Impacts of Potential Marketing Efficiency Gains

The analytical framework used in this study is a single-country, computable general equilibrium (CGE) model developed by the International Food Policy Research Institute (Löfgren et al., 2002). The model explicitly accounts for marketing margins as a fixed input-output quantity ratio between wholesale and retail marketing services and the sale of domestically produced food and agricultural goods in domestic and export markets. The purchase price for food and agricultural commodities in domestic and export markets is defined as the sum of the producer price plus the cost of the marketing service, plus any sales tax. Any change in the cost of marketing services directly affects the commodity purchase price, and through the demand response and changing intermediate input costs, may also affect the producer price.

The potential impacts of efficiency gains are analyzed in the model by imposing a 50-percent increase in total primary factor productivity in the production of wholesale and retail trade services used for food and agricultural commodities. This 50-percent increase implies that the same quantity of labor and capital inputs used to produce marketing services now generates 50 percent more output, thus reducing the costs of wholesale and retail marketing services. These efficiency gains are assumed to result from increased investment, improved technology, and enhanced integration in agricultural supply chains as rising consumer demand and domestic regulatory reform improve the climate for agribusiness investment and productivity growth.

We impose a relatively large increase in marketing productivity because of the evidence that the scope for efficiency gains is substantial and because the model data may understate existing marketing costs in the farm sector. The 50-percent productivity increase is equivalent to a compound annual productivity growth of about 4.5 percent over about 10 years, a timeframe compatible with a medium-run outcome in which land, labor, and capital markets fully adjust to the productivity gain. Although we expect the scope for marketing efficiency gains to vary by commodity, for simplicity—and due to lack of good detailed information by sector—we assume the same productivity gain across all food and agricultural commodities. A 50-percent increase in productivity may not be feasible in all sectors, but the anecdotal information derived from studies of India's food grain, oilseed, poultry, and fruit and vegetable industries suggests that it is a plausible overall average.

Economywide Impacts

The assumed improvement in marketing efficiency raises real GDP by 1 percent, reflecting the increased productivity of India's fixed aggregate factor supplies in providing marketing services (table 2). The scenario also generates a 1.4-percent increase in real household consumption—a welfare indicator that accounts for changes in the quantities of household consumption valued at base period prices. Additionally, improved marketing efficiency generates increases in investment that could increase future economywide output and consumption, although these dynamic impacts are not captured in the model. At the economywide level, the scenario has a small but positive impact on the producer price index, but implications for prices become more important when the focus shifts to the agricultural commodity sectors.

Table 2

Aggregate impacts of efficiency gains in agricultural and food marketing in India

Variable	50% increase in total factor productivity in agricultural and food marketing
	Percent change from base
Real gross domestic product	1.0
Real household consumption	1.4
Real investment demand	0.4
Government revenue	1.0
Producer price index	0.4
Land rents	5.6
Wages	1.6
Capital rents	0.1
Exports	0.7
Agricultural exports	3.9
Imports	0.7
Agricultural imports	-0.9
Exchange rate - rupees/U.S. dollar	0.7

Source: ERS model results.

Other economywide impacts include more government tax revenues associated with increased GDP and a small increase in the aggregate demand for imports (although demand for agricultural imports falls). Import growth leads to a small depreciation of the real exchange rate and an increase in aggregate exports. Wages and rental rates for land and capital increase in the scenario, driven by higher factor demand and the model assumption that labor and the other primary factors are fully employed. In the India case, however, labor unemployment and underemployment are substantial. Therefore, an alternative interpretation of the labor market result is that the upward pressure on wages in the labor market could increase employment and/or reduce underemployment instead of increasing wages. In this event, the increase in GDP would be even larger as more of India's productive factors are put to use.

Agricultural Sector Impacts

Increased efficiency in wholesale and retail marketing of agricultural and food products significantly affects producer and sales prices of domestic agricultural and food products (table 3). The reduction in marketing costs between producers and consumers reduces consumer prices and raises demand for most agricultural and food products. Greater demand increases production and producer prices for most agricultural and food products; the gains in marketing efficiency, therefore, are shared between producers and consumers. The largest production gains tend to be in such categories as oilseeds and products, sugar, dairy, and processed products (food, not elsewhere classified), which mostly have relatively high marketing costs (fig. 9).

Selected sectors	50% increase in total factor productivity in agricultural and food marketing	
	Producer price	Consumer price
	Percent change from base	
Rice	1.2	-0.8
Wheat	1.8	-0.5
Corn	2.2	-0.2
Fruit and vegetables	2.3	-1.0
Oils, fats	0.4	-2.1
Sugar	1.0	-1.8
Fibers	2.4	-0.1
Poultry and pork	2.7	0.6
Dairy products	1.9	-0.7
Food products, nec	-0.1	-4.0

Source: ERS model results.

Figure 9
**Production impacts of agricultural and
food marketing efficiency gains in India**

Percent change from base
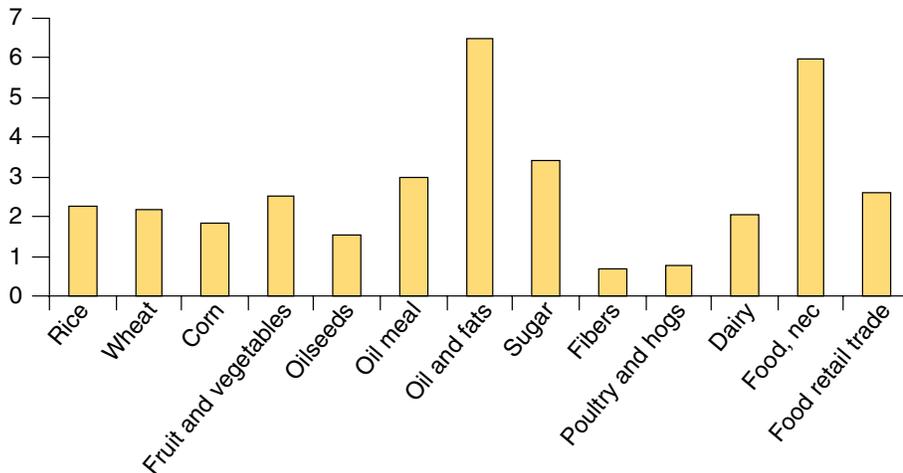
nec = Not elsewhere classified.

Source: ERS model results.

The rise in farm output associated with marketing efficiency gains further
increases India's normally substantial positive agricultural trade balance.
Agricultural exports, which include a broad array of grain, oilseed, horticul-
tural, and animal products, rise about 4 percent, whereas imports—dominated
by edible oils and pulses—fall about 1 percent. Note that these results for
trade, as well as for other variables, account only for medium-term adjust-
ments to greater marketing efficiency and not for the longer term impacts of
higher, sustained economic growth on food demand and trade.

Household Impacts:
Income and Rural/Urban Distribution

How the impacts are distributed across households hinges on how price changes affect the costs of the bundles of goods and services purchased by households and how changes in returns to land, labor, and capital affect earnings by rural and urban households at different income levels. The results indicate that all households benefit from marketing efficiency gains, which reduce consumer prices of most food items. Lower income households benefit primarily because they allocate a larger share of their expenditures to food (fig. 10). Higher income households also benefit because they tend to spend more than lower income households on foods, such as dairy products, that use larger amounts of marketing services.

Income gains tend to favor rural households and poor households in both urban and rural areas because wages rise more than do returns to capital. And, for rural households—whether low- or high-income—higher earnings are driven by increased returns to land associated with higher farm output.

The gains to rural households may be overstated and the gains to urban households understated by the model because the underlying data on marketing margins are an average of on-farm consumption, which does not incur marketing costs, and marketed consumption, which does incur marketing costs. To the extent that lower income rural—but not urban—households spend less than the average marketing costs on goods in their expenditure baskets, their estimated gains are overstated. Similarly, the impacts on higher income households, both rural and urban, are understated to the extent that they purchase products with higher-than-average marketing costs for a given product category. Although it is important to realize these potential biases in the results, the size of the estimated gains for both rural and urban low-income households suggests that the gains would remain substantial even if these data deficiencies could be corrected.

Figure 10
Effects on household real consumption of agricultural and food marketing efficiency gains in India by household type

Percent change from base
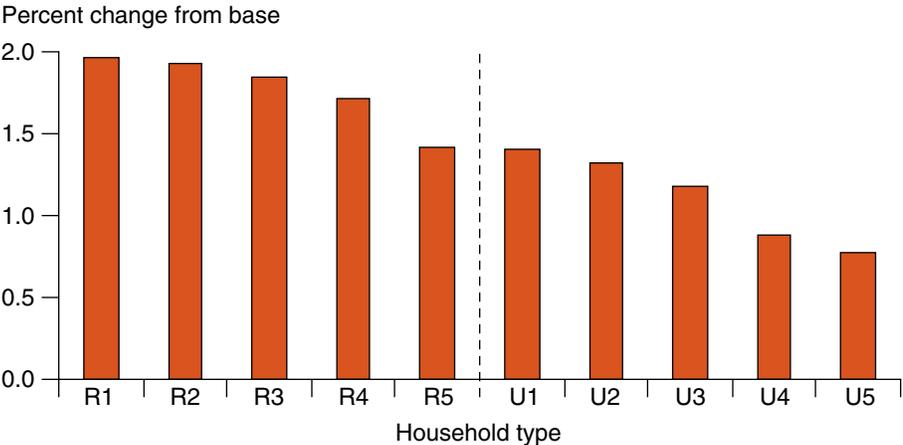
R = Rural; U = Urban; R1, U1 = Abject poverty; R2, U2 = Poverty; R3, U3 = Middle income; R4, U4 = Upper income; R5, U5 = High income.
Source: ERS model results.