from the JSC (in percent)
	1	2	3	(2-1)/(2+3)
Saratov	1,861	3,812	429	46
Leningrad	85	369	9,106	3

Sources: Market prices: Saratov Goskomstat, Goskomstat St Petersburg; Household survey, Engels Rajon, Saratov Oblast and Vsevolozhsk Raion, Leningrad Oblast, winter 1999, World Bank.

Discounted in-kind payments prevalent in Saratov Oblast allow employees to act individually as profit-maximizing economic actors and to use in-kind payments as low-cost inputs for individual production. In contrast, Leningrad Oblast employees tend to rely on wages as the main source of income and are less involved in personal plot production.

This brief summary of findings demonstrates that differences in the level of intervention by the regional government deeply affect the whole chain of production in the agricultural sector, from the level and pace of restructuring of the collective agricultural producers down to the modes of income generation by employees/shareholders of these enterprises, who double as small-scale individual producers. The following section formalizes the observed dynamics, showing the sustainability of inefficient development-curtailing outcomes and the distribution of benefits from these outcomes among the main economic actors.

III. DESCRIPTION OF THE MODEL

Consider the following three-stage game of complete information (Figure 2). In stage 1, the subnational government decides whether to support the Soviet-era redistribution structures. These structures are necessary if the government[15] decides to maintain a close economic relationship with the collective agricultural producers. In stage 2, the collective agricultural producers observe whether the redistribution structures have been recreated in the new environment and decide whether to reorganize the production according to market principles. In practice, that would mean breaking up the collective farms into individual farms or introducing alternative, drastic cost-saving and income-generating measures aimed at making the producers viable through direct market links with suppliers and buyers without intermediation by the local government. In stage 3, the government observes the collective producers' behavior and selects the value of the subsidy, taking into account the existing redistribution structures.[16]

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[15] Unless indicated otherwise, the term "government" always refers to a subnational government.

[16] Even though the government makes decisions in both stage 1 and stage 3, it is important to treat these stages separately. The choice of the value of subsidy in stage 3 is not a commitment. Rather, it is a response to the commitment by the producers to reorganize (or not to reorganize) the production process. In contrast, the decision to support or abandon the Soviet-era redistribution structures in stage 1 represents a commitment on the government's part and as such influences the producers' reform strategy.

Figure 2. Structure of the Game
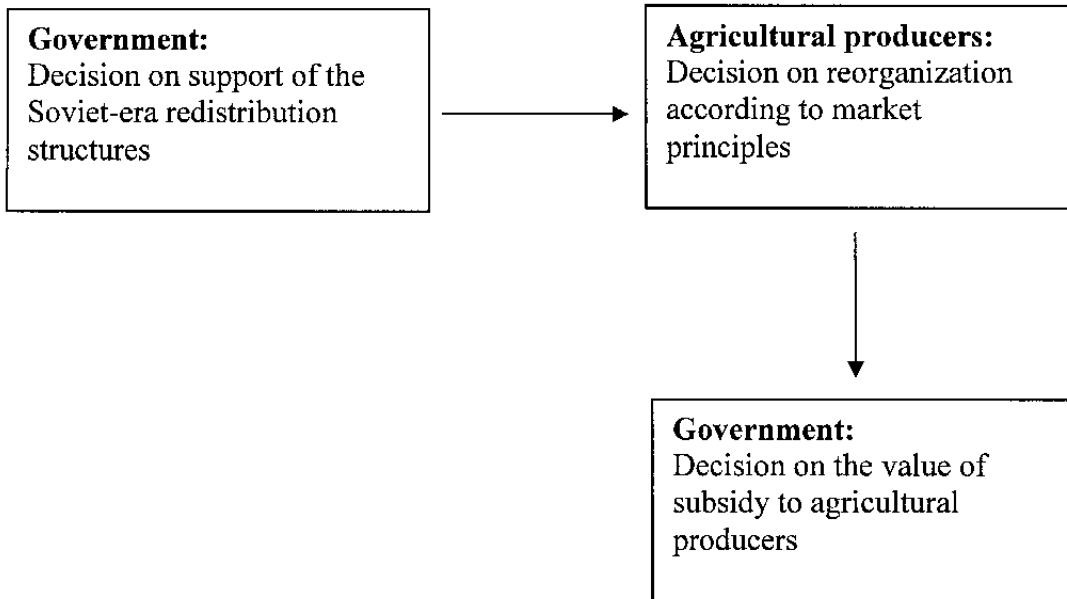
Our model relies on the work of Segal (1998) and Shleifer and Vishny (1994). Segal (1998) models the interaction between a monopolistic producer and a benevolent government. In that model, the producer chooses whether to undertake a profit-increasing investment and then specifies the government subsidy necessary for continued production. After that, the government either agrees to subsidize or rejects the producer's demands. Segal (1998) shows that the benevolent government may be willing to subsidize unprofitable enterprises in order to protect the social surplus associated with production.

To better capture the realities of post-Soviet Russia we extend the framework suggested by Segal (1998) by introducing an additional stage in the government-producer game. Instead of simply reacting to the producer's demand, the government first decides on the level of its involvement in the economy. The government's task is made easier in the agricultural sector by the low complexity of inputs needed for crop production. Accordingly, the subnational governments continue to play an active role in the distribution of inputs to a selected set of agricultural producers. In this case, their traditional clients are collective agricultural enterprises, as opposed to the nascent individual farms that employ few workers and present little interest either as a political base or as providers of social and agricultural services to a large share of the agricultural population. Collective producers at the provincial level continue to be passive recipients of these policies. As a result, we view the game as initiated by the government.

The government in our model is a political agent interested in staying in power despite economic changes that threaten to make its style of management obsolete. In this respect, we follow Shleifer and Vishny (1994), who assume the government to be not an altruistic

representative of the people, but rather an agent of narrow political interests. They describe how such a government may find it worthwhile to support private firms in exchange for higher employment, all at the general public's expense. Shleifer and Vishny (1994) model the interaction between the government and the producers as the Nash bargaining game. In contrast, in light of the preceding discussion, we rely on the Stackelberg approach, in which the government moves first, taking into account the response of agricultural producers. Since the Stackelberg games are solved by backward induction, we commence our discussion with the last stage of the game.

A. Stage 3: Determining the Amount of Subsidy

The government maximizes its net utility conditional on surviving in power. Let S be the subsidy paid by the government to the collective farms in exchange for the agricultural produce that the collective farms deliver to the government. In stage 3, the government selects the value of S to maximize its expected utility, $V(S)$, given by

$$V(S; C_S) = P(\alpha \, \sigma S) * [B - C(S; I, D)], \qquad (1)$$

where B is the government's gross utility; C is the cost of providing subsidy, which is the function of the amount of the subsidy, S, the availability of inputs, I, and the complexity of inputs, D; P is the probability of the government's survival in power, which is a function of the amount of the subsidy, S, institutional dependence, α, and the degree of synergy between collective and household agricultural production, σ.

B is the (fixed) political and economic benefit derived by the government from interventionist agricultural policies. In other words, it is gross utility conditional on surviving in power. There are two reasons why the government derives utility from maintaining the system of agricultural redistribution. First, the government officials acquire and exercise power based on the ability to provide the lower-cost inputs to a preferred group of producers.[17] Second, redistribution allows the government to postpone or even avoid potentially painful and costly reforms in the provision of public services, since the in-kind repayment of commodity credits by agricultural producers allows the local government to provide foodstuffs to schools, hospitals, etc., thereby decreasing the urgency of restructuring. Even though the amount of produce delivered by the collective farms as a repayment of in-kind credit is a function of annual bargaining, in this model it is assumed to depend on the demand of the budget organizations and is considered fixed.[18]

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[17] For a general discussion of access-based power, see Rajan and Zingales (1998).

[18] The crucial element in determining the equilibrium in this model is not gross but net utility, represented by $B - C(S; I,D)$. Hence, without loss of generality, the changes in B can be represented by the changes in $C(S; I,D)$. To keep our model simple, we ignore the strategic aspect of the annual bargaining process.

In addition to reaping the benefits from redistribution, the local government bears the cost of providing the subsidy in the form of inputs for agricultural production, such as parts for equipment and fuel. This cost, denoted $C(S; I, D)$, is an increasing function of the amount of subsidy S, that is, $C_S > 0$. The cost of providing the subsidy is also affected by the availability of inputs within local jurisdiction, I, reflecting the ability of the local government to provide tax forgiveness to input providers in the amount of input deliveries to agricultural producers; this arrangement is difficult to implement once an input provider (for example, an oil refinery) has been placed in another administrative unit. Another parameter that affects the cost of the state-sponsored redistribution scheme is the complexity of inputs required for agricultural production, D. We assume that $C_I < 0$ and $C_D > 0$. In other words, the availability of inputs locally reduces the cost of providing the subsidy, while the complexity of inputs raises it, as coordination costs are likely to increase with the increase in the number of required inputs. To make the analysis tractable, we assume that the cost function is linear in S, I, and D, and that all cross-partial derivatives are zero. In particular, this assumption implies that the value of C_S is independent of S, I, and D.

The value of C_S can be interpreted as a measure of the skill with which the government officials manage the agricultural redistribution. For example, the officials in the more agricultural Saratov Oblast are very skillful at redistribution, since many of them were agricultural managers during the Soviet times (see Table 2) and were central in organizing the plan-based distribution of resources in the past. For them, the cost of managing the provision of one unit of subsidy is relatively modest, that is, C_S is low. In contrast, the officials in the more industrial Leningrad Oblast do not have the necessary skills, as the majority of provincial leadership comes from sectors other than agriculture; hence, C_S is high for the Leningrad government. In stage 3 of the model, C_S is treated as a given parameter, yet in stage 1, C_S is a variable.

The expression $B - C(S; I, D)$ measures the government's net utility conditional on its surviving in power.

P is the probability that the government will survive in power long enough to reap the benefits of this redistribution arrangement.[19] A simplifying assumption is that the redistribution policies have an impact on the support of the rural population only (i.e., the support of the urban population is independent of the government's actions). More subsidies mean more support from the rural population and higher survival probability. For simplicity, we assume that P is linear; then, P' is a positive constant.

The expression $\alpha \sigma S$ is a proxy for the value of the government subsidy to agricultural producers. The variable α, $\alpha > 0$, is a measure of the institutional dependence of agricultural producers on the *oblast* government for resources. A high α means that

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[19] The discussion of the actual process, which can lead to the incumbent government's fall (such as elections, bureaucratic struggle, etc.), is beyond the scope of this paper.

agricultural producers are strongly dependent on Soviet-style redistribution and thus value highly the subsidy, S.

The technology parameter σ, $\sigma > 0$, represents the degree of synergy between the collective agricultural production and the personal plot (household) production of employees/shareholders of the collective farm. The value of σ depends on local agricultural practices and varies by region. For instance, if the output of collective farms can be used as inputs by employees/shareholders of a collective farm in their household production, then the degree of synergy is high. Accordingly, the utility of one unit of subsidy is high as well, since there is a direct link between subsidies to the collective farm and the income that the collective farm owners/employees derive from the household production. Such is the situation in Saratov Oblast, where the grain produced by the collective farms can be used as feed for the peasants' private livestock. In comparison to Saratov, the value of σ is low in Leningrad Oblast, where the output of collective farms consists of mostly meat and dairy products, which, in turn, cannot be used as inputs in household agricultural production.

We assume that, from the employees/shareholders' perspective, the benefits of close links with the local government exceed the costs, which prominently include institutional dependence on the collective farms; otherwise, the producers will not have the incentive to stay within the collective and will not condone the lack of restructuring and the continuation of inefficient redistribution practices.

B. Stage 2: Reorganizing the Production Process

In stage 2, the management of the collective farms decides whether or not they are going to restructure their production processes in accordance with the demands of the market economy. These reorganization measures have a twofold effect. First, they augment the profits the collective enterprise receives from its free market activities (the better you adapt to the demands of the marketplace, the better you can do there). Second, the collective enterprise becomes less dependent on the government's subsidies (the more closely your fortune is tied to the market, the less you depend on the government).

By choosing whether or not to reform, the collective farms are in effect selecting the level of institutional dependence, α. If they decide to reorganize in accordance with market principles, they choose a low α, that is, they choose a low level of institutional dependence. In contrast, if the collective agricultural producers (henceforth, the JSCs, or joint stock companies) do not reorganize, they select a high α. For simplicity's sake, we assume that there are no direct costs involved in selecting either a high or a low α. In other words, there are no direct costs associated with market reform.[20]

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[20] Assuming (more realistically) that reforms are costly will only strengthen our results.

The total profit, Π, of the representative collective farm equals its market profit, denoted as $\pi(\alpha)$, augmented by government subsidy, S. Since the impact of the subsidy is contingent on the level of institutional dependence, α, the total profit of the collective farms can be expressed as

$$\Pi(\alpha) = \pi(\alpha) + \alpha S,$$

where $\pi'(\alpha) < 0$. The amount of subsidy S will be determined in stage 3.

The employees/shareholders of the collective farm select α to maximize their utility, which they derive from cash wages paid by the collective farm and from household agricultural production. We assume that cash wages are proportional to the total profit of the collective farm, Π.

In addition to cash wages, the collective farm may provide in-kind payments in the form of inputs, such as feed and fodder grain, in order to augment household agricultural production. The size of this in-kind payment is assumed to be proportional to the total profit of the collective farm as well. From the producers' standpoint, the value of in-kind payments depends positively on the degree of synergy between the collective agricultural production and the household agricultural production, as represented by the parameter σ.

Based on the above discussion and without loss of generality, we assume that the employees/shareholders' utility, U, is equal to the total profit of the collective farm times the value of the synergy parameter σ:[21]

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[21] The suggested simplified formulation (2) is isomorphic to the rigorously defined utility function, as demonstrated below. The producers' net income consists of wages and profit from household production. The former is proportional to the collective farm's total profit, Π, and, hence, can be represented as $a\Pi$. The profit from household production consists of the exogenous component p plus the in-kind payments from the collective farm, which are proportional to Π by assumption. The size of the in-kind payments is then $b\Pi$. Their value is augmented by the degree of synergy σ, i.e., it is equal to $\sigma b\Pi$. The shares a and b are chosen by the producers with the objective of exploiting the existing degree of synergy σ, subject to $a + b \leq 1$, and subject to the common-sense constraint that a is not too small. In other words, the producers choose a higher b for a higher σ. To keep the exposition simple, we treat a and b as independent of α. Assuming linear utility, the producers' utility W is, therefore, given by $W = a\Pi + p + \sigma b\Pi = (a + \sigma b)\Pi + p$. Since a, σ, b, and p are all independent of α, the maximization of W with respect to α is equivalent to the maximization of Π, which is, in turn, equivalent to the maximization of $U = \sigma\Pi$. The impact of σ on the producers' utility is amplified in the case of function W, since b moves together with σ. However, even the weaker impact of σ on U is sufficient for our results regarding the relevance of σ.

$$U(\alpha; \sigma) = \sigma \, \Pi(\alpha) = \sigma \, [\pi \, (\alpha) + \alpha \, S]. \qquad (2)$$

Expression (2) states that by choosing reforms (low α) the employees/shareholders increase the market profit of the collective farm (since π' is negative) and reduce their institutional dependence, which makes the government subsidy less valuable.

C. Stage 1: The Institutional Choice

If the government decides to invest in the redistribution structures in stage 1, then it will be easier (less expensive) for the government to disburse the subsidies in stage 3, that is, the value of C_S for such a government is low. In other words, in stage 1 the government effectively selects the value of C_S to maximize its expected utility $V(S, C_S)$ minus the costs of choosing a particular value of C_S.[22] The government selects C_S, taking into account the effects of C_S on the JSCs' reform effort, α, and the size of government subsidy, S.

IV. ANALYTICAL RESULTS

A. Stage 3

In the last stage of the game, the government selects the amount of subsidy S to maximize its expected utility given by (1), taking the marginal cost of providing subsidy C_S and the JSCs' institutional dependence α as given.

Treating C_S and α as given, we differentiate (1) with respect to S to obtain the following first-order condition for maximization (assuming the interior solution):

$$\alpha \, \sigma P' * [B - C(S; I, D)] = P \, C_S. \qquad (3)$$

The above condition states that the marginal benefit of the subsidy, which manifests itself in the increase in the government's survival probability (the left-hand side of (3)), equals the marginal cost of a subsidy (the right-hand side). The condition (3) is also a sufficient condition for maximization, since the second-order condition is always satisfied.[23] Consider S^*, the level of subsidy that satisfies (3). By taking the appropriate partial derivatives of the condition (3) and using the implicit function theorem, we obtain the following result:

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[22] These costs represent the expenditure necessary to maintain the redistribution aptitude of the government at the desired level. For example, if the government would like the marginal cost of providing a subsidy to be low in stage 3, it must incur higher costs of maintaining the redistribution structures in stage 1. We will return to the discussion of these costs while analyzing the solution of the game.

[23] $V_{SS}'' = -2\alpha\sigma P'C_S < 0$, since both P' and C_S are positive by assumption.

$$dS^*/d\alpha > 0 \quad \text{if } C_S \text{ is sufficiently low} \quad \text{and} \quad dS^*/d\alpha < 0 \quad \text{if } C_S \text{ is high.} \qquad (4)$$

According to (4), the level of redistributional skills is crucial in determining the government's response to market reforms. Comparing the two states of the world, "reform" and "no reform," the result (4) implies the following relationship between the extent of market reforms and the amount of the subsidy: the government that is skilled at agricultural redistribution (C_S is low, as in Saratov Oblast) responds with a small subsidy in the case of reform (low α) and a large subsidy in the case of no reform (high α). This happens because the JSCs in the "no-reform" state of the world value government support highly, and, as a result, an extra dollar spent on a subsidy has a large positive impact on the government's survival probability. This fact, combined with the relatively low marginal cost of a subsidy, prompts the government to provide a large subsidy in the case of no reform.

Conversely, the government that is not skilled at agricultural redistribution (C_S is high, as in Leningrad Oblast), responds with a large subsidy in the case of reform and a small subsidy in the case of no reform. What is the intuition behind this result? In the case of no reform (high α), the existing level of subsidy translates into a higher probability of survival. Accordingly, a government for which administering a subsidy is very costly will find it optimal to dispense a small subsidy in the "no-reform" state of the world, since even a small subsidy goes a long way toward augmenting the government's survival probability.

By taking the partial derivatives of the condition (3) with respect to I and D, it can also be shown that $dS^*/dI > 0$ and $dS^*/dD < 0$. The availability of inputs within the local jurisdiction raises the equilibrium level of subsidy, while the complexity of inputs lowers it.

These results can be represented graphically. From (3) it follows that the marginal benefit from providing a subsidy is a downward-sloping linear function of S, while the marginal cost of providing a subsidy is an upward-sloping linear function of S.[24] Figure 3 illustrates the interior solution, with MB denoting marginal benefit and MC denoting marginal cost.

The comparative statics results derived above are now easy to demonstrate on the graph. According to (3), an increase in I reduces C and therefore increases the marginal benefit of subsidy; the marginal cost of the subsidy is not affected. The MB schedule shifts up, while the MC schedule stays the same, resulting in a higher equilibrium level of subsidy (Figure 4).

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[24] The marginal benefit and marginal cost schedules are linear because both C and P are assumed to be linear functions of S.

Figure 3. Equilibrium Level of Subsidy
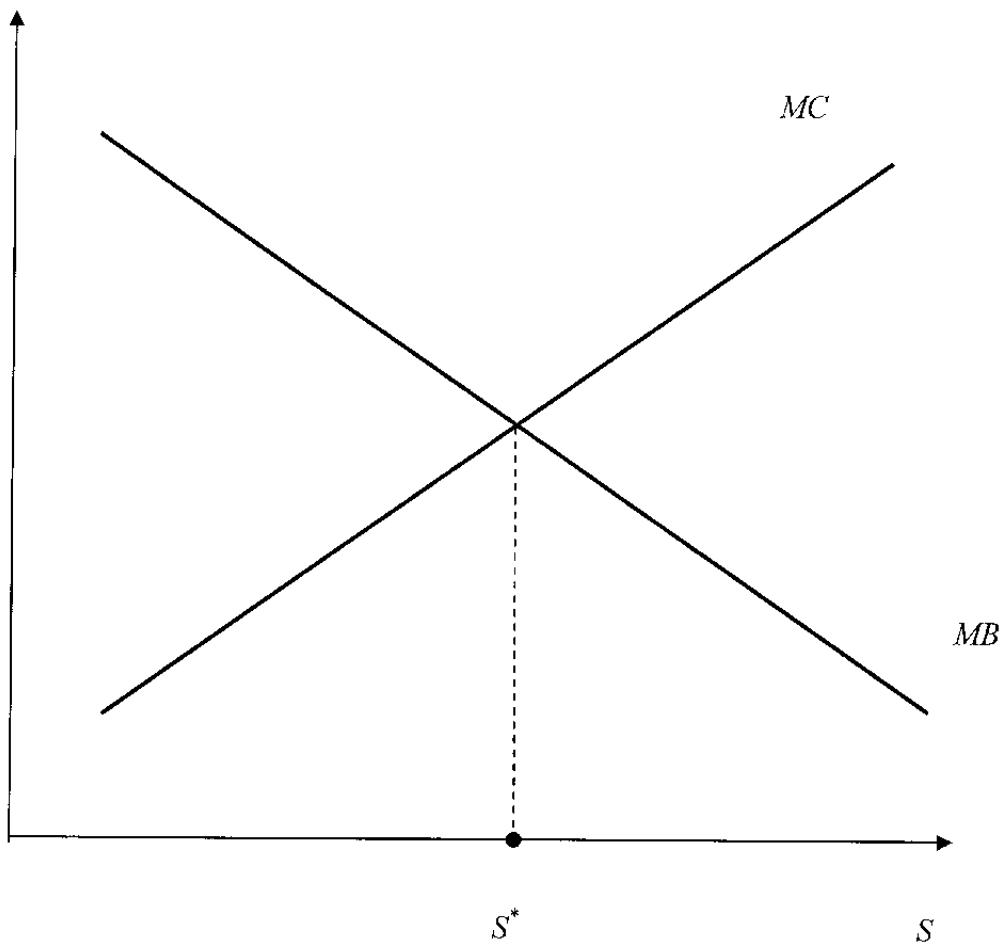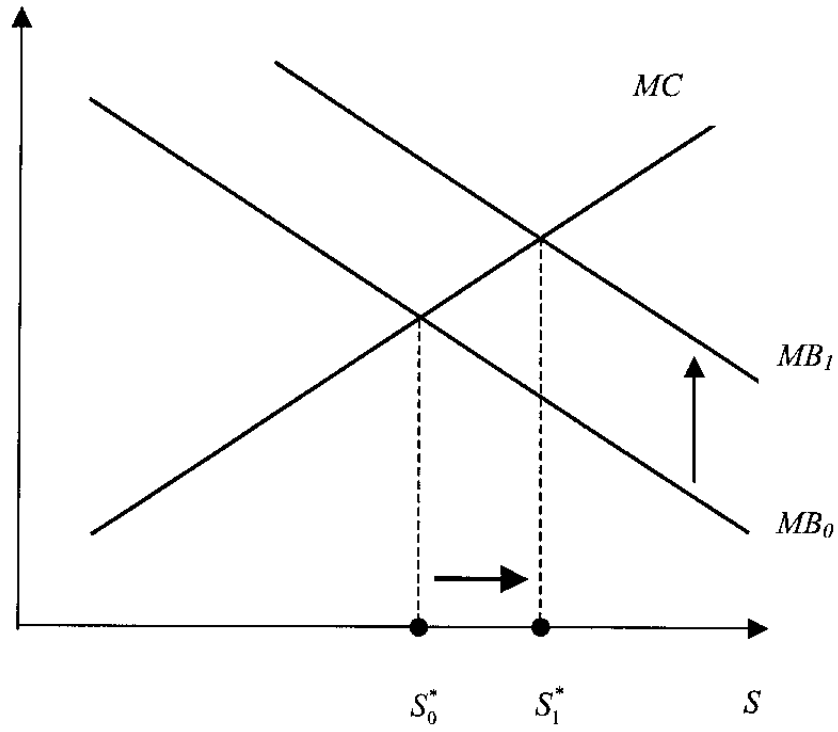
Figure 4. Availability of Inputs and Subsidy

Note: an increase in the availability of inputs raises the equilibrium level of subsidy.

An increase in D, on the other hand, raises C and thus lowers the marginal benefit of the subsidy, while leaving the marginal cost unchanged. The MB schedule shifts downward, leading to a lower equilibrium level of subsidy (Figure 5).

Figure 5. Complexity of Inputs and Subsidy
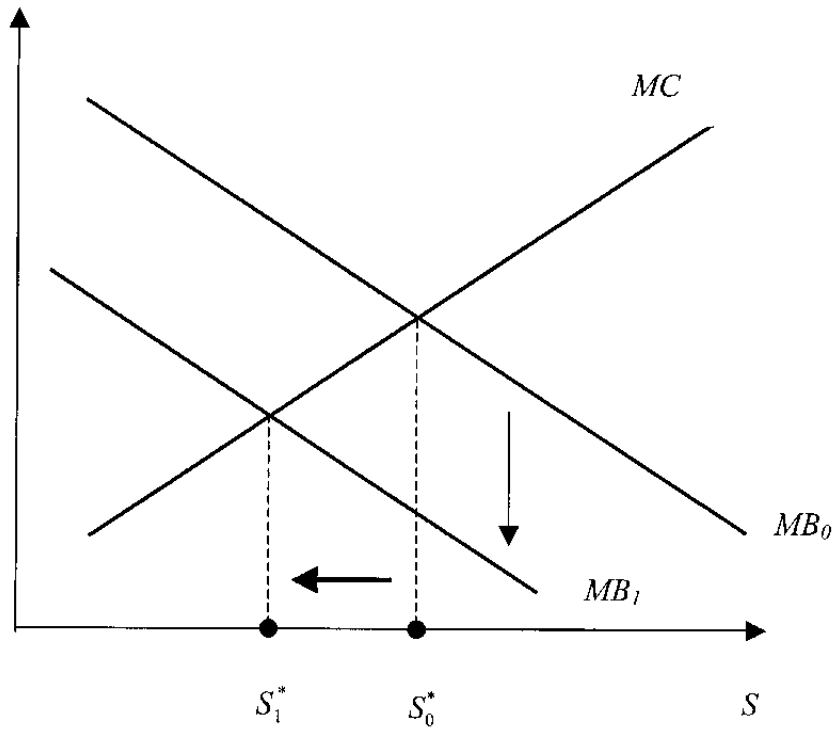
Note: an increase in complexity of inputs lowers the equilibrium level of subsidy.

A reduction in α (i.e., reform) lowers both the marginal benefit and the marginal cost of subsidy: the former directly, the latter indirectly through a decrease in P. Moreover, the impact of a decrease in α on marginal cost depends upon the value of C_S. If C_S is low, then the impact of α on marginal cost is dampened. In contrast, if C_S is high, then this effect is amplified such that a decrease in α lowers the marginal cost of providing a subsidy considerably. Figures 6a and 6b illustrate these respective possibilities.

Figure 6a. Skilled Government and Subsidy
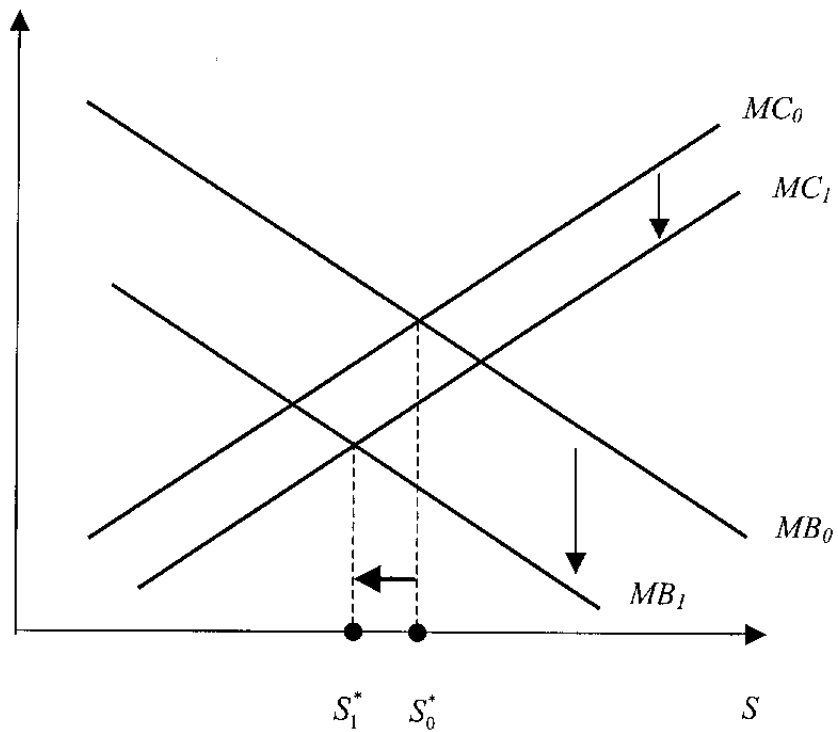
Note: if the government is skilled at redistribution, the reform scenario implies a lower level of subsidy.

Figure 6b. Unskilled Government and Subsidy
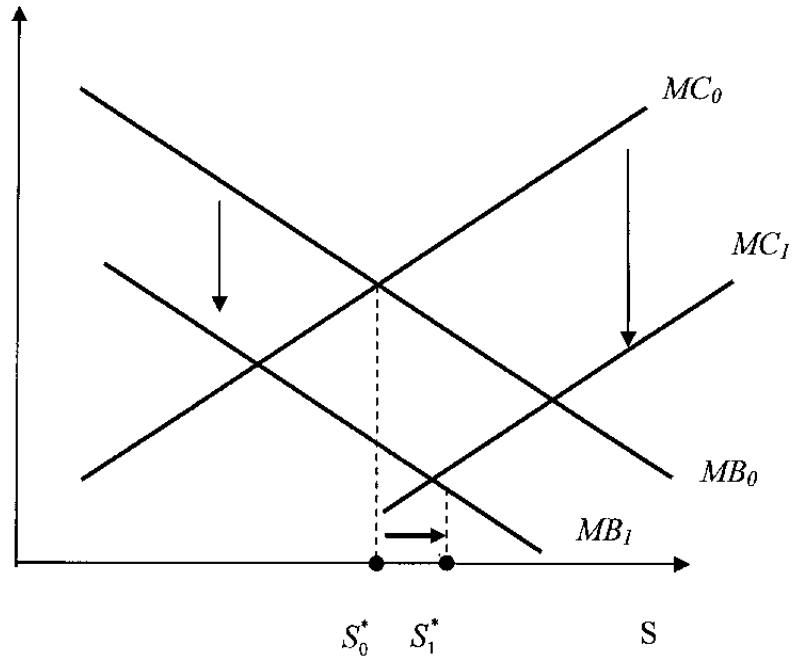
Note: if the government is not skilled at redistribution, the reform scenario implies a higher level of subsidy.

B. Stage 2

In this stage, the JSCs decide whether or not to reform agricultural production according to market principles. In doing so, they choose the level of institutional dependence, α, to maximize their utility, $U(\alpha)$, taking into account the impact of α on the government subsidy, S, in stage 3 and treating the government's redistributional aptitude, C_S, as given. The producers also take into account the degree of synergy between collective agricultural production and household agricultural production, σ.

From our analysis of stage 3, we know that the equilibrium subsidy, S^*, can either rise or fall with the level of institutional dependence α, depending on the redistributional aptitude of the government.

Suppose that the government is relatively skilled at agricultural redistribution (as in Saratov Oblast), that is, $dS^*/d\alpha > 0$. This means that, if the JSCs choose reforms in stage 2 (a reduction in α), then the government will respond with smaller subsidies in stage 3. Here lies the possibility of the realization of a government-induced **underdevelopment trap**: if the JSCs do not reform, their market profits will be reduced, and the subsidy they get from the government will be increased. As shown below, the latter effect outweighs the former if the local government is sufficiently skilled at redistribution. As a result, the JSCs do not reform, even though the direct costs of reforming are zero.[25]

Formally, the underdevelopment trap materializes if and only if $dU/d\alpha > 0$, that is, if and only if a reform (a decrease in institutional dependence α) reduces the utility of agricultural producers, U. As shown in the Appendix, $dU/d\alpha > 0$ if and only if

$$C_S < \frac{B - C_I I - C_D D - d}{-2d\pi/d\alpha}, \qquad (5)$$

where d is a constant.

To deduce the meaning of (5), note that $d\pi/d\alpha$ is negative by assumption, that is, the denominator in (5) is positive. Also note that by assumption C_I is a negative constant while C_D is a positive constant. Hence, as long as B, the benefit from redistribution, is sufficiently high, the policies of a government that is skilled at such a redistribution (low C_S) lead to the formation of an underdevelopment trap. Both the availability of inputs within the local jurisdiction (high I) and the low complexity of inputs (low D) increase the likelihood of such an outcome.

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[25] Segal (1998) derives similar results in describing a monopoly that does not implement the costless measures that would improve its profitability in order not to jeopardize the flow of government subsidies.

To understand the relevance of the synergy parameter σ, consider the expression for $dU/d\alpha$:

$$\frac{dU}{d\alpha} = \sigma \left[\frac{d\pi}{d\alpha} + S + \alpha \frac{dS}{d\alpha} \right]. \qquad (6)$$

It follows from (6) that the sign of $dU/d\alpha$ does not depend on σ. However, σ affects the absolute value of $dU/d\alpha$: the higher σ is, the steeper the slope of $U(\alpha;\sigma)$, as demonstrated in Figure 7. Therefore, in the case of an underdevelopment trap ($dU/d\alpha$ is positive), the high degree of synergy implies, from the point of view of JSC employees, a higher marginal disutility of market reform. As a result, a successful reform in high-synergy areas would require stronger incentives to restructure than in the low-synergy areas, ceteris paribus. To restate this result, a higher degree of synergy ties employees/owners closer to the collective, making the status quo less amenable to change.

Figure 7. Synergy and Underdevelopment Trap
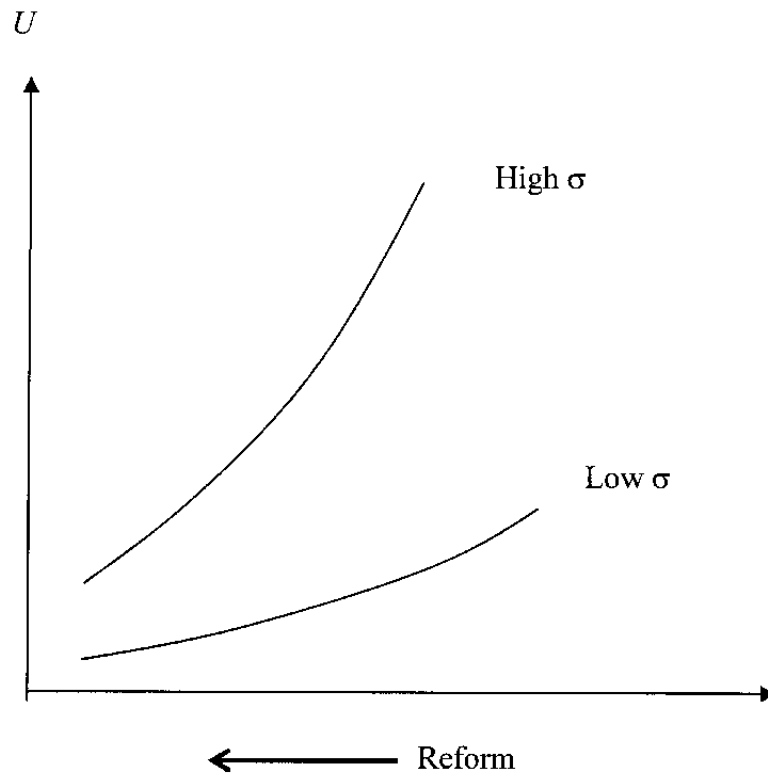
Note: in the case of an underdevelopment trap, a high degree of synergy results in a high marginal disutility of reform.

C. Stage 1

Consider now the government's choices in stage 1. The government can let the Soviet-era redistribution system wither away by itself. In this case, it does not have to spend scarce resources on maintaining the redistribution mechanism; however, as a drawback, it will be more expensive for such a government to subsidize the JSCs in the future. Conversely, the government can invest in maintaining the redistribution system now and be able to subsidize the JSCs with relative ease in the future. The choice is, therefore, between a no-maintenance technology with low fixed costs and high variable costs, and a maintenance technology with high fixed costs and low variable costs.

What affects the government's choice of technology? A technology with low fixed costs and high variable costs is appropriate when the level of output is relatively low, while a technology with high fixed costs and low variable costs is viable if the level of output is high (see Figure 8). In our case, we are talking about the costs of providing the subsidy.

Thus, if the agricultural sector is not an important part of the local economy (as in Leningrad Oblast), then, from the government's standpoint, the amount of subsidy it expects to "produce" is relatively small. In such a case, a no-maintenance technology with low fixed costs and high variable costs is appropriate. (Figure 8, the level of subsidy below $\bar{S}$).

In contrast, if the agricultural sector is important (as in Saratov Oblast), then the government expects to "produce" a relatively large amount of subsidy. In that case, a maintenance technology with high fixed yet low variable costs is more appropriate. (Figure 8, the level of subsidy above $\bar{S}$). This may help to explain why the Saratov government is more intent on keeping the Soviet-era redistribution mechanism, than the Leningrad government.[26]

To summarize our analytical results, the prominence of agriculture in the local economy encourages the government to maintain Soviet-era redistribution structures. The government thus is able to subsidize agricultural producers at a low cost. The low cost of providing a subsidy brings about the underdevelopment trap, as the producers become hesitant to proceed with restructuring for fear of losing the government subsidy. The availability of inputs within the local government's jurisdiction and their low complexity raise the likelihood of such an outcome. The high degree of synergy between the collective production and household production solidifies the underdevelopment trap.

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[26] One can imagine a situation wherein the government tries to increase or decrease the share of agriculture in the regional GDP to suit its objectives. We abstract from this possibility on the assumption that it will be an extremely costly and time-consuming process.

Figure 8. Average Cost of Providing Subsidy

AC

Maintenance

No maintenance

$\overline{S}$

S
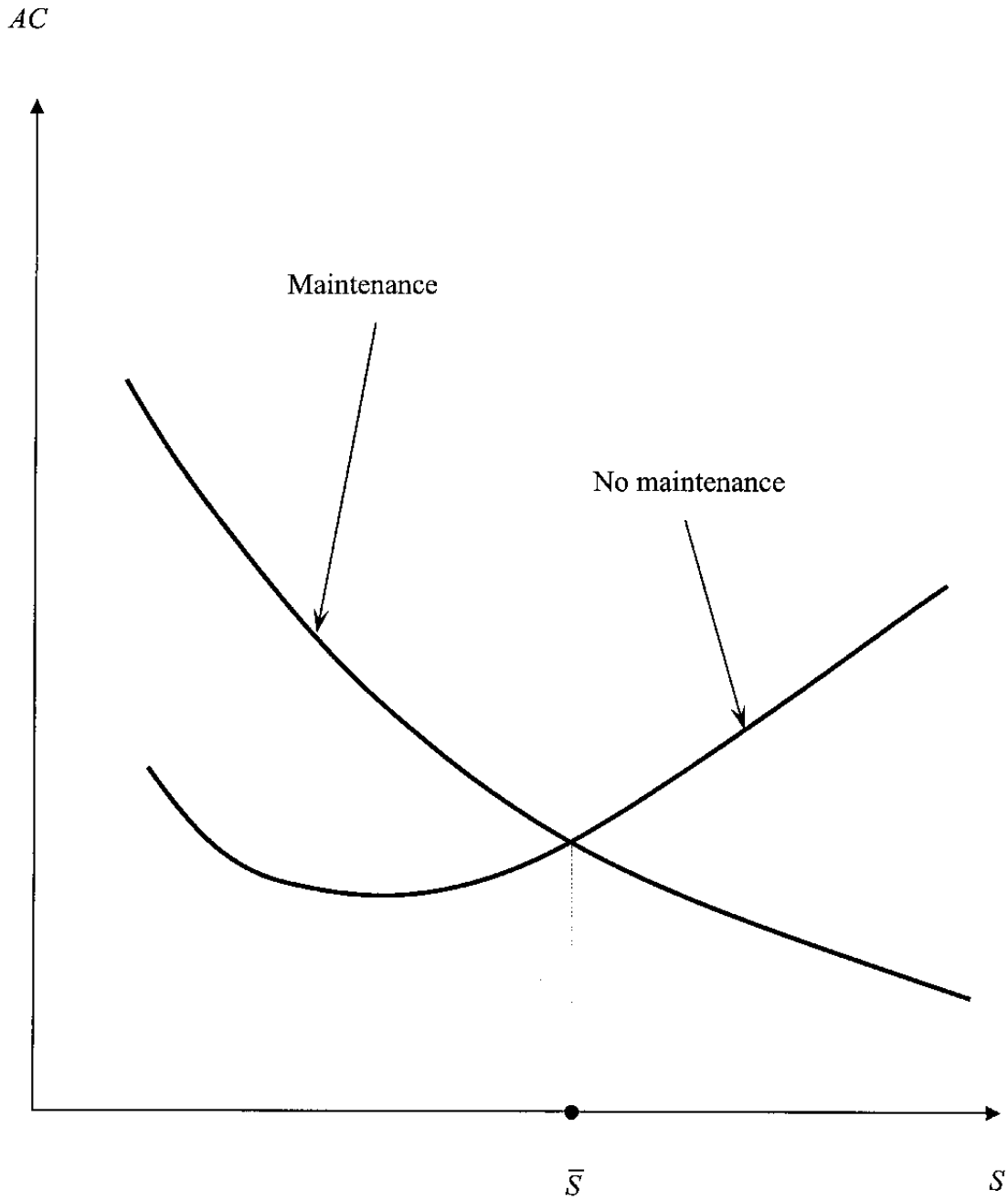
V. CONCLUSIONS AND POLICY RECOMMENDATIONS

Our study shows that a government is more likely to continue implementing interventionist agricultural policies in regions where agriculture is an important sector of the local economy. In other words, the governments of heavily agricultural regions are less likely to champion a genuine agrarian reform. The model developed in this paper illustrates the experience of two Russian regions, the more urban (and reformed) Leningrad Oblast and the more rural (and *dirigiste*) Saratov Oblast.

The study also demonstrates how a government-induced underdevelopment trap could materialize. If the government maintains the redistribution structures, the opportunity cost of reforms from the producers' perspective is effectively increased. As a result, even if the market-oriented farms are more efficient and even if no direct expenditure is required to implement reforms, the agricultural producers may opt for the preservation of the inefficient Soviet-style system for fear of jeopardizing the flow of government subsidies.

On the basis of these findings, we are able to conclude that resistance to reforms is more likely in the better-endowed agricultural regions. Therefore, a successful reform in these areas requires much stronger incentives to restructure.

Policymakers seeking to implement changes need to assess the importance for the local economy of a sector that is undergoing reforms, the strength of the ties of the sector to the local government, and the share of population that is directly or indirectly benefiting from the status quo. If the sector is important, the ties are strong, and the share is large, the reform strategy should contain stronger incentives to change. Alternatively, less effort from the reformers' side will be needed to engender change in areas where the sector going through the reforms holds less prominence. These observations call for a more varied and nuanced approach to the reform process than has been observed in the efforts to reform Russian agriculture, or in many other top-down reform processes worldwide.

In the case of Russian agriculture, even though the better-endowed regions stand to benefit the most from the successful restructuring program, such regions need to be offered additional incentives to reform. Practically, such incentives may come in the form of microcredits or other targeted assistance to employees/shareholders of collective farms. Social policies at the village level need to be adjusted as well, so that villagers gain access to social assistance and emergency support from more varied sources. These economic and social measures would be expected to weaken the ties between the collective enterprise and its employees, thereby diminishing the dependence of the employees on the social services and indirect benefits that accrue from the association with the enterprise. It is also possible that a positive external shock in the form of large private investment cum new managerial skills can speed restructuring in the nonrestructured region and help propel agricultural producers onto a more developmental trajectory.

Whatever the reform instruments of choice, one must understand the overt and covert incentives that make actors choose inefficient outcomes in the situations that are likely to result in an underdevelopment trap. It is imperative to address these incentives directly rather than to expect the invisible hand to stack the deck in favor of the efficient paths.

Formation of Underdevelopment Trap

The producers' utility is given by

$$U(\alpha;\sigma) = \sigma\left[\pi(\alpha) + \alpha S\right].$$

The underdevelopment trap implies that reform (reduction in α) lowers the JSCs' utility, that is, $dU/d\alpha > 0$, or

$$\frac{dU}{d\alpha} = \sigma\left[\frac{d\pi}{d\alpha} + S + \alpha\frac{dS}{d\alpha}\right] > 0. \quad (A1)$$

Taking the partial derivatives of condition (3) and using the implicit function theorem yields

$$\frac{dS}{d\alpha} = \frac{B - C(S;I,D) - SC_S}{2\alpha C_S}. \quad (A2)$$

By assumption, the $C(S; I, D)$ function can be represented in the form
$C(S) = C_S S + C_I I + C_D D + d$, where d is a constant. Using such a representation in (A2) and then substituting back into (A1) yields the result that the underdevelopment trap materializes if and only if

$$C_S < \frac{B - C_I I - C_D D - d}{-2d\pi/d\alpha}. \quad (A3)$$

REFERENCES

Amelina, Maria, 2000a, "False Transformations: From Stalin's Peasants to Yeltsin's Collective Farmers" (Ph.D. dissertation; Boston, Massachusetts: Fletcher School of Law and Diplomacy, Tufts University).

———, 2000b, "Why Russian Peasants Remain in Collective Farms: A Household Perspective on Agricultural Restructuring," *Post-Soviet Geography and Economics*, Vol. 41 (October-November), pp. 483–511.

———, 2001, "What Turns a *Kolkhoz* into a Firm?" in *Adaptation and Change in Rural Russia*, ed. by David O'Brien, Stephen Wegren (Washington: Woodrow Wilson Press).

Bates, Robert, 1989, *Beyond the Miracle of the Market: The Political Economy of Agrarian Development in Kenya* (Cambridge and New York: Cambridge University Press).

———, 1997, *Open-Economy Politics: The Political Economy of the World Coffee Trade* (Princeton, New Jersey: Princeton University Press).

Bates, Robert, and Anne Krueger, eds., 1993, *Political and Economic Interactions in Economic Policy Reform: Evidence from Eight Countries* (Oxford: Basil Blackwell).

Blanchard, Olivier, and Michael Kremer, 1997, "Disorganization," *Quarterly Journal of Economics*, Vol. 112 (November), pp. 1091–1126.

Brooks, Karen, and Zvi Lerman, 1994, "Land Reform and Farm Restructuring in Russia," World Bank Discussion Paper No. 233 (Washington: World Bank).

Epstein, David, and Peter Tillack, 1999, "How Russian Agricultural Enterprises Are Surviving: The Financial Status of Large Agricultural Enterprises in the St. Petersburg Region," *Eastern European Economics*, Vol. 37 (September-October), pp. 52–92.

Evans, Peter, 1995, *Embedded Autonomy: States and Industrial Transformation* (Princeton, New Jersey: Princeton University Press).

Freinkman, Lev, Daniel Treisman, and Stepan Titov, 1999, "Subnational Budgeting in Russia: Preempting a Potential Crisis," World Bank Technical Paper No. 452 (Washington: World Bank).

Galbi, Douglas, 1995, "The Significance of Credits and Subsidies in Russian Agricultural Reform," World Bank Policy Research Working Paper No. 1441 (Washington: World Bank).

Goskomstat, 1997, *Statistical Bulletin,* No. 8 (37) (Moscow: Goskomstat).

———, 1998, *Sel'skoye khozaistvo v Rossii, ofitsial'noye izdaniye,* (*The Agriculture of Russia, official edition*) (Moscow: Goskomstat).

Hoff, Karla, 2000, "Beyond Rosenstein-Rodan: The Modern Theory of Underdevelopment Traps," paper presented at the Annual World Bank Conference on Development Economics, Washington, April.

Interstate Statistical Committee, 1999, *Official Statistics of the Countries of the Commonwealth of Independent States* (Moscow: Interstate Statistical Committee of the Commonwealth of Independent States). Available on CD-ROM.

Krueger, Anne, 1993, *The Political Economy of Policy Reforms in Developing Countries* (Cambridge, Massachusetts: MIT University Press).

Moore, Barrington, 1966, *Social origins of dictatorship and democracy: lord and peasant in the making of the modern world* (Boston: Beacon Press).

Rajan, Rahguram, and Luigi Zingales, 1998, "Power in a Theory of the Firm," *Quarterly Journal of Economics*, Vol. 113 (May), pp. 387–432.

Segal, Ilya R., 1998, "Monopoly and Soft Budget Constraint," *RAND Journal of Economics,* Vol. 29 (Autumn), pp. 596–609.

Shleifer, Andrei, and Robert W. Vishny, 1994, "Politicians and Firms," *Quarterly Journal of Economics,* Vol. 109 (November), pp. 995–1025.

Wegren, Stephen K., 1996, "The Politics of Private Farming in Russia," *Journal of Peasant Studies,* Vol. 23. (July), pp. 106–40.

Weingast, Barry, 1992, "Economic Role of Political Institutions," IPR Working Paper Series, No. IPR 46 (Washington: Institute for Policy Reform).