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The Macroeconomic Dimensions  
of Arms Reduction

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## Economic Reform and Arms Reduction in Eastern Europe: Insights from Evolutionary Economics

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### Introduction

In Eastern Europe, successful arms reduction, depends on the success of economic reforms. Failure to reform would certainly lead to reversion to the old order, which includes a pivotal role for the military in society. (This link between the military's role and the failure of reforms seems to have suggested itself constantly in the events in the Soviet Union during 1991.) Without economic restructuring, the present moves to arms reduction will not bear fruit.

As a succession of geriatric regimes fell in 1989, it became obvious that the biggest problem was not the establishment of democracy, but rather the reconstruction of the economies of Eastern Europe.<sup>1</sup> Indeed, the problem has become more ominous in the light of two years' experience of reforms: the goal of reform is now simply to save the economies of Eastern Europe from disastrous performance over the next few years.

Now that all external political barriers to reform have fallen, Eastern Europe is dismantling the centrally planned economies that had been in place for forty years. Throughout these four decades, Western politicians and economists fostered the belief that the removal of the planned system would lead to a dramatic improvement in living standards. But now that discussion has descended from broad desires to practical measures, the problems of transition to the market seem daunting. The problems suggest that failure, in the form of falling standards of living for many years, is a real possibility. The combination of dashed expectations,<sup>2</sup> weakness of nascent democracy,

and renewal of ethnic rivalries will make a potent brew for the rise of regimes that might threaten the stability of the European continent.<sup>3</sup> Such instability would be a direct threat to peace and security throughout the world. It would have serious implications for arms reduction not only in the East but also in the West.

During the economic transition, the ideas of economists will play a central role in determining policies.<sup>4</sup> This is already evidenced by the high profiles of Leszek Balcerowicz in Poland and Vaclav Klaus in Czechoslovakia. Given the immensity of the task, it is not surprising that reform ideas lean heavily on the central tenets of economic theories. Ideas for reform change dramatically, depending on the theory adopted. Moreover, predictions of the likelihood of success of particular reforms depend on the mode of analysis used. Rarely in history has prediction of the fate of nations, perhaps that fate itself, rested upon the veracity of abstruse economic theorizing.

In this chapter, I examine the nexus between peace and security and the economic ideas used to underpin reforms in Eastern Europe. The hypothesis is that the biggest threat to European peace and security over the next few years arises from the possibility of abject failure of economic reform.<sup>5</sup> Moreover, the success of reform depends on the types of policies adopted, which in turn depend on the economic theory that guides the process. In discussing the appropriateness of two different theories to guide reform, this chapter provides both a normative and a positive analysis of the link between reforms and peace and security issues. The normative element derives from the recommendations implicit in the consideration of alternative reform policies. The positive element emanates from the qualitative predictions of the likelihood of success or failure of particular reform policies.

This chapter addresses two further national security matters. First, it analyzes the particular policies that are relevant when reductions in arms production must occur. One of the thorniest questions arising from such reductions is whether arms-producing enterprises should be converted to civilian production. I approach this question in a manner consistent with the paper's analysis of reforms in general, analyzing answers that would be offered by two different economic theories.

Second, the paper attempts to improve forecasts of which reform policies will succeed. The potential threat posed by any country is proportional to its economic strength. Therefore, predictions about the effects of reforms are also predictions of the potential military threat posed by a reforming country. With irredentist claims increasing and calls for fraternal assistance still a recent memory, threats to peace and security could arise from variations in military strength across the

region. Because military strength depends on economic performance, it is important to generate insight into the likely success rates of different types of reform programs.

In reflecting on the likely effectiveness of different reform programs, I consider two rival sets of economic doctrines that could support reforms—traditional neoclassical theory, which is the basis for many of the reform proposals now being advocated and implemented in Eastern Europe, and evolutionary, or Schumpeterian, economics. After briefly describing the fundamental features of the two theories, I summarize empirical findings that lead to the conclusion that the evolutionary approach, rather than the neoclassical one, explains the crucial failings of the Eastern European economies, the failings that reforms must correct. I show that the alternative paradigms have radically different ramifications and consider the implications for the economic performance of Eastern European economies over the transition period. The last sections directly examine the question of arms reduction and military conversion in a manner that draws upon the lessons of this chapter.

#### Alternative Perspectives: Neoclassical Versus Evolutionary Economics

Neoclassical theory is familiar to most readers, so only a brief review is needed. In this paradigm, independent economic agents are viewed as making decisions on the basis of clearly known objectives and constraints, expressed as functions of tangible goods and monetary variables. Agents interact at arm's length through the price system, with prices completely describing the available alternatives. The price system transfers all information and mediates all exchanges. All transfers of information and exchanges occur when the economy is in equilibrium. For normative purposes, neoclassical analysis uses the criterion of Pareto efficiency. This criterion—whether there are opportunities to better the lot of one person without making another worse off—is powerful only in a limited domain, where the main object of interest is the equilibrium allocation of physical resources, rather than out-of-equilibrium informational processes.

At the simplest level, the evolutionary (or Schumpeterian) paradigm rests on two premises.<sup>6</sup> First, to understand the success of capitalist processes, one must primarily focus upon the mechanisms that produce growth and change, not equilibrium. Second, one must begin theorizing with a satisfactory description of the behavior of economic agents, taking full account of problems of decision making and organization in the face of uncertainty and limits on information-

processing abilities. The description of economic processes must follow directly from this view of the nature of agents.

At the center of evolutionary theory is the notion that innovation has been the driving force behind the immense increases in wealth that have occurred since the industrial revolution. The theory attaches a broad meaning to the notion of innovation: progress has come not simply from new technologies, but also from organizational and institutional innovation. In other words, innovation should not only conjure up the invention of the blast furnace or the semiconductor, but also the development of the multidivisional corporation and fast-food franchising.

In emphasizing growth and change, the evolutionary perspective implicitly accords little importance to the property of allocative efficiency and competition within equilibrium, the focus of the neoclassical paradigm. As Schumpeter stated most forcefully, these features are of secondary importance compared to capitalism's mechanisms for change and innovation:

[I]t is. . . competition within a rigid pattern of invariant conditions, methods of production and forms of organization in particular, that practically monopolizes attention [in the traditional, neoclassical paradigm]. But in capitalist reality as distinguished from its textbook picture, it is not that kind of competition that counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organization. . . . This kind of competition is much more effective than the other as a bombardment is in comparison with forcing a door, and so much more important that it becomes a matter of comparative indifference whether competition in the ordinary sense functions more or less promptly. (Schumpeter 1950, 84–85)

Implied in this quote—and the evolutionary approach—economic reform proposals centering on the pursuit of allocative efficiency will be of second order of importance.

In modeling processes of growth and change, the evolutionary approach begins by acknowledging the effects of pervasive uncertainty and the consequent demands on informational resources on the behavior of economic agents, particularly on organizations.<sup>7</sup> Thus, evolutionary economics views agents as facing not only financial and physical barriers but also limits on information-processing capabilities and the difficulty of exercising control in complex organizations. This has profound consequences for the construction of effective organizations.

A system organizing many individuals must have a means of

coordinating their actions and handling information flows among them. The exercise of routine operations is an efficient way of handling such coordination. By repetition of tasks varying only over a narrow range, an organization is able to economize on scarce information-processing resources. Hence, the efficiency of an organization is intimately tied to the exercise of a particular "routine," or narrow range of routines.

In this view, it is important to realize exactly where the organization's information, or technology, resides. Information should not be thought of as held by individuals, but rather as subsisting in the interactions between individuals. Information and skills, then, have value largely or wholly through interactions during the exercise of a particular organizational routine. The productivity of an organization (and of the individuals within the organization) therefore depends on the ability to continue operations with little variation from past behavior.

So far, emphasis has been placed on routines as the solution to the problem of coordination within organizations. Routines are also an aspect of the solution to problems of incentives and distribution of income. A routine might be thought of as an equilibrium of the complex, noncooperative game that is at the heart of efficient organizational design. And as is well known from game theory, such games usually have many equilibria of widely varying efficiency. Moreover, the process of reaching efficient solutions entails a long search. Hence, the perpetuation of a routine is in itself a protection against the creation of conflict that would arise from any attempt to find an alternative solution to the organizational game. During conflict, of course, the efficiency, and indeed the existence, of the organization would be under great threat.

Of course, organizations are not totally inflexible. They do change routines. But the search for alternatives is limited by the stock of organizational information, which is intimately bound to the exercise of an existing routine. Hence, the search for new routines is best characterized not as a wide-ranging choice from a universe of alternatives, but rather as a history-bound process of discovery within a neighborhood of existing operations. Moreover, when a search occurs, the existing routine is threatened, jeopardizing the stability of the organization by calling into question the division of organizational income.

Given reliance on routines and constraints on search, societies that attain efficiency in a changing world must have a mechanism to free themselves from the inertia inherent in the operations of an existing set of organizations. Under capitalism, the mechanism is provided by

several features of market processes. First, markets automatically reallocate resources from inefficient organizations to efficient ones. Second, exit and bankruptcy remove inefficient organizations. Third, new organizations, some of which find an effective organizational structure, are constantly entering the market. Then, in a process that marks the evolutionary approach to economic change: "Patterns of differential survival and growth in a population can produce change in economic aggregates characterizing that population, even if the corresponding characteristics of firms remain constant" (Nelson and Winter 1982, 9). And, of course, surviving and growing firms reflect properties of the economic environment in which they have prospered.

I can now summarize the elements of the evolutionary paradigm that are most important for thinking about economic reform.

1. The use of routines and the fact that the search process reflects the historical experience of an organization cause much *persistence in organizational behavior*.
2. The evolutionary approach emphasizes the concept of the *economic environment*—the set of external influences, including the other organizations in society, that affect an enterprise's performance. In a stable environment for a long enough time, routines and behaviors will be conditioned by the context in which organizations have survived and prospered.
3. Hence, for a period after a change in environment, the behaviors observed will be a reflection of the past environment.
4. The evolutionary approach emphasizes the importance of selection processes, or *entry and exit*, in accomplishing change. Changes within organizations are deemphasized in favor of a focus on shifts in control over economic resources from inefficient (technologically obsolete) to efficient (technologically progressive) organizations or to new enterprises better suited to the new economic environment.
5. To aid in the efficacy of the selection process, a variety of types of organizations must be generated. This is especially true when a radical change in environment is considered. But it also must be emphasized that a variety of organizational forms is characteristic of modern capitalism (Nelson 1990).
6. The uncertainty and the limits on information processing that are emphasized in the evolutionary approach to organizations must also be acknowledged as constraints on the effectiveness of policymakers. Knowledge of the behavior of the economy under conditions unlike the past will be highly inaccurate.

### The Use of the Neoclassical Paradigm in the Analysis of Reform Programs for the Eastern European Countries

Before proceeding to examine some deeper consequences of the two paradigms for economic reform, it is necessary to establish two points. First, I must show that the neoclassical paradigm has an important influence on economic reforms: that it is not simply a straw man. That is the subject of this section. Second, I must show the relative merits of the two paradigms in addressing the problems that reforms must solve. This will be done in the next section.

It is not surprising that neoclassical analysis is used as the basic building block in designing and understanding reform programs. The paradigm directs and shapes the very discourse of economic analysis, identifying which features are to be considered of central importance and, by implication, which are not. Consider, for example, the following characterization of reform by Hardt and Kaufman (1989, xviii):

The process of reform requires some degree of decentralization of decisions about the allocation of resources and of economic management. The goal is an economy in which choices are made rationally, on the basis of objective criteria, and where resources are used efficiently. Knowledge of the costs of inputs is essential. Change from administered to market-determined prices is a precondition to a rational system. Self-management, self-financing, and accountability at the enterprise level is necessary, along with incentives for innovation and high performance. There should be substantial disengagement of the government and the Communist Party from micromanagement of the economy, reduction or elimination of subsidies, and adherence to Western standards of statistical reporting.

The assumption that an inefficient allocation of resources is the primary problem plaguing planned economies and that decentralization and market-determined prices are the most essential reforms are firmly rooted in both the neoclassical paradigm and the traditional approach to reform.

Even before the 1989 revolutions that dramatically opened Eastern Europe to Western ideas, the neoclassical influence upon reform discussion in the region was strong. For example, Csikos-Nagy (1972) drew heavily on neoclassical theory when characterizing Hungary's 1968 reform, using such concepts as rational allocation of resources and Pareto efficiency. Winiecki (1986), who was playing an important role in Polish reform debates, examined the problems plaguing Eastern European economies using analysis strikingly similar to that found in

standard Western works. Kornai (1986, 1728) states that the common ideas behind reforms and reform attempts in Hungary, China, Czechoslovakia, Poland, and the Soviet Union were the need for the autonomy of firms (decentralization), the elimination of shortages, the focus on the profit incentive guided by appropriate price signals, and the use of the market.

In the progression of proposals for the reform of the Soviet economy, elements of the neoclassical paradigm are clear. For example, the Abalkin plan that existed for some months during 1989–1990 gave central importance to the price mechanism: “[T]he successful introduction of an economic reform is impossible if current retail prices and the procedures for their formation is retained” (*PlanEcon Report* 1989). Similarly, both the now-defunct 500-day program and Gorbachev’s largely ignored program introduced in October 1990 emphasized the freeing of prices and the creation of a competitive market environment, with due acknowledgment of the invisible hand.<sup>8</sup> These plans bespeak an indebtedness to the standard Western economic model.

The Polish reform was perhaps the most radical to be introduced in Eastern Europe. The program’s initial concentration on removing subsidies, freeing prices, decentralizing decisions, and using foreign competition as a disciplining device is strictly within the neoclassical paradigm. More importantly, the reform plan implicitly assumes that, after the introduction of the orthodox stabilization measures, existing producers would be driven by competition to maximize profits. The surprise at the depth of the recession resulting from the stabilization program indicates the extent to which poststabilization behavior needs to be explained in terms other than rational maximization. Of course, the evolutionary perspective provides a transparent explanation of the behavior.

#### Empirical Evidence on the Relevance of the Evolutionary and Neoclassical Paradigms as Guides to Reform

In order to judge which of the two paradigms should govern the design of reform programs, it is helpful to ask which of the two theories best diagnoses the illnesses of the economies that are being reformed. Much evidence on this point can be offered; I will concentrate on my own empirical work.<sup>9</sup> Both my work and other findings lead to the conclusion that the evolutionary paradigm has more explanatory power than the neoclassical paradigm in diagnosing the ills of centrally planned economies. And it is these ills that have caused the headlong rush to reform.

#### Central Planning and the Slowdown in Rates of Growth

Neoclassical theory argues that allocative efficiency is the most important feature of a well-functioning economy and that poor resource allocation is the most salient characteristic of a planned economy. There are at least two ways to test this proposition. One is to measure and compare the different levels of allocative efficiency attained by various economies. Such studies have been attempted, and they certainly do not show that planned economies are significantly less allocatively efficient than market economies.<sup>10</sup>

A second way to test whether allocative efficiency is the central characteristic distinguishing socialist from capitalist economies is to observe whether socialist economies consistently perform more poorly than market economies, relative to their respective potential levels of performance. In a recent paper, Murrell and Olson (1991) found that from 1950 to 1965 there is little evidence in growth rates that distinguishes the performance of centrally planned from market economies.<sup>11</sup> On average, the centrally planned economies operated as much below potential as did the market economies. (Table 12.1 presents a brief summary of the Murrell-Olson results.) It is difficult to conclude from this evidence that centrally planned economic systems were any less dynamic than market systems during 1950–1965.

The results change dramatically from 1965 to 1980. While the performance of the market economies, relative to potential, did not change at all, the overall performance of the centrally planned economies declined markedly. The average growth rate of the planned economies was 2.48 percent per annum less than its potential in this latter period, as opposed to only 1.62 percent in the earlier period.

Rather than performing consistently worse than market economies,

TABLE 12.1 Comparison of Growth Performance of Planned and Market Economies

	Actual Growth Rate, 1950–1965	Estimated Shortfall from Potential Growth Rate, 1950–1965	Actual Growth Rate, 1965–1980	Estimated Shortfall from Potential Growth Rate, 1965–1980
Market economy average	3.75	1.74	3.36	1.76
Planned economy average	4.43	1.62	3.24	2.48

Source: Murrell and Olson (1991).

the proach predicts, centrally planned economies and too early than market economies only after a period of time what one would predict from evolutionary economics. The significance of allocative efficiency and the stark contrast between the stability of institutions in centrally planned economies and the dynamic creation and destruction from relatively free entry and exit in market economies.

#### Foreign Trade Levels

These explain foreign trade levels by different neoclassical economists conclude that the market decision making and the state's monopoly power lead to low levels of trade in centrally planned economies. This analysis focuses on two facts: that agents operating at arm's length find it difficult to exchange goods (Dunning 1981; Helpman and Krugman 1985; and Ethier 1986); and that the transfer of technology is best accomplished within a country (Gardner 1983). As a consequence of these two facts, the price of markets within a country might be of great importance in determining the level of foreign trade. The development of different organizational forms, multinational enterprises, is the most important determinant of trade levels. Thus, to compare the neoclassical model's expectations, it is important to decide whether the presence of multinational enterprises is responsible for low levels of foreign trade in centrally planned economies.

Thus, the absence of multinational enterprises in centrally planned economies accounts for observed differences in trade levels in market economies. That paper explores the effect of representing the level of involvement of multinational enterprises in a country to an existing study that examines the level of foreign trade of centrally planned economies (Helpman 1985).<sup>12</sup> The variable on multinational enterprises was the "system" variable denoting the degree of central planning. The multinational variable was significant in all estimated regression equations, but the variable was not significant.<sup>13</sup> This result alone shows that the combination of planning and the creation of markets is not a sufficient reform package.

#### Rationality as Evidenced in Foreign Trade

Many economists argue that planning leads to an irrational economic structure. In Murrell (1990), I used the Heckscher-Ohlin model (the standard neoclassical model of foreign trade) and endowment data from the market economies to define what constitutes a rational structure of foreign trade.<sup>14</sup> Then, I estimated how far the trade behavior of various economies deviates from this structure, in order to examine the degree of irrationality of centrally planned trade.

Table 12.2 summarizes the results of the study. The data used to make the calculations have undergone rather complicated transformations, making it difficult to interpret the absolute values of the statistics. However, it is sufficient for present purposes to view the numbers as ordinal indicators of foreign trade rationality, with lower numbers evidencing greater rationality. Comparisons clearly show that models from neoclassical theory provide little evidence that the foreign trade of the planned economies is irrational.<sup>15</sup>

#### Product Versus Process Technological Change

Neoclassical theory attributes the technological deficiencies of planned economies to incentive problems and bureaucracy. Unless managers are motivated by profit maximization, they will not have

TABLE 12.2 Measures of Rationality of Foreign Trade (conformity of trade patterns to those consistent with the Heckscher-Ohlin Model)

Countries	Rationality of Foreign Trade
OECD + developing countries	1.338
OECD countries	0.946
23 developing countries	1.731
7 poorest OECD countries	0.778
Bulgaria	0.303
Czechoslovakia	0.022
East Germany	0.012
Hungary	0.361
Poland	1.566
Romania	0.159
6 Eastern European countries listed above	0.404
USSR	0.336
Yugoslavia	1.340

Notes: Lower figures indicate greater "rationality," as evidenced in foreign trade flows. The figures for groups of countries are averages. Estimates are for 1975.

Source: Adapted from Murrell (1990).

appropriate incentive to pursue the creation and adoption of new technologies. Bureaucracy impedes technological advance by slowing source reallocation and by separating R&D from the production process. This analysis implies that planned economies should exhibit particularly poor performance in creating and adopting both new product technologies and new process technologies.

The evolutionary approach predicts that centrally planned economies will do better at introducing new process technologies than new product technologies, for many reasons. First, new products often arise from outside a sector, whereas new processes often emerge within existing firms (Utterback 1979, 48, 50). Thus, absence of entry—a characteristic of planned economies—should limit new product technologies. Second, because the costs and benefits of new processes are easier to calculate than those of new products (Beardsley and Mansfield 1987, 130), conservative planners are more easily persuaded of the benefits of new processes. Third, new process technologies are more easily spread without internal organization (Brada 1981, 211). Because Eastern European enterprises rarely create subsidiary plants, spread of ideas by internal organization is absent in Eastern Europe, thus hindering the spread of new products more than new processes. Fourth, the importance of internal organization in disseminating new product technologies means that importers of the technology must rely on multinational enterprises, which are largely absent from the economies of Eastern Europe.<sup>16</sup>

Murrell (1990, 69–70, 113–115) strongly supports the predictions of the evolutionary perspective. The evidence indicates that the centrally planned economies have a large comparative advantage over market economies in sectors with high rates of process innovations and a comparative disadvantage in sectors with large amounts of product innovations. A summary of these results is presented in Tables 12.3 and 12.4. The figures show that the poorer OECD countries outperformed the six Eastern European countries in producing new products in all but one of the measures generated.<sup>17</sup> Furthermore, the planned economies outperformed their comparable market economies in producing new process technologies in more than half of the measures generated.

### Reforms From an Evolutionary Perspective

We must now examine the way in which reforms are viewed from the evolutionary perspective. This examination has two objectives. First, it identifies the central problems that any reforms must address. In doing so, it pinpoints how reforms can fail, providing information

TABLE 12.3 Measures of Comparative Advantage of Planned and Market Economies in Sectors with High Rates of Process Innovations

	1975	1976	1977	1978	1979	1980	1981	1982	1983
Export measure (higher figures indicate superior performance)									
Low-income OECD countries	0.95	0.96	0.95	0.89	0.85	1.00	0.98	0.97	0.95
6 Eastern European countries	1.46	1.16	1.27	1.25	1.16	1.42	1.58	1.71	1.64
Import measure (lower figures indicate superior performance)									
Low-income OECD countries	1.09	1.18	1.21	1.24	1.24	1.18	1.19	1.19	1.16
6 Eastern European countries	1.41	1.38	1.43	1.47	1.45	1.56	1.51	1.64	1.50
Export-import measure (higher figures indicate superior performance)									
Low-income OECD countries	0.86	0.81	0.79	0.72	0.69	0.84	0.83	0.81	0.81
6 Eastern European countries	1.04	0.84	0.89	0.85	0.80	0.91	1.04	1.05	1.09

Note: The low-income OECD countries are market economies whose incomes lie in the same range as those of Eastern Europe: Austria, Greece, Ireland, Italy, Portugal, Spain, and Turkey. The six Eastern European countries are Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania.

Source: Murrell (1990).

TABLE 12.4 Measures of Comparative Advantage of Planned and Market Economies in Sectors with High Rates of Product Innovations

	1975	1976	1977	1978	1979	1980	1981	1982	1983
Export measure (higher figures indicate superior performance)									
Low-income OECD countries	0.95	0.94	0.96	0.91	0.94	1.05	1.02	1.01	1.00
6 Eastern European countries	0.67	0.69	0.71	0.65	0.67	0.63	0.66	0.63	0.56
Import measure (lower figures indicate superior performance)									
Low-income OECD countries	1.07	1.03	1.03	1.02	1.01	1.01	1.02	1.00	0.98
6 Eastern European countries	1.23	1.25	1.31	1.34	1.21	1.06	1.00	1.08	1.04
Export-import measure (higher figures indicate superior performance)									
Low-income OECD countries	0.89	0.91	0.93	0.89	0.93	1.03	1.00	1.02	1.02
6 Eastern European countries	0.54	0.55	0.54	0.49	0.55	0.59	0.67	0.58	0.53

Note: The low-income OECD countries are market economies whose incomes lie in the same range as those of Eastern Europe: Austria, Greece, Ireland, Italy, Portugal, Spain, and Turkey. The six Eastern European countries are Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania.

Source: Murrell (1990).



ruinations about the macroeconomic consequences of my policies. Second, the examination suggests how efort. This makes it easier to identify programs that ire 1 and, therefore, which countries will have igitonies over the next few years.

### *The Cost of Reform*

Prns emphasize the importance of correcting or atior allocative mechanisms by introducing element, macrobalance, decentralization, free prices, onvorth). Because the proposals stem from a strong elief allocative efficiency, the lack of which is felt o beailing of Eastern European economies, the plans all ntroduced across all sectors in the economy. An evolu of Eastern European problems, on the other and such changes will cause immediate adverse onse

Th routines in a society are a product of the envir they have been selected and to which they havetern Europe, the past environment was the centntic system of administrative allocation and ontrsystem performed tolerably and was stable for a num number of countries, it is reasonable to suppose that stines were selected according to the needs of the evere largely suited to that environment. These routine unfit for any new environment, however. Thereform of the economic system—the environ-ment economic performance. The decline in performancertain if the change in environment produces advees the possibility of simply continuing past behaial efficiency tends to diminish rapidly in the face existing routines are no longer viable and when coopt must be broken and replaced with less attraand Winter 1982, 121–124).

Prn arise if the environment is changed without regathat enterprises might continue their past beha find enough slack under the new conditions, therect that the characteristics of past behavior will persi<sup>8</sup> Such persistence will be especially pernicious in on generation of excess demand within the state prodmai (1980) has argued cogently that excess demaconomies with large state productive sectors. In

the short run, while reforms are being implemented, existing organiza-tional behavior, which has generated excess demand so consistently in the past, will still be an important determinant of economic outcomes. Therefore, until large-scale destruction and creation of economic insti-tutions have taken place, it is likely that the Eastern European econo-mies will have a much stronger tendency to generate excess demand than economies that have had dominant private sectors in their recent past. Of course, if macroeconomic adversity is serious enough, excess demand might be temporarily squeezed out of the economy. But if the evolutionary approach's insistence on the persistence of past behavior is correct, it will take an extremely large, and costly, amount of adversity to retain macroeconomic stability. Indeed, such a scenario might accurately characterize the Poland of 1990.

Using the principles of evolutionary theory, I will briefly delineate the four main problems that are likely to be encountered on the road to reform. Any reform program that does not solve these problems will risk failure, macroeconomic instability, and possibly a large decline in standards of living.

1. Radical economic reform will lower the productive efficiency of the state sector, while in the early stages of reform the private sector will not be large enough to take up the slack. At the same time, the efficacy of selection processes in the private sector requires a fairly stable environment, similar to the one at the end of the reform process. A viable reform must provide continuity with the past for the state sector and continuity with the future for the private sector.
2. Experience shows that only draconian market-type macroeco-nomic measures will control excess demand in the state sector. How-ever, encouragement of the selective process requires a nonrestrictive macroeconomic policy to provide a fertile environment for new private-sector firms. Reforms must combine macroeconomic stringency in the state sector with nonrestrictive macroeconomic policies in the private sector.
3. In the absence of draconian fiscal, monetary, and exchange rate policies, the old-style bureaucratic intervention will be needed to contain the excess demand pressures emanating from the state sector. Thus, reforms must find a way of combining bureaucratic intervention in the state sector with free markets in the private sector.
4. Immediate exposure of the state sector to foreign trade is extremely risky, for two reasons. First, the introduction of world prices and trading conditions might cause a large decline in state-sector productivity. Second, openness without macroeconomic austerity will lead to the accumulation of foreign debt, given the tendency toward

excess demand in the state sector. However, because openness to foreign trade is the long-term goal, selection processes in the private sector must occur in an environment that includes foreign competition. The reforms must combine continuing insulation of the state sector with openness of the private sector.

#### *A Reform Package Based on Evolutionary Principles*

As the foregoing makes clear, the central question facing economic reformers who are guided by the evolutionary approach is how to handle the state and private sectors in seemingly contradictory ways.<sup>19</sup> Any reform that does not manage to do so will, if not fail, at least cause undue economic trauma and expose the whole transition process, both political and economic, to the possibility of reversal, with consequent risks for the peace and stability of the European continent as a whole. Yet, for completeness, it is necessary to show that there is a viable reform policy that steers clear of the problems that I have identified. If such a policy were not defined, one could reasonably object that the present argument only shows that reforms will inevitably be very costly.

The only possibility is a dual economy. Since there will inevitably be a long period in which the old state enterprises will continue to produce a large proportion of the country's output, the state sector should be run along traditional lines. In fact, the early months or years of transition might even require recentralization. At the same time, the private sector of the economy should be allowed to function freely in order to create internationally competitive enterprises.<sup>20</sup>

It is possible to give only the broadest overview of the principles of operation of a dual economy. Nevertheless, identification of a few general principles suggests what types of reforms would be viable according to the evolutionary perspective. First, the new private economy and the old state sector should be separated in roughly the same manner as the rest of the world and bureaucratic centrally planned economies have been separated in times past. The state sector should retain its nonconvertible currency for some time. The new private sector should operate with a new, convertible currency.

Second, the state sector should operate as it has in the past, with the traditional bureaucratic mechanisms. Radical price reform need not be undertaken and might, in fact, be harmful.<sup>21</sup>

Third, state enterprises must adhere to strict budget balancing, through the traditional means of central targets, monitoring, and intervention. Accumulation of hard-currency debt (including the new convertible currency) by the state sector should not be allowed.

Fourth, the immediate objective of the dual economy should be the shrinking of the state sector. However, this should not be attempted with the heavy hand of intervention. Once private-sector activity is allowed and a stable economic environment for private enterprise is established, the state sector will shrink by natural attrition as the labor force, attracted by better opportunities, gradually moves from the state to the private sector.

Fifth, growth of the private sector must be encouraged. There should be no restrictive macroeconomic policy in this sector and no bars on foreign competition. In addition, the following measures should be undertaken:

1. Multinational corporations should be allowed to function as freely as they do in other modern, developed economies.
2. Joint-stock firms formed by any groups of individuals, foreign or domestic, should be allowed.
3. The government should encourage "privatization by selection." Private firms (including foreign ones) or groups of employees should be allowed to bid for existing state enterprises.
4. Special circumstances might demand swift and complete privatization of some sectors of the economy. In agriculture, for example, the immediate benefits of private enterprise would probably be large—a practical policy of privatization by handing out parcels of land seems eminently feasible—and widespread support from the workers is likely.

#### *Arms Reduction and Economic Conversion*

Given the large role of the military in the affairs of the former Warsaw Pact nations, any program of economic reform must be able to address the issue of arms reduction. The evolutionary perspective has two important points to add to the debate on conversion of military-related production facilities. These points do not follow from the neo-classical paradigm and are perhaps inconsistent with it. They bear on the costliness of organizational change and the spillovers that can occur when economic change in one sector produces adversity in another.

#### *The Difficulties of Converting Existing Facilities*

Building new organizations is a costly and difficult process. However, starting over might be less costly than transforming old organizations, where behavior and language have adapted to existing conditions, the organization has been aligned with the structure of the

phy:ommitments that would be expensive to revoke havexisting members. Because of the difficulties of chairs of organizational structure, the reconstruction of exists involves costs that are not present in the con: organizations. Hence, there can be no a priori assuverting arms-producing facilities is better than sim]

Twould be especially large if reorganization requl changes in a facility's sectoral specialization, proxy, or market orientation. In fact, the conversion of armies would require changes in all three. A change in sation follows from the limited civilian use for goo produced for the military. The change in proxy arises from the fact that attention to costs will be nre after economic reform than it ever was for the cosstor. Lastly, enterprises will no longer be able to relyrkets and will find that the new ones have very diff(those of their former military masters.

ould be unproductive to commit a large expenditure of mversion grants and subsidies for enterprises in trartary to civilian production. Resources might be muve in funding start-up enterprises in a new private sect

### *The of Rapid Change*

Fucing sector, the decline in efficiency that occurs witbe inevitable, since retrenchment is an unavoidable mns reduction. No sensible policy would be able to avefficiency. However, policymakers must consider the nterprises, primarily in the civilian sector, that havrectly or indirectly on the military for some sales in try-related markets are suddenly lost, then these entefer a large overall decline in efficiency due to the effe on their ability to maintain existing organiza-tion-hence, there is every chance of large spillover effen sectors from a precipitate reduction in military pur possibility of chain reaction to enterprises that havnected with the military in any way.

Leads directly to the question of decisions on the spe the arms-producing sector. Given a nonlinear relationational performance and degree of adversity, and give performance in one sector will produce adversity

in others, it seems appropriate to reduce military purchases gradu-ally. Because gradual reduction would avoid the possibility of a chain reaction of declines, it might result in a larger sum of discounted national income over the relevant time period than would a program of immediate reduction.<sup>22</sup> The appropriate speed of reduction (i.e., closing arms-producing plants) is thus determined primarily by the ability of the civilian economy to absorb the accompanying loss of sales.

It might seem paradoxical to continue operating enterprises that are producing essentially worthless goods. But the paradox vanishes in light of the inherent externalities in the creation, design, and destruction of large organizations. These externalities arise both from the nonmarket elements of coordination intrinsic in organizations and from the public-goods nature of organizational performance. Cooperation, although essential for efficiency, is extremely hard to establish and it is fragile. If the austerity produced by large changes in economic arrangements (such as the closing of military markets) ruins existing cooperative arrangements, the productivity of workers in civilian enterprises will decline because each worker's productivity is intimately tied to the continuing cooperation that they have with their fellow workers.

### *Conversion or Gradual Closing of Arms-Producing Enterprises?*

The policy for arms reduction can be seen to be consistent with the general reform program outlined in the last section. That program's principles were that the greatest benefits of reform would come from the creation of new enterprises, that a radical change in existing arrangements could cause large declines in efficiency, that there would be negative spillovers from changes in the state sector to the new private sector, and that there would be a need to use old institutions to isolate the worst consequences of these externalities. Each of these principles is mirrored in the policy for arms reduction adumbrated above. Hence, closing the armaments-producing sector is preferable to converting it.<sup>23</sup> Gradual closing is necessary in order to protect the civilian sector of the economy from large periods of austerity. During the period of decline, arms will be produced that might be superfluous compared to political demands.

### **Conclusion**

A secure Europe depends on the progress of economic reforms in Eastern Europe. Hence, the ability to predict the performance of the Eastern European economies is vital to understanding the future

curity problems of Europe. But now prediction is most difficult cause of the radical changes that are occurring. When an economy is undergoing fundamental reconstruction, it is unlikely that the usual quantitative economic models could produce reliable forecasts of the outcome of reforms. An alternative to traditional macroeconomic models is to rely on broad qualitative generalizations. In this chapter, I have produced generalized predictions by focusing on the economic theories that underlie reforms. I have argued that reform programs focusing on decentralization and the freeing of prices in order to obtain allocative efficiency might produce very poor results. In contrast, reforms that are more sensitive to persistence in the behavior of state enterprises and the need to focus policy changes on the creation of a new private sector are more likely to be successful.

This chapter has concentrated on an abstract idea—the ability of competing paradigms to examine the processes of economic reforms. One might wonder whether my themes are relevant to the pressing practical problems of power and security. But there is no doubting the potential for political instability in Eastern Europe and with it the threat to European security. Economic success or failure will be critical in determining the levels of instability, and success or failure will hinge on the economic principles underlying reforms. Perhaps economic theories and economists are exerting a more profound influence over events than at any time in history. Hence, it is vital for peace and security to consider the intellectual basis of present economic policy in Eastern Europe.

#### Notes

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1. For brevity of expression, I include the Soviet Union among the Eastern European countries.

2. For evidence of how economic changes can alter expectations very quickly, see *Warsaw Voice*, November 25, 1990, which reported that the number of Polish teenagers expecting to buy a house within 15 years declined from 35 percent in 1989 to 25 percent in 1990.

3. Lest this seem overly dramatic, one should remember the regimes that ruled Berlin, Budapest, and Bucharest in the 1930s—the last extended period when these cities were masters of their own political destinies.

4. Economists played a large part in the formulation of the platforms of the political parties in the recent Hungarian elections. Moreover, the design and implementation of the radical Polish policy seems to be driven largely by economic ideas rather than political forces.

5. Many analyses connect the rise of fascist regimes in Europe earlier this century with the failure of the European macroeconomy.

6. Elements of the evolutionary perspective derive from a number of sources. The original insights were most clearly stated by Schumpeter. Nelson and Winter (1982) provide a modern exposition. The present discussion closely follows their treatment, emphasizing elements most critical to reforms.

7. The justification for the view of organizational behavior taken in the evolutionary paradigm is provided in detail in Nelson and Winter (1982).

8. For the 500-day program, see "Transition to the Market", written by a working group formed by a joint decision of Gorbachev and Yeltsin and produced in Moscow in August, 1990. For Gorbachev's program see the *FBIS* report of October 18, 1990, and the document "Guidelines for Stabilization of the Economy and Transition to the Market Economy," transmitted by Gorbachev to the Supreme Soviet, October 15, 1990.

9. In particular, I concentrate on work carried out under the auspices of the Economics and National Security Program of the Pew Charitable Trusts. Further empirical evidence can be found in Murrell (1990). Empirical evidence produced by other scholars is summarized in Murrell (1991a). In the past twenty years, numerous theoretical findings have cast doubt on many of the traditional conclusions of the neoclassical paradigm. Hence, theoretical economists have gradually retreated from the postulate that unfettered markets are always the most efficient form of economic organization.

10. Thornton (1971), Whalley (1976), and Desai and Martin (1983) have conducted studies attempting to derive measures of allocative inefficiency. Initially, their results were interpreted as a serious criticism of central planning. However, subsequent studies by Toda (1976) and Whitesell (1987) have questioned the significance of the results. Toda presents evidence that measures of allocative inefficiency in planned economies are statistically insignificant. Whitesell argues that such measures are relevant only if one compares losses in planned economies to losses in market economies, since neither system operates at the first-best optimum. He presents results from such a comparison, concluding that decentralizing reforms are not likely to lead to significant economic gains.

11. The growth performance is adjusted to account for differences in "potential growth." A country at a lower level of income should be expected to have a higher average growth rate than a country at a higher level (closer to potential). For a more complete description of this adjustment measure, see Murrell and Olson (1991).

12. The data sources, the exact derivation of each variable, and the

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