

TRANSITION AND FOOD CONSUMPTION

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ABSTRACT

This paper examines why transition from planned to market economies in the countries of the former Soviet bloc has changed their mix and volumes of food consumption. During transition, consumption of high value products, such as meat and dairy products, has plummeted, while consumption of staple foods such as bread and potatoes has remained steady, or even increased. The paper shows that in the pre-reform planned economy, planners "desired" the production and national consumption of high value (and cost) foodstuffs more than consumers. When market reform resulted in consumer prices adjusting to reflect the full cost of production, consumer demand switched from high cost foods to other goods and services. The demand-driven nature of food restructuring in these countries has implications for food security, reinforcing the argument that any food security problems are not mainly the result of inadequate aggregate supplies of agricultural products.

Keywords: transition economies, transition agriculture, food consumption, food aid

INTRODUCTION

Economic transition in the countries of the former Soviet bloc has substantially restructured their commodity agriculture, the main effect being a large drop in production and consumption of meat and other high value products. The fall in food production and consumption has raised concerns within certain countries about food security, which their agricultural establishments have used to lobby strongly for increased support and protection for agriculture. Although Macours and Swinnen and Liefert and Swinnen examine how transition has affected countries' commodity agriculture, their focus is on production rather than consumption effects.

This paper examines how and why transition has changed the structure of countries' food consumption. The paper first presents a conceptual framework, then empirical analysis, and lastly policy implications of the results. The main causal factors examined in the consumption restructuring are the shift from planners' to consumers' preferences as the dominant force in determining what goods are produced and consumed, trade liberalization, and the transition-induced drop in real consumer income.

CONCEPTUAL FRAMEWORK

Figure 1 is used to examine how transition from a planned to a market economy affects a country's commodity structure of consumption. The curve concave to the origin is the economy's production possibilities frontier (PPF) for goods G^1 and G^2 . We extend the concept of economy-wide social indifference maps for consumers to include an indifference map for planners in the aggregate. In our analysis, planners receive utility from goods from the various ways they put them to use within their overall plan for the economy. We assume that in the planned economy, planners and consumers have different preferences for goods, represented by different indifference maps. U^P_1 and U^C_1, U^C_2, U^C_3 are specific indifference curves within the indifference curve maps for planners and consumers, respectively.

Assuming that the planners are utility maximizers, the planned economy's production and consumption point is A, where the planners' indifference curve U^P_1 is tangent to the PPF.

Figure 1: Transition's Effect on Production and Consumption

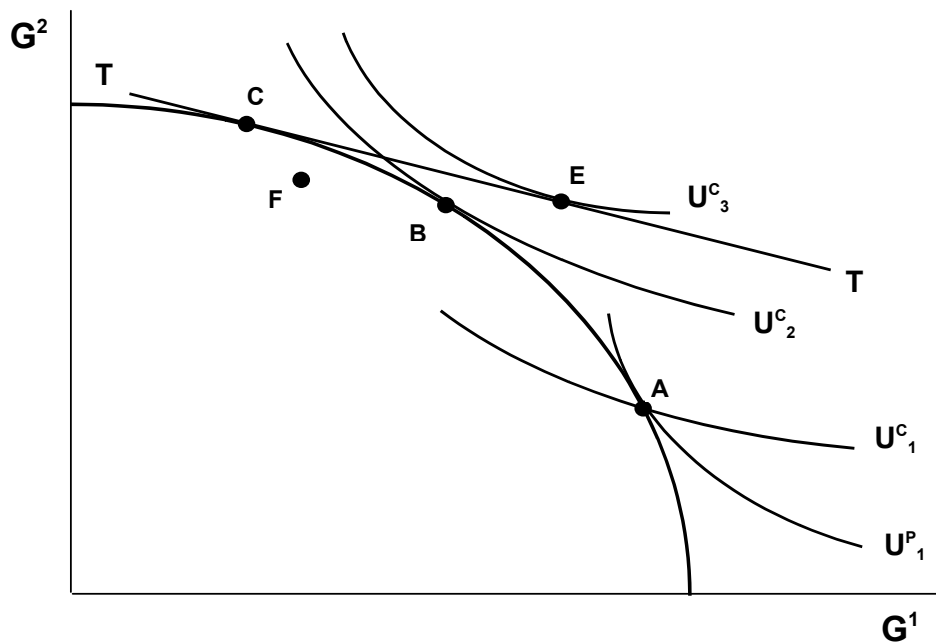


Table 1. Per Capita Food Consumption.

1990 kilograms									
Food	Poland	Hungary	Romania	Russia	Ukraine	United States	Germany	Great Britain	Japan
Meat (incl.offals)	76	105	76	75	68	114	101	76	41
Milk (excl.)	230	178	195	184 ¹	184 ¹	256	224	227	65
Cereals	145	148	173	164 ¹	164 ¹	109	94	93	133
Potatoes	144	58	59	106	131	55	81	105	25
2000 kilograms									
Food	Poland	Hungary	Romania	Russia	Ukraine	United States	Germany	Great Britain	Japan
Meat (incl.offals)	73	93	50	44	35	123	88	79	47
Milk (excl. butter)	190	177	189	152	147	260	232	221	68
Cereals	154	125	190	149	157	114	97	108	117
Potatoes	135	68	90	119	134	65	80	109	24

Source: FAO.

¹Figure for entire USSR.

Transition has two inherent features that can fundamentally alter the structure of a country's production and consumption. The first is that consumers' preferences replace planners' preferences as the dominant force in determining what goods are produced and consumed. The switch in indifference maps moves the production and consumption point from A to B. The second feature is trade liberalization. In Figure 1, the international trade price ratio is given by the slope of line TT. With free trade, the economy's consumption possibilities frontier (CPF) shifts from the PPF to line TT. The economy's production point shifts to C, and its consumption point to E. The country exports G^2 and imports G^1 .

EMPIRICAL ANALYSIS

In the pre-reform period, the countries of the former Soviet bloc were consuming foods at per capita levels equal to those in rich Western countries (Table 1). This was true even for high value livestock products, such as meat and milk. By the late 1990s (5-10 years into economic reform), per capita consumption of livestock products had fallen substantially. On the other hand, consumption of staple foods such as bread and potatoes remained steady, or even increased. In Figure 1, transition reduces consumption of G^1 and raises consumption of G^2 . Therefore, in our use of Figure 1 to examine how transition has affected food consumption, G^1 represents high value foods and G^2 all other goods.

Shift from planners' to consumers' preferences

The main cause of the restructuring of consumption during transition, and in particular the drop in consumption of high value livestock products, has been the shift from planners' to consumers' preferences as the dominant force in determining what goods are produced and consumed. We wish to show that before transition, planners "desired" the production and national consumption of high value livestock products more than consumers (at the margin). This accounts in figure 1 for the relative shapes given for the planners' and consumers' indifference curves.

Beginning in the early 1970s, the USSR began to expand the livestock sector, a policy generally copied by the other countries of the Soviet bloc. The policy succeeded, such that by 1990 livestock herds and meat production in these countries were about 50 percent higher than in 1970. Because the main reason for expanding the livestock sector was to improve consumers' standard of living by increasing consumption of high-value livestock products, governments did not want consumers to have to pay the high cost of livestock production. Thus, consumer prices for livestock goods were set far below production cost. In 1986, the aggregate ratio of producer to consumer prices for livestock products in the USSR, Poland, the Czech Republic, and Hungary was about 2.0, 1.8, 1.45, and 1.35, respectively (computed from ERS)¹

Massive subsidies to both producers and consumers were required to cover the gap. By 1990, state budget subsidies to the agro-food economy in the USSR equaled about 10 percent of GDP (World Bank, p. 138), with the bulk going to the livestock sector. By 1990, per capita consumption of meat and other livestock products in the USSR and other bloc countries was on a level equal to that in many rich Western countries, such as Great Britain (table 1). Since per capita income in these Western countries was much higher than in the Soviet bloc countries, the latter were producing and consuming livestock products at a much higher level than one would predict based on their real income (Sedik). Further evidence that these countries were overconsuming livestock products relative to their real income is that in the more successfully reforming transition economies whose GDP has surpassed the pre-reform level, consumption of livestock products is below pre-reform levels. In 2000 per capita GDP in Poland, Hungary, and the Czech Republic was 43, 12, and 10 percent higher than in 1990 (PlanEcon), while per capita consumption of meat was 4, 12, and 24 percent lower, respectively (FAO).

The main reform policy that effected the move from planners' to consumers' preferences, thereby moving the production and consumption point in figure 1 from A to B, was price liberalization, accompanied by the slashing of subsidies to producers and consumers. These policy changes resulted in consumer prices jumping to reflect the high costs of production. Faced with higher prices, consumers switched their demand away from high value (and cost) foods. Reform in fact created entirely new goods and, in particular, services (ranging from legal and financial services to car repair and health clubs), which consumers were starved of under the old regime and to which demand has turned during reform.

The appearance of new consumer goods and services during transition could in fact change the indifference map of consumers by altering the shape of the indifference curves, most likely in a way that further distinguished them from the planners' indifference curves.

To prove that planners "desired" the production and national consumption of livestock products more than consumers (at the margin), we must show that during the planned period, the ratio of the marginal utility of livestock goods to the marginal utility of all other goods was higher for planners than for consumers. As mentioned before, in Figure 1 G^1 represents high value foods such as livestock products and G^2 all other goods. Let MU^1_p, MU^2_p be the marginal utility of G^1, G^2 to planners; MU^1_c, MU^2_c the marginal utility of G^1, G^2 to consumers; P^1_p, P^2_p the producer price of G^1, G^2 ; P^1_c, P^2_c the consumer price of G^1, G^2 ; and MC^1, MC^2 the marginal cost of producing G^1, G^2 . All the variables are defined for the pre-reform planned period. We want to show that

$$MU^1_p/MU^2_p > MU^1_c/MU^2_c \quad (1)$$

In terms of figure 1, equation (1) means that the planners' indifference curve that passes through point A (U^p_1) is steeper at that point than is the consumers' indifference curve that passes through point A (U^c_1).

We assume that planners and consumers were both rational, such that

$$MU^1_p/MU^2_p = MC^1/MC^2 = P^1_p/P^2_p \quad (2)$$

$$MU^1_c/MU^2_c = P^1_c/P^2_c \quad (3)$$

The "producer prices" used to compute the ratios of producer to consumer prices for countries' agricultural goods given earlier are producer incentive prices; that is, they include per unit state budget subsidies to producers, and thereby cover the full cost of production. This means that in equation (2), the producer prices are incentive prices, such that we can assume that the ratio of the goods' MC equals the ratio of the goods' producer (incentive) prices. Concerning equation (3), although in the planned economies planners determined the quantities and prices of goods made available for consumption, consumers were free to purchase these goods as they chose. Equation (3) gives the consumer welfare maximizing condition.

It was shown earlier that pre-reform, producer prices for agricultural goods in general, and livestock products in particular, exceeded their consumer prices, or in terms of our notation, $P^1_p > P^1_c$. Ceteris paribus, this means that

$$MU^1_p/MU^2_p = MC^1/MC^2 = P^1_p/P^2_p > P^1_c/P^2_c = MU^1_c/MU^2_c \quad (4)$$

The distance in figure 1 between the planners' and consumers' optimal production/consumption points (A and B) for the former Soviet bloc countries is even greater than that implied by the values given for the ratios of producer to consumer prices for foodstuffs. When price liberalization began in these countries, agricultural producers' terms of trade (output prices relative to input prices) deteriorated substantially. For example, from 1989 to 1995, agricultural producers' terms of trade in Poland and Hungary worsened by 73 and 36 percent, respectively, while in Russia, Ukraine, and Romania they deteriorated over 1990-95 by 77, 76, and 66 percent, respectively (computed from OECD). This shows that during the planned period, agricultural input prices (such as for energy, fertilizer, and animal feed) were set low, relative to both output prices and to the real cost of producing the inputs. In the planned economy, agricultural producers were subsidized not only directly through state budget subsidies, but also indirectly through the price system.

The increase in the relative prices of agricultural inputs once prices were free to move to levels that reflected full production costs means that during the planned period, agricultural output prices were also understated relative to output prices for other goods. In other words, in equations (2) and (4), MC^1 is not equal to, but rather is greater than, P^1_p . This means that

$MC^1 > P^1_p > P^1_c$. This pushes the planners' production/consumption point A further down (to the right) on the PPF than is implied by the ratios of pre-reform producer to consumer prices for foodstuffs. In turn, $MC^1/MC^2 > MU^1_p/MU^2_p$ by a magnitude greater than is implied by the price ratios. The degree to which production and consumption of high cost livestock products would fall during transition is therefore also greater than that implied by the price ratios.²

Trade liberalization

The second main feature of the movement from a planned to a market economy that affected the structure of production and consumption was trade liberalization. In planned economies, foreign trade was a state monopoly. Although most planned economies did trade, it was to a much lower degree than market economies. (When discussing the behavior of a planned economy in the Conceptual Framework section of the paper, for simplicity we ignored foreign trade.) The requirement of central planning that output targets and input requirements must balance motivated planners to think in autarkic terms. Trade was used not to maximize the gains from trade according to comparative advantage, but as a necessary evil to correct resource shortages within the plan (see Holzman).

In figure 1, trade liberalization shifts the production point from B to C, and the consumption point from B to E. If in figure 1 G^1 represents high value agricultural products, the country has a comparative disadvantage in these goods. The reason is that the slope of the line tangent to the PPF at point B (which gives the opportunity cost of producing one more unit of G^1 in terms of units of G^2 foregone) is greater than the ratio of the foreign trade prices of G^1 to G^2 , as given by the slope of the trade line TT. Trade liberalization results in imports of G^1 .

The empirical evidence shows that when the transition countries liberalized their foreign trade, they generally were uncompetitive in agricultural goods, and especially livestock products. The main evidence is that domestic producer prices for livestock products, and agricultural goods in general, lay above world prices (OECD). Liefert more specifically finds that during transition, Russia has had a general comparative disadvantage in producing agricultural output (meat and grain) compared to agricultural inputs (energy, fertilizer, and animal feed for livestock), as well as a comparative disadvantage in meat compared to grain. Trade liberalization has therefore resulted in the transition economies moving more toward imports rather than exports of foodstuffs, with many countries becoming large importers. For example, Russia's meat imports rose from 0.71 million metric tons (mmt) in 1992 to 2.70 mmt in 2001 (USDA).³

The transition countries' uncompetitiveness in agricultural products during transition has reinforced the drop in agricultural output resulting from the move to consumers' preferences, as measured in figure 1 by the further shift in the production point from B to C. Yet, given that trade liberalization has made the transition countries largely importers rather than exporters of agricultural products, it has increased consumption of many foodstuffs. In figure 1, trade liberalization has the isolated effect of raising consumption of G^1 , by the horizontal distance between points B and E. This has mitigated the drop in food consumption resulting from the move from planners' to consumers' preferences. For example, although per capita meat consumption in Russia in 2001 was about 40 percent lower than in 1990, imports supplied 40 percent of all meat consumed (in volume terms; USDA). Without trade, meat consumption would be much lower.

Drop in real consumer income

In addition to the move to consumers' preferences and trade liberalization, transition can also affect food consumption by changing real consumer income. In almost all transition countries, real income has fallen, in many cases substantially (PlanEcon). For example, for Russia, Ukraine, and Bulgaria, official statistics show that 2001 per capita income was down compared to the pre-reform period by half or more (PlanEcon). One reason is an inevitable rise in unemployment, as jobs are lost at a faster pace than new jobs can be created. In figure 1, this would be represented by the "temporary" movement of production to a point within the PPF, say to F.

Another major reason for the decline in real income, however, is price liberalization. In virtually every transition country, price liberalization resulted in consumer prices rising by a much larger percentage than nominal wages or income, such that real incomes fell. Countries' macroeconomic statistics show that for almost every country, most of the drop in real consumer income during transition occurred in the single year when price liberalization was implemented (about 25 percent for Poland in 1991 and the Czech Republic in 1991, and about 50 percent for Russia in 1992 and Ukraine in 1993; PlanEcon). Consumer purchasing power fell, though not because of an immediate and accompanying decline in the economy's real national product. Rather, just as price liberalization resulted in output prices jumping to reflect real production costs, it also resulted in consumer purchasing power adjusting to reflect the country's real income and wealth, as measured by its ability to produce goods valued at their real cost of production.

This means that much (if not most) of the decline in consumer income, and accompanying shift in demand for goods, sprang from the move from planners' to consumers' preferences, rather than from the transition-induced rise in unemployment. Thus, although the consumption effect of the drop in real income is reflected in figure 1 in part by movement of the production point to F within the PPF, much of the effect is reflected by movement of the production point along the PPF from A towards B.

That a move from planners' to consumers' preferences for goods, which should increase consumer welfare, is associated with a drop in consumer income might seem contradictory. Much of the contradiction is resolved by recognizing that during transition, the fall in consumer income, as conventionally measured, has been overstated. Because of difficulties in obtaining prices for new goods and services, as well as inertia in state statistical agencies, the basket of goods whose prices are used to compute the income changes largely reflect the goods more desired by the pre-reform planners than consumers. In particular, the basket excludes most of the new consumer goods and services that have arisen as markets have developed and to which demand has switched during transition. Real consumer income, purchasing power, and welfare from consumption have fallen less than the official statistics indicate.

Nonetheless, the decline in real consumer income and purchasing power from price liberalization plays a role in the restructuring of consumption. One reason for the drop in consumer demand for high value foodstuffs has been a substitution away from them as their prices rose. But the decrease in real consumer income has also created an income effect. Because livestock products have relatively high income elasticities of demand, demand for them has fallen substantially. Demand for staple foodstuffs with low income elasticities of demand, such as bread and potatoes, has dropped only little. In some countries, consumption of these staples has in fact increased (Table 1), which suggests that during transition they could be inferior goods.

Another way transition could change consumer income is from technological change. Transition could generate technology transfer, facilitated by foreign direct investment, as well as exposure to superior foreign management practices. On the production side, technological improvement would increase productivity, thereby shifting the economies' PPF outward, while on the consumption side it would raise consumer income. This would disproportionately increase demand for livestock products and other foods with high income elasticities of demand. Yet, given that real consumer income in most countries is still below the pre-reform level, any isolated rise in consumer income from technological progress to date probably has not been large, and has been dominated by the negative income effects of transition.

POLICY IMPLICATIONS

The main policy implication of our analysis is that most of the fall in agricultural production and consumption during transition is an inevitable, and thereby irreversible, consequence of market reform (unless reform itself is reversed). Consumption of high value foods will rise to pre-reform levels only if economy-wide productivity growth over time raises consumer income, thereby supporting greater demand for relatively expensive high value foods. No short to medium term effects intrinsic to the reform process will substantially increase consumption of these foods. This point takes issue with the argument commonly made by these countries' agricultural establishments that the contraction of agriculture is a temporary, though disastrous, effect of the dislocations of transition, an assertion used to support lobbying for large assistance to producers in the form of subsidies or trade protection. A qualification is that some of the drop in food consumption is the result of the short run frictional unemployment of transition, such that consumption could rebound as employment and incomes rise. Yet, as argued before, much if not most of the decline in real consumer income during transition has resulted not from unemployment, but rather from "irreversible" price liberalization.

The second major policy conclusion is that the causes of food insecurity in these countries could be misidentified, and concerns about food security exaggerated. Many observers in both the transition countries and the West have used the decline in agricultural production and per capita food consumption as evidence by itself of a food security problem. The argument of inadequate overall food supplies has buttressed support for Western food aid.⁴ Yet, consumption has fallen for high value foods, not for staple foods such as bread and potatoes. Although some transition countries do have food security problems, the main reason is not deficient overall food supplies.

Rather, the major causes appear to be inadequate purchasing power by the poor, as well as problems in moving foodstuffs to deficit-producing regions (Russia being a good example; see Liefert and Liefert).

CONCLUSION

This paper argues that the main reason for the drop in consumption of meat and other high value foods in transition economies has been the shift from planners' to consumers' preferences as the dominant force in determining what goods are produced and consumed. Empirical evidence is used to show that in the pre-reform period, planners desired the production and national consumption of high value (and cost) foods more than consumers (at the margin). The main evidence is that in the pre-reform period, producer prices for high value foodstuffs lay above consumer prices. Under standard assumptions of economic rationality for both planners and consumers, this means that the ratio of planners' marginal utilities of high value foods to other goods exceeded the ratio for consumers.

One policy implication is that the fall in production and consumption of high value foodstuffs during transition has been an inevitable, and therefore irreversible, part of market reform. Another policy implication is that the causes of food insecurity could be misidentified, and concerns about food insecurity exaggerated. The decline in food production and consumption has reinforced the misconception that a major factor in any food security problems is inadequate overall food supplies. On the contrary, the main causes of food insecurity appear to be deficient purchasing power by the poor and obstacles to moving foodstuffs to deficit-producing regions within countries.

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Notes

¹ Because consumer retail prices for foods include costs for processing and distribution as well as the cost of primary agricultural production, the "consumer prices" used to compute this ratio are the prices paid by the immediate purchasers of the primary agricultural products (typically processors). Policy in most countries of the former Soviet bloc (following that of the USSR) was to apply the subsidies to agriculture specifically at the processing stage, such that processors' purchaser prices were below the prices received by agricultural producers.

² This point complicates the argument that planners “desired” high value foods more than consumers, because the complex price system during the planned period whereby prices could understate costs means that planners might have been unaware of the real opportunity cost of goods. In other words, the planners themselves might not have known the degree to which they favored the production of high cost foodstuffs compared to consumers.

³ An exception is that because of the large contraction of their livestock sectors, the countries of the former Soviet Union have terminated the large imports of grain, soybeans, and soybean meal needed during the Soviet period to help feed the country’s growing livestock herds. Rather than importing feed to maintain high cost livestock production, Russia and other countries are now heavily importing meat and other animal products.

⁴ During the 1990s, the United States and EU gave food aid to a number of transition economies, including Albania, Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Russia, and Tajikistan. The biggest recipient in recent years has been Russia, which in 1999-2000 received 3.1 and 1.8 million metric tons of food aid from the United States and EU, the main aid commodity being grain (Liefert and Liefert).