VIII. Scenario 3—Can the Reduction of Marketing Costs Boost Livestock Output?

Marketing costs are important factors in determining prices received by producers for live animals, and prices paid by retail consumers for finished animal products. The transition process has reduced marketing costs, but institutional and policy impediments continue to characterize livestock/poultry marketing chains in some transition economies. Country models for Romania, Russia, and Ukraine were used to simulate the elimination of marketing chain bottlenecks. Model results suggest a reduction in marketing costs can have significant positive impacts on output and net exports. In general these impacts are greater that those obtained through a reduction in credit costs.

Introduction and Background

Marketing costs are important factors in determining the prices that producers receive for live animals, and that consumers pay for finished animal products in retail markets. Several institutional and policy impediments continue to characterize livestock markets in the five countries, leading to marketing costs that are typically higher than comparable costs in more developed market economies. These impediments include poor market infrastructure, underdeveloped institutional market requirements (see Chapter I), segmented markets, underdeveloped market information systems, low investment, lagging privatization efforts, and a high-risk business environment. All of these factors together constitute another "bottleneck" to fully functioning livestock markets, which hinders increased profitability of animal agriculture in transition economies. We hypothesize that marketing costs will decline with continued economic growth and development in transition economies. Following a brief discussion of marketing margins and hypothesized responses to price liberalization, simulation results from the marketing cost reduction scenarios costs will be discussed.

Marketing Margins: Definition and Use

Economists use the term "marketing margin" to summarize the aggregated costs of moving agricultural goods forward along successive levels of the farm-to-retail marketing chain. For animal products, a farm-to-retail marketing margin is computed by the price difference between what the farmer receives for the live animal and what the consumer pays for a finished meat product. Marketing margins thus include the costs of converting a live animal or farm milk to a retail product: costs of assembly, cutting, processing, packaging, transport, and distribution are captured in a farm-to-retail margin. Observing marketing margins over time provides insight into the distribution of consumers' food dollars among producers, processors, and retailers. Further, marketing margins indicate how retail prices respond to changes in farm prices and consumer demand. Marketing margins alone are not indicators of farm, processor, or retail profitability. Thus, a marketing margin is never "too wide," or "too narrow."

Over the past three decades in the U.S., for example, marketing margins for meat products, when adjusted for inflation, have either remained constant or have declined slightly (Nelson and Duewer, 1997). Factors that cause marketing margins to decrease include industry adoption of new technology, improved transportation and infrastructure, lower labor costs, and lower business/financial risk.

Prior to the transition period, governments in the five countries set and controlled marketing margins. Typically, margins were not permitted to deviate beyond a specified percentage of acquisition costs. For example, a meat processor could sell products to a wholesaler at a price that reflected only the purchase price of live animals plus a fixed percent of the acquisition price. Under central planning, this "cost-plus" pricing method often characterized prices along all levels of the marketing chain.

Marketing Margins in Transition Economies

In the early years of the transition, marketing costs in the five countries increased dramatically in response to mar-

ket reforms and liberalized prices. Margins increased as retail consumers paid more for animal products while animal producers received lower prices. At that time economists hypothesized that as transition economies adjusted to market forces, new lower price equilibria would be achieved and marketing margins would decline.

Price series for livestock/poultry and animal products are available for some Polish, Hungarian, Romanian, and Russian markets. Approximate marketing margins computed from the price data tend to support the adjustment hypothesis: that an explosive initial response to liberalized prices and margins would be followed by decline, and subsequent stabilization. Marketing margins for meat in Poland, and for meat and eggs in Russia, most directly reflect this dynamic (figures VIII-1 and VIII-2). Margins computed for meat products in Hungary, however, do not show a clear response to the collapse of central planning (figure VIII-3). This may be because prices were partially liberalized even before the end of the Communist period. Romania demonstrates an altogether different set of margin dynamics (figure VIII-4). Unlike Poland, Hungary, and Russia, Romanian margins continued to widen from the early 1990s, through 1997. The likely reason is that the first post-communist government maintained controls on margins, which were finally abolished in 1997.

It is difficult to forecast the dynamics of marketing margins in transition economies because markets simultaneously generate forces that both increase and decrease marketing costs. Supply-side factors will likely decrease marketing margins, while demand-related factors tend to increase marketing costs. Supply-related factors that will likely cause marketing margins for animal products to decline include industry investment in technology, upgraded country infrastructure, and the development of coordinated relationships between producers, processors, and financial institutions.

On the other hand, marketing margins for all food products typically increase with economic growth and development because consumer demand for marketing and processing services increases as income increases. Consumer income growth is associated with increased demand for higher quality meats, as well as for more highly prepared, processed, and packaged animal products. The transition process includes both factors that cause marketing margins to decline (listed previously) and income-related factors that cause margins to increase. The net effect on marketing margins for animal products therefore, is indeterminate, and will depend on the relative strength of the respective factors over time.

Supply-Side Factors Still Keep Margins High

The modeling scenarios described below focus only on the supply-related factors that tend to hold margins above those observed in more developed countries. Chapter 1 sets out a general description of institutional bottlenecks that continue to inhibit market development in transition economies. Supply-side factors that continue to keep marketing margins high in Romania, Russia, and Ukraine are described in more detail below.

Market infrastructure. Market infrastructure includes transportation, storage, handling, processing and retail networks, and communications. Deficiencies in market infrastructure have been described previously (see Chapters III and IV).

In Poland and Hungary there has been considerable investment in the physical infrastructure since the beginning of the transition. Highways have been upgraded, public transportation has improved, and telephone communications are more reliable. The movement of goods in Romania, Russia, and Ukraine, however, continues to be handicapped by poor transportation networks and outdated transport and handling equipment. It is often necessary for meat products to travel great distances to consumption centers by rail and/or truck. Because the road and rail systems are not extensive and are often in a deteriorated condition, transportation and handling costs in Romania, Russia, and Ukraine are high. It is estimated that Russian transportation costs from farmgate to consumer are 20-40 percent of the costs of production.[8]

Market information. Market information systems—broadly disseminated reports of commodity market prices—are a key element in a system whose chief purpose is to move goods from surplus to deficit regions at minimum cost. In Hungary and Poland, market information systems are more developed than systems in Romania, Russia, and Ukraine. Although nascent price information systems exist, the absence of regularly scheduled, widely available market price information in Romania, Russia, and Ukraine continues to hinder livestock/poultry producers and processors. Small producers in particular are affected by lack of access to low-cost market information, while large producers appear to have developed their own information sources. Clearly, publicly available and low-cost market price information would contribute to a

[8] As a point of reference, in the U.S, transportation accounted for 4.1 percent of the estimated value-added in the food marketing system in 1993 (Gallo, ERS/USDA).

leveling of the playing field and allow small producers to compete more equally in meat and livestock/poultry markets.

Segmented markets. Private sector participants in livestock/poultry and meat markets in Romania, Russia, and Ukraine continue to be handicapped by what is sometimes termed segmentation of markets. Under central planning, production, processing, distribution, and marketing operations were managed in isolation of one another. Moreover, these components of the marketing chain were often located at great physical distances from one another. The state controlled the movement of products through the marketing chain, as well as among different regions and across international borders. Because of the high degree of commitment to central planning by the governments of Romania and the former Soviet Union, producers and processors in Romania, Russia, and Ukraine currently face comparatively greater challenges in developing price-driven marketing relationships to coordinate delivery of meat products to consumers.

In transition economies today, livestock/poultry production takes place largely on small subsistence-level farms,

Figure VIII-1—Poland: Approximate share of marketing costs in retail prices of beef and pork

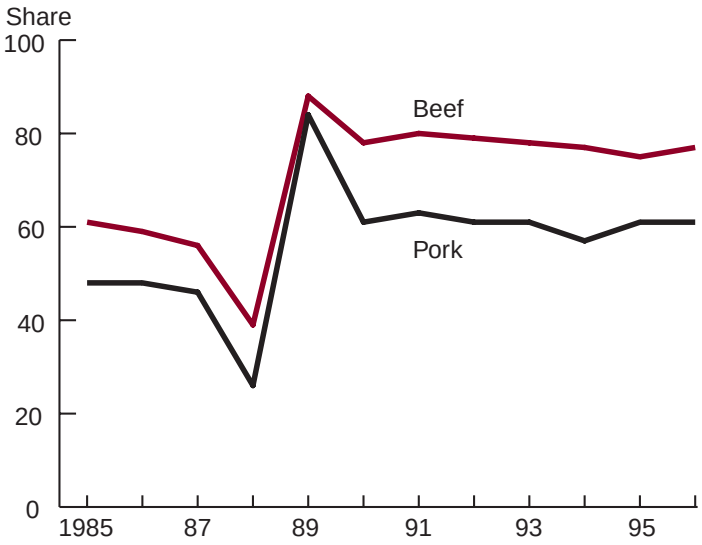


Figure VIII-2—Russia: Approximate share of processing and marketing costs in retail price for beef, pork, and eggs

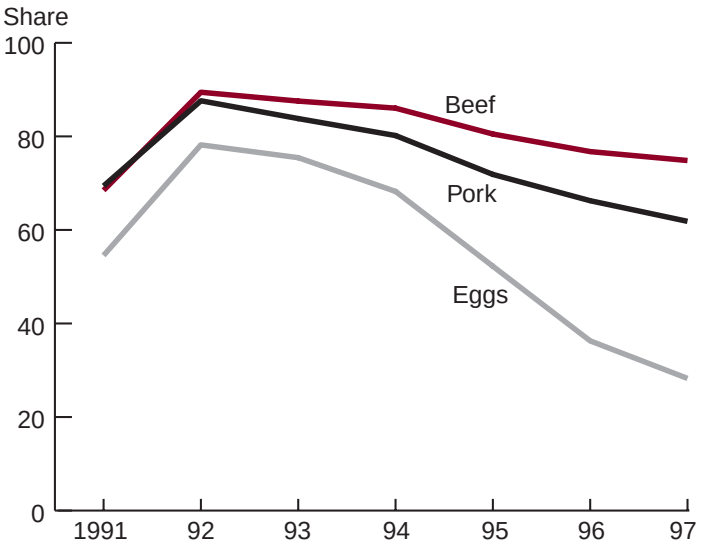


Figure VIII-3—Hungary: Approximate share of marketing costs in retail prices of meat

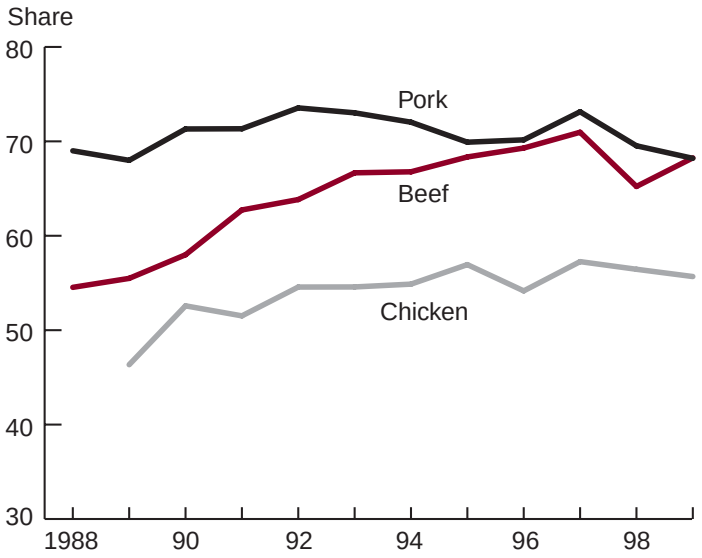
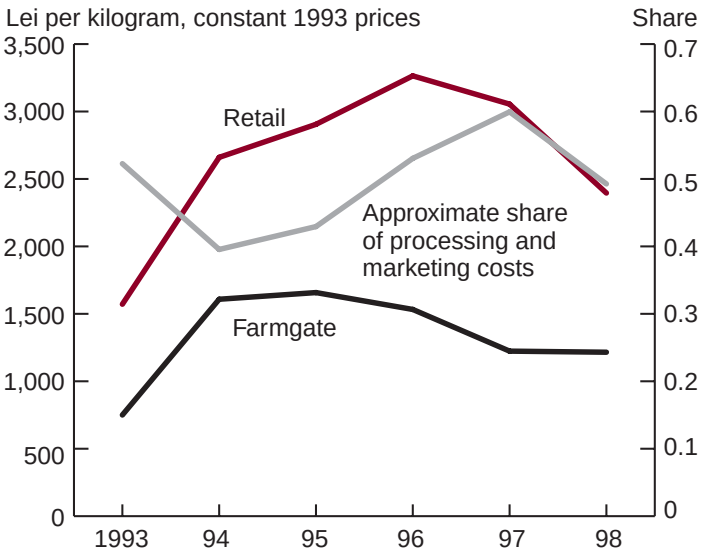


Figure VIII-4—Romanian pork prices, farmgate and retail



or household plots. However, marketing structures inherited from central planning are geared toward servicing large cooperatives and state farms. Emerging private producers are increasingly bypassing marketing channels held over from central planning, marketing products directly to consumers (see Chapter III.) But unit costs of direct marketing are high. Because production is small-scale and dispersed, costs associated with marketing significant volumes of animal products are extremely high. Meat marketing may include direct cattle sales through agents who travel from farm to farm. The added costs of collecting meat from a number of small private meat slaughterers, maintaining quality control, finding adequate storage, and organizing the sale of the product contribute to large price spreads, and keep marketing margins high.

High-risk environment. The costs associated with operating in a high-risk business environment also contribute to high marketing margins. Studies by Wei and Orban support this hypothesis (see Box VIII-1). Anecdotal evidence suggests that risk factors continue to come into play for other animal product markets as well. Small producers and processors appear to minimize marketing risk by choosing to deal with suppliers, etc, who are known to them, rather than seeking out low-cost service providers who may be unknown to them. This practice may also contribute to wide marketing margins (see Box VIII-1).

Lagging privatization. Chapters I-III document advances made by the governments of Hungary and Poland in privatizing formerly state-owned assets. Privatization efforts in Romania, Russia, and Ukraine are ongoing, but progress continues to lag. The state continues to play a significant role in processing and marketing livestock/poultry products, through partial ownership and/or control of formally state-owned assets. The continued state presence in livestock/poultry production, processing, and marketing more than likely has a negative impact on private operations. Anecdotal evidence indicates that operations either partially or wholly owned by the state continue to receive subsidies, thus disadvantaging private enterprises. In addition, state dominance of marking channels limits the marketing options of private producers. State ownership of grain storage and feed mills also appears to raise production costs for livestock/poultry producers.

As market-based economies continue to develop in the transition economies, the costs of marketing agricultural products will decrease. Costs will decline as private and governmental investment increases, new technologies are adopted, and domestic marketing chains become more closely coordinated. Model simulations of lower marketing costs using the Romania, Ukraine, and Russia models indicate that the livestock/poultry producers and processors, as well as consumers, all benefit.

Model Results

Country models for Romania, Russia, and Ukraine were used to analyze the effects of the disappearance of bottlenecks associated with marketing agricultural products. By assumption, marketing margins in each of the country models declined by 20 percent for all commodities. Prices for outputs rise while prices for inputs fall.

Lower marketing margins generated similar outcomes in the Romania, Russia, and Ukraine models. Results suggest that lower marketing costs cause output of all agricultural and processed goods to increase (except oilseeds in Russia and Ukraine), with livestock products benefiting more than crops. Furthermore, the positive impacts under this scenario are significantly greater than the benefits observed under the reduced credit cost scenario. In part this occurs because lower marketing costs benefit both commercial and subsistence producers. The reduction in marketing costs is also reflected in higher output prices and lower input prices, whereas the reduced credit cost only affects the cost structure.

Livestock producers receive higher prices for their animals, milk, and eggs and pay lower prices for feed. These reinforcing price changes raise returns to capital from the low levels of the base scenarios and encourage producers

Many farmers find direct marketing to be their only viable outlet.

Credit: Milton Madison.

to expand animal numbers and to increase the production of farm milk. In each of the three countries, lowered margins generate increased animal production (Table VIII-1) Calf crops increased by less than hogs and poultry because cattle are less dependent on grain and oilmeal, whose prices fall, and more dependent on roughage and pasture, which are relatively more expensive in the scenario outcome.

Increased animal numbers put an upward pressure on feed supplies. In the Russia model, feed use of grain increases by 13.8 percent. Feed demand for meal increases by 11.8 percent. In addition, demand for nontraded feeds—pasture grass, hay, etc.—is higher, and their prices rise.

Lower marketing costs and higher output prices lead to an expansion in area planted to grain, potato, root and pulse, and sugarbeets. This expanion causes the rental price of land to rise. Producers substitute other inputs for the more expensive land, and yields rise as a result. The increase in land rental rates limits expansion in the crop sector, and oilseed output declines in Russia and Ukraine. Because oilseeds are traded, their prices are fixed by international markets, and the increased feed demand is met through imports and does not lead to higher oilseed prices. Since oilseed yields are low, the cost share for land is relatively high. Ukraine and Russia reduce production of oilseeds due to rising land rents, and lower returns to the crop cause oilseed area and output to fall. Feed grain production in Russia and Ukraine increases slightly because a

Table VIII-1—Impact of marketing cost reduction on live animals births

	Ukraine	Russia	Romania
		Percent increase	
Pig	18	26	9
Bird	15	22	16
Cattle	9	11	1

Box VIII-1—Theoretical Work on Marketing Margins

Theoretical work on processor margins for agricultural commodities has centered on the work of Gardner (1975) and Hein (1980). Gardner's approach is based on a one-output, two-input model involving retail food, farm product, and a conglomerate marketing service. Gardner concluded that changes in farm-retail spread are functions of changes in any market and in the relationship between any two markets. Furthermore, he concludes that a markup pricing rule could not depict the farm-retail price spread.

Hein argued that in markets where inventory was important and the time period for adjustment was short, the fixed markup rule would indeed apply. These two models remain the basic framework, where Gardner's model explains long-run behavior and Hein's model short-run behavior. Additional studies have focused on relaxing the pure competition assumption both Gardner and Hein make, or introducing a risk variable into the mix.

Both Wei (1995) and Orban and Toth (1998) have empirically tested models based on the Hein concept but with the introduction of risk variables similar to Brorsen, et al., (1985). Orban and Toth use a margin calculated as the difference between farmgate and retail pork prices. Wei includes two margins: farmgate-wholesale and wholesale-retail. Wei modeled the Polish pork sector while Orban and Toth modeled the Hungarian pork sector.

The independent variables include a real wage variable, an energy price index variable, a government intervention variable, and a marketing risk variable. The Consumer Price Index with a fixed base was used to measure macroeconomic risk. Wei's model featured two equations, with the marketing margin from farmgate to wholesale being one dependent variable and the marketing margin from wholesale to retail being the other. Orban used only one margin, but employed a mixed ARIMA model with structural variables. In both models, the independent variables were wages, energy, government intervention, and macroeconomic risk.

Both Wei and Orban found the risk variable to be highly significant in both Poland and Hungary. The wage variable had the expected sign in both cases but was statistically insignificant. Orban and Toth found the energy price index to be significant in Hungary, while Wei found energy not to be a significant variable in Poland. As expected, government intervention was significant in both countries.

What both these studies suggest is that risk and uncertainty are major contributors to high marketing margins in both countries. Wei was explicit in pointing out that the Polish processing sector was highly competitive with many private and formerly state-owned processors competing for customers. Wei dismissed the common argument of monopoly power in the processing sector. What was surprising was that energy costs were not a strong contributor to margins in Poland, yet were significant in Hungary. High energy costs were another often-cited cause for high marketing margins. Labor costs were not considered important determinants of marketing margins in either country.

smaller percentage of feed grain production costs are attributable to land, which permit the substitution of lower cost inputs in place of land. As with oilseeds, the link to the world price means that the rise in derived demand is met via trade changes.

In each country model, animal products output increases under the lower marketing cost scenario. Falling marketing costs and increased supplies cause prices of animals and raw milk to fall, thus benefiting meat and dairy processors. Output of pork, beef (with the exception of Romania, see below), poultry, and eggs all increase (table VIII-2). Fluid milk, butter, and cheese production also increase slightly.

Animal products output in Romania follows a different pattern from Russia and Ukraine. While pork and poultry meat output expands by 8.2 percent and 11.5 percent, respectively, Romanian beef output remains largely unchanged. The limited production response by cattle producers in Romania may be attributable to the structure of cattle ownership. Most of the cattle in Romania are held by subsistence farmers, who tend to feed roughage and pasture whose price remained constant in the marketing cost reduction scenario. Consequently, they do not benefit as much from lower grain prices as commercial producers. In contrast, in Russia and Ukraine, the majority of cattle are held on commercial farms, where labor and purchased inputs account for a higher proportion of total costs. Because cattle production in Romania is less responsive to lower marketing costs than production in Russia and Ukraine, the 20 percent marketing cost reduction causes a smaller rise in the Romanian calf crop and smaller increases in beef production.

The major impact of reducing marketing margins is seen in changes in trade. In Russia, meat imports fall considerably: beef by 28 percent, pork by 89 percent, and poultry by 16.7 percent. Likewise in Romania, poultry imports fall by 16 percent, and pork exports increase by 45 percent. Ukraine receives a significant boost to its export markets, becoming a net exporter of beef, pork, and poultry (table VIII-3).

Unlike trade in meat products, net exports of feed crops declined, due partly to the increased demand for feed. Grain imports rise by 180 percent in Russia, while oilseed and meal exports fall by over 68 percent. Lower marketing costs caused Ukraine to move from the position of a net exporter of grains to a net importer. Imports of oilseed meal also increase by almost 40 percent, due only in part to increased feed demand. The increase is also a reflection of the rise in land rents. The increased cost of land divert grain and oilseed production slightly in favor of sugarbeets, potatoes, roots and legumes, roughage, and pasture.

Although both subsistence and commercial agriculture benefit from reduced farm marketing costs in Russia and Ukraine, there are some small but notable shifts among types of enterprises.

As in the Romanian beef sector, subsistence farms in Russia and Ukraine make less use of grains and oilseeds as feed. Thus, subsistence enterprises in Russia and Ukraine also demonstrate less response to changes in marketing costs than commercial enterprises.

In general, subsistence farmers rely more on labor and less on purchased inputs than commercial producers. As a result, subsistence producers are less flexible and less responsive to changes in the prices of purchased feeds. The principal exception is swine, a pattern similar to Romania. Reduced marketing costs allow the pig crop in the subsistence sector to increase by 46 percent in Russia and by 27 percent in Ukraine, compared with 16 and 11 percent in the commercial sector. Feed crops—grain and potatoes—comprise a much larger share (over 90 percent) of the cost of raising pigs in the subsistence sector than in the commercial sector, where the cost share of feed is over 60 percent.

Table VIII-2—Impact of marketing cost reduction on meat output

	Ukraine	Russia	Romania
	Percent increase		
Pork	24	17	8
Poultry	11	17	12
Beef	6	7	0

Table VIII-3—Impact of marketing cost reduction on imports

	Ukraine		Russia		Romania	
	Base	New	Base	New	Base	New
			1,000 tons			
Pork	1	-178	440	146	-66	-96
Poultry	1	-30	822	684	55.3	46.2
Beef	-148	-223	596	427	-14.1	-12.3

Summary: Key Results From Lower Marketing Costs in Russia, Ukraine, and Romania

- The reduced marketing margin scenario produced similar results in the Russia, Ukraine, and Romania models. The reduction in marketing costs caused the output of most agricultural products to increase, with a greater expansion in livestock products than in crop output. Livestock/poultry production increased, and the processor price of animals and raw milk declined. The output of processed meat and milk products also increased. Thus, as marketing margins decline in transition economies, animal products production is likely to increase.

- A key result of the marketing cost scenarios was the large positive effect on net trade. Romania, Russia, and Ukraine reduced animal product imports, or increased exports. In some cases, the country moved from a net importer of a given product to a net exporter. The crop sector, on the other hand, moved in the opposite direction, as net exports decreased. Net exports declined because feed demand increases frequently exceeded domestic crop expansion. Thus, lower marketing costs in transition economies could bring about higher exports of high-value animal products, and greater imports of bulk feed inputs.

- Another important scenario result was that both subsistence and commercial agriculture tended to benefit from the reduced farm marketing costs, but not uniformly. In general, the subsistence sector is less responsive to reduced farm marketing costs because it tends to rely more heavily on labor and less on purchased feeds and other inputs. The result was a small shift of agricultural labor from the subsistence to the commercial sector.