



**Economic Transition in Central and East Europe,
and the Former Soviet Union:
Implications for International Agricultural Trade**

Von Witzke, H. and S. Tangermann, eds.

1998

International Agricultural Trade Research Consortium
Symposium Proceedings Issue
June 12-14, 1997
Berlin, Germany

PRIVATIZATION AND LIBERALIZATION AND THE TRANSITION TO A MARKET ECONOMY: THE FORMER SOVIET UNION

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It is commonplace to note that the transitions to market economies in Central and Eastern Europe have been far more difficult, involving much greater personal hardship and disappointment, and are taking much longer than generally anticipated. The difficulties and trauma have varied from country to country, but in no country has there been an absence of disarray and hardship. Those who were elated that the dictatorial and socialized systems were to be replaced by democratic institutions and market economies and who held optimistic expectations concerning the speed and ease with which the transitions would be accomplished must now recognize that we were guided more by wishes than by a sense of reality.

We were all too willing to assume that the evident euphoria of those responsible for the demise of the old system in Central Europe would result in quick agreement on the steps that should be taken to create democratic systems in countries where democracy had never existed or, at most, had a very short history. And once democratic governments were in place, relatively prompt agreement would be reached concerning the structure of laws and institutions required for market economies, or so we thought. We permitted ourselves to be misled because the dissolution of the old systems had occurred with the near absence of bloodshed and, by romantic descriptions, such as the "Velvet Revolution", of the process by which old political and economic systems collapsed and new ones were to emerge. True, it was most remarkable that a world superpower would simply disappear with hardly a shot being fired and with its enormous army simply standing aside.

But it wasn't only in the USSR that governments fell with little or no use of force; very little force was involved in the governmental and institutional changes in Central Europe. There are few if any other examples in history in which such political and economic transformations - one might say revolutions - occurred with so little use of force.

Alas, participants and observers alike greatly underestimated the complexity of the tasks that had to be tackled to create the conditions simultaneously required for both democratic institutions and market economies. It is now evident, as well, that there were very few who understood the enormous importance of laws and governmental institutions in creating and maintaining an efficient market economy. A market economy must be supported by a broad range of governmental functions, such as enforcement of contracts, procedures for settling disputes, providing security of property rights, creation of infrastructure (roads, communication, schools), and to support competitive sectors, such as agriculture, it needs to have an active role in such areas as research and the supply of information (Johnson 1995). In some countries, for a time, it was believed that all that was needed to create a market economy was to abolish all of the hated regulations and institutions of the old system and the market would emerge and take care of everything. But, alas, it was soon

learned that the market could not function entirely on its own without the appropriate institutional setting. Unfortunately, it has proved remarkably difficult to agree on what laws and institutions are required for a market system and to then enact them.

The transition from the socialist planned system to a market economy was generally agreed by domestic reformers and outside advisers to include two primary transformations - liberalization of markets and privatization. The liberalization of markets was to include a wide range of markets - foreign exchange, credit, commodities and resources, such as land and other physical assets. Privatization implied the transfer of nearly all the state owned assets used in ordinary productive economic activities to either new corporate entities or to individuals.

Liberalization

Liberalization as prescribed by an adviser seems simple enough – eliminate direct governmental intervention in domestic prices, the interest rate, the allocation of credit, international trade and the exchange rate reserving for the government a limited number of functions such as national security, the provision of public goods and the maintenance of law and order. All this, of course, was to be accomplished within a democratic framework, based on consensus achieved after appropriate discussion. While it was recognized that liberalization would result in gainers and losers –probably far more losers than gainers - I don't believe that there was sufficient recognition that, for those who have lived their lives in a planned economy, that markets are very strange and forbidding institutions. Throughout their lives they had been taught that markets and the associated capitalism resulted in the exploitation of the worker and the enrichment of a few and failed to provide for all that was necessary for a humane society. But the problem was even greater than distrust - there were few who had any understanding of how markets functioned.

The actual liberalizations that occurred in Russia and other republics of the former Soviet Union bore out the worst expectations.

There have been numerous failures of the West in assisting the transition process but perhaps the most important was the failure to emphasize the enormous importance of developing the legal and institutional framework to provide the public goods a market economy requires. While there may be disagreement concerning the exact scope of that role, there should be no disagreement that provisions for clear definitions of property rights, provisions for the enforcement of contracts, the assurance of civil liberties, limitations on the arbitrary exercise of power by bureaucracies, and governmental responsibility for the infrastructure are essential for an efficient market system. Actually the prescription for establishing a market economy, once the appropriate legal and institutional setting has been created, is really quite simple - it consists primarily of removing the enormous range of constraints on individual behavior that existed under the old system. The difficult part has been finding the proper role for government.

Privatization

Privatization is not a magic pill that will transform an economy. It is but one component - one policy element - of a set of coherent policies that can facilitate the transition of a planned economy to a productive market economy. Adam Smith taught us that policies do matter - "Nations tolerably well advanced as to skill, dexterity, and

judgment in the application of labour, have followed very different plans in the general conduct or direction of it; and those plans have not all been equally favorable to the greatness of the product" (Smith 1937, p. lix).

Privatization will not have the anticipated positive effects on incentives and organization of production unless it is a part of general policy of liberalization and the existence of laws and institutions required for the effective function of a market economy. The experience of Poland's agriculture in the socialist period should have caused us to question how much privatization of land, by itself, could contribute to efficient use of resources and the prosperity of farming. Approximately three quarters of the farm land of Poland remained in private hands but its agriculture did not achieve a more rapid rate of growth of output for the period from, say, 1950 to 1990, than that of other Central European countries. In fact, the overall growth rate of Polish gross agricultural output was approximately the average for Central Europe but was probably below the average for the growth of net production due to the dependence on large imports of grain during the 1970s and 1980s. The estimates of gross agricultural output did not factor out the large grain imports thus resulting in overcounting. Privatization by itself cannot overcome the consequences of misdirected policies, such as limited access to inputs, markets controlled by monopsonies, restraints on buying and selling of land. The instability of policies, including the unwillingness of the government to abandon its objective of completing the socialization of land, added to the poor performance in the rest of the economy (Johnson 1981, p. 186).

Privatization in a supportive policy atmosphere can be a powerful force in agricultural development but it is not enough to offset the adverse effects of the set of inappropriate policies such as prevailed in Poland or now, unfortunately, in much of the former Soviet Union. The transfer of title from the state to a private entity constitutes privatization but by itself few or no benefits are likely to be realized. For example, if the new entities are neither permitted nor forced to go bankrupt if they incur financial losses and cannot meet their obligations, then the effect of privatization is likely to be nil. And this seems to have been the fact with respect to the types of privatization carried out in the FSU except for the Baltic Republics and even there the case is somewhat mixed. If titles are not actually issued, are issued very slowly, and property can only be inherited but not freely sold, important functions of property ownership will not be available, such as using land or other property as collateral for loans. Consequently the positive role of agricultural credit will be greatly circumscribed. Where ownership is subject to considerable restraints by local authorities, privatization may not make all that much difference - for example, if the local administration prevents reducing the labor force or the export of a product outside the local jurisdiction or imposes price ceilings for the benefit of local urban consumers.

Distortions and resource allocations

Why has it been so difficult to finish the process of liberalization while achieving the conditions for effective privatization? One reason is certainly that experience has shown that democratic institutions have seldom proven themselves to be efficient in the use of time. But it is not obvious that given the enormity of the tasks involved in the transitions that any other form of political organization would have been superior. Certainly the governmental structures of the past were not up to the task in Central and Eastern Europe - even when it was recognized that the socialist economies were

failing and were endangered, it was not possible to undertake the reforms required to save even the remnants of the previous political and economic systems. The failure of reforms in the USSR, for example, was not for the lack of trying. Either the system was not reformable as Kornai argues (1992) or the reformers didn't know what needed to be done as shown convincingly by Gertrude E. Schroeder's "The Soviet Economy on a Treadmill of 'Reforms'" (1979). Hungary attempted numerous reforms over two decades but failed to significantly alter the basic structure of its system.

What is now evident was that the old system had so many and such enormous economic distortions that even under the most promising circumstances a smooth and relatively painless transition to a market economy was impossible. The large departures in resource allocations in the economy from what must exist in a market economy meant that the required resource adjustments had to be highly disruptive and enormously painful. Before turning to the extent of the distortions that affected the food and agricultural system, it must be noted that the macroeconomic imbalance created primarily during the last half of the 1980s and the first years of the 1990s in the USSR added greatly to the difficulties and pain of the transition. If price liberalization in 1992 had resulted in a doubling of prices instead of a ten fold increase, followed later by increases of several thousand times, the transition would have gone ahead with far less trauma and pain. Given that there were few available assets that could provide a hedge against inflation, the inflations that occurred wiped out the accumulated savings of nearly every family in every country of the region. This was especially tragic for the elderly but surely adversely affected nearly every one except for the few who had taken advantage of opportunities to acquire state property, legally or otherwise, in the very early stages of the reforms.

As one means of visualizing the disruptions to enterprises and families that have occurred during the transition, let us briefly review some of the major distortions that affected agriculture and food as the old systems collapsed in 1990 and 1991:

- Large consumer subsidies for livestock and poultry products;
- Subsidies for farm inputs either explicit or indirect through very low prices for energy;
- Existence of soft budget restraints for many enterprises, including state and collective farms;
- A banking system that allocated credit on the basis of plans rather than on profitability of the activity being financed;
- A very large macroeconomic imbalance, evidenced by shortages at the fixed prices and enormous price increases when price controls were eliminated;
- Excess demand for food products that permitted the processing sector to produce and sell products of limited quality and variety that were not competitive in international markets;
- Faith in the economies of scale led to large scale processing plants, with exclusive territories in which they faced no significant competition for supplies;
- Direct allocation of farm inputs to farms in the socialized sector, which meant that there did not exist a marketing system for farm inputs.

Perhaps worst of all, nearly all economic activities were undertaken by monopolies with the expected effects on innovation, productivity, and the quality and variety of products and services. The concept that an enterprise was to serve the consumer, be it a housewife or a farm, simply did not exist.

It is important to understand the significance of these distortions to the transition process, especially those that had the greatest impact on resource allocation. The existence of large subsidies on livestock and other food products that ranged from 10 to 12 percent of the gross national product of the Soviet Union during 1985 to 1991 resulted in an allocation of agricultural resources vastly different than what would have existed in a market economy (World Bank 1992). Much of the pain of the transition process for farmers has been due to the required changes in the allocation of resources, the product mix, and the scale of output. Even if there had been no declines in real per capita incomes during the transition, the livestock sectors would have been faced with substantial problems of adjustment as the unsustainable subsidies were eliminated. Other major conditions have caused significant harm to the transition process, namely the absence of certain institutions, such as a banking system or a marketing system for farm inputs, and monopolization of the processing sector.

Monopoly in the input and processing sectors merit special note since the effects will last for many years, at least a decade. What emerged from the old system was a group of enterprises with outmoded equipment that will require nearly complete replacement if they are to adequately serve agriculture and, in turn, consumers.

Farm machinery did not meet the standards of productivity and performance of machinery available elsewhere. Central planners were never able to solve the spare parts problem, which ranks as one of the great unsolved mysteries of the planning systems. In a system that provided little variety in farm machinery and equipment, it should have been easy for planners to determine the appropriate mix between new machines and the supply of spare parts - even in the days before computers. And among the most insane of the regulations of the Soviet system was that it was a crime to cannibalize, for example, a new combine to repair several existing combines. The real crime was that the planners were so incompetent that they could not solve the spare parts problem.

It will require several years and large investments before significant progress will be made in producing machinery that is of appropriate quality, design and size for the farms that will emerge in the future. In the past, farm machinery was produced for large farms, and nearly all of the inventory inherited from the past consisted of machines ill adapted for family farms. This has put the small family farm at a disadvantage. Whether the farms that emerge are large enterprises or family farms, the future of farming in the FSU will be that of a modern agriculture with a relatively high ratio of capital per worker and with a large percentage of its inputs purchased from the nonfarm sector. The machinery and other input producing enterprises that now exist require enormous change in order to adequately supply the agriculture that will be competitive in world markets. The consumer subsidies, primarily for livestock products, were put first on the list of distortions because of the large and painful adjustments required in meat and milk production, as the subsidies were eliminated. In 1989 consumers paid no more than a third of the cost of meat and milk in retail stores (World Bank 1992, p. 219). It has never been obvious to me why policy makers in the USSR had such a fetish over meat unless they believed that it was one

consumer product in which they could compete with the west. In any case, they must have followed Engels and not Engel in making their decision - Engel would have told them that in a growing economy it was dangerous to fix the price in nominal terms and then subsidize it, if the income elasticity of demand were equal to or greater than one. But this is exactly what was done with meat and milk from 1963 through 1990. Even with large subsidies Soviet agriculture could not meet the growth in the annual demand for meat - from about 9 million tons in the first half of the 1960s to 20 million tons in 1990 (Shend 1993, p. 184). The USSR became the world's largest importer of grain and livestock products in the 1980s with total agricultural imports exceeding \$20 billion in 1985 and averaging about \$16 billion annually in the late 1980s (USDA 1989, p. 40). It can be said that the Soviets ate half of their petroleum exports during the 1980s, by using the foreign exchange to pay for the resources needed to meet the consequences of livestock product subsidies. With a different policy framework, the foreign exchange could have been used to have updated the machinery and technology of important industrial sectors - but it wasn't.

Transition

Unfortunately much of what needs to be accomplished for a successful transition to a market economy in the former USSR remains to be done. There are variations from republic to republic, with the Baltics having made the greatest progress but even there much remains to be done. There is no agreement on the future structure of agriculture - will the large units continue to be protected by ambiguities in property rights, limitations on the sale of farm land, the lack of a credit system that depends on land as collateral, and by the power of management to restrain farmers from taking the land to which they are entitled? Until these and other related issues are resolved, it is unreasonable to expect that an efficient and low cost agriculture will emerge in the near future.

Some major developments during the transition will be briefly presented. I start with 1990 rather than 1991 since in the latter year the system was already winding down with lower output levels in the agricultural input sector. We shall consider changes in production, livestock inventories, inputs and prices of outputs and inputs.

Output

Between 1990 and 1995 the output of agriculture in the FSU declined by approximately a third. Grain production declined from an average of 196.6 million tons for 1986-90 to 125.7 million tons in 1995, but recovered to 154.3 million tons in 1996 (USDA 1996, p. 33).

It is difficult, even now, to fully understand the magnitude of the adjustments in livestock and poultry production necessitated primarily by the elimination of the subsidies. One measure is found in the large reductions in livestock inventories in the FSU from 1990 through 1995 - 29 percent for cattle, 43 percent for hogs and sheep and 36 percent for poultry (USDA 1996, p. 20). Nothing similar had ever happened before except in the destruction of their livestock by farmers when they were forced to join the collectives in the 1930s. If such changes had been required of farmers in Western Europe or North American over such a short period of time, one could only imagine the political consequences.

While there were those who were concerned that the removal of the food subsidies

would result in higher retail prices for meat and milk, the farmers soon found that this concern was entirely erroneous. What has happened was that the farmers have borne the entire brunt of the elimination of the subsidies as well as the adverse price effects of the reduction in real consumer income. In Russia the retail prices increases of meat and poultry from December 1991 to December 1995 is fully consistent with the view that farmers bore the full cost of the elimination of the price subsidies. The retail prices of meat and poultry increased 1,420 times while the overall consumer price index increased by 1,850 times. Retail milk prices behaved quite differently - from the end of 1991 to the end of 1995 retail milk prices increased by 6,283 times.

The changes in the farm prices of livestock products in Russia from 1991 to 1995 even more strongly support the conclusion that farmers bore the brunt of the effects of the elimination of the subsidies. From 1991 to 1995 the overall consumer price index increased by 1,850 times while hog prices increased by 1,010 times, cattle prices by 530 times and milk prices by 1,005 times (USDA 1996, p. 23). The milk producers obviously did not gain from the increase in the real retail price of milk. The marketing margin for milk seems to have increased much more than for beef and pork.

There were policy mistakes that served to prolong the livestock inventory adjustment process, thus extending the period during which livestock prices were depressed and producers were faced with large losses and/or low returns. The official reaction was that the liquidation of the cattle herds constituted a national disaster and large subsidies were introduced to minimize liquidation. There was no official recognition that the immediate impact of the elimination of the food subsidies was a sharp fall in the real prices of livestock. The process of liquidating the herds added to the short run supply of available product and forced prices even lower than demand side variables would have called for. The payment of subsidies only delayed the date when livestock production once again became profitable. Until supply was reduced to the point at which it equalled demand at a profitable price, the market value of meat would be one that resulted in losses in producing livestock products. If there ever were rational grounds for decoupled subsidies, this would have been one.

The level of subsidies were not quite as large for hogs in 1993 and 1994 as for cattle (USDA 1996, p. 6). However, as a percentage of gross revenues the subsidies were large for both cattle and hogs - 19.8 and 18.8 percent, respectively in 1993, and 27.4 and 22.9 percent in 1994. Both were cut significantly, falling to about 10 percent or a little less in 1995. The subsidy for milk was large in 1993 (25.5 percent) and in 1994 (22.8 percent) with a reduction to 11.2 percent in 1995 (USDA 1996, p. 6).

Inputs

While adverse weather has been responsible for part of the output decline, especially in 1995 in Russia and Kazakstan and in 1996 in the Ukraine, the reduction in fertilizer and pesticide use has almost certainly begun to have adverse effects on yields. The delivery of chemical fertilizer to farms in the FSU declined from 21.6 million tons (nutrient weight) in 1990 to 6.5 million tons in 1994 (USDA 1995, p. 10) and the decline continued into 1995. The reduction exceeds 70 percent.

The delivery of pesticides has declined at least as much as fertilizer and perhaps more. The yield reductions have been smaller than one might have expected from

the decline in fertilizer use. Some of this may be due to the "mining" of nutrients in the soil; other factors may be due to past excess use of fertilizer, especially in the drier regions, and inappropriate and untimely application of fertilizer.

The deliveries of new farm machines - tractors, trucks, combines - have fallen by more than 90 percent since 1990 (OECD 1996, p. 196). The inventory of farm machines has declined, is declining and will continue to decline until purchases equal the removals from the inventory. While up to the present, the availability of harvest machinery apparently has been sufficient to harvest the crop in a reasonable amount of time, if deliveries remain low for two or three more years harvesting problems may arise.

The amount of feed used to produce a centner of gain for cattle and hogs and for a centner of milk were high in the USSR compared to Western Europe in the 1980s (World Bank 1992, p. 180). Unfortunately the available evidence indicates that in the large farms feed use per unit of output has increased from the 1990 level - by more than 40 percent for cattle and hogs and 20 percent for milk between 1990 and 1994 (USDA 1996, p. 22). The deterioration in feed productivity could be due to reductions in the supply of calories per animal unit, reductions in protein in the diets and limited supplies of animal pharmaceuticals - probably all three factors have been involved.

Agricultural potential of the FSU

There are conflicting views about the agricultural potential of the territory of the former Soviet Union. There are also different views concerning the future of the region in international trade. Let me briefly present my relatively optimistic views concerning the future, especially with respect to trade in grain and possibly livestock products. To some degree, my optimism with respect to the trade in grain results from the decline in the demand for grain for feed to meet the local demand for livestock and poultry products. When consumers have to pay prices for meat and milk that will be profitable for livestock producers, per capita consumption will be substantially below what it was in the 1980s even after per capita real incomes equal and exceed what was achieved prior to the transition. It is possible, though unlikely, that instead of exporting grain, the region could export livestock products instead but limitations on the available international markets of meat make this unlikely.

The above has been written under the assumption that it will be possible "to put the agriculture of the region back together" after the transition to a market economy has been completed. In other words, will the dislocations that we have seen and expect to see result in reducing the potential agricultural productivity of the region for the near future, say over the next quarter century or so? Under reasonable policy conditions, I believe that the territory of the FSU could regain and surpass the realized output of crop products that was achieved under the old system. While the efficiency of the production of livestock products was low in comparison with that of Western Europe, there is no reason why this would be the case if there were an effective market system in place. It is known what it takes for a cow to produce seven or more tons of milk per year or how to produce a pig weighing nearly 100 kilograms on 400 kilograms of concentrates in less than five months. There is absolutely no reason why this could not be done in the FSU if the proper inputs and services were available. With effective privatization and the return of livestock profitability, there should no longer be an imbalance between overall feed supplies and the number of animals. Under the old system, livestock feed rations were

notoriously short on protein, minerals and some micro nutrients; the planners never seemed to have read Morrison's Feeds and Feeding or any other guide to efficient animal feeding practices. In a market economy this defect should be remedied by increases in the protein supply either through increased domestic production or imports. Until domestic supplies of animal pharmaceuticals and feed supplements can be increased, such products can and will be imported. In other words, the major sources of low feed productivity can and, I believe, will be overcome when agriculture is really privatized and a market system functions within a reasonably liberal trading regime. There is no reason why the farm people of the FSU cannot achieve approximately the same levels of feed productivity as farmers elsewhere if there are both the incentives and access to the necessary products and services. True, it will take time but livestock producers outside the region should not be misled by the current low levels of feed productivity and assume that they will persist more or less indefinitely.

Contrary to general belief, grain productivity in the USSR compared favorably with that of climatically comparable areas in North America. It is inappropriate to compare average grain yields of the USSR with average grain yields of North America. Where maize can be grown economically, it is much higher yielding than wheat, barley or rye. As Khrushchev learned, only a small fraction of the grain area of the USSR was suited for growing maize as grain and maize is much more important in North America than it was in the USSR. Consequently in comparing yields as a basis for judging productivity of resource use, it is best to exclude maize from the comparison.

Quite some years ago I compared the yields of wheat, oats and barley in the USSR with climatically similar areas in North America. If adjustment is made for the differences in the use of summer fallow and if bunker yields are converted to clean grain, average yields of grains in the USSR were approximately the same as the average yields of wheat, oats and barley in climatically similar areas in North America from 1965 to 1979.

The USSR grain yields, of course, are for the grain actually harvested, not on the amount of grain that was available for harvest. Soviet grain combines were notoriously inefficient, throwing a significant amount of grain out with the straw and chaff. The yield of clean grain might well have been increased by 10 percent – some would put the figure significantly higher than that - if their combines had met the standards of combines produced in Western Europe or North America.

While grain yields in similar climatic areas compared favorably with those in North America, the same could not be said for hay and silage yields. Based on regressions of hay yields on grain yields in North American similar climatic areas, hay yields in the USSR were only half of what one would expect given the actual wheat yields in the USSR (Johnson and Brooks 1983, pp. 81-82). Hay was not a priority crop under the old system while grains were. Corn silage yields were also significantly below those achieved in North America for similar areas. There is a substantial potential for major increases in hay and silage yields. If tame hay yields increased by one ton per hectare, this would increase the feed supply by a minimum of 15 million tons of concentrates and yields would still be a third below the potential yield based on wheat yields in the FSU. This improvement alone, which would be relatively easy for truly privatized farms to achieve, would equal more than 10 percent of the amount of concentrates fed in the late 1980s. Other savings in grain due to privatization would be reduced seed use and reduced waste in harvesting, transportation and processing

(Johnson 1993, p. 27). These latter savings might well total 20 million tons. If one accepted the very high estimates of waste in the old system, the savings could be substantially greater (OECD 1991). Added to the above potential effects of privatization and other market reforms are the effects of the long run reduction in feed use of grain due to the decline in per capita consumption of livestock products. Grain production depends on both yield and the area sown. The area sown to grain in the FSU has declined from 115 million hectares in 1986-90 to an average of 97 million hectares for 1995 and 1996 (USDA 1996, p. 33). The decline could be due to several factors - the low prices of grain for much of the recent period, the abandonment of low yielding land, an increase in summer fallow in the drier areas, and the lack of certain inputs such as fuel, seeds and fertilizers. The largest percentage reduction in grain sown area, 25 percent, has been in Kazakstan, which has had the lowest yields of any of the republics. In Kazakstan the total sown area has declined significantly since 1990 while in Russia and the Ukraine the total sown area has remained unchanged implying that in these republics the area not sown to grain has been sown to something else (OECD 1996, p. 198). But this may be reading too much into the somewhat shaky available data. Prior to 1991 the regional prices paid for grain did not reflect the costs of transportation and marketing; in fact grain prices were higher in Kazakstan than in the Ukraine even though the latter was much closer to the center of the national market. Now that farm prices are beginning to more nearly reflect real transport costs, it is highly probable that grain production will decline - perhaps disappear - in areas of Kazakstan and Western Siberia. But these are areas of low yields with a low ratio of output to seed and the net output reduction will be much less than in the area involved.

I have estimated that the changes that can be reasonably expected due to privatization and liberalization would change the net grain trade of the territory of the FSU by as much as 75 to 80 million tons annually (Johnson 1993). A significant share - nearly half - of the change in trade has already occurred due to the reduction in feed use.

Organization of Agriculture

The above speculation assumes that there will emerge an organization of agriculture that will make efficient use of the human and natural resources of the region. That organization has not yet emerged. Most of agricultural output comes from either of two extremes - the large farm units that have succeeded the state and collective farms and from private plot production by both rural and urban residents. Independent private farms account for a relative modest fraction of output overall - perhaps 5 percent of the total. For a number of important products - potatoes, fruits and vegetables - the household plots produce 75 percent or more of total output (OECD 1996, p. 203). In Russia, the Ukraine and Kazakstan, plot production accounts for more than 40 percent of production of milk and meat (OECD 1996, p. 203). These distributions are not sustainable in the long run as real labor earnings increase.

Why have not more private family farms emerged? It now seems clear that the lack of profitability of agriculture due to the slow adjustment to changing conditions combined with the overall decline in real incomes have inhibited the development of family farms or, for that matter, the significant reorganization of the existing large farms. As profitability returns to agriculture, as it must sooner or later, more family farms will emerge if the governments of the region stop providing subsidies to large

scale units, either directly or through credit that no one expects to be repaid, and enforces the rights of individuals to withdraw the land and other assets of the large farms that they have been awarded.

But it can be argued that other factors may be responsible for the failure of family farms to emerge. One is that there has not been a tradition of individual farms in the FSU. Another is that the workers on the collective and state farms were highly specialized and few people have experience with the range of production activities required on a family farm as well as no experience in management. A third reason is that there are important interests in maintaining the existing farms over and above the interests of their management. Much remains to be done to create local governmental institutions to take over the numerous functions of the large farms - the schools, pensions, welfare and social functions. A large percentage of the rural population is elderly and currently they are dependent on the farms for their incomes, access to food at low prices, health facilities, personal transportation, and assistance in a wide variety of day to day activities. There is obvious concern as to how their needs will be met if the large farms are broken into family farm units, especially for those who are not capable of operating their own farms.

My own view is that the first two factors, while valid as statements of fact, are not decisive in determining the future of agriculture. During most of the 1920s there were individual farms in the Soviet Union and their performance certainly compares favorably to that of the collective and state farms that followed. The majority of the able bodied farm population is well enough educated that with some assistance from an extension service they could quite readily learn to solve the management problems of family farms. But the dependence of the older farm people on the existing farms is clearly a problem of great importance and one that needs to be addressed if the transition to family farms is not to result in great distress for them. My reaction to the view that the rural people cannot adapt to the requirements of family farming is that this is a demeaning and unwarranted appraisal of the capabilities of farm people. Experience indicates that when farm people anywhere find themselves in a reasonably congenial policy environment, they can and do succeed. Can the large farm units survive? When I speak of large farm units it is in terms of the number of workers not hectares of land. Farms of several hundred hectares may emerge where the number of workers is small, say no more than four or five. World experience indicates that farms that employ large numbers of workers - say 100 or more - are unusual and are restricted to certain plantations or farms where piece rates generally apply and there are no restraints on hiring and firing. Large livestock producing units have emerged in the United States but these are very capital intensive, employ relatively few workers and are dependent on a sophisticated infrastructure that is unlikely to exist in Eastern Europe for several decades. The economies of scale in grain production with the capital intensive methods of production that have emerged in the United States appear to be exhausted with a farm size employing no more than two full-time workers.

Structure of rural communities

In the industrial market economies, agriculture plays a minority role in rural communities in providing employment. With the substitution of capital and purchased inputs for labor required to achieve a high return on farm labor, the amount of employment that can be provided by agriculture is simply too small to maintain viable rural communities. Increasingly, farms are part-time with one or more members of

the family working off the farm, either in the rural community or by commuting to a city. Without such employment opportunities available to rural people, the density of population would be too small to provide the infrastructure needed for attractive rural life. Such employment has been a major factor in bringing rural incomes into rough equality with urban incomes in most industrial economies.

One of the tragedies of the heritage of the FSU is the limited number of nonfarm jobs available in rural communities. The efforts that were made to create nonfarm employment opportunities in rural efforts bore little fruit. There were many reasons for this - the types of enterprises created, the poor state of the rural infrastructure, especially roads and communication, and the prevailing structure of incentives. Given the relatively low density of population in many rural areas it may be very difficult to attract nonfarm employment. One source of the success of China's rural reforms was the high density of population in most rural areas. This high density provided easily accessible markets, both for farm products and for the rapid development of small industrial enterprises.

Concluding comments

A great deal remains to be accomplished before the agriculture of the FSU becomes productive and competitive in the world economy. There remain numerous policy decisions that are required to facilitate the development of a market economy. For much of the FSU liberalization has hardly begun and numerous measures are required before privatization can serve as the basis for efficient land and credit markets. All too many restraints remain on the buying and selling of land as well as on the removal of land from the large farms to establish either family farms or smaller cooperative units. National markets have not yet emerged due to the power of local governmental units to prohibit or manage trade. The limited national road network and poor quality of rural roads constitute a real barrier to the integration of rural areas into the national economy. Added to this array of unresolved issues is that agriculture and rural areas will require an enormous amount of investment to create a modern productive agriculture and to transform the input and processing sectors into internationally competitive industries. These investments will be slow to materialize until the economies achieve a relatively rapid and sustained rate of growth and agriculture becomes sufficiently profitable to support a high rate of investment.

While the current outlook can be described as gloomy, if policies are soon set reasonably right there is ground for optimism for the future of agriculture and rural life of the FSU. The freeing of the energies of a large and well educated rural population can bring forth an outpouring of ingenuity and productivity. Perhaps within the next decade or so the countryside will flower in a way that the potential of its human and natural resources has long warranted but may now for the first time be fully realized. Let us hope that this will be the outcome. It is in no one's real interest that it be otherwise.

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Footnotes

1. Prepared for presentation at International Agricultural Trade Consortium meeting on the Economic Transition in Central and Eastern Europe and the Former Soviet Union: Implications for International Trade, Berlin, June 12-14, 1997.

Financial assistance for the preparation of the paper was provided by the William ImMasche Foundation Endowment and is gratefully acknowledged.

2. The same relationship between the retail prices of meat and poultry prevailed at the end of 1992, 1993 and 1994 compared to December 1991. By the end of 1992 the overall consumer price index had increased 26 times while the retail prices of meat and poultry had increased by 19 times; for the end of 1993 the increases were 245 times and 229 times.

3. I frankly do not understand the sharply different behavior in the retail prices for meat and poultry and milk. From 1990 to 1995 the per capita consumption of meat and poultry declined by 32 percent while milk consumption declined by 38 percent. The price elasticity of demand for milk has to be very much smaller than for meat to be consistent with these differences in price behavior.

4. The marketing margin for milk has increased substantially more than for beef or pork since 1990. In 1990 the marketing margins for all livestock products were very low, equal to less than 15 percent of the farm price (World Bank 1992, p. 212). The margins have remained low, by the standards of Western Europe or the United States for beef and pork, but in 1995 the farm price of milk was only 0.43 times the retail price implying a marketing margin equal to about 130 percent of the farm price.

5. An additional major source of error in comparing Soviet and North American grain yields resulted from ignoring the different roles of summer fallow. Soviet planners didn't like summer fallow - the practice of leaving land idle every other year or one year out of three so that it would accumulate moisture and nitrogen and permit more effective control of weeds. Consequently the percentage of the small grains sown after summer fallow was much smaller in the USSR than in the comparable areas of North America - about 10 percent in the former and approximately 50 percent in the latter. Since grain on summer fallow land outyields that on continuously cropped land by 50 percent or more, comparing yields on the land actually sown to grain gives an erroneous impression of the yield potential of the land. It is much more accurate to estimate yields on the total amount of land devoted to the grains, including summer fallow and land actually sown, than to calculate the yield on the basis of sown area alone. In 1975-79, for example, the average yield per hectare sown area of wheat, oats and barley in the climatically similar areas in North America was 1.81; when the summer fallow area is included, the yield falls to 1.22 tons (Johnson and Brooks 1983, p. 77). The USSR yield for the same years, cleanweight basis, was 1.29 tons per hectare when summer fallow was included. Over the next decade soviet grain yields increased about 16 percent while wheat yields in the United States increased 20 percent. I can see no reasons why future yields in the FSU could not be comparable to those in climatically similar North American areas.

6. A chairman of a Ukrainian collective farm and an important governmental official told me that a John Deere combine would harvest one ton per hectare more than a soviet combine. This seems high to me, but a difference of a half ton per hectare on wheat that was yielding 3 tons or more per hectare might be a reasonable estimate.

7. In terms of the implications for trade in grain and/or livestock products, account needs to be taken of the reduction in the use of concentrates for production of meat and milk that results from the reduction in production of these products within the FSU. The per capita consumption of these products has fallen by approximately a third and some continuing decline may be anticipated as their production returns to profitability. While per capita consumption will increase as real per capita incomes grow, the long run levels of per capita consumption will remain well below those of 1990 until real per capita incomes substantially exceed those of the late 1980s. Even without any improvement in the productivity of feed, feed use in the FSU will remain far below that of the late 1980s. The anticipated improvements in feed productivity with privatization will only add to the amount of grain available for export as grain or as livestock products.

8. The allocation of garden plots to a significant percentage of the urban population in Russia and the Ukraine has been an important factor in maintaining the food supply at a tolerable level. The area of

the rural household and garden plots equals nearly 7 percent of the total sown area in Russia and about 15 percent in the Ukraine (OECD 1996, pp. 99 and 198).

9. The significant increase in the average size of full-time farms in industrial countries that has occurred over the past half century has been due primarily to the change in factor proportions that has been required by the increase in the real value of farm labor. The higher returns to farm labor has required both overall productivity improvement in farming and increases in the amounts of capital, including land, and purchased inputs per worker. Since World War II the rate of growth of average output per worker in agriculture has been higher than for the nonfarm part of the economy; total factor productivity growth has also been higher in agriculture (Johnson 1997).