

Economic Payoffs to More Unified Markets

Internationally integrated commodity, product, and input markets function more efficiently than nationally segmented markets. They also establish an environment that is conducive to growth. This occurs because of comparative advantage and increasing returns. (See box, "Fundamental Economic Forces Underlying Comparative Advantage and Increasing Returns.")

Better Exploitation of Comparative Advantages

All three North American countries possess inherent comparative advantages in commodity agriculture. Both the United States and Canada enjoy relative cost advantages in grains and oilseeds because of their abundance of fertile farmland. Mexico's strength is with high-value fruits and vegetables due to its relatively plentiful supply of labor and its semi-tropical climate. These comparative advantages are not fully exploited whenever barriers exist that inhibit trade and artificially segment the North American market.

One principal aim of CUSTA/NAFTA was to increase the efficiency of North American agriculture by making better use of continental resources. For this reason, the agreement lowered member-country tariffs and nontariff barriers to trade. These policy shifts enabled the price mechanism to generate more accurate information about relative scarcity within North American agriculture. The post-CUSTA-NAFTA rise in commodity complementarities, which link one country's import shares with its partner's comparative advantages, suggests that structural change and shifting trade patterns have benefited U.S., Canadian, Mexican, and global agriculture. (Bilateral trade complementarities present in U.S.-Canadian as well as U.S.-Mexican agricultural trade are examined later in this report.)

Realization of Increasing Returns

Market integration and trade expansion also enhance economic welfare because a more unified and enlarged market generates increasing returns which drive unit costs down as output rises. Underlying the phenomenon of increasing returns are scale economies, spillover effects of human capital, and increased use of technological inputs such as computer programs that, once created, can be used repeatedly without additional costs and that are accessible to many, but not all, producers.

National Returns to Scale and Greater Operational Efficiencies

Increasing returns attributable to scale economies are derived from both national and international returns to scale. National returns to scale result from increased plant and industry size within country borders. Notable examples of such economies occurring in North America include the enlargement of meatpacking plants in both the United States and Canada and the increased size of vegetable production and marketing operations in Mexico.

Applied research on U.S. agriculture shows that the emergence of large-scale operations within the U.S. food sector has benefited U.S. consumers by lowering retail prices. These benefits are extended to consumers in Canada and Mexico whenever the North American food market becomes more open. U.S. consumers also benefit from national scale economies in neighboring countries when continental markets become more open. For example, a greater variety of lower price fruits and vegetables is now available year-round in U.S. supermarkets as a result of NAFTA and structural change in the Mexican fresh produce industry.

Outsourcing and International Returns to Scale

Companies that outsource production abroad combine low-wage labor from one country with highly skilled human capital from another to generate international returns to scale (Ethier). The efficiency payoffs of these internationally derived returns are "over and above the stated neoclassical gains from increased specialization and exchange across countries" (Feenstra).

There are many instances of efficiency gains from outsourcing in North American agriculture. Examples include cross-border trade in various segments of the meat, livestock, and fruit and vegetable industries (Cook; Southard). U.S. textile and apparel firms provide a particularly interesting illustration of trade in intermediate inputs. NAFTA provided inducements for capital-intensive yarn spinning and weaving manufacturing firms, such as Dupont, to make foreign direct investments and to establish joint ventures with labor-intensive apparel assembly firms in Mexico. The result has been that many U.S. firms have effectively traded their managerial experience, embodied in their

highly skilled labor force, for Mexico's low-wage labor.

Spillover Effects of Human Capital

In much of North America, the "traditional food system," in which price signals are the main mechanism for allocating resources and delivering products across market stages (i.e., farm input suppliers, farmers, food processors, and retailers), has been replaced by the "new food system" (Barkema; Kinsey). The new system relies less on market prices and more on institutional innovations such as contracts, strategic alliances, and vertical integration and coordination. These innovations rely heavily on human capital (skills embodied in the workforce). This is significant because human capital generates spillover returns to society at large (Lucas).

Increased Use of Technological Inputs

Intra-NAFTA trade in high-value agricultural products is growing rapidly. This is significant because consumer prices for these products reflect marketing networks, product designs, and other technological inputs that underlie increasing returns. All that is needed for technological inputs that have productive value to gen-

erate increasing returns is a market through which goods produced with these inputs can be sold (Romer). Producers also profit from increased sales when the market is extended, provided their inputs are non rival and partially excludable (see box, "Fundamental Economic Forces Underlying Comparative Advantage and Increasing Returns," for details). Consumers also benefit from an expansion in the size of market because it allows them to choose from a wider variety of lower priced goods.

Recent developments in North American fruit and vegetable markets illustrate how the use of technological inputs, in combination with more open continental markets, have generated very large payoffs. Clearly, NAFTA, which removed obstacles that were responsible for segmentation of national fruit and vegetable markets in North America, was beneficial to society because the agreement enabled better exploitation of comparative advantages. By using contractual and institutional arrangements, suppliers throughout the produce production/marketing chain in Mexico, Canada, and the United States probably experienced increasing returns. Variable costs likely increased little, if at all, by expanding the size of the market to include all three national economies.

Fundamental Economic Forces Underlying Comparative Advantage and Increasing Returns

Comparative advantage and optimal resource use. Comparative advantage explains why societies are better off when spatial markets become more unified. More open and integrated national markets provide opportunities for additional cross-border trade. This trade enables a country to shift its pattern of production in such a way that, after exporting those goods it does not want and importing those it would like, its citizens are able to consume more without any increase in available resources. As a result, movement towards more integrated markets not only changes production patterns and increases trade, but raises national income in partner countries.

The gains from more unified market integration described above follow a one-time shift in production and trade specialization. There are, in fact, additional dynamic gains from market enlargement which follow the initial change. These other benefits arise because the more integrated market transmits increasingly accurate price signals across national borders, information that producers use to optimize resources and to justify the adoption of more profitable technologies.

Contracts, vertical integration and other institutional innovations are sources for increasing returns. Contracts and strategic alliances help control costs and ensure that the output generated is endowed with desirable characteristics. Contracts frequently stipulate the use of precise production practices and/or the use of specific inputs or input combinations. Alliances are typically designed to minimize risks and lower costs. Vertical integration occurs when upstream and downstream activities are coordinated through ownership within a single firm. Vertical integration typically leads to lower transaction costs through better coordination between upstream input supply and downstream output demand (Young and Hobbs). Coordination takes many forms, including administrative planning and management of the processes required to ensure identity-preserved supply chains for value-enhanced crops, such as wheat used to produce General Mill's Wheaties breakfast cereal, grown in Idaho under approved farming practices.

Important attributes of technological inputs. The unique characteristics of technological inputs—nonrivalry and either partial- or non-excludability—explain why their use creates positive spillovers (Romer). Once produced, technological inputs can be used over and over again without additional costs. This attribute is called "nonrivalry." Typically, nonrival goods are ideas or designs that have fixed but no variable costs because duplication can occur at essentially zero additional cost. A rival good, by contrast, can be used by only one firm or person. Moreover, technological inputs are either "non-excludable" or "partially excludable." A good is excludable if the owner can prevent others from using it.

Large-firm scale economies and possible negative fallout from increased concentration. One area of some concern about increased firm size is whether concentration leads to the abuse of market power and departures from competitive pricing (USDA, ERS Briefing Room). This is an empirical question which quantitative analyses can answer. Econometric studies of the meatpacking industry in the United States show that increased concentration has not led to the extraction of excess profits (MacDonald et al.; Persaud and Tweeten). Similar conclusions were drawn by Reed and Clark, who investigated other areas of the U.S. food system, including the fruits and vegetables sector.