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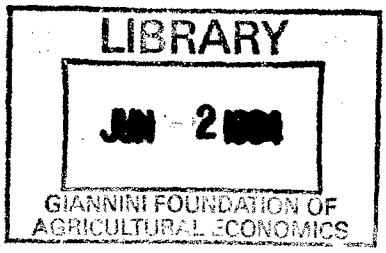
by

Robert F. Lyons, Gordon C. Rausser, and Leo K. Simon



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ABSTRACT. The Bulgarian land reform process is burdened by a fundamental tension between disruption and continuity. This tension arises from the dual roles played by the *nomenklatura* in the transition to a market economy. Both roles stem from their privileged status in the old order. While the *nomenklatura* have the potential to provide the agricultural sector with indispensable human capital, they also have the potential to extract rents from the sector, thus undermining its competitiveness. Both the productivity of *nomenklatura* capital and their capacity to extract rents are diminished to the extent that the reform disrupts the established agrarian order. Thus in order to succeed, the agrarian reform process must sail between Scylla and Charybdis. Too much disruption degrades economic productivity, possibly to the extent of threatening the viability of the reform movement itself. Too much continuity skews the distribution of political power in favor of the *nomenklatura*, which may undermine the competitiveness of the nascent free market institutions. This chapter develops a formal political-economic model of this tradeoff. The model challenges the conventional political economic wisdom that decoupling politics from economics will improve economic performance. In particular, we identify conditions under which the quality of the transition is *enhanced* by coupling the *nomenklatura*'s acquisition of political power to the magnitude of the rents that they extract.

1. INTRODUCTION

In this chapter, we investigate the political and economic dynamics of the agrarian reform currently underway in Bulgaria. As in other Central and Eastern European (CEE) countries, the purpose of this reform is, ostensibly, to reorganize economic institutions in the countryside to promote a competitive agricultural sector. Bulgaria's reform process, however, has been more radical than other CEE reforms. In particular, the land restitution process stipulated by the Law for Land Ownership and Land Use[1] (LALOLU) is distinguished by its extreme "precision" requirements. The *real boundaries* provision of LALOLU entitles land owners or their heirs to the precise parcels of land that they owned in 1946, prior to the advent of Communist rule. Given the extensive internal migration that occurred during the collectivization process in the 1950s, there is presumably little correlation between these 1946 boundaries and the plots farmed by peasants at the end of the Communist era. Under these conditions, such a high degree of precision—we will use the term *historical precision*—necessarily entails intensive analysis and verification of historical records as well as an elaborate dispute resolution procedure for evaluating and reconciling competing claims. This process has resulted in delays, confusion and losses in agricultural output.[2] Indeed, at the time of writing there is a real danger that the transition process will bog down and ultimately stall. Thus, from a purely economic standpoint, the reformers' emphasis on historical precision seems indefensible.

One possible explanation is that the reformers are primarily ideologues, who care less about economic efficiency than about smashing all remnants of the old system, out of hatred of Communism. There are, however, alternative explanations based on incentives and rationality. One such explanation is offered by Jo Swinnen in another chapter in this volume.

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[1] See Swinnen's chapter in this volume for a detailed history of the political debate surrounding this legislation.

[2] One recent report of the progress of the land reform confirms this analysis: "On 19 October officials announced that a government program designed to restore state lands to pre-communist owners was being adversely affected by inflated claims. According to an agriculture ministry report, former owners have staked claims to 35,000 more hectares of land than actually exists. The ministry report maintains that some courts, which have allegedly not investigated claims satisfactorily before making awards, have played a large role in creating the current problems. Georgi Khinchev, an agriculture ministry representative, said that to date slightly more than 28% of all lands claimed have been returned to their rightful owners."—*Stan Markotich, RFE/RL Daily Report, No. 202, 20 October, 1993.*

Swinnen argues that the reform process in Bulgaria is an arena for a struggle between the former Communists and the anti-Communist reformers over the "future political constellation" of rural society. Under this interpretation a clear justification for historical precision emerges. The disruption it causes is a tool for reorganizing rural social and political relationships—what we call the "agrarian order." The degree to which the old order is changed by the reform process will have profound economic and political effects on post-reform society. Of particular importance in this process will be the role played by the leaders of the old order—the *nomenklatura*.

The political and economic power of the *nomenklatura* in rural Bulgaria stems from their status in two institutional structures which dominated agrarian society prior to the "revolution" in 1989: the Communist Party and the management hierarchy of the collective farms. During the forty-three years of Communist rule, institutional relationships within these two structures permeated local *social* relationships between the peasantry and their *nomenklatura* supervisors, endowing the latter with a social power that transcended the legitimacy of the institutions themselves. The removal of the Communist government in 1989 created something of an institutional limbo in rural Bulgaria. While the institutional details of Communism were eliminated, its gestalt was not so easily annulled. Vestiges of the old structure—in particular, the localized social and economic relations between the *nomenklatura* and the peasantry—have persisted. That is, while the *nomenklatura*'s power originated in the context of collectivized agriculture, it has survived, albeit tarnished, despite the dismantling of this structure.

In many quarters, it is feared that the *nomenklatura* will regain some form of ascendancy in the new system by leveraging this vestigial social power. One scenario under which this could happen is as follows. Since post-reform agriculture will initially be organized around plots which are of far less than optimal scale, efficiency can be attained only if the new, small farms are consolidated into larger productive units. In order to operate these units successfully, certain kinds of human capital—including organizational and networking

skills—will be required. Because the only group that has had the opportunity to develop this kind of capital is the *nomenklatura*, they are the natural candidates to take a leadership role in a newly organized agricultural system.

Well, capitalism requires capitalists. Given that they have vastly greater experience in agricultural management than the peasantry, one may ask—why not let the *nomenklatura* become the new capitalists? Presumably, some reformers fear that if the *nomenklatura* are allowed to play a pivotal economic role in the new market-based system, they will be able to leverage their vestigial social and newly acquired economic power to obtain *political* power. In this view, the *nomenklatura* can be expected to use this power to re-institutionalize distortionary policies aimed at garnering rent for themselves at the expense of consumer and producer welfare.

In short, there is here a dialectic between disruption and continuity. Effective reform requires action on two fronts, each of which can jeopardize the other: swift removal of the old agrarian order followed by the establishment of new, sustainable institutions to take its place. The former requires disruption and speed—the social networks of the *nomenklatura* must be dislodged quickly. The latter demands continuity and caution—a transition that is stable and consistent enough to guarantee that the new institutions, ones based on ideas antithetical to the recent experience of Bulgaria, have time enough to "stick." Though this tension arises, in one form or another, in transition processes across Central and Eastern Europe, it is especially stark in Bulgaria (Swinnen, 1994).

To investigate this tradeoff we construct a two stage Stackelberg model. In the first stage, three political parties representing client interest groups negotiate a reform package. This package is then implemented, inducing some degree of disruption in the agrarian order. This disruption has consequences for the post-reform economic and political environment. In particular, the degree of disruptiveness of the reform determines the distribution of political power between the interest groups in stage two, the post-reform era. In this era, the interest groups use their political power to influence government policy. The second stage of our

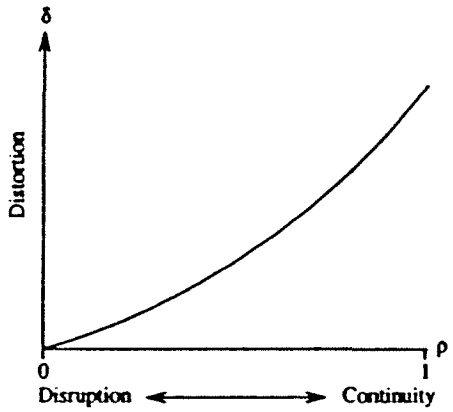

FIGURE 1. The disruption–continuity tradeoff

model focuses on those aspects of government policymaking that relate to the competitiveness of the post-reform economy. We assume that the political parties involved in the first stage have perfect foresight, so the transition negotiations are conducted with full knowledge of their implications for the future political-economic landscape.

We abstract from the institutional details of particular policy packages by representing policy in each stage by a single composite index. That is, we model policymakers as negotiating over *the end result of* a complex mix of policy decisions, bypassing the process of setting individual policy instruments. In the first stage of the model, the object of negotiations is the *disruptiveness* of the reform. In the second stage, the negotiations determine the extent of *distortion* in the post-reform economy, where by "distortion" we mean the deviation between the consumer and producer price levels in the agricultural market.

These abstractions lead to a simple characterization of the dilemma facing policymakers. It is represented by the disruption-distortion locus graphed in figure 1. The horizontal axis in the figure measures the degree of correlation, ρ, between the structure of pre- and post-reform social relations in the countryside. A high degree of correlation is associated with a low level of disruption. When ρ is set to one, the old order is perfectly preserved. As ρ tends to zero, the old order is increasingly fragmented.

The vertical axis in the figure measures the degree of competitiveness of the post-reform economy, which we denote by δ. A high degree of competitiveness is associated with a

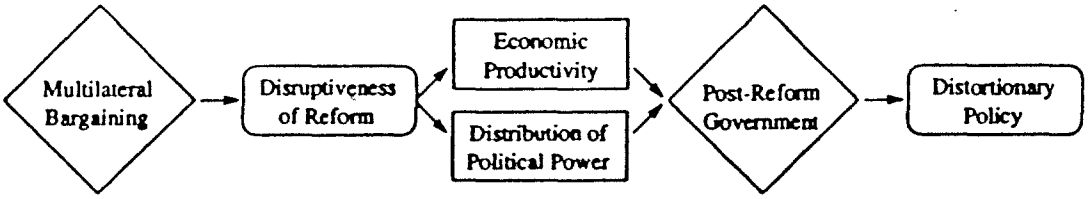

FIGURE 2. A flowchart of the model

low level of distortion. In our model, distortions result from rent-seeking activities by the *nomenklatura*. These activities could arise under various institutional settings. For example, the *nomenklatura* may monopolize the food distribution sector after the reform, resulting in a gap between farm-gate and retail prices.

The nature of the disruption-distortion tradeoff (which we will often call the ρ-δ tradeoff or the ρ-δ locus) can be illuminated by contrasting the economic and political effects of disruption in the aftermath of the transition. From an economic standpoint, disruption erodes productive efficiency, lowers output, increases prices, and reduces social welfare. This argues for a preservation of the old order on economic efficiency grounds. From a political standpoint, however, preservation of the old order increases the political power of the *nomenklatura*, enhancing their capacity for rent-seeking. For this reason, the disruption-distortion locus has a positive slope.

Figure 2 provides a graphic summary of the model. We present the Stackelberg leaders' decision as a multilateral bargaining game (Rausser and Simon, 1991) between three political parties variously representing consumers, producers and the *nomenklatura*. The Bulgarian Socialist Party (BSP) is the reincarnation of the Communist Party which ruled Bulgaria under Todor Zhivkov from 1946–1989.[3] The Socialists represent the interests of the *nomenklatura*. The BSP seeks to maintain the old order so as to increase the political power of the *nomenklatura* in the post-reform economy, and hence increase the level of rents they extract. The Union of Democratic Forces (UDF), at the opposite end of the political spectrum, consists of the radical reformers to whom we have previously referred. The UDF

[3] For a detailed description of the political developments in Bulgaria since 1989 see other chapters in this volume. We omit this description here.

represents the interests of historical land claimants. In a closed economy with sufficiently inelastic demand, gains in productivity reduce producer surplus, as do distortionary policies.[4] For both reasons, the UDF prefers a low level of ρ in the bargaining game.

Both of these parties actually exist in Bulgarian politics, and while the stylized preferences we attribute to them here are perhaps only one interpretation of political events in Bulgaria, they are at least based on documented positions taken by the parties since 1989. In contrast, our third political party is a hypothetical construction which we call the "center" (CTR). Its goal in the bargaining game is to maximize the sum of consumer and producer surplus. One justification for including the CTR is that it vaguely represents the centrist movements that have arisen in Bulgaria since 1989. Generally, these reformist elements have been less motivated by anti-Communism than by a desire to smooth the pain of the transition process by protecting the interests of both consumers and producers. However, to the extent that our model is general enough to apply to a broader class of transition environments beyond Bulgaria, a more natural interpretation is to view the CTR as a vehicle for incorporating into the policy process the normative interests of external agents, such as the World Bank or the IMF, which have an interest in increasing the efficiency of the transition.

In the second stage of the model, the post-reform government acts as a Stackelberg follower. Taking the ρ resulting from the first stage bargaining game as given, it selects a level of distortion between consumer and producer prices in the agricultural market so as to maximize the weighted sum of *nomenklatura* rent, consumer surplus and producer surplus.[5] Each group's weight in the government's objective function represents the degree of political influence that group exercises on the post-reform government. The Stackelberg leaders who determine the disruptiveness of the reform, therefore, do so with the knowledge that their decision will alter not only the size of the post-reform pie, but also each group's influence

[4] Because our focus does not include trade policy, our model omits a trade sector to avoid unnecessary complications.

[5] There are many possible ways of modeling the relationship between the policy choices we have isolated here. We chose the two stage structure to capture the fundamental path dependence of transition processes. However, we could have modeled the second stage decision as a multilateral bargaining game. Alternatively we could have both policy decisions framed as sequential single government maximizing decisions. In a forthcoming paper we analyse the importance of these modeling choices.

over how to divide it.

Our model focuses on the relationship between the economic role of the *nomenklatura* and their acquisition of political power. Conventional political-economic intuition would suggest that in the absence of externalities, policies which "decouple" the *nomenklatura*'s economic activities from their political power should improve welfare. We show that in general this intuition is not well founded. It turns out that the slope of the ρ-δ locus in figure 1 can be interpreted as the relative price of improving productive efficiency in terms of lost allocative efficiency. Changes in this price have a dramatic effect on the relative bargaining strengths of each political party in the transition game. This alters the ultimate political-economic equilibrium of the model, which in turn, alters welfare. An important question therefore is: What factors affect the slope of the ρ-δ tradeoff? It turns out that just *how* the *nomenklatura* acquire political power in the post-reform economy is a crucial determinant of this slope. To analyze the *nomenklatura*'s acquisition of political power, we introduce the notion of a **political-economic technology** or PET. A PET is a rule for mapping social and economic influence into political power, just as an economic production function maps economic inputs into outputs. We compare various political-economic technologies to show that decoupling economics from politics, the standard political-economic advice, will not necessarily improve social welfare. On the contrary, under certain circumstances, coupling the *nomenklatura*'s power directly to their unproductive activities can actually strengthen the bargaining position of the radical anti-Communist reformers and lead to *less* rent-seeking and higher social welfare in equilibrium. More generally we show that in equilibrium the relative merits of alternative political-economic technologies will depend on the severity of the tradeoff between productive and allocative efficiency within the context of a particular economy. We turn now to a more detailed specification of the economic and political components of the model.

2. The Economic Model

The post-reform economy has one sector which produces an homogeneous agricultural commodity solely for domestic consumption (*i.e.*, there is no foreign trade). At the end of the transition period, all land claimants are given plots of land of equal size and quality. The only distinction between one land reform and another is its degree of disruption. All farmers use the same production technology. Per-hectare output, q, is given by

$$q = \kappa^{\alpha} \nu^{0.5-\alpha} \tag{2.1}$$

where κ is a generic variable input, α its production elasticity and ν represents *nomenklatura* "experience services." These services refer to the productive skills and connections that the *nomenklatura* have to offer the post-reform economy.

We assume that both inputs are supplied competitively—a clear deviation from reality justified in that factor market imperfections have little to contribute to our story. While one might expect that the *nomenklatura* could wield market power in the provision of their services since they monopolize the skills they have to offer, we ignore this complication here. In the model, the *nomenklatura* supply their skills elastically at some price, p_ν. *Nomenklatura* services not employed in the agricultural sector are assumed to be employed in other sectors at the same wage rate. As a consequence, the *nomenklatura*'s payoff is independent of their utilization in agriculture, allowing us to focus on their rent-seeking activities.

While the *nomenklatura* themselves cannot influence the price of their services, we *do* assume that this price is affected by the transition. Because their experience and connections were acquired in the context of, and are specific to, the old agrarian order, the more disruptive the transition, the less useful the *nomenklatura*'s services will be in the post-reform economy. While there are a number of ways to model this phenomenon, the simplest is to interpret the production technology as utilizing "efficiency" units instead of actual units of *nomenklatura* services. An increase in ρ (*i.e.*, greater continuity with the old order) causes the productivity of these services to rise. This is equivalent to reducing the number of efficiency units required

to produce a fixed level of output, which in turn is equivalent to a reduction in the price of each efficiency unit. Such a reduction in the price of *nomenklatura* services, in turn, rotates the supply curve outward, which, other things equal, affects three important economic variables: demand for *nomenklatura* services increases, output rises, and both producer and consumer prices go down. These are the effects we refer to when we discuss the relationship between disruption and productive efficiency.

The efficiency price of *nomenklatura* services is the primary way in which the transition affects the economic structure. The secondary way is through the fixed costs of production. We assume that in setting up farm operations after being given their parcels of land, new farmers incur fixed costs. Arguably, a more disruptive reform exacerbates these start-up costs. For this reason, fixed costs decline with ρ. While justifiable from the standpoint of realism, we include fixed costs entirely for technical reasons. They provide the concavity we need to ensure a deterministic solution to the bargaining model.

Our notion of economic equilibrium is completely standard. The production function in (2.1) gives rise to a linear aggregate supply curve. In equilibrium, the producer price, p_p, is equal to the marginal cost of production. The demand side of the market is even simpler. Aggregate demand is given by an exogenously specified, stationary, linear demand curve. Consumer and producer welfare are measured by their respective surpluses. As shown in panel (a) of figure 3, producer and consumer prices diverge in equilibrium as a result of rent-seeking by the *nomenklatura*: that is, $\delta = p_c - p_p \geq 0$. The *nomenklatura* receive the rent from this distortion, corresponding to rectangle $(\delta \times \bar{q})$. These rents are the *nomenklatura*'s only payoff in the model.

It is useful to graphically describe what happens to each interest group's payoff if the disruptiveness of the reform increases, holding distortion constant. Panel (b) of figure 3 depicts such a scenario. More disruption (lower ρ) rotates the supply curve to the left, reducing equilibrium quantity and raising both consumer and producer prices. If distortion is held constant, this unambiguously implies that *nomenklatura* rent and consumer surplus

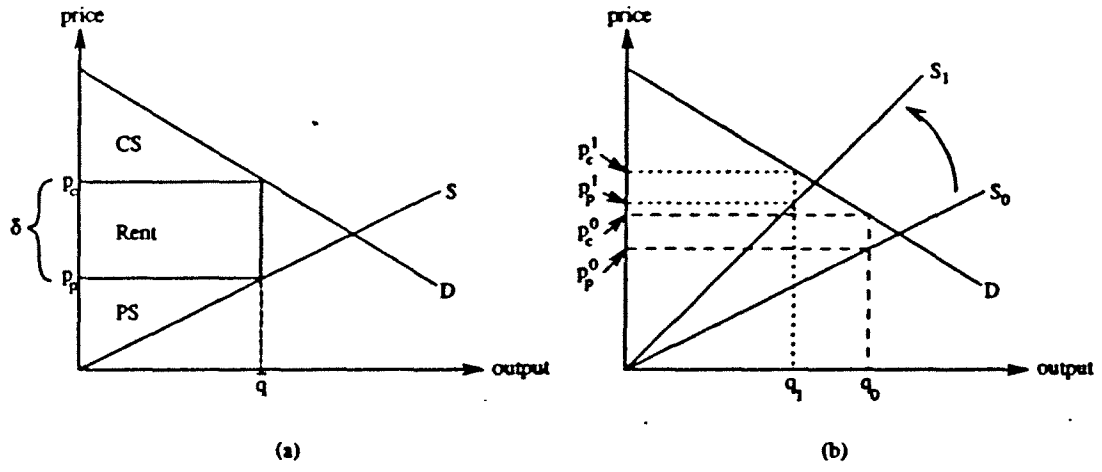

FIGURE 3. The distorted agricultural market in the post-reform economy

declines. Whether producer surplus increases depends upon the relative elasticities of supply and demand at the new equilibrium.

We have kept our economic model straightforward in order to focus attention on the political model, to which we now turn. We first analyze the second stage decision of the government reacting as a Stackelberg follower to the reform. We then turn to the multilateral bargaining game which determines the disruptiveness of the reform.

3. THE POST-REFORM POLITICAL MODEL

The level of distortion in the post-reform economy is determined by a political process within which competing interest groups lobby the government for preferential policies. The depth of the government's commitment to free-market institutions will reflect the relative strength of these interest groups. For instance, a strong *nomenklatura* lobby can be expected to hinder the development of a commercial and legal infrastructure that facilitates free competition. As Zusman (1976) and Rausser and Zusman (1992) have demonstrated, this kind of political process can be represented as a decision-theoretic problem in which the government maximizes a weighted sum of interest group utilities, the weights reflecting the relative political influence of each group. In the context of our model, we can think of the

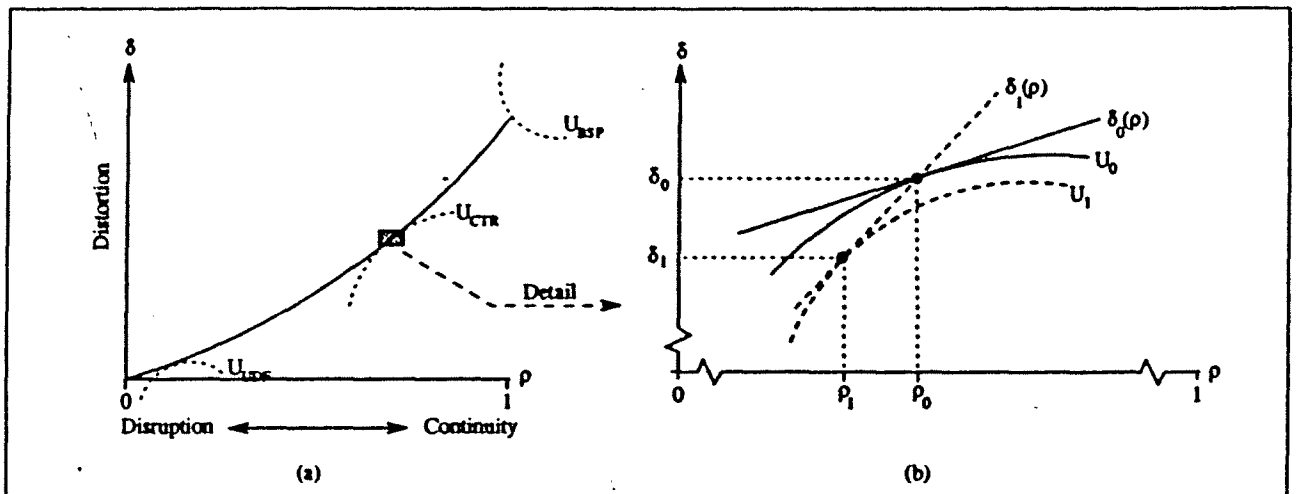

FIGURE 4. The government's reaction function and party preferences

post-reform government as choosing a level of distortion so as to solve the following program:

$$\max_{\delta} \quad G \quad = \sum_{i \in (c,p,n)} \omega_i(\rho, \delta)\pi_i(\rho, \delta) \tag{3.1}$$

where δ, the distortion per unit of output, is chosen by the government, i indexes the three interest groups, including consumers, producers and the *nomenklatura*, ω_i is i's political power coefficient and π_i is i's payoff. Two interesting questions naturally arise. First, how are the political weights in the government's objective function determined? Second, what is the relationship between the government's decision and the transition bargaining? We address the latter question first.

3.1. The Government's Reaction Function. In our model, the government is a Stackelberg follower—it makes its decision after the transition bargaining has already determined the extent of disruption in the agrarian order. This means that the payoffs and the power weights of the interest groups are implicit functions of ρ, the disruptiveness of the reform. It directly follows that the optimal distortion chosen by the government will also be a function of ρ. We can therefore derive the government's "reaction function," which indicates the level of distortion the government optimally selects for every possible value of ρ. We denote this reaction function by $\delta(\rho)$. Panel (a) in figure 4 graphs such a reaction function. This is precisely the ρ-δ tradeoff we discussed in the introduction (see figure 1). The most important

feature of the diagram in panel (a) is that the graph of the government's reaction function is upward sloping. This means that a more continuous transition induces the government to choose higher levels of distortion. This reflects the fundamental political-economic tradeoff in the model: while continuity with the old order improves productive efficiency, it does so at the cost of allocative efficiency in the form of rent-seeking by the *nomenklatura*. The steepness of the government's reaction function is a measure of the severity of this tradeoff. A very flat reaction function implies that increases in productive efficiency can be "bought cheaply" *vis-a-vis* corresponding reductions in allocative efficiency. Conversely, a very steep reaction function indicates that the "price" of increasing productivity is quite high in terms of lost rents. Interpreting the slope of the reaction function as the "price" of gains in productive efficiency is a very useful insight because it allows us to use standard consumer theoretic tools to analyze the decision problems confronting the political parties in the bargaining game.

In panel (a) of figure 4 we have drawn an indifference curve for each of the political parties. These indifference curves mark the optimal locations in ρ-δ space for each of the parties given the reaction function in panel (a). These preferences are consistent with those we ascribed to these parties in the discussion on pages 5 and 6. The BSP and the UDF are at opposite extremes—the BSP prefers high, while the UDF prefers low, levels of both distortion and ρ.[6] The CTR falls in the middle: its utility is decreasing in distortion; since it cares about consumer as well as producer surplus, it values productive efficiency more than the UDF, and thus is willing to tolerate a larger level of distortion. We restrict the following discussion to the CTR, although similar arguments apply to the UDF as well.

Panel (b) of figure 4 shows a detailed view of the CTR's preferences. The range is panel (b) is sufficiently small that the government's reaction function is well represented by a straight

[6] An increase in ρ changes the UDF's payoff in two distinct ways. If demand is sufficiently inelastic, as ρ increases and the supply curve shifts to the right, price declines more than output increases so that the producers and thus the UDF are worse off. However, when ρ increases, fixed costs decline which improves producer welfare. Depending upon which effect dominates, the UDF's utility will be either increasing or decreasing in ρ. In figure 4, we have drawn the UDF's preferences so that their utility increases very slightly for small values of ρ.

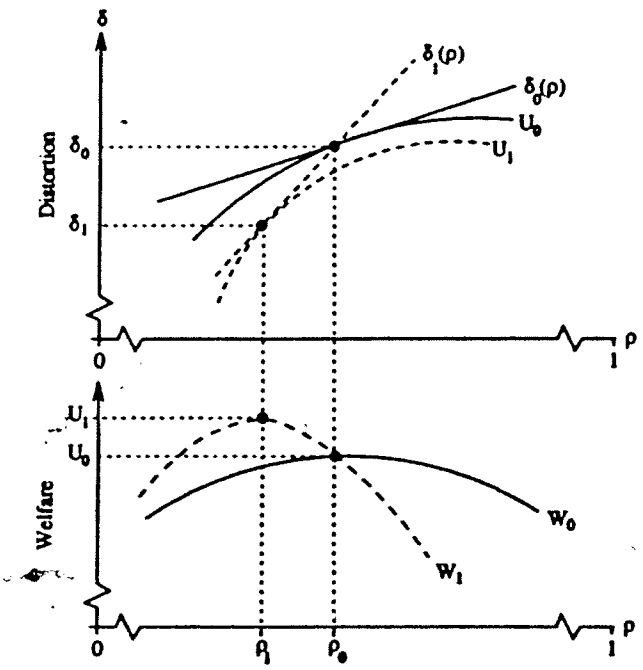

FIGURE 5. How the slope of the reaction function affects party preferences and welfare

line, although over the entire range for ρ, the reaction function can be concave, linear or convex. The graph in panel (b) is an application of standard consumer theory to the CTR's preferences over distortion and ρ. We consider the effect of a "compensated" change in the relative price of ρ in terms of distortion. Consider the initial point (ρ_0, δ_0). If $\delta_0(\rho)$ is the relevant government reaction function, then at this point, the CTR attains a maximum—the marginal rate of substitution between distortion and disruption just equals their "relative price," as measured by the slope of the reaction function. Now consider rotating the reaction function around (ρ_0, δ_0) to $\delta_1(\rho)$. This has the effect of making reductions in disruption more expensive in terms of distortion. While we have no notion of compensation in the model, we are, like consumer theorists, interested in isolating the effects of slope from those of level. We do so by requiring that the new reaction function pass through the initial point. It is therefore clear from the diagram just how a change in slope affects the CTR's optimal ρ. Increasing the relative price of ρ in terms of δ reduces the CTR's optimal ρ. Conversely, although not drawn in panel (b), a flatter sloped reaction function would yield a higher optimal ρ for the CTR.

Figure 5 reproduces the diagram in panel (b) of figure 4 and adds below it a graph of how the CTR's payoff (which coincides with the social welfare function) shifts when the slope of the government's reaction function steepens. The welfare function W_0 corresponds to the reaction function $\delta_0(\rho)$. W_0 is maximized at the initial point (ρ_0, δ_0). Now rotate the reaction function to $\delta_1(\rho)$ as before. Since any point chosen by the CTR must lie on the government's new reaction function, it follows that for choices of $\rho > \rho_0$ the CTR is unambiguously worse off than under the original reaction function. This is so because for all $\rho > \rho_0$, the new reaction function lies everywhere above the old. Conversely, for $\rho < \rho_0$ the CTR is unambiguously better off. The new welfare-maximizing value of disruption, ρ_1, therefore lies to the left of ρ_0.

The argument so far has been about *individual* party preferences. The diagrams used in this section do not depict equilibria to the bargaining game. Rather they represent building blocks in the analysis of the bargaining model. Before getting to the bargaining, however, we must discuss two more building blocks. First, we focus on the determination of the political power weights, *i.e.*, the ω_i's in the government's objective function. Second, we relate the distribution of political power to the slope of the government's reaction function.

3.2. The Determination of the Political Power Weights. Because our primary concern is with the way in which the *nomenklatura* acquire political power, consumers and producers have no independent sources of power in our model. Power acquisition is therefore a zero-sum game—gains in influence by the *nomenklatura* imply complementary losses for producers and consumers. We normalize the power weights such that once ω_n is determined, consumers and producers are allocated the residual such that all three coefficients sum to unity.

To analyze the determinants of *nomenklatura* political power, we introduce the notion of a **political-economic technology**, or PET. In general, a PET is a rule which maps social and economic power into political power. We have already informally discussed, in the introduction, the sociology of the *nomenklatura*'s relations with the peasantry and how

the transition determines the extent to which these relationships remain intact. We now formalize these notions by examining three kinds of political-economic technologies.

The simplest one incorporates only sociological factors and assigns no role to economics:

$$\omega_n = \gamma_\rho \rho \qquad 0 < \gamma_\rho \leqslant 1 \tag{3.2}$$

In this simple linear technology, *nomenklatura* power is increasing in ρ at a rate γ_ρ, which measures the strength of the linkage between sociology and political power. We label this technology **decoupled** (DEC) because it is independent of endogenous post-reform economic variables—it depends solely on the disruptiveness of the transition. Under this PET, a more continuous transition increases *nomenklatura* power, while a more disruptive transition reduces it.

We now consider two additional PETs which couple economic and political power. The first conceives of economic power as measured by some index, μ, of demand for *nomenklatura* experience services:

$$\omega_n = (\gamma_\rho \rho)^\lambda (\gamma_\mu \mu)^{1-\lambda} \qquad 0 < \gamma_\mu,\ \lambda \leqslant 1 \tag{3.3}$$

For lack of empirical guidance, we impose a Cobb-Douglas technology. Note that this technology collapses to the decoupled technology when λ is set equal to one. We label this PET the **power is visibility** technology, or VIS for short. The interpretation is that *nomenklatura* power derives from visibility in the economy. The more they are seen to be contributing productively to the economy, the more willing the populace will be to accept them in a leadership role. Alternatively, the more they are needed in the marketplace the more they will be able to capitalize on local sociological relationships with the peasantry to gain political leverage against central government policies they dislike. The VIS technology is not neutral with respect to the post-reform economy, as demand for *nomenklatura* services declines in the face of increasing distortion. This means *nomenklatura* power is therefore dependent upon the government's choice of distortion. But from the government's objective function

in equation (3.1), of course, the level of distortion depends upon *nomenklatura* power. So, under a VIS technology, distortion and *nomenklatura* power are simultaneously determined.

The second "coupled" PET represents the source of economic power not as visibility in the economy, but rather purely in terms of money. In this PET, *nomenklatura* rent, denoted by θ, takes the place of demand for *nomenklatura* services:

$$\omega_n = (\gamma_\rho \rho)^\lambda (\gamma_\theta \theta)^{1-\lambda} \qquad 0 < \gamma_\theta \leqslant 1 \tag{3.4}$$

We label this the **power is money** or PIM technology. The interpretation here is the conventional one, *i.e.*, that money buys power. Once again, with this technology there is a feedback loop: *nomenklatura* rent and the government's choice of distortion are simultaneously determined.

In the following sections, we will demonstrate that slight changes in the specification of the political-economic technology—reflecting changes in *the way* in which the *nomenklatura* are assumed to acquire power—can have dramatic effects on the shape of the government's Stackelberg reaction function, and hence, ultimately, on the quality of the transition. In particular, the two feedback effects mentioned above operate in opposite directions. Thus, economic performance is likely to be very sensitive to whether *nomenklatura* power is founded upon their contribution to productive activity, or whether it is based on the depths of their pockets.

In this section, we show how the slope of the government's reaction function changes under different political-economic technologies. We analyze the interrelationship between *nomenklatura* power and the government's choice of distortion through the government's

first order condition:

$$\frac{\partial G}{\partial \delta} = \underbrace{\omega_n \left(\frac{\partial \pi_n}{\partial \delta} - \frac{1}{2} \left[\frac{\partial \pi_c}{\partial \delta} + \frac{\partial \pi_p}{\partial \delta} \right] \right)}_{A} + \underbrace{\frac{1}{2} \left(\frac{\partial \pi_c}{\partial \delta} + \frac{\partial \pi_p}{\partial \delta} \right)}_{B} + \underbrace{\frac{\partial \omega_n}{\partial \delta} \left(\pi_n - \frac{1}{2} [\pi_c + \pi_p] \right)}_{C} \equiv 0 \quad (3.5)$$

The slope of the government's reaction function can be recovered by applying the implicit function theorem to equation (3.5). We first show that this slope must be positive. We then show how it varies with the underlying PET.

To begin, assume the operational political technology is decoupled. With the decoupled PET there is no feedback effect from distortion to *nomenklatura* power, so that $\frac{\partial \omega_n}{\partial \delta} \equiv 0$. In this case, the third term in equation (3.5) vanishes. Under these conditions, it can be shown that as ρ increases, the optimal level of distortion also rises—that is, the distortion-disruption tradeoff is upward sloping.[7]

Now consider switching from a decoupled PET to a VIS technology. Prior to the switch, assume the government's first order condition (3.5) was satisfied at some level of distortion $\hat{\delta}$. After the switch, while term A and B remain unchanged, term C must now be considered because under the VIS technology, $\frac{\partial \omega_n}{\partial \delta} < 0$—that is there is a negative feedback effect at work.[8] The sign of term C then depends upon the sign of the expression $\left(\pi_n - \frac{1}{2}[\pi_c + \pi_p]\right)$. Because the *nomenklatura*'s payoff increases with ρ, this expression will be negative for low levels of ρ and positive for high ones. It follows that at low levels of ρ, term C is positive implying the government should *increase* the level of distortion above $\hat{\delta}$. Conversely, for high levels of ρ, the government should *decrease* distortion relative to $\hat{\delta}$. The conclusion to

[7] To see this, recall that term C in equation (3.5) is zero under the PET technology. For fixed supply and demand curves, $\frac{\partial \pi_n}{\partial \delta} > 0$, while $\frac{\partial \pi_p}{\partial \delta} < 0$ and $\frac{\partial \pi_c}{\partial \delta} < 0$ for all δ. Thus, term A is necessarily positive, while term B is necessarily negative. Let $\delta = \hat{\delta}$ such that term A and term B are just balanced, that is $\frac{\partial G(\hat{\delta})}{\partial \delta} = 0$. Now increase ω_n. Term A becomes more positive while leaving term B unaffected. Thus, $\frac{\partial G(\hat{\delta})}{\partial \delta} > 0$ implying it is optimal for the government to *increase* the level of distortion. But under a decoupled technology, as can be seen from equation (3.2), *nomenklatura* power can only rise if ρ rises, implying the relationship between ρ and distortion is also positive—i.e., the government's reaction function is upward sloping.

[8] For fixed supply and demand curves, as distortion increases, output must go down, implying a reduction in demand for *nomenklatura* services, which in turn reduces *nomenklatura* power.

this argument is, then, that a shift from a decoupled PET to one based on visibility flattens out the government's reaction function. We can make an analogous argument for switching from a decoupled technology to a PIM. The conclusion, however, is reversed. Such a change in the underlying political technology results in a *steeper* tradeoff between distortion and disruption. This reversal occurs because, under a PIM technology, the feedback effect from distortion to *nomenklatura* power, $\frac{\partial \omega_n}{\partial \delta}$, is *positive*, not negative.[9]

To review, we have shown that the slope of the government's reaction, $\delta(\rho)$, will be steeper under a PIM political economic technology than under a VIS technology. The slope under the decoupled technology falls in between. The reason lies entirely in the opposite directions of the feedback effects between distortion and *nomenklatura* power under the two technologies. These feedback effect arguments are the cornerstone to understanding the relationship between the political-economic technology and the welfare effects of reform proposals. We now come to the final stage of the argument, which investigates the comparative statics of these competing PETs.

4. The Comparative Statics of Political Economic Technologies

In this section we investigate the comparative statics properties of the technology that relates economics to political power. While there has been relatively little formal study of this question, it is a topic about which economists are likely to have strong intuitions, derived from general political-economic principles. For example, it would appear, intuitively, that our decoupled PET should outperform the others, in the sense of leading to a higher quality transition. This conclusion would appear to follow immediately from the basic premise underlying this paper: potentially, the *nomenklatura* can provide economies in transition with valuable productive services, but reformers in transition economies are generally unwilling to

[9] As distortion increases, quantity declines, but the product of distortion and quantity (i.e., *nomenklatura* rent) always increases. This follows from the fact (see equation (3.5)) that the government's optimal choice of distortion level cannot exceed the level which maximizes *nomenklatura* rent. Therefore, an increase in distortion increases *nomenklatura* rent which in turn increases their power—that is, $\frac{\partial \omega_n}{\partial \delta} > 0$.

utilize these services to the maximum degree, for fear that such reliance on the *nomenklatura* will increase their political power. It seems virtually self-evident, then, that an increase in the technological linkage between economics and politics (shifting towards either the VIS or PIM technology) must necessarily exacerbate the dilemma facing reformers. Furthermore, it would seem, intuitively, that if politics must be linked to economics, then the VIS technology is likely to do less damage than the PIM. After all, the latter actually rewards the *nomenklatura*'s socially undesirable behavior—*i.e.*, rent-seeking—while the former at least rewards socially productive behavior—*i.e.*, the provision of scarce experience services. The major lesson to be learned from this paper is that, in general, neither of these intuitions is generally true.

We will limit the present discussion to comparative statics analysis around the political-economic equilibrium for the decoupled technology. That is, we will rewrite the decoupled technology as either a VIS or a PIM technology with a λ value of unity (see equations 3.3 and 3.4). We then reduce λ slightly in either case—thus adding a small "dose" of either the VIS or the PIM technology—and compare the political-economic equilibria of the original and the perturbed political economies. It is important to note that none of the *economic* parameters of these economies are affected by the perturbations. The only relationship which *is* affected is the one that links economic activity to the post-reform political power distribution. As observed in the previous section, a change in this distribution will shift the government's reaction function and hence the solution to the first stage bargaining game. We are particularly interested in the effect of changing the political-economic technology on the equilibrium levels of disruption, distortion and economic welfare.

Before proceeding, we digress to address a delicate methodological issue. When perturbing the political-economic technology away from a pure decoupled regime in the direction of one of the others, an additional degree of freedom is added to the technology specification. In the case of the PIM technology, this is the parameter γ_θ, which determines the sensitivity of *nomenklatura* power to the magnitude of the rents they extract (see equation 3.4). What

value should be assigned to this parameter? If a very small value for γ_θ is chosen, then relative to the initial equilibrium, *nomenklatura* power (ω_n) will plummet and distortion will fall, so that welfare will necessarily rise. Conversely a very large choice of γ_θ will necessarily result in a decrease in welfare relative to the initial equilibrium. Clearly, then, the comparative statics problem is not even well-defined unless a criterion is specified in advance for determining the appropriate value for γ_θ. Fortunately, the economic tradition of analyzing "compensated variations" dictates a natural criterion: the value of γ_θ should be determined by the condition that the ρ-δ graph associated with the perturbed technology must intersect the corresponding graph for the original technology *at the original political-economic equilibrium level of* ρ.

The preceding observation is illustrated in figure 6. Variables and graphs denoted with a "0" subscript refer to the economy under the decoupled regime. The equilibrium under this regime is (ρ_0, δ_0). The curves U_0, U_1 and U_2 are iso-welfare lines (i.e., indifference curves for the CTR party).[10] In the left panel, γ_θ is chosen so that the above criterion is satisfied: the new ρ-δ tradeoff $\delta_1(\rho)$ passes through the original equilibrium point. In the right panel, a higher value of γ_θ is chosen and the new ρ-δ tradeoff $\delta_2(\rho)$ rises more steeply. The effects on equilibrium disruption, distortion and welfare are quite different in the two panels. The moral of these pictures is that unless some criterion is specified in advance for selecting a unique γ_θ for the purposes of comparative statics, anything can happen and nothing can be learnt.

We now return to our comparative statics analysis. What is the effect of a perturbation of the political-economic technology in the direction of the PIM regime, adjusting γ_θ so that the ρ-δ tradeoff swivels through the equilibrium point for the original system? As discussed on page 18, the effect of the perturbation is to steepen the slope of the government's reaction function, *i.e.*, the ρ-δ tradeoff. As the slope of the tradeoff steepens, the price of reducing disruption increases. Just as the CTR's individual response in figure 10 was to reduce both

[10] In this particular illustration, the original equilibrium coincides with the CTR's optimal point on the ρ-δ tradeoff. Of course, this condition will not hold in general.

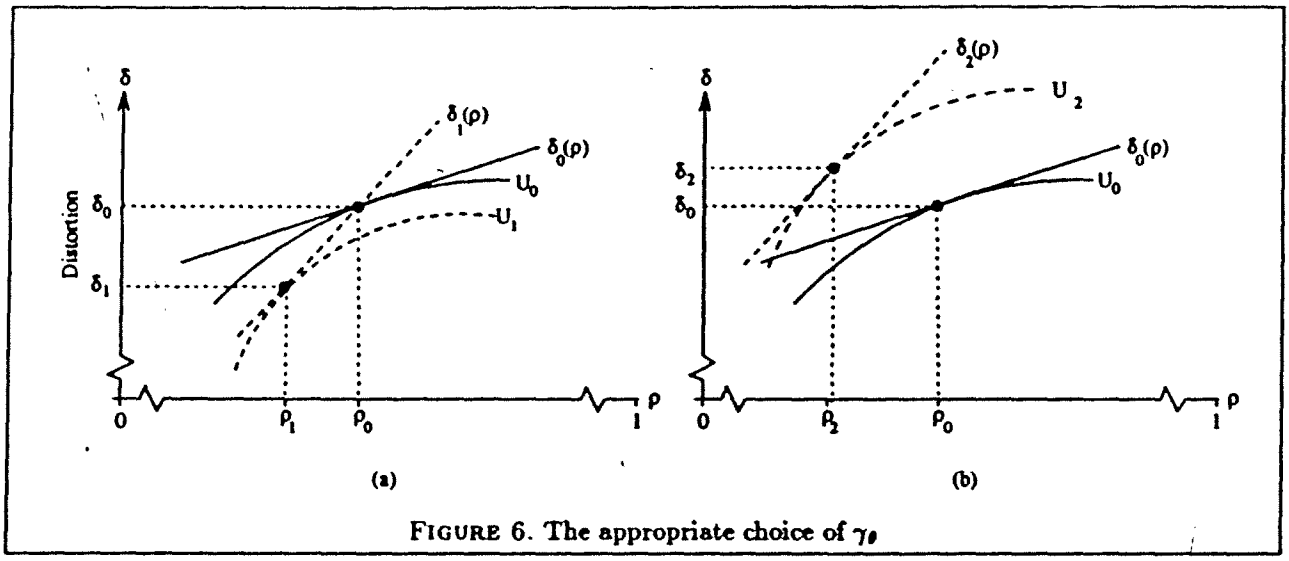

FIGURE 6. The appropriate choice of γ_θ

ρ and distortion, we would expect that the political-economic equilibrium values of ρ and δ would also decline. The bargaining problem is, however, significantly more difficult to analyze than the CTR's individual optimization problem: the solution to the bargaining model reflects the interaction of a complex set of substitution and "income" effects.[11] Consequently, we are unable to specify general conditions under which the intuitive comparative statics results always obtain and must confine ourselves to a discussion of specific examples. However, extensive computer simulation experiments indicate that the intuitive results remain robust over a wide range of parameter values.

Figure 7 illustrates the effect of this shift on the proposals made by each party in the final round of negotiations. Observe that the political-economic equilibrium under the original technology is located to the right of the welfare-maximizing point along the tradeoff line (*i.e.*, the CTR's proposal in the final round). As discussed on page 13, the effect of shifting towards PIM is to steepen the ρ-δ tradeoff, *i.e.*, to increase the "price" of reducing disruption. Accordingly, the final-round proposals made by both the CTR and the UDF shift to the left. These changes in final round proposals have multiple effects that are transmitted all the way back up the inductive chain. For the range of parameter values that we have considered, the net effect is to further isolate the BSP and thus to diminish its bargaining power. It follows

[11] The reader may wish to consult the appendix for a brief overview of the bargaining model.

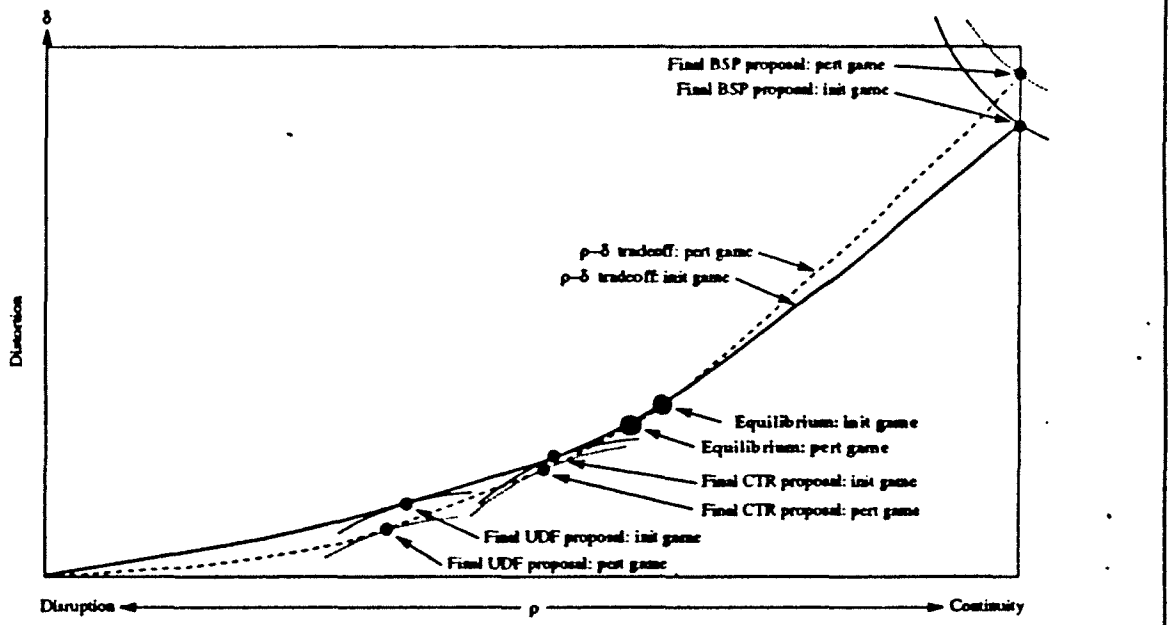

FIGURE 7. The effect on the bargaining of a shift towards PIM

that the ultimate solution to the bargaining problem must shift to the left. Thus, the effect of shifting to a PIM technology is to increase equilibrium disruption and reduce equilibrium distortion.

In the example described in figure 7, equilibrium welfare increased as a result of the technology shift. More generally, however, the effect on welfare of shifting towards PIM will depend on the location of the initial equilibrium value of ρ relative to the ρ-value that maximizes welfare. Figure 8 provides the intuition for this result. In the top-left panel, the initial equilibrium (ρ_0, δ_0) is to the left of the point on the ρ-δ tradeoff that maximizes welfare. That is, the corresponding ρ-welfare locus (W_0 in the bottom-left panel) is upward sloping at this point: from a welfare perspective there is too much disruption and too little distortion. Now, because $\delta_1(\rho)$ (the ρ-δ tradeoff for the perturbed technology) passes through (ρ_0, δ_0), the ρ-welfare locus for the perturbed technology (W_1 in the bottom right panel) must pass through the point (ρ_0, U_0) on W_0. By continuity, if the shift towards PIM is sufficiently small, then W_1 must also be upward sloping. Finally, as we have seen, the perturbation in technology shifts the solution of the bargaining game to the left along the line W_1, so that equilibrium disruption further increases and equilibrium distortion further declines.

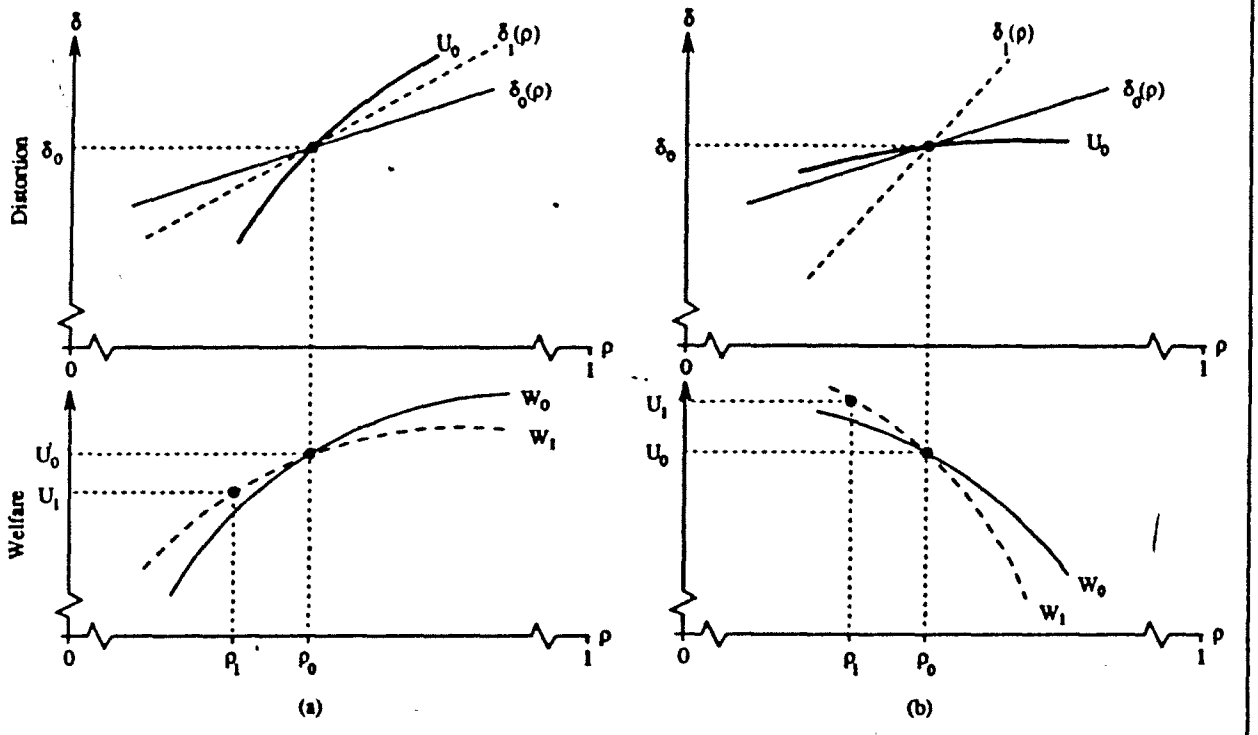

FIGURE 8. The effect on welfare of a shift towards PIM

The other possibility is illustrated in the right panels of figure 8. The initial equilibrium lies on the downward sloping portion of the ρ-welfare locus, *i.e.*, there is too little disruption and too much distortion. As in the bottom-left panel, the perturbation in technology shifts the equilibrium to the left, but in this case, welfare increases. Each one of these results is reversed for the VIS technology. A perturbation towards VIS shifts the equilibrium to the right rather than the left. In this case, welfare will increase if the initial value of ρ is on the uphill segment of the ρ-welfare locus, and decrease otherwise.

To illustrate these results, we will present a group of computer simulated examples. We begin by constructing a base-case political-economic system in which the equilibrium disruption level and the level at which welfare is maximized are exactly coincident at $\rho = 0.6$. The base-case system has a pure decoupled PET. We then consider two variants of this system and analyze the effects of perturbing each variant in the direction of either the VIS or the PIM technologies. In our first variant, productivity increases with ρ—and hence allocative efficiency deteriorates with disruption—at a *slower* rate than in the base-case system. Under

Technology	Optimal Disruption	Equilibrium Disruption	Equilibrium Distortion	Equilibrium Welfare
First variant: downhill starting point				
PIM	0.4898	0.5314	0.6124	3.1568
DEC	0.5007	0.5357	0.6213	3.1559
VIS	0.5035	0.5364	0.6227	3.1557
Second variant: uphill starting point				
PIM	0.6952	0.6639	0.8681	2.8335
DEC	0.7162	0.6720	0.8872	2.8342
VIS	0.7200	0.6733	0.8903	2.8343

TABLE 1. The comparative statics of PETs

the decoupled technology, the welfare maximizing value of ρ declines from 0.6000 to 0.5007 while the political-economic equilibrium declines by less, to 0.5357. In this variant, then, the initial equilibrium point in our comparative statics analysis lies on the *downhill* segment of the ρ-welfare locus (corresponding to panel (b) of figure 8). In our second variant, productivity increases with ρ at a *faster* rate, so the welfare maximizing value of ρ increases to 0.7162 while the political-economic equilibrium increases by less, to 0.6720. Thus in this variant, the initial equilibrium point lies on the *uphill* segment of the ρ-welfare locus (corresponding to panel (a) of figure 8). The comparative statics results are summarized in table 1.

The results for these two variants illustrate the preceding discussion. In the first, the shift towards the PIM technology steepens the ρ-δ tradeoff. The bargaining solution moves to the left, reducing δ relative to the initial level. Conversely, the shift towards the VIS technology flattens the tradeoff. Thus, the bargaining solution moves to the right and δ increases. Since in the first variant, δ was too large to begin with, the shift towards PIM improves welfare while the shift towards VIS reduces it. In the second variant, the effects on ρ and δ of shifting toward either technology are qualitatively the same as in the first variant. In this case, however, δ was *too low* to begin with, so that it is a shift towards VIS, not PIM, that improves welfare.

In one respect, these results seems quite natural; in another they seem quite the counter-intuitive. Naturally, starting from a point at which welfare increases with ρ, a shift towards VIS, which will increase ρ, will benefit society. An interpretation is that the *nomenklatura*

should be rewarded with political power on the basis of the productive component of their behavior—*i.e.*, their provision of experience services—when the gains that accrue from this behavior exceed the losses from the associated non-productive component—*i.e.*, rent acquisition. This seems logical—a matter of aligning the incentives of the *nomenklatura* and society in general. The counterintuitive result is that starting from a point at which welfare decreases with ρ, a shift towards PIM will be beneficial. The analogous interpretation is that the *nomenklatura* should be rewarded on the basis of the the undesirable component of their behavior, *precisely* when at the margin this behavior costs society more than the productive component benefits it! This recommendation seems ironic, to say the least: reward rent-acquisition precisely when it is most damaging?

On further reflection, however, the apparent paradox evaporates. An oversimplified explanation of the resolution is as follows. The outcome of the bargaining game reflects the balance of power between the UDF and the BSP. From a social welfare perspective, the UDF wants too much disruption while the BSP wants too little. If the bargaining powers of the two parties are appropriately balanced, then the optimal level of distortion can be attained in the political-economic equilibrium for the system. If the UDF has too much power, the equilibrium level of ρ will be too large, *i.e.*, welfare will be increasing at the equilibrium level of ρ. If the UDF has too little power, welfare will be decreasing at the equilibrium ρ. Now one determinant of the balance of power is the location of the CTR's preferences. If these preferences are realigned toward one of the extreme parties, then the balance of power will be tilted in favor of that party. A perturbation of the political-economic technology accomplishes just such a realignment. After a perturbation towards VIS, increments in ρ are less costly, so that the CTR's preferences become more closely aligned with the BSP's. Conversely, after a perturbation towards PIM, these increments are more costly, and the CTR's preferences become more aligned with the UDF's. It follows that when the UDF has too much power initially, a shift towards VIS will redress the balance, while if the BSP has too much power, then a shift towards PIM will redress it.

The preceding discussion gives rise to the following question: if there is an initial imbalance of power between the UDF and the BSP, why can the CTR not redress this balance by strategically misrepresenting its preferences? The answer is that our political-economic equilibrium is required to be subgame perfect. For example, suppose that the BSP is "too powerful" relative to the UDF, so that the equilibrium level of ρ is too high. Now if the CTR were to propose a lower level of ρ than is actually optimal for it in the last round of the bargaining, then the BSP's bargaining strength would be weakened, and the solution value of ρ would move to the left, closer to the CTR's real optimal level. Thus, by strategically misrepresenting its preferences in this way, the CTR could manipulate the bargaining environment in order to increase welfare. This misrepresentation would, however, violate subgame perfection: the CTR cannot credibly threaten to make a proposal that would not be in its best interests, when the time comes to make it. On the other hand, if there is an exogenous shift in the political-economic technology, then the CTR's preferences will genuinely be realigned, so that the CTR's credibility would not be at issue.

5. Conclusion

In this chapter we have taken the position that the preeminent characteristic of the Bulgarian land reform process is the degree to which it disrupts the social order in the countryside. Of particular importance is how the reform affects the *nomenklatura*—the leaders of the old order. The *nomenklatura* are pivotal for two reasons. On the one hand, they monopolize the human capital required to make the transition economically viable. Without the skills and connections they acquired while managing Communist agriculture, it seems likely that agricultural productivity will suffer, which in turn may threaten the political viability of the reform movement. On the other hand, the *nomenklatura* have a history of extracting rents from the agricultural sector. If they are allowed to accrue political influence within the new system they can be expected to manipulate policy for this purpose, thereby undermining the

competitiveness of the new market institutions. In choosing the degree of disruption caused by a reform package, the reformers are in essence balancing a complicated political-economic tradeoff. A highly disruptive reform, while limiting the productive potential of the *nomenklatura*'s experience services, has the benefit of reducing their political influence and thus the allocative inefficiency associated with their rent-seeking. A very continuous reform, while risking greater *nomenklatura* power and thus greater distortion in the agricultural market, can make more effective use of the productive potential of the *nomenklatura*. The severity of this tradeoff is the focal point of the formal model we have developed here.

Because the political parties in the first stage game are aware of how the post-reform government selects its distortion level and use this information when offering proposals in the bargaining game, the interaction between competing offers in this game is extremely sensitive to the way in which the *nomenklatura* acquire political power in the post-reform era. We therefore develop the notion of a **political-economic technology** (PET) which specifies how the *nomenklatura* convert their social influence and economic activity into political power. The main result of the model is that the conventional political-economic wisdom—that policies which decouple politics from economics, will be welfare improving—is not generally correct. We identify conditions under which coupling the *nomenklatura*'s post-reform political power to the size of the rents they extract from the agricultural market actually hardens the bargaining position of the radical reformers in stage one and which leads to higher post-reform social welfare.

Appendix

The Multilateral Bargaining Model

In the first stage of our model, the three political parties—the BSP, the CTR and the UDF—negotiate with each other to determine the character of the transition. The outcome of their negotiations is a choice of ρ, representing the extent of disruption. Once ρ has been selected, the political power distribution in the post-reform government is determined, and so also is the government's choice of a distortion level in the post-reform economy. Thus, the political parties are in fact negotiating to select a point on the ρ-δ tradeoff. The negotiation process is formulated as a multilateral bargaining game, using the framework developed in Rausser and Simon (1991).[12] In this section we shall briefly summarize a special case of this framework, directing the reader to the original paper for a more general treatment and for technical details. We will then illustrate how in the present context, shifts in the political economic technology can change the outcome of the bargaining process.

In a Rausser-Simon bargaining game, there is a fixed, finite number of negotiating rounds. In the first round of negotiations, each player (*i.e.*, in our model, each political party) submits a *proposal.* In the present context, a proposal is simply a value for ρ. One of these proposals is then chosen at random by "nature" according to an exogenously specified vector of *access probabilities* and put up for a vote.[13] If all parties accept the tabled proposal then the game ends. If one or more parties rejects it, then play proceeds to the next round. This process continues until the last round. If players cannot reach an agreement in the last round, an exogenously specified default alternative is implemented. In this paper, we presume that the default alternative is a breakdown in the economic system, a possibility so catastrophic that

[12] The Rausser-Simon model generalizes the classical Stahl-Rubinstein bargaining game (Stahl, 1972; Stahl, 1977; Rubinstein, 1982) to a multidimensional issues space with multiple players.

[13] Players' access probabilities reflect the distribution of power among them: the higher is a player's relative political power, the greater will be that player's access probability.

it is less preferable to each party than *any* negotiated level of ρ. The main result of Rausser and Simon (1991) is that the equilibrium of the bargaining game is essentially independent of the precise number of negotiating rounds, provided that this number is sufficiently large.[14]

Like all such games, our multilateral bargaining model is solved by backward induction. The solution may be obtained by applying a simple computational algorithm. Since in the last round of the game the alternative to agreement is the default alternative, a consensus can be obtained in support of *any* option in this round. It follows that the final round proposal in any party's equilibrium strategy will globally maximize the party's payoff along the ρ-δ tradeoff curve. Whichever proposal is selected by nature in the final round will be accepted by all parties.[15]

Now consider the decision problem facing players in the penultimate round of negotiations. In equilibrium, each party will accept any tabled proposal that satisfies the party's *participation constraint*, *i.e.*, any proposal that yields a payoff level at least as great as the party's *reservation utility*, which is its expected utility conditional on disagreement in the current round.[16] It follows that the penultimate round proposal of any party's equilibrium strategy must be the ρ-value that maximizes that party's payoff, subject to the condition that the other parties' participation constraints are both satisfied. Proceeding backwards up the game tree with this algorithm, we can compute the proposals that each party must submit in each round of negotiations. In equilibrium, whichever proposal is selected by "nature" in the first round will be unanimously accepted. Thus, in equilibrium, play never proceeds beyond the first round.

To illustrate the structure of the algorithm, we provide a numerical example. The example

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[14] More precisely, the Rausser-Simon model consists of a sequence of finite round bargaining games, with the number of rounds increasing without bound as the sequence progresses. For each of these games, there is a unique equilibrium value for ρ. If players' payoffs are concave in ρ, this sequence of equilibria will converge as the number of rounds increases. A *solution* to the bargaining model is the limit of the sequence of equilibria for the finite games. It is interpreted as the equilibrium of a negotiating process with a large but unspecified number of negotiating rounds.

[15] We assume that a party must vote in favor of a proposal whenever it is indifferent between accepting or rejecting that proposal.

[16] To compute this reservation utility, take the weighted sum of the utilities the party receives from each of the proposals submitted in the final round, where the weights are the players' access probabilities.

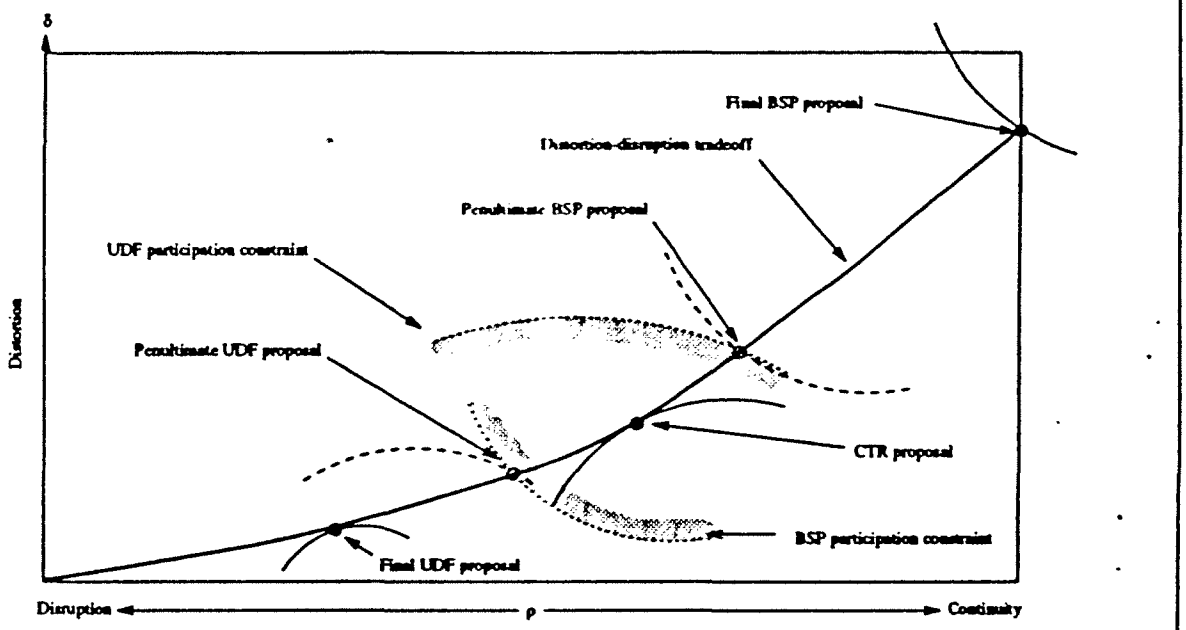

FIGURE 9. The multilateral bargaining game

assumes a given economy and a political-economic technology, so that the ρ-δ tradeoff is determined. It is represented in figure 9 by the heavy solid line. The three solid bullets along this line denote the proposals that each party makes in the final round of negotiations. As the indifference curves indicate, the proposal in each case maximizes the proposer's payoff over the entire range of ρ values. Now consider the downward-facing shaded arc with the dotted edge. This denotes the boundary of the UDF's participation constraint, *i.e.*, the set of (ρ, δ) points that yield the UDF at least its reservation utility, which is in this case the access-probability-weighted combination of the utility levels the UDF derives from each of the three solid bullets. The UDF will accept any point on the heavy solid line that satisfies this constraint. Similarly, the upward-facing shaded arc represents the BSP's participation constraint. To avoid further complicating the picture, the CTR's participation constraint is omitted. In this instance, however, the CTR's constraint is not binding on either the UDF or the BSP.

The dashed indifference curves and unfilled bullets indicate the BSP's and UDF's optimal choices in the penultimate round. In the penultimate round, the BSP's proposal must be at the rightmost edge of the UDF's participation constraint, while the UDF's proposal must be

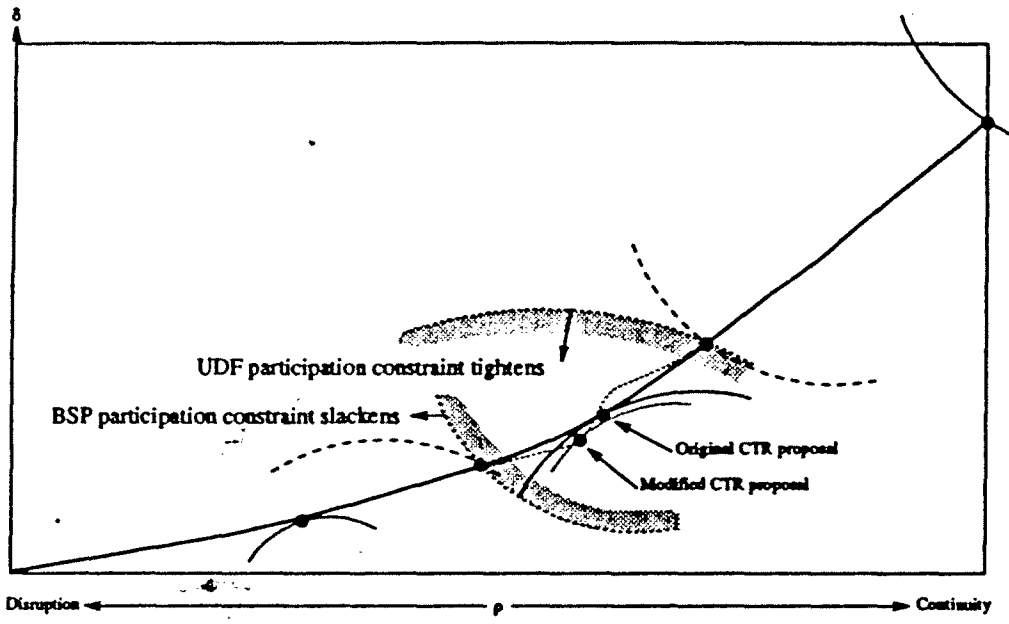

FIGURE 10. A perturbation of the multilateral bargaining game

at the leftmost edge of the BSP's constraint. By contrast, since the CTR's optimal proposal satisfies both parties' participation constraints, it remains the same as in the final round. As we proceed by induction backwards up the game tree, the "lens" defined by the intersection of the BSP's and the UDF's participation constraints *must* continually shrink inwards. In the limit, this lens shrinks to a point, which will be the solution to our model. We will call this point a *political-economic equilibrium* for the given economic system. In this particular example, by construction, this solution occurs at the ρ-value which maximizes the CTR's payoff.

We conclude this section by illustrating, in a controlled and artificial way, how a change in the slope of the ρ-δ tradeoff will affect the solution to the bargaining game. Incidently, the same illustration demonstrates how in the example discussed in the text (figure 9, page 30), the CTR party controls, in a sense, the "balance of power." A striking feature of the example just given above is that CTR's participation constraint is never binding on any of the other players. It might appear, then, that the real negotiations are being played out between the BSP and the UDF, with the CTR only a spectator. This is not the case, however. The outcome of the bargaining model is as sensitive to the CTR's behavior as to any of the other

parties'. To illustrate this, we construct an artificial perturbation of the original example, in such a way that in the final round the CTR's optimal proposal is modified but the other parties' proposals are not. Figure 10 is identical to figure 9 except that the ρ-δ tradeoff has been steepened in a neighborhood of the CTR party's final proposal. Observe that after this change, the lottery that the UDF will face if the final round is reached is *more* favorable one, while for the BSP it is less favorable. Consequently, in the penultimate round, the UDF will be more particular about the proposals it is willing to accept, while the BSP will be less so. In other words, the UDF's participation constraint in the penultimate round will tighten, while the BSP's constraint will slacken. It follows that in the penultimate round, *all three* players' proposals will lie to the southwest of their proposals under the original specification. Inducting backwards up the game-tree, we conclude that the effect of steepening the slope of the ρ-δ tradeoff in a neighborhood of the CTR's original optimum is to reduce both equilibrium disruption and distortion.

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