1. INTRODUCTION

A striking pattern of economic organizations has emerged in a large number of ex-communist countries that are pursuing varied strategies in attempting to make the transition to capitalism.[2] The central feature of the mix of organizations is that small-scale capitalism flourishes in one sphere of the economy, while large-scale state- or foreign-owned firms dominate in the remainder. Privately owned small businesses burgeon immediately after the lifting of the ban on private ownership.[3] They cluster in sectors satisfying fairly basic consumption needs. Family farming, retail services, small restaurants and hotels, and rudimentary manufacturing are typical initial activities. The businesses have low capital-labor ratios, rely on family members for their first source of labor, are controlled by individuals, and grow through self-finance.[4]

In contrast, there is an almost total absence of domestic, large-scale, private businesses that have complex internal organization, use more advanced technology, and cater to more sophisticated consumption needs. The vast majority of larger-scale private or semiprivate businesses are foreign-owned or joint ventures. State ownership of medium- and large-scale enterprises is prolonged and privatization slow. This is true not only in China, where the government is reluctant to privatize for largely ideological reasons, but also in countries like Poland or Hungary, where the intention is to privatize quickly.[5] Moreover, despite the plethora of proposals for mass privatization relying on new nonmarket or synthetic-market institutions, a large propor-

[2] We define a communist economy in terms of its fundamental feature: the dominance of the state sector guaranteed both by favorable resource allocation and by systematic legal restrictions on private ownership. Once the major legal restrictions to the development of the private sector are abolished, an economy is no longer communist and has started its transition. By this criterion, countries like China are no longer communist, but rather transitional economies, despite the presence of a large state sector. By the same criterion, the Hungarian and Polish economies of the mid-1980s were still communist, despite significant reform efforts and a more tolerant policy toward the private sector. Final elimination of the major legal barriers on the private sector occurred in 1988 in Hungary and in 1989 in Poland (see Johnson, 1992).

[3] The term private ownership is used here in the sense of the absence of ownership and control by the state. The term encompasses the rather unclear ownership types that have sprung up in China. For a discussion of the nonstate sector in China, see Singh (1991, 1992) and Xiao (1991).

[4] Kornai (1990, pp. 8–10) remarked on the spontaneous and rapid growth of small-scale private activity as common in transition. For a systematic survey of the private sectors in the Czech and Slovak Republics, Hungary, and Poland, see Johnson (1992). Berg and Blanchard (1992, p. 16) observe that average employment in Poland's small private businesses, at the end of 1990, was 1.7 workers.

[5] "What is striking in Poland is that two years into the radical 'big-bang' program the vast majority of state enterprises are controlled as before" (Berg, 1992, p. 1). The Czech Republic, Slovakia, and Mongolia seem to be exceptions to the characterizations that we have given. In the case of Mongolia, privatization is more apparent than real, however.

tion of privatization has been accomplished slowly through traditional market-like bargaining mechanisms.[6]

In this paper, we ask why this pattern of organizations has emerged in the early stage of transition. We address this question using a model of the allocation of resources between different types of activities and between sectors during transition. In particular, the paper addresses the competition for resources between institutional creation and material production and between the old state sector and the nascent private sector. The model demonstrates clearly that the organizational pattern identified above can be viewed as a natural response to the poor resource and institutional conditions that a transitional economy inherits from a communist economy.

By examining the allocation of resources between institutional creation and material production, this paper addresses several fundamental issues in the economics of transition. First, it provides insights into the nature of the differences between the so-called shock therapy (Lipton and Sachs, 1990) and organic or evolutionary (Kornai, 1990; Murrell, 1992) philosophies of transition. Second, the paper reflects upon the thorny question of the appropriate timing of privatization, in particular on how the timing of privatization might be expected to vary across countries. We show that fast privatization is less likely to be desirable the less significant the reforms undertaken by the old communist leaders.

Third, we address the question of whether the organizational pattern identified above is evidence of a faltering process of transition or of the first steps of a successful process. Various explanations have been offered as to why privatization has been slow, most suggesting that the economic costs of slow privatization are indeed high. For example, Shleifer and Vishny (1992, pp. 14, 38) focus on the conflicting interests of different stakeholders in Russia, while Dervis and Condon (1992, p. 26) comment on the popular dissatisfaction with the distributional effects of self-privatization in Hungary. But few have suggested, as we do, that delay in privatization might be a consequence of the real economic costs of privatization and that delay could be evidence of a viable transition program, so long as the other basic elements of strategy are in place.[7]

The argument begins in Section II with a discussion of the relationship between organizational and institutional development. Section III examines those legacies of communism that are most important in deliberating on the problem of institutional creation in the early stages of transition. Section IV synthesizes the discussion of the two preceding sections in a simple model,

[6] Levitas (1992) clearly documents this point for Poland.

[7] In comments consistent with our conclusion, Berg (1992, p. 16) observes how "the complexity of the privatization task overwhelms administrative capacity" in Poland and Dervis and Condon (1992, p. 27) make similar observations for Hungary.

whose assumptions are driven by the importance that we place on the legacies of communism and the twofold interaction between institutions and organizations. The results of that model are derived and discussed in Sections V and VI.

II. ORGANIZATIONS AND INSTITUTIONS

We follow North (1990) and others in distinguishing between institutions and organizations. Institutions, the rules of the game together with the structures that support them, are the constraints that shape interactions between the economy's participants. Organizations are groups of individuals pursuing common objectives that operate within the framework of a set of institutions.

There is a twofold dependence between organizations and institutions. On the one hand, institutions help to determine the character of a society's stock of organizations and the types of skills developed by individuals. On the other, the capacities and needs of organizations and the skills of individuals help to determine the path of institutional development. We elaborate on these points by summarizing the features of this interdependence that are important to our analysis.

Institutions determine the types of opportunities that exist in society. Organizations are created to pursue these opportunities and their survival is determined by the nature of these opportunities (North, 1990). The institutional environment creates and molds organizations and determines their character (Scott and Meyer, 1991). For example, under communism, rules existed barring any significant private ownership of the means of production and limiting the use of the market. Hence, private enterprise organizations and the skills needed to manage them in a market environment were scarce and confined to small organizations on the margins of the communist economy.

Because institutions shape organizational structure, organizational performance varies across different environments. "Both the informal and the formal institutional constraints result in particular exchange organizations that have come into existence because of the incentives embodied in the framework and therefore depend on it for the profitability of the activities that they undertake" (North, 1990, p. 8). As a result, a society undertaking significant reforms has a normative problem of matching organizations and institutions. Large-scale change in institutions can greatly affect the productivity of society's stock of organizations (Murrell, 1992).

But the reverse dependence also exists in decentralized economies. The character of organizations helps to shape the institutional environment.[8]

[8] Van de Ven (1992, p. 4) emphasizes this as a view of Commons: "Just as institutions constrain, liberate, and expand individual action, individuals construct and change institutions."

There are two important reasons for this dependence. First, as Lin (1989, p. 14) makes clear, institutions exist to serve individual and organizational needs: "For an induced institutional change to occur, there must be some profitable opportunities that arise from institutional disequilibrium; that is, there must be some reason the existing institutional arrangement is no longer the most efficient one in the choice set." Second, the skills held by individuals and the capacities of organizations play a role in determining the set of available institutions. For example, Ruttan (1984, p. 549) recognizes "the use of social science knowledge and the role of social scientists, in the design and evolution of institutional innovations."

Thus, institutional change comes about because of the "perceptions of the political and economic organizations that they could do better by altering the existing institutional framework at the margin. But the perceptions depend crucially on both the information that they receive and the way that they process information" (North, 1990, p. 8). Since an organization's perception of information is dependent on the routines that it employs (Nelson and Winter, 1982, Chap. 5), the nature of institutional change must depend on existing organizational structure. For example, the fact that financial institutions are slow to develop in reforming economies, despite large-scale governmental initiatives, is plausibly a reflection of the lack of importance attached to financial operations in the old socialist enterprises. An organization that has yet to develop a sophisticated accounting and financial system for its day-to-day operations is hardly likely to perceive the advantages of modern financial instruments.

Because of the twofold interaction between organizations and institutions, the development of institutional structure is largely a cumulative process in which structure in one period reflects that of the immediate past. Institutional change is characterized by "the lock-in that comes from the symbiotic relationship between institutions and organizations that have evolved as a consequence of the incentive structure provided by these institutions" (North, 1990, p. 7).

Hence, the institutional structure of the reforming economy will reflect the characteristics of the communist era that are carried into the transition by the organizations shaped during that era. Institutions created in the process of privatization will not be the same as those reflecting the needs of organizations created under the market. Given that economies in transition now have two very different sets of organizations, the smaller ones created by the market and the state enterprises, these economies will have two very different sets of institutional needs. These two distinctive sets of needs arise directly from legacies of the communist era, to which we now turn.[9]

[9] Neuberger (1968) provided an early analysis of the effects of the legacies of central planning on reforms.

III. THE COMMUNIST LEGACY

A major difference exists in the way in which institutions develop under capitalism and communism. Under capitalism, institutions develop through direct contracts between involved agents, or their representatives in government, primarily to facilitate changes in the efficiency of transactions.[10] This largely spontaneous process can create well-tailored, efficient institutions only if it deeply involves the very economic actors who will use those institutions.

Communist regimes, guided by a vision that asserts the primacy of public ownership and central direction, created a set of institutions that were largely unresponsive to efficiency considerations generated from below. This led to institutional inflexibility. Institutional change reflected the views of the apex of the communist hierarchy on how to promote efficiency. Therefore, the institutional structure left by communism had a paradoxical character. There was an immense structure that guided the activities of organizations. Organizations were highly dependent on this structure. But this immense structure contained few of the features that would have been demanded by firms in market economies.

The dependence between institutions and organizations under communism was largely a one-way process of organizational adaptation. Organizations were subject to efficiency pressures and to pressures to function in a manner approved by the top leadership. Over time, this led, through adaptation and some limited selection, to organizational adjustment to the institutions imposed from above. The composition of the large enterprises that existed at the beginning of the transition was therefore a reflection of the institutional base laid down by the communist leaders. Given that these enterprises had been insulated from market-type activity, it is plausible that large organizational adjustments would be needed before the enterprises could function more efficiently under market conditions.[11]

A very similar argument establishes that the lack of market-oriented skills is also a communist legacy. The ability to function efficiently within a particular set of market institutions comes about as a result of market activity, rather than being endowed or learned quickly through formal education.[12] Therefore, the lack of market institutions under communism leads to a dearth of both market-oriented human skills and organizations that can function in the market environment. Moreover, the market experience of most individuals has been with largely unsophisticated market institutions,

[10] Williamson (1985) gives an in-depth discussion of the relationship between transaction cost efficiency considerations and institutional arrangements under capitalism.
[11] For an extended discussion of these points, see Murrell (1992).
[12] This assumption is the essence of an organic model of society.

often with those of the black market. The market skills that do exist are ones geared to markets with simple institutional prerequisites rather than those that fit for the types of markets in which large organizations would prosper.

The final legacy to emphasize is one that resulted from the communist leaders' revealed preferences for large-scale, heavy-industrial activities, which directly led to a lack of resources flowing into the small-scale, consumer-oriented, and service spheres. The preference for state ownership and control of economic activities also led to the neglect of small-scale activities, which are comparatively inefficient when attached to a hierarchical control system. As a result, at the beginning of transition there is a marked contrast between the overabundance of productive capacity in the heavy-industrial–large-enterprise sector and the relative lack of capacity in the small-scale, consumer-oriented sphere. To the extent that factors are specific to sectors, the relative capacities of the two sectors will be enduring features of the first years of transition.

IV. A MODEL OF THE RELATIONSHIP BETWEEN INSTITUTIONAL CHOICES AND RESOURCE CONSTRAINTS IN THE EARLY STAGES OF TRANSITION

At the beginning of transition, there are two very distinct sectors. The nascent private sector, henceforth the n sector, is typically labor intensive, small-scale, and uses simple technology; producers have a simple arm's-length relationship with customers and input suppliers, and firms are in service-oriented or light-industrial activities. The heavy-industrial–large-enterprise sector, henceforth the h sector, comprises the large old state enterprises whose affairs have previously been conducted within the state industrial planning system; the distance from the final customer is remote, and attention to quality and service has not previously been important.

IV.1. Institutions

Institutional developments occur separately in each sector, and there are no public-good effects of institutions across sectors. The level of institutional development in sector j (=h, n) at time t is denoted I_{jt}, $t = 0, 1, 2, \ldots$.

The justification for this strong assumption of institutional separation has been foreshadowed in previous sections. The small and simple nature of the organizations in the n sector calls for institutional support that is not so relevant to large enterprises; for example, protection against robbery and theft, enforcement mechanisms for simple contracts, and the provision of public marketplaces. Government efforts to guarantee free markets will be especially important for a sector that cannot rely on the established relationships of large enterprises. Since the n sector comprises small units relying on personal acquaintances for labor, the incentive, information, and agency

problems of large organizations, and the institutional solutions to these problems, are not relevant. The relationship with suppliers is simple, so that attention to technical standards, a sophisticated, as opposed to a simple, patent system, and a legal system trained in complex, as opposed to simple, contractual issues are not important.

In contrast, the enterprises in the h sector are large, complex organizations, each embodying intricate intrafirm relations and maintaining a tangled web of interfirm relations. For efficiency both in privatization and thereafter, this sector requires institutional solutions to problems occurring in the ownership of intangible assets, the monitoring of firm performance, specificity in buyer-supplier relations, market power, and the social insurance of employees.

A further reason for conceptually separating institutions in the two sectors is that a large part of early institutional development in the h sector is the process of privatization itself. The legal arrangements for privatization, the training of government negotiating teams, the special mutual funds, and the voucher schemes are all of little help to the firms in the n sector. The stock markets that are needed to facilitate postprivatization corporate control are hardly relevant for the n sector at the early stages of transition.

IV.2. Resources

The model differentiates between resources that are fit for the market and those that are not, socialist resources. Here, we interpret resources broadly to include both individuals with their accompanying skills and existing organizations. M_t is the stock of market resources at time t; S_t is the stock of socialist resources. The basis for this distinction is that human skills and organizations are adapted to the environment in which they are used. If a person has functioned in the market or if an organization has survived the market test, then that person or organization will possess very different characteristics than if their experience had been confined to the socialist sector. This understanding of the nature of resources means that the relative stocks of the two resources will change over time, according to the type of experience gained. The characterization of the change in stocks is given in Section VI, where it first becomes relevant.

IV.3. Production

Let m_{jt} equal the input of market resource for current production purposes in sector j at time t, with s_{jt} similarly denoting the use of socialist resources for production. The level of both institutional development and resource input determine the amount produced: $Y_{jt} = F_j(m_{jt} + \alpha_j s_{jt}, I_{jt})$, where Y_{jt} is the output produced in the j sector at time t. With $\alpha_n < \alpha_h \lessgtr 1$, we represent the fact that market resources are more productive than socialist resources and

that the comparative advantage of socialist resources lies in the h sector. The F_j are concave functions.

IV.4. Institutional Change

We assume that only market resources can build market institutions. Although this assumption is a strong one, it does help to emphasize the decisive resource constraint of the early phases of transition. The previous discussion has provided justification: institutions must be designed to meet the efficiency needs of market participants who contribute relevant knowledge to the institutional building process, the ability to construct the appropriate institutions requires knowledge of the market place, and productive privatization must place the assets into the possession of real owners appropriate for the activities to be undertaken with those assets.[13] Hence, changes in the levels of institutional development occur as $I_{jt} = I_j(\bar{m}_{jt}) + I_{j-1}$, for $j = h, n$, where $\bar{m}_{jt}$ is the amount of market resources used for institutional development in the j sector at time t.

As all possible uses of resources have been given, completeness requires the specification of the constraints on such use:

$$M_t = m_{ht} + m_{nt} + \bar{m}_{ht} + \bar{m}_{nt}, \quad t = 1, 2, \ldots,$$

and

$$S_t = s_{ht} + s_{nt}, \quad t = 1, 2, \ldots$$

IV.5. Preferences

We assume the existence of a true utility function for society, represented by $U(Y_{ht}, Y_{nt})$ with

$$\frac{\partial U}{\partial Y_{jt}}\bigg|_{Y_{jt}=0} = \infty.$$

The leaders of the old regime are viewed as maximizing a utility function $W(\cdot)$, in which the preference for output of the h sector was greater. Then,

[13] In the organic view, the process of privatization is complete, not when there is simply a formal exchange of title to assets, but rather when the title has found itself in the hands of owners with a real interest in, and a knowledge of how to use, the assets. Thus, after the completion of a voucher-privatization scheme there is still much work to be done to complete the privatization process, and this is all work that will require the use of fairly sophisticated market institutions and market resources.

there is the following relationship between the true and preform utility functions:

$$\frac{\partial U(Y_{ht}, Y_{nt})/\partial Y_{nt}}{\partial U(Y_{ht}, Y_{nt})/\partial Y_{ht}} > \frac{\partial W(Y_{ht}, Y_{nt})/\partial Y_{nt}}{\partial W(Y_{ht}, Y_{nt})/\partial Y_{ht}} \qquad \text{for all } Y_{ht}, Y_{nt}.$$

IV.6. Legacies

Denote by 0 the last period of communism. I_{n0}, I_{h0}, M_0, and S_0 are the stocks left by the previous regime and inherited by the first transition government. As the $W(\cdot)$'s varied across communist regimes, there were differences across countries in the use of the market before transition. These differences are reflected in three ways. First, the level of I_{n0} is indicative of the overall development of the n sector. Second, M_0 is the stock of resources that can function efficiently in markets. I_{n0} and M_0 are highly correlated across countries. Third, the level of I_{h0} is indicative not only of institutional development in the h sector, but also of the productive capacity that was installed in the h sector under the communists. In this way, I_{h0} captures the extent to which the new regime can rely on such capacity to produce the more rudimentary outputs of the h sector in the first years of transition.[14]

V. A SINGLE-PERIOD OPTIMUM

Exposition is greatly simplified by considering a single-period optimum, that is, the decisions society would make if developments after the first period were ignored. In the next section, we show that all important characteristics of the economy's equilibrium identified for that single-period optimum are features of the first period of a multiperiod optimum transition program. Therefore, the results developed in the present section have great relevance for developments in the early stages of a long transition.

We examine decisions at time 1, the first period of the transition immediately after the leadership has removed most ideological barriers to private enterprise. These decisions do not affect the stocks of resources that are available in period 1, since these stocks can change only in a learning-by-doing process when resources are used in activities. Therefore, in the first period of transition, decision makers must use the resource stocks inherited from the previous regime: $M_1 = M_0$ and $S_1 = S_0$. But resource allocation decisions do immediately affect the levels of the institutions that are available for use in the first period: $I_{j1} = I_j(\bar{m}_{j1}) + I_{j0}$.
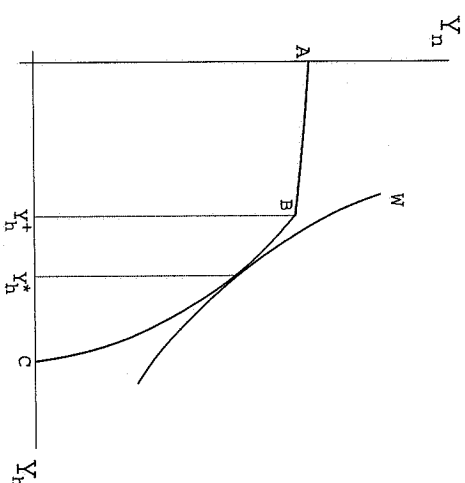
Given the structure of the model and the focus on the first period, we are

now able to omit the time subscripts for all variables except those on the levels of institutional development.

FIG. 1. The old regime's equilibrium.

V.1. Production Possibilities

First we examine trade-offs when institutions in the h sector are fixed at their pretransition level, interpreted, for example, as the case facing the old communist leaders, with their ideological constraints against privatization and in the market sector. These leaders faced the choice of how much M and S to allocate to each sector and how to divide the n sector's allocation of market resources between institutional creation and direct production input. Given that $\alpha_n < \alpha_h$, the no-privatization transformation frontier would appear as the curve ABC in Fig. 1. The kink at point B in the curve occurs where all M is allocated to the n sector and all S to the h sector. Its position on the Y_h axis is defined by $Y_h = F_h(\alpha_h, S, I_{h0})$, which is labeled Y_h^+. The larger the difference between α_h and α_n, the more pronounced this kink and the more likely that it will be a focal point for equilibria. As befits the nature of this no-privatization frontier, placed on the same figure is one possible indifference curve for the old leaders, labeled W. The equilibrium associated with that indifference curve, indicated by Y_h^*, is one of some importance to the ensuing discussion.

We now examine the transformation frontier facing the new leaders at the beginning of transition, the outer envelope of production possibilities in the Y_h–Y_n plane when privatization is under consideration, obtained by allowing

all m_j's, $\bar{m}_j$'s, and s_j's to vary. Of course, it could be the case that privatization is not immediately productive. Then the set of alternative production possibilities identified in Fig. 1 is the relevant one. However, there can be cases where privatization has not only long-run benefits, but also immediate benefits in terms of expanding consumption possibilities. Thus, we must consider the characterization of the effects of privatization as embodied in the $I_h(\cdot)$ function.

Our results are fairly robust with respect to changes in the assumptions about $I_h(\cdot)$, for reasons that become clear below. The following seem natural in the context of a simple model:

a. There is no room for improvement in socialist-type institutions while keeping them socialist.[15]

b. The process of increasing I_n involves creating a new set of institutions that are very unlike the old ones. This is a very different process from that of increasing I_n, which is built up organically in a cumulative fashion.

c. Small amounts of $\bar{m}_h$ do not increase the productive capacity of the h sector for the following reasons: because effort must be spent on destruction of the old institutions, because there is a temporary worsening of the productive potential of the old organizations which are fit in the evolutionary sense to the old institutional structure, not the new one (Murrell, 1992), and because there will be a need for a large increment of new institutions, which are indivisible.

These assumptions can be modeled in a simple way with the $I_h(\cdot)$ function, remembering that I_h is assumed to register changes in the productive potential of the institutions, rather than simply changes in the institutions themselves. First, let $I_h(0) = 0$. Second, $I_h(\bar{m}_h)$ is less than or equal to zero for values of $\bar{m}_h$ between zero and some critical level. Above this critical level, $I_h(\bar{m}_h)$ is positive. Thus, over some range of $\bar{m}_h$ investment in institution building does not increase the immediate productive potential of the h sector. It should be emphasized here that these assumptions are appropriate only for the first time period in which privatization occurs. A different formulation of $I_h(\cdot)$ is necessary for later periods, but since we are interested in exactly the issue of when privatization first occurs, there is no necessity of specifying $I_h(\cdot)$ for later periods.

Assume that M is larger than the critical value of $\bar{m}_h$. Then, privatization can expand production possibilities during the time period in which privati-

[15] To make a different assumption would involve us in discussion of whether restructuring should be undertaken before privatization. This is not an issue with which the paper is concerned.
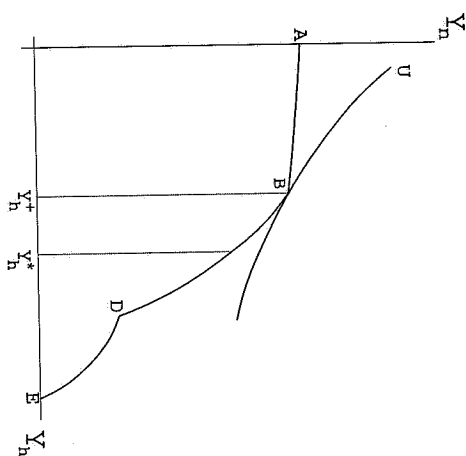
FIG. 2. The no-privatization equilibrium.

zation occurs. The single-period transformation curve will now have three distinct sections, the curve ABDE in Fig. 2. The kink at point B is the same point that appears on Fig. 1. The point D represents the position at which privatization becomes immediately productive in terms of increasing present output of Y_h. Placed on the figure is one plausible social indifference curve, labeled U, the positioning of which we now discuss.

V.2. A Possible Single-Period Equilibrium

As is evident from the figures, one possible equilibrium for the single-period case occurs when all market resources are allocated to the n sector and all socialist resources to the h sector. We now examine the conditions under which this equilibrium occurs.

Let

$$Y_n^+ = \max_{M \equiv m_n + \bar{m}_n} [F_n(m_n, I_n(\bar{m}_n)) + I_{n0}]$$

and

$$Y_h^+ = F_h(\alpha_h S + m_h, I_h(\bar{m}_h)) + I_{n0})|_{\bar{m}_h = 0}$$

and use the symbol $\partial Y_h^+/\partial m_h$ in an obvious manner to represent the right-hand-side derivative at this point. Then examine the following quantities, which are the slopes of the social indifference and transformation curves:

and

$$\frac{\partial U(Y_h^+,\, Y_n^+)/\partial Y_n}{\partial U(Y_h^+,\, Y_n^+)/\partial Y_h} \qquad (1)$$

$$\frac{\partial Y_h^+/\partial m_h}{\partial Y_n^+/\partial M}. \qquad (2)$$

The limit of (1) as $M \to 0$ is ∞.[16] Assuming the utility function is twice differentiable and concave, (1) is a continuous, decreasing function of Y_n^+, and therefore implicitly of M, given the assumptions on $F_h(\cdot)$. Moreover, (2) is an increasing function of M. Hence, there exists a value of M greater than zero such that (1) equals (2).[17] For this value of M, say M^+, there is a local optimum of the single-period problem in which $m_h = \bar{m}_h$, $s_n = 0$. That is, all market resources are used in the n sector, all socialist resources are used in the h sector, and there is no institutional creation, i.e., privatization, in the h sector. This is the equilibrium depicted in Fig. 2, where the social indifference curve U is tangent to the production possibilities curve ABDE at point B. For all values of M less than M^+, (1) must be at least as great as (2): the no-privatization solution is the optimum for these values of M and equilibria would occur in section AB of the transformation frontier of Fig. 2. For some values of M that are less than M^+, it will be the case that $s_n > 0$. When $M > M^+$, (1) must be less than (2) and the optimal point will have market resources allocated to the h sector. Then equilibria are in section BDE of the transformation frontier, perhaps even in section DE, in which immediate privatization occurs.

The question of whether this local optimum is a global one depends upon the nature of the nonconcavity in production relationships introduced by the assumptions on the privatization process and reflected in the properties of $I_h(\cdot)$. However, if privatization is not immediately productive, the transformation curve depicted in Fig. 1, or if it is too costly in terms of the Y_n that must be sacrificed in order to privatize, the equilibrium depicted in Fig. 2, then the single-period equilibrium that we have described above will hold. A sufficient condition for one of these two cases to pertain is that M is small. Thus, our previous result pertains to the global case: for small M, the no-privatization equilibrium is a global one.

V.3. A Comparison to the Pretransition Period

Now let us suppose that $M = M^+$: the legacies of communism are such that the single-period equilibrium chosen by the new leaders would be the no-pri-

[16] Of course, M is fixed for any single country. Therefore, the movement to the limit is best viewed as a comparison across a spectrum of countries, with the limiting country one that has seen no market elements in the past.

[17] Given standard assumptions.

vatization one at point B in Fig. 2. It is instructive to compare this equilibrium to the one that would have existed had the old leaders stayed in power.

Given that (1) is equal to (2),

$$\frac{\partial U(Y_h^+,\, Y_n^+)/\partial Y_n}{\partial U(Y_h^+,\, Y_n^+)/\partial Y_h} > \frac{\partial W(Y_h^+,\, Y_n^+)/\partial Y_n}{\partial W(Y_h^+,\, Y_n^+)/\partial Y_h}.$$

Hence, in the eyes of the old leaders, the new leaders have devoted too many market resources to the n sector. The old regime would have chosen a point such that $m_n + \bar{m}_n < M$ and $m_h > 0$. This is the old equilibrium that we have already identified in Fig. '1, indicated by the level of production in the h sector, Y_h^*.

Summarizing, we have shown that there must exist legacies of the communist era, the resource levels M and S and the levels of institutional development I_{n0} and I_{h0}, such that the optimal policies under the old regime would have been

$$s_h = S, \quad m_h > 0, \quad m_n + \bar{m}_n < M, \quad \text{and} \quad s_n = 0,$$

whereas under the new regime

$$s_h \lessgtr S, \quad m_h = 0, \quad m_n + \bar{m}_n = M, \quad \text{and} \quad s_n \gtrless 0.$$

It is a distinct possibility that the equilibrium preferred by the old regime has $\bar{m}_n = 0$, while the new regime chooses $\bar{m}_n > 0$ in the same circumstances. Thus, the equilibrium of the old regime is one in which there was no reform taking place in the sense that the leaders chose no institutional change.

The comparison between the two equilibria is important for the analysis that follows. We have shown that when the market resource legacy is small enough, the reforming regime concentrates all market resources in the n sector. Under the same circumstances, the old regime would have preferred to use some of its market resources to improve the effectiveness of the state sector, in the way that *tolkachi* improved the efficiency of the Soviet industrial system.

We have concentrated on the effects of the M legacy on the timing of privatization, but, intuition suggests that a similar type of analysis would be possible for other variables. The no-privatization equilibrium is more likely in the following circumstances: when the M legacy is low, when I_{n0} is very high, when I_{n0} is very low, and when privatization is costly. Hence, privatization is less likely to be the optimal choice when the old leadership has been very nonreformist.

VI. THE BEGINNING OF TRANSITION: THE FIRST STAGE OF THE LONG RUN

We turn now to an analysis of the first period of an optimal multiperiod transition program. The time subscripts on variables are consequently rein-

troduced. Society maximizes a stream of utility, where the single-period utility function has been defined above:

$$\sum_{t=1}^{\infty} \theta^t U(Y_{ht}, Y_{nt}).$$

At time t, the inheritances from the previous time period are the stocks of resources and the levels of development of institutions, $(M_t, S_t, I_{nt-1}, I_{ht-1})$. Then, one can write

$$V(M_t, S_t, I_{nt-1}, I_{ht-1})$$

$$= \max_{m_{nt}, \bar{m}_{nt}, m_{ht}, \bar{m}_{ht}, s_{nt}, s_{ht}} [U(Y_{nt}, Y_{ht}) + \theta V(M_{t+1}, S_{t+1}, I_{nt}, I_{ht})],$$

where all the constraints on the maximization are left implicit.

The single-period analysis already embodied the assumption that institutional development was a product of the resources available, in the sense that market institutions could be created only by market resources. Now, we recognize the opposite dependence: changes in the resource stocks depend upon the institutions with which existing resources interact. Thus, the stock of market resources available in one time period is a function of the institutional base and the accompanying production activity of the previous period. This is the major difference between the single-period analysis and one focusing on longer-run considerations.

As discussed in Section II, we assume that the human skills and organizational forms that are most productive in a market economy are created in a learning-by-doing process. The more developed the market institutions and the less significant the legacies of the socialist institutions, the more market resources arise out of the process of production. The dynamic aspect of transition is then a cumulative process in which the development of appropriate institutions leads to more efficient organizations and better adapted human skills and then those human skills and organizations foster the creation of higher-level institutions.

A very general formulation allows for the creation of market resources in both sectors, but at different rates. The amount of resources created for later use is related to both the amount of productive resources allocated to a sector and the level of development of the institutions in the sector. In order to model this relationship, it is especially instructive to adopt a formulation that makes transparent the parallels between production and resource creation. Activities leading to the development of market-type organizations and market-suited skills look, on the surface, very similar to activities leading to the creation of goods, because it is exactly the process of learning by doing that creates market resources.

We use the following equation to describe the amount of market resources available, given the resource allocations of the preceding time period:

$$M_{t+1} = G_n(m_{n_t} + \gamma_n s_{n_t}, I_n(\bar{m}_{n_t}) + I_{n_{t-1}})$$
$$+ G_n(m_{h_t} + \gamma_n s_{h_t}, I_n(\bar{m}_{h_t}) + I_{h_{t-1}}), \quad \gamma_n < \gamma_h \leqq 1.$$

Then the amount of socialist resources is determined as a residual, $S_t = M_{t-1} + S_{t-1} - M_t$. The γ_j represent the fact that it is easier to create market resources from previous-period market resources than from previous-period socialist resources.[18]

It is possible that fewer market resources are generated in the h sector than initially enter that sector, if the creation of new institutions, i.e., privatization, has not been large enough in previous time periods. In an extreme case, one could assume that $G_h(\cdot) = 0$ if $I_h(\bar{m}_{h_t}) + I_{h_{t-1}} \leqq I_{h0}$.

$U(Y_{n_1}, Y_{h_1})$ was the maximization criterion in period 1 in the single-period case. In the first period of a multiperiod transition program, the objective function has two elements: $U(Y_{n_1}, Y_{h_1}) + \theta V(M_2, S_2, I_{n_1}, I_{h_1})$. Thus, given that the pertinent choice sets for the instruments are the same for each of the elements of this latter objective function, one approach to understanding the properties of the first-period choices of the complete transition program is to ask in what way these two elements of the objective function would lead to systematically different choices of instruments. In indirect ways, we have already addressed this question. Since the major difference between the single period and the long run is the creation of market resources in the latter and since the market-resource-creating process is akin to the production process, there might be no reasons to expect systematic differences between analogous aspects of the equilibria of the two problems.

Given the generality of the model, it is unlikely that we would be able to prove this point generally. However, the presentation of an example suffices for the present purposes. This is because we are primarily interested in showing only the possibility, not the certainty, that the delay of privatization and the concentration on the n sector can be a normal feature of an optimal transition.

VI.1. An Example

To simplify the exposition, we make strong assumptions. Where they have important economic content, as opposed to purely analytical convenience, they are chosen to represent the limiting cases of the assumptions implied by our discussion in Sections II and III.

[18] An interpretation of γ_n is that it is the probability that a unit of socialist resources will learn the lessons of market behavior from the institutions with which it interacts. In this way, interaction with the market sector performs the necessary sorting function that must occur in transition, labeling those resources that can function in the market in an appropriate manner so that they can be used more effectively in the following periods.

First, the h sector is assumed incapable of creating market resources: $G_h(\cdot) = 0$. This is especially likely to be apposite in the early periods of transition, before the lessons of the market have had time to seep into the state sector. Then, in order to emphasize the parallels between the creation of resources in learning by doing and production, let $G_n = H(F_n)$, where H is a monotonic function, and $\alpha_n = \gamma_n$.

Finally, for expositional and analytical convenience, assume that the F_j are fixed coefficients functions, that $I_n(\cdot)$ is a linear function, and that $I_h(\cdot)$ has a single nonlinearity at the point at which privatization begins to have a positive effect on the productiveness of the h sector.

Examine the relationships between the choice variables across the set of efficient allocation streams, i.e., relationships across the set of allocations whose members might be optimal under some conceivable utility function. For such allocations, the above assumptions imply that there is a functional relation from Y_{j1} to I_{j1} for $j = $ n, h. With the linearity of the $I_j(\cdot)$ functions, there can be no reason to build up institutions before they are necessary for present production needs.[19] This relationship associates the value $I_{j1} = I_{j0}$ with all values of Y_{j1} that can be produced with I_{j0}; for other values of Y_{j1}, there is a one-to-one relationship between the two variables.

M_2 and I_{n1} are in one-to-one relation across the set of efficient allocations. Hence, by substituting variables, one can write in the case of this particular example $v(Y_{n1}, Y_{h1}) = V(M_2, S_2, I_{n1}, I_{h1})$. This $v(\cdot)$ function must be carefully interpreted. $v(Y_{n1}, Y_{h1})$ is the value derived in period 1 and all later periods from the institutions and market resources that would be available were (Y_{n1}, Y_{h1}) produced efficiently in period 1.[20]

Now let us assume that the legacies of communism are such that the economy has the stocks of resources and levels of institutional development that would lead to the no-privatization scenario in the case of the single-period model. That is, the equilibrium chosen by the new leaders would be (Y_{n1}^+, Y_{h1}^+) at point B in Fig. 1 and the equilibrium that would have been chosen by the old leaders, if they were still in power, is the one identified in Fig. 1 at Y_{h1}^* with a larger production of good h and a smaller production of good n than are chosen by the new leaders.

Given this scenario, there must be excess I_h in period 1, in the sense that more was inherited by the new leaders than is necessary for an efficient beginning to the optimal transition program. Hence, among the set of efficient multiperiod allocations, no marginal reallocation from (Y_{n1}^+, Y_{h1}^+) in-
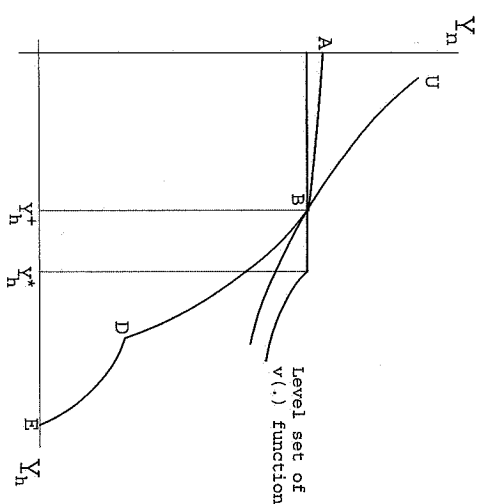
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volving a larger value of Y_{n1} will lead to a change in the end-of-the-first-period values of the state variables that would increase welfare in the first or subsequent periods. Hence, $\partial v(Y_{n1}^+, Y_{h1}^+)/\partial Y_{n1} = 0$ across the set of efficient allocations. Now the objective function for the beginning period of transition can be rewritten as $U(Y_{n1}, Y_{h1}) + \theta v(Y_{n1}, Y_{h1})$. Thus, if the single-period optimum (maximizing $U(\cdot)$) is (Y_{n1}^+, Y_{h1}^+), then the local first-period optimum for the transition program would entail allocating at least as many resources to the n sector as at (Y_{n1}^+, Y_{h1}^+) and no greater amount of resources to the h sector.

This is depicted in Fig. 3, where the relevant level set of $v(\cdot)$ has been added to the previous figure. This level set is horizontal for values of Y_h less than or equal to Y_h^*. As is apparent from the figure, the addition of second- and later-period concerns, i.e., $\theta v(\cdot)$, to the single-period objective function, $U(\cdot)$, does not imply that the privatization option is more likely. In fact, the reverse is the case for this particular example. The position of the level set of $v(\cdot)$ shows that post-first-period concerns would tend to favor an equilibrium to the left of B in Fig. 3. The need to create market resources means that society might favor the n sector even more than if present consumption were the sole concern.

For this example, the characteristics of the single-period equilibrium of Section V also hold for the first-period equilibrium of an optimum transition program. There is a range of values, with zero at its lower end, for the level of market resources inherited from the communists such that the initial equilibrium chosen by the new leaders involves no privatization. Market resources are concentrated in the building up of institutions and productive capacity in

FIG. 3. Transition's first-period equilibrium.

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[19] Building institutions before production resources are applied to them amounts to saving market resources for a future time period. But there will be a declining marginal utility of market resources along the optimal path; therefore it is always efficient to build institutions exactly when the need for their product, including the production of new market resources, arises.

[20] One should note that $v(\cdot)$ applies to period 1 only, not subsequent time periods.

the new private sector. In fact, as the example shows, the concentration on the n sector might be even more necessary given long-run concerns than for short-run reasons. In the long run, market resources are created most efficiently by the n sector. These resources might be exactly what is required to pursue effective privatization. Thus, initial concentration on the n sector follows because that sector creates the resources necessary to carry out the privatization process in an efficient manner.

VII. CONCLUDING REMARKS

Our results arise because of the essential isomorphism between the production of goods and the production of future market resources that lies at the center of our model. This isomorphism is a representation of the fact that society is an organic process in which new entities are most productively created by like entities that have been generated in the past.[21] Thus, a fruitful way of providing for the future is to concentrate on creating more of those organizations and human skills that will be most productive in changing society in the long run, that is, market resources. Expending scarce resources on fast privatization in the early phases of transition might be counter to the goal of ensuring that the privatized firms operate in a productive institutional environment in the long run.

It is important to ask whether the isomorphism between long-run and short-run concerns is accidental in our model or intrinsic in the transition. The n sector is favored with the scarce market resources for short-run consumption purposes in the first phases of transition because one of the legacies of the communist period, resulting from the preferences of the old leaders, is that the n sector is relatively underdeveloped. The old leaders' preferences concerning the n sector arose from the fact that this is inherently a market sector given its structure, low minimum efficient scale, activities in which service is important, connection to consumers, etc. From the perspective of long-run objectives, the n sector is favored by the new leaders because it has had more market elements in the past, which means that it will be more productive in creating market resources in the future.

Hence, the isomorphism between short- and long-run objectives comes about predictably as a result of the interaction of the two sectors. The intrinsic leadership and the structural characteristics of the two sectors. The intrinsic legacies of communism, rather than some adventitious combination of circumstances, explain our results. Hence, it is natural that the emphasis on the n sector is more pronounced the fewer the market resources available at the

[21] "The point emphasized by evolutionary theory is that a firm with an established routine possesses resources on which it can draw very helpfully in the difficult task of attempting to apply the routine on a larger scale" (Nelson and Winter, 1982, p. 119).

beginning of transition. The more reformist the last communist leaders, the more likely that the legacies of communism are less significant in determining outcomes.

Our analysis has been one of optimal economic decision making. We have shown that such decisions could lead to the structure of organizational development identified in the opening paragraphs of the paper. We do not suggest that decisions in the reforming countries are made on the basis of such optimal calculus. Nevertheless, there is some possibility that leaders of the reforming countries have sensed the economic trade-offs that we emphasize and that therefore the slow pace of privatization could be partially explained by the factors depicted in our analysis. If indeed this is the case, the frequently commented upon delays in privatization in Eastern Europe might not be as damaging economically as is sometimes supposed.

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Privatization, the Entrepreneurial Sector, and Growth in Post-Comecon Economies[1]

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Green, Edward J.—Privatization, the Entrepreneurial Sector, and Growth in Post-Comecon Economies

Thinking regarding the privatization of state industries and enterprises in the former Comecon countries has tended to focus on the efficiency gains that would occur in the privatized sector. Based on the comparatively good performance and the rather rigid configuration of Comecon production institutions, the scope for such productivity gains seems small. Rather, productivity and innovation in the post-Comecon economies are likely to depend greatly on the emergence of new, initially small, entrepreneurial firms. The extent and form of privatization may affect these firms' prospects for success. How the privatized-firm and entrepreneurial sectors will interact depends on public finance considerations as well as on considerations of industrial organization. *J. Comp. Econom.* June 1993, **17**(2), pp. 407–417. Federal Reserve Bank of Minneapolis, Minneapolis, Minnesota 55401; and University of Minnesota, Minneapolis, Minnesota 55455. © 1993 Academic Press, Inc.

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1. INTRODUCTION

The transition of economies in the countries that formerly constituted the Comecon economic region toward a more market-oriented structure has been proceeding intensively, but it still remains far from complete. In this paper, I make some observations about the interrelationship between reform of the market as a whole and reform of individual enterprises that operate in the market and about the policy choices implied by this interrelationship.