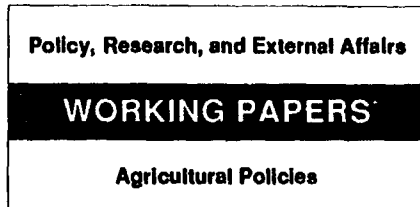


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Agricultural Reform in Developing Countries

Reflections for Eastern Europe

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and
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The experience of developing countries is relevant for the countries of Eastern Europe and the USSR, but offers no magic formulas. The scope of change is greater than that attempted in structural adjustment programs, and so are the opportunities for success and failure.

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This paper — a product of the Agricultural Policies Division, Agriculture and Rural Development Department — is part of a larger effort in PRE under the Bank's program objective for private sector development and public sector management, with special emphasis on Eastern Europe. This paper was presented at the August 1990 annual meeting of the American Agricultural Economics Association in Vancouver, Canada. It will be published in the *American Journal of Agricultural Economics*. Copies are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Cicely Spooner, room N8-037, extension 30464 (22 pages).

The countries of Eastern Europe may be able to benefit from the lessons learned from structural adjustment in developing countries although the two reform experiences differ in major ways. For one thing, markets were suppressed more in the formerly socialist countries than in the developing countries. Distortions in the agricultural sector were more massive, and the urban bias was less — because large-scale subsidies allowed producer prices and earnings to rise even though labor productivity was low.

Four issues must be addressed to get the prices nearly right:

- A credible correction of the exchange rate must be achieved. The intent of devaluing the exchange rate is to increase the price of tradables relative to nontradables. Devaluation will achieve its original purpose only if there is political commitment — manifested through fiscal discipline — to change the rural-urban distribution of income. If the government offsets devaluation by spending that increases the income of the urban sector, the result will be cost-push inflation.

- Relative prices must be adjusted within the agricultural sector. The response to a uniform price shift and to changes in relative prices will be modest unless the instruments of bureaucratic intervention are removed. In the former socialist countries, price reform and institutional change are linked: removing bureaucratic constraints on agents' decisions is essential to price reform.

- The transmission mechanism that links domestic to international prices and consumer to producer prices must be changed. Strengthening the momentum of the negotiations on trade liberalization is important to the long-term success of reform in Eastern Europe. But removing relatively cheap subsidized imports will make it harder in the short run for these economies to meet the needs of their most vulnerable consumers.

In Eastern Europe and the USSR, the political and administrative problems of introducing a new tax system are formidable, but do not justify substituting commodity taxes for a more modern fiscal system. The difficulties with the changeover to a new tax system are transitional, rather than endemic, and delay in introducing more appropriate taxes will simply build new distortions into the reformed economies.

- The needs of vulnerable groups must be monitored and addressed. In developing countries, policy reforms in agriculture often imply raising food prices to provide better incentives to producers. Eliminating food subsidies reduces urban income in relation to rural income, because food prices must go up. And price reform can hurt vulnerable parts of the population. The challenge during the adjustment process is to see that large sums of money targeted to help the poor are appropriately distributed to the needy.

In this important look at what the reforming countries of Eastern Europe can (and cannot) learn from the developing countries, Braverman and Guasch discuss these and other issues involved in reforming prices; credit, financial institutions, and marketing boards; property rights, land tenure, and privatization; research, extension, and technology; and efforts to remediate environmental degradation.

A central dilemma in the reform of the Eastern European economies is the tension between commitment and flexibility. Economic agents must believe that the government will play by the new rules and will force others to do so too. Yet the rules must occasionally change or be adjusted as circumstances change. Modern economic theory is of little help in the art of merging flexibility with credibility. Western technical assistance and international financial help can be effective only if professionals of the East and West work together, as this is a process of joint learning, not a pure transfer of knowledge.

The PRE Working Paper Series disseminates the findings of work under way in the Bank's Policy, Research, and External Affairs Complex. An objective of the series is to get these findings out quickly, even if presentations are less than fully polished. The findings, interpretations, and conclusions in these papers do not necessarily represent official Bank policy.

**Agricultural Reform in Developing Countries:
Reflections for Eastern Europe**

by
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and
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AGRICULTURAL REFORM IN DEVELOPING COUNTRIES
Reflections for Eastern Europe

Avishay Braverman and J. Luis Guasch

INTRODUCTION

Eastern European countries and the USSR are embarking on a breathtaking political and economic transition. They are venturing into uncharted economic territory encumbered by institutional rigidities, property rights dilemmas, high external debt, nonconvertible currencies, and inadequate safety nets, all of which pose severe problems for traditional macroeconomic and price reforms. The move toward a market economy has shocked the stagnant and deceptively stable socialist system, bringing unemployment and inflation.

The people of these countries, however, are not the only ones who are moving into uncharted territory -- so also are economists usually designated "Western", i.e., those working in the tradition of economic theory that developed unconstrained by strict Marxist dogma. Modern economic theory offers little insight into the dynamics and institution-building necessary to move from a centrally-planned to a market economy. Our Arrow-Debreu paradigm even in its most modified version, allows analysis of small changes in a market economy. It assumes the existence of well-defined property rights, financial and marketing institutions and contingent markets. In their absence, our ability to predict the impact of major reforms, such as freeing the price system is limited.

The reform of formerly centrally planned economies involves freeing the price system, developing a competitive environment, and privatizing many of the state-owned or controlled assets and services, while simultaneously generating the social, economic and legal infrastructure that

undergirds a market economy. These processes require varying time dimensions in an atmosphere of political uncertainty. Any ex ante analysis of the transition in Eastern Europe and the USSR should therefore be approached with the utmost humility, and with the knowledge that we have many lessons yet to learn as we expand our theory to comprehend this phenomenon.

The experience of developed and developing countries offers some lessons relevant to the transition. In this paper we focus only on lessons relevant to the agricultural sector. The agricultural or rural sector in developing countries is important. In many countries it is still the main engine for growth and a major contributor to foreign exchange. The rural sector engages between 50 percent and 80 percent of labor in most developing countries and contributes more than a quarter of GDP. Most of the poor in developing countries still reside in rural areas. Agriculture has traditionally been subject to discriminatory practices, through exchange rate, price, and tax policies known together as the urban bias.

Many developing countries have attempted to remedy the problems caused by the urban bias plus the budget deficit, balance of payments problems, and massive external debt by embarking on the so-called process of structural adjustment. In response, international financial institutions, in particular The World Bank, have generated a new lending mechanism, the structural adjustment loan conditioned on various policy reforms. We prefer to view these loans in a broader context, since structural adjustment should be seen as a process of ongoing policy reform. The areas of reform include monetary and fiscal policies, exchange rate and domestic price reforms, institutional reform (especially in areas of credit, marketing boards and land and property rights), and policies to improve technology transfer and adaptation. In addition, special attention has been given to

programs to protect the poor, with an insufficient degree of success. Adequate investment in physical and human infrastructure, including health, education, and nutrition, is critical to supplement structural adjustment programs, and these investments have a high payoff, particularly for the poor.

The process of reform in developing countries differs from that in Eastern Europe and the USSR, since the physical infrastructure, human capital, and cultural context that comprise the initial conditions differ. The differences limit the degree to which the LDC experience generalizes the Eastern Europe and the USSR. The suppression of markets in the former socialist countries is greater than in the LDCs. The distortions within the agricultural sector are more massive, and more difficult to measure without meaningful prices and exchange rates. The urban bias in aggregate has been less in the post-Stalinist period than is the case in LDCs, because subsidization on a large scale through the state budget and the banking system has allowed producer prices and earnings to rise even though labor productivity is low. The urban bias in several countries, most notably the USSR, has increased in the transitional period as controlled producer prices have fallen behind increases in the general price level. The bias is still less than in many LDCs however, and the large subsidies of recent years affect rural people's evaluation of the gains and losses that the transition will bring. The implications of these differences in initial conditions for the two types of policy reform: structural adjustment in developing countries and transition to post collectivist market oriented agriculture will be discussed below.

GETTING THE PRICES NEARLY RIGHT

Four issues usually must be addressed in an effort to get the prices nearly right: i) a credible correction of the exchange rate must be achieved; ii) relative prices within the agricultural

sector must be adjusted; iii) the transmission mechanism that links domestic to international prices and consumer to producer prices must be changed; iv) the needs of vulnerable groups must be monitored and addressed.

Achieving A Credible Devaluation

The intent of devaluing the exchange rate is to increase the relative price of tradables with respect to nontradables. Given the prevalence of urban bias, this tends to increase agricultural producer prices at the expense of incomes of urban residents. One clear lesson on devaluation that has been learned is that devaluation will only achieve its original purpose if there is political commitment, manifested through fiscal discipline, to change the rural-urban income distribution. If the government offsets the devaluation by expenditure that increases the income of the urban sector, particularly the government sector, the results will be the nullification of the devaluation, and generation of cost-push inflation (see Braverman and Kanbur [1987] for an example in an African context).

The Importance of Relative Price Changes

A uniform price shift, such as that which takes place in devaluation, is important, particularly when urban bias is great. In both developing countries and the former socialist countries, however, change in relative agricultural prices can be more important, since the distortions in these prices are quite high. Moreover, when the aggregate supply elasticity of output and employment in the agricultural sector is low, the response to a uniform shift in prices, as is achieved through devaluation alone, may bring modest welfare gains. The greater impact on the budget deficit, foreign exchange, and on the distribution of income derives from response to adjustment in relative prices

of key commodities. In addition, since the aggregate response has very high own and cross effects, the costs of inappropriate relative prices within agriculture are high, and the welfare gains correspondingly great. In assessing price reform which involves tradeoffs, we empirically use estimated elasticities, and the newly-reformed centrally-planned economies present a real dilemma. We do not have price series that are meaningful for the generation of these elasticities. We are forced, as is the case in analysis of many data-poor developing countries, to resort to guesstimates and judgment.

In the case of Eastern Europe and the USSR, exchange rates have historically been grossly overvalued, but their impact on resource use has been muted by bureaucratic restrictions and hidden interventions. Devaluation is essential, but the response to a uniform price shift and to changes in relative prices will be modest unless the instruments of bureaucratic intervention are also removed. Much of the gain from price reform (both devaluation and changes in relative prices within the agricultural sector) will come from removal of distortions in regional comparative advantage achieved through price bonuses and assignment of quotas. In the former socialist countries, the removal of direct bureaucratic constraints on agents' decisions is an integral part of successful price reform; price reform and institutional change are linked. In LDCs the potential direct impact of remediation of price distortions is greater, although there, too, institutional changes promoting competitive behavior, such as the removal of monopolistic marketing and procurement boards, are essential.

Producer Prices, Consumer Prices, and International Prices

The usual prescription for price reform has been to move domestic prices toward international prices. Many people question this remedy, since world prices are distorted. International prices for agricultural commodities are low in part due to the subsidization of agricultural producers in the EEC, the United States, and Japan. These price subsidies stand in the way of shifting comparative advantage in agriculture toward the developing countries. Moreover, current price support policies in all countries provide income transfers skewed toward large more commercial farms, and they encourage inefficient use of inputs, such as fertilizers, thus contributing to environmental degradation.

East European and Soviet producers also suffer from these policies of developed countries. A breakthrough in the GATT negotiations through reduction of subsidies and quotas will improve the lot of their agricultural sectors. Therefore strengthening the momentum of the negotiations on trade liberalization is very important to the long run success of the reform process in Eastern Europe. The removal of relatively cheap subsidized imports, however, will exacerbate in the short run the difficulties of economies in transition in meeting the needs of their most vulnerable consumers.

Whatever the outcome of trade negotiations, small countries have to take international prices as determined by world markets, and policy reform should direct domestic prices towards international prices. This does not imply, though, a dogma of immediate equalization of domestic prices with international prices. Rather we advocate assessment of tradeoffs involved in price reform in terms of government revenue, foreign exchange, and the real incomes of different groups.

The reality of LDCs often implies a limited set of instruments for raising revenue and influencing income distribution, and therefore price reform must on occasion address conflicting objectives.

More specifically, domestic prices may diverge from international prices for several reasons: First, when a country exerts market power over international prices, the need to use marginal revenue translates into the need for an optimal tariff [tax]. This special case applies to very few countries and a few primary commodities and often the degree of market power of individual countries is overstated. This argument is irrelevant to the small countries of Eastern Europe, but may have some relevance to Soviet wheat imports, or eventual exports. Second, the presence of significant price volatility might force the government to deviate from the full transmission of international prices to the domestic economy. Maintaining stable prices has importance for the macroeconomy by reducing the impetus for cost-push inflation and swings in government revenue and foreign exchange. Moreover, price stabilization can protect the very poor from transitory movements in real income below subsistence level. The macroeconomic consequences and protection of the very poor are probably more important than some of the microeconomic considerations which have received most of the attention of research on the economics of price stabilization up to now (Newbery and Stiglitz [1981], Kanbur [1984], Braverman, Kanbur, et al [1990]). The third justification for price intervention involves subsidies of industrial countries. A developing country facing a reduction in world prices due to subsidies or other factors may be reluctant to pass these prices on to farmers if the reductions are deemed temporary. The motive is to avoid the adjustment costs of moving out of an activity with expectations of returning to it later. Supporting prices during periods of transitory decline may be justified to maintain production and employment in agriculture,

but only if there is a strong consensus that the decline is transitory and the adjustment costs are high enough. Although price stabilization programs have often been costly and inefficient due to their misuse, the concept cannot be brushed completely aside. There is a need to look for an appropriate mechanism for income insurance and/or price stabilization devised in more effective ways. Given the absence of risk insurance markets together with producers' and consumers' inexperience in managing risk, the costs of variability may be higher in the transition. Therefore this issue should be reopened. Fourth, political and administrative problems may make income tax and other broadbased taxes impractical, particularly in some poor developing countries. The government thus has difficulty raising revenues to finance essential public expenditures, e.g., for infrastructure and poverty alleviation. In Eastern Europe and the USSR the political and administrative problems associated with introduction of a new tax system are formidable, but do not justify the substitution of commodity taxes for a more modern fiscal system. The difficulties with the change-over to a new tax system are transitional, rather than endemic, and delay in the introduction of more appropriate taxation will simply build new distortions into the reformed economies.

Protecting the Vulnerable

In developing countries, policy reforms in agriculture often imply raising food prices to provide better incentives to producers. Eliminating food subsidies reduces urban income in relation to rural income, because food prices go up. These changes require political will because the urban sector is much more politically sensitive and influential than the rural sector. They raise the distributional issue of how price reform adversely affects vulnerable segments of the population. In Eastern Europe, the same problems can occur, as the recent severe increases in food prices in

Poland have demonstrated. Several important differences between Eastern Europe and developing countries should be noted, however. In the former, basic nutritional needs have been met in general, and expectations and standards of living are higher than in many developing countries. The changes in Eastern Europe, however, are of tremendous magnitude; economies that have known little unemployment will experience a great deal of joblessness. Many real wage earners are experiencing declines in their real income due to increasing prices. The decline of real wages is exaggerated, since during the period of low prices many consumers experienced quantity rationing and resorted to black or free market purchases at higher prices. Safety nets such as social security have yet to be created. Agricultural employment is proportionately less than in most LDCs, and changing the rural-urban terms of trade may thus adversely affect a large number of people in urban areas.

Despite the differences in their circumstances, the experience of poorer segments of society in developing countries is relevant to that of Eastern Europe. In LDCs higher food prices hurt the urban poor, landless farmers, and small farmers with a negative marketed surplus, at least in the short run. To protect these vulnerable groups during the adjustment, targeted programs are desirable and have been implemented. The track record for such programs in developing countries during the last 20 years has not been very good, however. They should be advocated only when the appropriate political will and administrative capacity exists in order to avoid corruption and mismanagement of resources. Otherwise, it is still advisable to resort to subsidization of commodities that the poor significantly consume much more than do the rich (that is, inferior goods). The financing and implementation of large safety nets during the adjustment process of the Eastern bloc will require large amounts of capital transfer from the Western world, including international

organizations. The challenge will be to design, monitor and implement these programs to guarantee that large sums of money will be appropriately distributed to the needy population during the transition.

INSTITUTIONS

Credible price reform can achieve the desired price response only if supplemented by institutional reform to provide for well-defined property rights, easy access to capital inputs, financial institutions that distribute credit effectively, and competitive marketing boards that allow producers rather than institutions to retain rents. There is also a need for a coherent policy on research and development to induce innovations and to diffuse technical knowledge and information through extension services. Without such policies the potential gains of price reform probably will not be realized (Chhibber [1989]). Crops have to reach markets quickly and only farmers with access to credit will choose the right mix of inputs or exert the right amount of effort. The provision of public goods, like water and irrigation systems, as well as extension services, can be a most effective way to increase yields: but one can hardly expect individual farmers to invest much in them. The evidence suggests, however, that many countries, particularly low income Sub-Saharan African economies, have seen the efficacy of price reforms undermined by the presence of severe infrastructural constraints and market rigidities. In consequence, many structural adjustment programs should have policy components addressing those issues.

Credit, Financial Institutions, and Marketing Boards

Improved access to credit in LDCs was intended as a major policy instrument to accelerate development in the rural areas and to improve the income distribution between rural and urban

residents. In addition, it was advocated as a second best remedy to counter the common discrimination against agriculture through the urban bias in tax, price, and exchange rate policies.

The record of companion policies to price reform, particularly on credit and institution building, is disappointing. Over the past 30 years, massive amounts of credit, most often at subsidized interest rates, have been channeled to rural sectors in developing countries. But more often than not, those subsidies have benefitted the wealthier and influential farmers. Little formal credit reached the small farmers. Also, many institutions created to support the agricultural sector, in particular formal credit institutions, suffer from inefficiency and ineptitude, engage in arbitrary practices, and lack financial viability (Adams [1971], von Pischke, Adams and Donald [1983], and Braverman and Guasch [1990]).

The abovementioned shortcomings in performance of financial institutions, however, could easily apply to the developed countries. The Savings & Loan crisis in the United States will probably end up costing \$250 to \$500 billion, an amount that dwarfs the obligations of even the most debt ridden LDCs. The creation of long term accountability in financial institutions is becoming a global issue. Eastern Europe must learn from the failure of incentives in many financial institutions in LDCs and the developed world, and build credible mechanisms for monitoring, enforcement, and accountability. Banks in the socialist system were essentially agencies for transmission of funds, and fulfilled few of the functions of full financial institutions in a market economy. Therefore, technical assistance from developed countries will be necessary in order to develop basic skills in the technology of banking, accounting practices, and generation of financial instruments. Financial institutions must be created immediately, for without them, a market system cannot function.

The needed institutional changes go beyond the financial sector, and, as argued above, are critical in the area of marketing. Reforms in marketing boards and procurement agencies are urgently needed to promote competition, since many of these organizations exhibit monopoly power and overly tax the farmer. Their noncompetitive behavior reduces farmers' supply response and inhibits improvement in the rural sector. Experience in developing countries has shown that attempts to interfere directly with supply through rationing, licensing, targeting and other direct controls have been open to abuse. At best, the attempts breed inefficiency. At worst, they increase monopoly power, increase inequality, and encourage corruption. The key characteristics to strive for are accountability, non-interference, and responsiveness to market forces which will generate competitive behavior.

Property Rights, Land Tenure, and Privatization

Structural adjustment policies often involve reassessing property and land rights as well as titling the land. A major issue here is whether and how the absence or ambiguous definition of land rights harm agricultural productivity. One usual line of reasoning is that when land or property rights are not well defined, farmers are reluctant to sink fixed (irreversible) investment or to make long-term investments in their land, even though doing so is socially efficient. Another is that farmers access to credit is hampered, since their land is not accepted as collateral.

Evidence of the reality of these links is ample. For example Feder's [1990] case study on Thailand shows that the lack of land title prevents small farmers from access to credit and induces underinvestment of capital. The policy implication is that property rights should be fully exclusive, transferable, alienable, and enforceable to facilitate the development of an active land or rights

market. Property rights or long term land use rights with these characteristics induce efficient and higher levels of labor and management, as well as greater investments to enhance land yields. This point is very important in the East European and Soviet context, since these countries enter the transitional period with a strong ideological bias against fully functioning markets in land. Restrictions on land markets will constrain the extent to which reform in the financial sector can move forward, since the state will be forced to retain an active role in agricultural lending (Brooks [1990]).

A point to consider in the land privatization process is what should be the level of land fragmentation. Of course, that could be left ex post to the market to resolve, but that could take years and large transaction costs to bring the desired changes. An argument for maintaining the current size, where the average farm size is over 1500 hectares, except in Poland, is that it would allow for the reaping of the existent and significant economies of scale in agricultural activities, giving those countries an advantage over the countless smallholdings of the EC, provided that the managerial and agency incentive problems are accounted for.

The developing countries offer few lessons on the particular issues of farm reorganization and privatization of land relevant to Eastern Europe and the USSR simply because few collectivized on the scale of the socialist countries. The available lessons lie mostly in the successes and failures of the Chinese and Israeli experiences, but the generalizations are limited. In China price reform and division of the land (albeit suboptimally) brought an immediate supply response due in part to a divisible technology amenable to small scale production. The Chinese experience suggests that uncertainty as to the duration and renewability of the land contract limits investment and constrains

long term growth (Lin [1990]). The Israeli experience with long term marketable contracts in land also offers some lessons (Zusman [1988], and Kislev, Lerman and Zusman [1990]). In Israel long term leasing of land has provided security of tenure adequate for investment and producers have jointly contracted for use of nondivisible technology. The Israeli agricultural sector, however, has been plagued by financial overextension, due to the existing unlimited joint liability both among members and among cooperatives that lead to significant "free-riding".

In addition to land reform, the privatization of agrarian enterprises is at the core of the agricultural reform in Eastern Europe. When, where, and how to privatize these organizations, and how to structure efficiency and fair access into the process present dilemmas for the former socialist countries that the LDC experience does little to elucidate. The public sector in most developing countries is of course proportionately smaller than in Eastern Europe. Many developing countries established state enterprises with the intention to correct market failures and improve income distribution. Although some state enterprises, like the Kenyan Tea Authority and the Botswana Meat Commission, are relatively well run, many public enterprises in developing countries and throughout Eastern Europe and the USSR are statutory monopolies, or are given advantages over private concerns through open or indirect subsidies. In addition, they often lack competitive or fiscal discipline as they perceive themselves -- unfortunately rightly so -- as being subject to soft budget constraints (Kornai [1980]). The absence of financial discipline shelters their survival and riddles them with inefficiencies and inequities. Some developing countries have in response moved haltingly toward the privatization of large state complexes. The results of their cautious

approach have been mixed. In Malaysia and Togo, selective privatization has been vigorous, but these countries have been the exceptions despite widespread disenchantment with the public sector.

The efficiency argument for privatization or divestiture emphasizes the potential benefit to the consumer from lower production costs. Those benefits can be reaped and passed to the consumers only if there is a competitive environment and a supporting infrastructure. Privatization in itself will not bring competition and improved performance. In Poland, despite much privatization in agricultural production, systemic and institutional impediments in extension, credits, input supply, and marketing depress agricultural productivity. Noncompetitive behavior in marketing prevents the private sector from benefitting from the superior incentives of private ownership. Moreover, transferring monopoly power from a public enterprise to a private one will transfer value added from one privileged group to another (or sometimes to the same people in larger amounts!), but will have ambiguous net impact on consumers and on total factor productivity.

The question of how and when to privatize is a complex one. The conditions under which privatization can fully implement the social objectives of equity and efficiency are restrictive. Economic theory convincingly argues for the allocative superiority of competition, but it is much less forceful, if not ambiguous, about the superiority of private ownership. There is a cost to privatization, as we have learned through the principal agent literature. In providing incentives, the government receives less than the expected discounted value of enterprise profits, because of risk aversion, informational constraints, and capital restrictions. Moreover, some objectives might be very difficult to obtain in the course of privatization, like the right risk-taking, the socially optimal innovation, and the equitable division of capital, particularly in these societies where over 40 years

of collectivization have significantly undermined the psychological prerequisites for private undertakings.

The appropriate balance between the public and private sectors hinges on establishing who has a comparative advantage in the productive or service activity. If measures can be taken to ensure a competitive environment -- a large determinant of efficiency -- it would be foolish to claim that no government intervention could improve welfare. Opening formerly closed economies to foreign competition can induce competitive behavior even if the domestic industry remains concentrated.

Given the severity of the price and market distortions affecting Eastern European countries, it is difficult to determine ex ante which state enterprises would perform effectively under a bona fide market system and which would not. The issue of privatization illustrates our need for humility -- if we could distinguish the viable from the nonviable enterprises, which should be privatized? The bankrupt ones, trading fiscal solvency for higher unemployment? Or the potentially profitable ones, releasing profits where they can grow under better incentives, and retaining weak firms under the shelter of the state's portfolio? If it is possible to harden the budget constraint and change managerial incentives, privatization may not be necessary. The credibility of the commitment to a hard budget constraint is difficult to promote, however (Brooks [1990]).

Equity and fairness are key issues in the privatization debate, and must be considered along with efficiency. We have learned from developing countries that severe inequities can result on two fronts. First, equity will suffer if small, powerful groups within the society are allowed to gain ownership of large amounts of property. Conversely, East Europeans and Soviets now face the rare

opportunity to put in place a relatively equitable distribution of agricultural assets and wealth that minimizes the need for costly contractual negotiations and can serve as a foundation for future growth (Stiglitz [1990]). Secondly, a situation in which the prices of capital are much lower than the actual market valuation can result in the inappropriate large transfers to foreign interests with greater access to capital. Even if valuation is correct, wealth will pass to foreigners if domestic citizens have poor access to international capital markets.

The distribution of the gains from privatization within the country depends on the distribution of information and access to capital markets, which often privileges people well placed in the old order. Valuation also critically affects the distribution of gains. Care should be exercised to avoid "spontaneous privatization", or the illicit or unfair capture of sale proceeds or asset value by the former managerial class. Denying ownership to former managers, however, eliminates a class of people who presumably are relatively better trained to run the enterprise. If the enterprise can be fairly valued, the problems of spontaneous privatization are reduced, but not eliminated.

Research, Extension and Technology

Much agricultural growth can come from new technologies. Research generates innovations, and extension brings them to the field. Research and extension are public goods, and the private sector alone will underinvest in them without government intervention. Most developing countries have neglected agricultural research, as is exemplified by the lack of government commitment to research, budget cuts and a low level of funding for operational expenses. Research and extension expenditures have barely exceeded one percent of the value of agricultural product in most developing countries, whereas three times as much is allocated in the industrial countries, where the

relative importance of agriculture in the national economy is lower. Perhaps the shortage of trained scientific and technical staff, and the difficulties in measuring positive returns in extension and research investments in the short run have been some of the causes. The developing world has consistently shown lack of a coherent strategy, the lack of a review of the status of research for each agro-ecological zone, and the lack of an evaluation of the expected net gains from research.

The most common type of research has been applied or adaptive. It is less costly, more oriented to quick results, and essential, because research developed elsewhere cannot be directly transferred without some adaptation to local conditions. But even where successful research programs have been developed, problems have occurred in the dissemination of those advances. Research and extension services have not always been linked.

East Europeans and Soviets can learn from the shortcomings in research and extension in the developing world, but they can learn the same lessons from the poor returns to their own, larger, investments in agricultural research. Satisfactory links depend on cooperative attitudes among the scientist, the extension worker, and the farmer. Regional committees, joint onfarm trials, having research workers function as subject matter specialists, running periodical in-the-field training sessions can all help in strengthening these links.

The experience of agricultural research and technology transfer in the developing world is not one of uniform failure. There have been significant successes, as well, and many of these have been achieved in coordinated international efforts that link participants from many countries of the developed and developing world. Linkages with the international scientific community can be expected

to have a higher payoff in Eastern Europe and the USSR than in the developing world because the initial investment in basic scientific knowledge is higher.

The Environment

Environmental degradation is one of the more ominous problems facing Eastern Europe and the USSR, and in this area the experience of LDCs offers an important cautionary note to temper the enthusiastic rush toward markets in the former socialist countries. In developing countries, a focus on growth without careful consideration of the long-term consequences has resulted in pollution, erosion, and consumption of nonrenewable resources. The classic problems of externalities have made markets myopic with regard to the needs of future generations and very hard on the environment. Given the inherited environmental degradation, the former socialist economies cannot afford leisurely lessons in environmental protection. Technical assistance will be necessary in order to find ways drastically to reduce industrial pollution, deforestation and soil degradation.

The severity of the environmental degradation associated with market oriented growth raises an important question: Should the wealthier countries subsidize poorer nations to encourage them to choose an environmentally more responsible path? This question arises more concretely when a wealthy neighbor provides tied assistance to a poorer neighbor, with the objective of reducing transboundary pollution. In both cases instruments must be created to transmit the incentive to cease pollution to the agents actually engaged in environmentally destructive behavior. This involves creation of instruments such as marketable pollution permits, but these will achieve the desired effect only if indirect effects on employment are included, as well.

CONCLUSIONS

The transition to post collectivist agriculture presents unprecedented opportunities and dilemmas. The experience of developing countries has much relevance for the countries of Eastern Europe and the USSR, but unfortunately it offers no magic formulas or guaranteed solutions. The scope of change is greater than that attempted in the structural adjustment programs of the developing world, and, because of its comprehensiveness, the potential that the parts will fit together is greater. The dilemmas and pitfalls are correspondingly large. A central dilemma is the tension between commitment and flexibility. Economic agents must believe that the government will and will force others to play by the new rules. Yet the rules must occasionally be changed or adjusted as ignorance clears or circumstances adjust. The merger of flexibility with credibility is indeed an art.

In this process of artistic science, modern economic theory is of limited help. Rarely have economists encountered the kind of consciously undertaken, sweeping changes that Eastern European societies and the USSR have proposed including the creation of new legal, political and social infrastructures. Western technical assistance with the support of international financial institutions can be effective only if professionals of the East and West work together, since this is a process of joint learning, not a pure transfer of knowledge.

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