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# Agroindustrialization, globalization, and international development

## An overview of issues, patterns, and determinants

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### Abstract

This paper offers an overview for a special issue on agroindustrialization, globalization, and international development. It sets out a conceptual framework for understanding the links among these three broad phenomena and then discusses emerging issues and evidence concerning the factors conditioning agroindustrialization in developing countries and the subsequent effects on employment, poverty, and the natural environment. We conclude with a research agenda. © 2000 Published by Elsevier Science B.V.

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### 1. Introduction

We believe that two sets of opportunities for enriched debate and joint work have been neglected, and that in each case, increasing interaction will be highly desirable. The first set is in the discipline of agricultural economics, where there have long been strong, distinct traditions of research on agribusiness and on international agricultural economic development. The second set is in the development debate, where advocacy and research on competitiveness and business development, and on poverty alleviation, often take place in separate camps. In both cases, the separate groups are like two adventurers following roughly parallel paths that do not cross.

The premise behind this special issue of *Agricultural Economics*, and of the conference from which this selection of papers was drawn,<sup>1</sup> is that fostering closer contact between the parties of each of the two sets above can enhance the quality of debate, scholarship, and praxis. An increasingly integrated global economy causes established agribusiness firms to look increasingly to foreign suppliers and customers in order to improve profitability. But the structural foundations of developing country agriculture often differ radically from those of OECD economies. So the agribusiness community can learn much from those

<sup>1</sup> The international preconference to the August 1999 annual meeting of the American Agricultural Economics Association, held in Nashville, Tennessee. Other papers from the preconference will appear shortly in special issues of the journals *Environment and Development Economics* and the *International Food and Agribusiness Management Review*. We draw on some of those papers in this overview and encourage readers to read those issues as well.

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working on development issues. Meanwhile, given steady long-term decline in raw agricultural commodity prices, the increasingly widespread perception is that stimulating value-added activities that build on production agriculture is a necessary condition for improving living standards among poor rural populations in developing countries. Yet there is a dearth of experience and research on development of competitive and economically sustainable agroindustrial firms in developing countries, especially in the context of profoundly changed global and domestic economic conditions. Moreover, it appears that agroindustrialization is merely a necessary, not a sufficient condition. It may accentuate prevailing inequities, deepen poverty among vulnerable subpopulations, or damage the natural environment if not induced and monitored carefully. So the development community likewise has much to learn from the agribusiness community about how to stimulate agroindustrialization of the sort that advances sustainable development objectives.

The objective of this special issue is thus not a summary of a rich literature offering definitive answers or even a comprehensive set of key questions, so much as it is to shed light on previously underemphasized topics. The nine papers that follow examine specific issues and cases in an attempt to improve our understanding of what factors condition the process and effects of agroindustrialization in developing countries. Our tasks in this introductory essay are to define terms, to present a conceptual framework for understanding the links among these three broad phenomena, to synthesize emerging issues and evidence concerning the factors conditioning agroindustrialization in developing countries and their subsequent effects on employment, poverty, and the natural environment, and to identify key areas in need of further research.

## 2. A conceptual framework

“Agroindustrialization” comprises three related sets of changes: (1) the growth of agroprocessing, distribution, and farm-input provision activities off-farm, undertaken by what we shall call “agroindustrial firms” which are called agribusiness firms in the agribusiness research literature; (2) institutional and organizational change in the relation between agroindustrial firms and farms, such as increasing vertical coordination;

and (3) concomitant changes in the farm sector, such as changes in product composition, technology, and sectoral and market structures (Wilkinson, 1995). The 1990s brought relatively rapid and intense agroindustrialization in many low- and middle-income economies. In the face of a so recent phenomenon, there are inevitably many gaps in our understanding of how and why these changes occur, and what agroindustrialization implies for development.

Fig. 1 sets out a general conceptual framework showing the “conditioners”, i.e. the factors that condition or influence agroindustrialization, and the effects of the latter on development indicators. The feedback loop among these forces begins conceptually from the leftmost column, which depicts meta-trends in both developed and less-developed countries. Population, income growth and urbanization induce global changes in consumer demand patterns, notably disproportionate growth in demand for dairy, meat, horticultural, and processed grain products, as compared to the demand for unprocessed staple foods, following Bennett’s law. Since demand for food is income inelastic, these meta-trends also fuel disproportionate growth in demand for non-food goods and services, thereby inducing rural industrialization and non-farm employment growth. Meanwhile, the meta-trend of market-oriented economic reforms, often embodied in structural adjustment programs and multilateral trade liberalization, reduces cross-border distribution costs and barriers and gives increased currency to profit-minded activities by private sector firms. This trend has fostered increasing integration of goods and capital markets around the world, linking farmers in the developing world to OECD countries’ consumers and corporations in unprecedented ways. Increased integration also raises issues about the internationalization of product standards (e.g., quality grades and food safety standards) either by means of non-tariff barriers to trade or restrictions on national sovereignty in imposing such barriers under trade accords such as North American Free Trade Agreement (NAFTA) or the World Trade Organization (WTO). Meanwhile, rapid technological change is transforming the conduct and structure of production and commerce in all sectors, and throughout the world, enhancing productivity and enabling customized production and marketing processes, all with lower transaction costs.

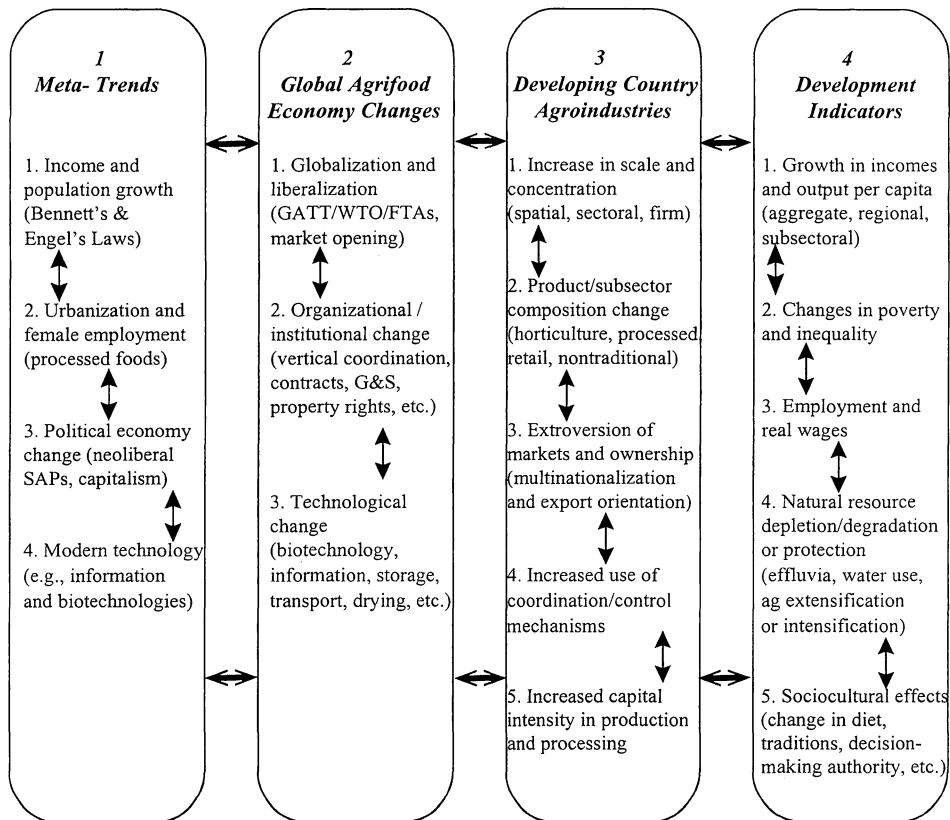


Fig. 1. Flow diagram showing links among globalization, agroindustrialization, and development.

These meta-trends foster more specific changes in the global agrifood economy (column 2). For example, while agriculture remains one of the most protected tradable sectors on earth, the Uruguay Round, various regional trade agreements, and unilateral liberalization efforts by some countries have opened domestic agrifood markets to considerable international competition. Many countries (e.g., Kenya, Malaysia) redefined national food security objectives to move away from previous strong commitments to food self-sufficiency. These changes create opportunities for agroindustry while also raising issues of competitiveness (and derivative questions of production scale, institutional arrangements, vertical coordination, and technological innovation). At the same time, there have been profound changes in the organization and institutions of the agrifood economy associated with reduced state regulation of farmers' production and marketing choices, globalization, and

the rise and spread of new contractual arrangements between processing firms and farms, of quality and safety standards, and of intellectual property rights.<sup>2</sup> These organizational and institutional changes and increased global competition in the agrifood economy are closely linked with rapid technological change, from biotechnology advances dramatically affecting farm-input industries (e.g., seed, chemicals) and the farm-to-table distribution channel, to information, transport, and robotics technologies that affect processing, storage, shipping, and inspection activities. Agroindustrialization is both an agent of and a

<sup>2</sup> We define institutions as in Hoff et al. (1993): "By an economic institution we mean a public system of rules that define the kinds of exchanges that can occur among individuals and that structure their incentives in exchange. Economic institutions include markets and property rights, systems of land and animal tenure, obligations of mutual insurance within lineage groups, and other systems of exchange that are determined by implicit contracts or social norms."

response to globalization and induced institutional and technological change.

These broader patterns inevitably affect the evolving character of agroindustries in developing countries (column 3), through changing relative factor and product prices, foreign direct investment (FDI) by global and regional companies, and the transfer of technology, organizational structures, and institutions. Among the broad patterns observed over the past decade are increased concentration in agroindustrial sectors, and an increase in the average size of processing firms and farms struggling to reap available economies of scale. The various forces already discussed have exposed developing country firms to competitive pressures from which they had been partly or wholly shielded until the past decade or two.

In part, this induces a shift in product composition toward those subsectors in which developing country producers and upstream and downstream firms hold global comparative advantage and toward which local consumers' preferences are moving: shellfish, horticultural products, processed foodstuffs, and non-staple products. They can also redefine traditional domestic comparative advantage, as where industrial production of shrimp has replaced tidal and deep sea capture methods or biochemical innovations provide cheap substitutes for natural spices (e.g., vanillin for vanilla). These changes have sharply increased the value-added share of processing and distribution within the agrifood chain, and of non-staple subsectors relative to staples, including a significant increase in several regions in non-traditional raw and processed agricultural exports. These changes often attract or are driven by rapid "multinationalization" of the off-farm portions of developing country agrifood systems. Previously semi-subsistence sectors often lacked a critical mass of private, modern input supply, and post-harvest processing and distribution service providers. Many foreign entrepreneurs and firms have stepped in to fill these gaps, often through acquisition, mergers, and joint ventures. Their presence is manifested by an increase in the share of foreign control and/or ownership of domestic firms and the markedly increased presence of multinational firms in the agrifood sectors of the most middle-income countries.<sup>3</sup> Where in the 1960s

and 1970s, entry into the sector was more commonly in the form of plantation-cum-processing-for-export enclaves by firms such as Unilever or Del Monte, the past decade has witnessed widespread developing country market entry by input supply firms such as Monsanto or Pioneer, processors like Coca-Cola and Nestle, traders such as Cargill, and retail distributors like Carrefour, McDonalds, or Walmart.

Growth in downstream components of the agrifood channel and multinationalization have set off significant changes in the agrifood system organization and institutions in developing countries. The most prominent and widespread changes include the rise of contractual exchange in the place of spot markets, and increased attention paid to product quality and safety, both in fact and as perceived by urban or foreign consumers. These same forces have sparked rapid change in off-farm technologies, often with the effect of increasing capital/labor ratios relative to traditional, more artisanal methods of processing and distributing agrifood products.

These changes inevitably affect development indicators, such as those in column 4. Technological change, renewed access to private foreign capital, new organizational forms and institutional arrangements to enhance coordination can all stimulate growth in output and income per capita. But as any introductory trade text makes plain, the aggregate net gains disguise distinct winners and losers. Regions with greater access to ports, serviceable infrastructure (e.g., roads, electricity, telephone service), and producers of non-traditional products enjoying increased global demand commonly enjoy advantageous terms of trade shifts while producers of unprocessed staple commodities in rural hinterlands too often lose out. Changing technologies and scale economies in processing and distribution, where none may have existed in production, can lead to differentiation between large and small firms and farms. The net effect on employment and poverty cannot be predicted generally but depends substantially on the ex ante spatial and sectoral distribution of the poor, the nature of the particular technologies introduced (e.g., do they substitute grading and sorting machines for human packers?), and the indirect effects created by overall economic growth. For example, it may be that labor/output ratios fall but aggregate output rises sufficiently to swamp this effect and stimulate

<sup>3</sup> The trend is less evident in low-income countries, but seems underway.

aggregate employment, while lowering food prices, thereby pushing up real wages and generating distributionally progressive growth even though the direct benefits appear to be concentrated on elite sub-populations.

Changes in the agrifood sector can significantly affect consumer welfare, by altering the quality and quantity of their diets, by increasing convenience and product variety, but also by imperiling cultural norms surrounding traditional foods or local firms. At issue is whether agroindustrialization leaves small farmers, landless laborers, or artisanal service providers behind, or even impoverishes them, and whether foreign firms or consolidated privatized industries owned by local elites crowd out small-scale rural entrepreneurs. No clear pattern yet exists as to whether the gains in opportunities and market access for small rural firms and farms and laborers outweigh the losses.

Finally, agroindustrialization, like any change in production patterns, can leave its mark on the natural environment, and thereby on the welfare prospects of future generations in the developing world. Some agroindustries can concentrate and increase undesirable effluvia, as with tanneries that have polluted Kenya's Lake Nakuru to the point that its famed flamingos are dying en masse and evacuating to other soda lakes in the Rift Valley. Increased demand for standardized products and reorganization of the input supply-to-output marketing channel can also lead to increased chemical and water use by small farmers intensifying production for markets, often with undesirable environmental consequences (Pingali, 2000), and to expansion of cultivated area into fragile forest, rangeland, or watershed margins, as discussed by Barbier (Barbier, 2000). On the other hand, agroindustrialization can reduce environmental pressures by inducing adoption of improved production technologies, fostering the transmission of consumer demand for environment-friendly production practices, or generating useful processing by-products, such as animal feeds that promote sedentarized livestock production, thereby reducing overgrazing and competition with wildlife for natural forage. As with its poverty and employment effects, agroindustrialization's environmental effects remain generally unclear, depending considerably on local conditions.

### 3. Trade and marketing issues

International trade in processed agrifood products and in fresh fruit and vegetables and oilseeds has grown rapidly over the past several decades. The growth has been uneven across LDC regions, with greatest growth in exports from Latin America, and exports and imports in Asia, but with stagnation and loss of market share of Africa (Díaz-Bonilla and Reca, 2000; Yumkella et al., 2000). Intra-regional trade has increased, thanks in part to the formation of regional free-trade areas such as Mercosur (Farina, 2000). In some cases growth in regional product markets has been accompanied by rapid growth in regional capital markets and inter-country flows, as in East Asia (Wei and Cacho, 2000).

Increasing product trade has been driven partly by trade liberalization, at the global scale via GATT and WTO and at the regional level by regional trade agreements such as Mercosur, NAFTA, and at the country level by structural adjustment programs that have emphasized currency devaluation, removal of tariff and non-tariff barriers to trade, reduction of export taxes, eased FDI restrictions, and reduced government involvement in agrifood marketing and trade.

However, the pace of policy change has varied across countries and products. For example, OECD nations have been relatively slow to reduce tariffs on processed agrifood products, thereby concentrating developing country agrifood export gains chiefly in raw, rather than value-added products. Díaz-Bonilla and Reca document the resulting pro-wealthy country bias in international agrifood trade due to persistent trade distortions.

Rising incomes and urbanization have fed a shift in diet from staples toward non-staple foods (fruits, vegetables, dairy products, meat, edible oils) and drawn more women into employment outside the home, increasing demand for processed products and restaurant food. This trend too has stimulated growth in both domestic and international agrifood trade.

Consider the case of Brazil, now the fourth largest agricultural and agroindustrial producer in the world and hub to the soybean oil and orange pulp and juice industries. The 1995 formation of the Mercosur union by Argentina, Brazil, Uruguay, and Paraguay came immediately on the heels of structural adjustment programs that substantially reduced trade distortions,

impediments to FDI inflows, and government food procurement and price control policies. Private domestic and foreign firms entered en masse, and agricultural output, external trade, and real wages grew rapidly over the last half of the decade. However, increased competition constrained profit growth and led to rapid consolidation in the agrifood processing and retail sectors, where supermarkets and fast food chains become prominent players and firms increasingly adopt Mercosur-wide strategies (Jank et al., 2000). The emergence of powerful downstream players in the agrifood chain has also affected upstream organization, manifest in the imposition of product quality and safety grades and standards and new production technologies on farmers in subsectors such as dairy (Dirven, 2000).

FDI has also been extremely important in influencing the pace and nature of agroindustrialization elsewhere (Gopinath and Bolling, 2000). LDCs currently account for over 37 and 14% of global FDI inflows and outflows, respectively (World Investment Report, 1998), up sharply over the course of the decade, particularly in South and Southeast Asia and Latin America, and especially in China. Developing country markets now represent one-quarter of US firms' FDI in food processing globally.

But while FDI can relax capital constraints for domestic agroindustrial firms, as in Argentina, Malaysia or Slovakia (Gopinath and Bolling, 2000; Gow et al., 2000), it can also foster industrial concentration and large flows of repatriated profits, as in the Brazilian case just cited. Developing country governments and firms are responding in various ways, by regulating acquisitions and joint ventures, and through strategic response. For example, Wei and Cacho (2000) note that in China international product quality standards introduced by Unilever and Nestle, each a new entrant to the Chinese market through acquisitions and joint ventures, spurred indigenous firms' adoption of international quality standards and imitation of the multinationals' management and marketing techniques. The innovating group of domestic firms grew competitive, increasing their market share at the expense of the foreign firms and of domestic firms forced out of the market. Wei and Cacho make similar observations about other subsectors in China, including beverages, instant noodles, fast food, chocolate, and snack foods.

### 3.1. Sectoral organization and institutional issues

Agroindustrialization both prompts and responds to the changing organization of agrifood sectors in developing countries and in the institutions governing production and exchange. This issue highlights several such changes.

Village-level cooperatives are resurgent, after a period of disfavor in the 1970s and 1980s, as a means of overcoming liquidity constraints, information asymmetries, and minimum efficient scales of production or marketing that can otherwise impede smallholder participation in rapidly growing agrifood sectors (Jaffee and Morton, 1995; Candler and Kumar, 1998; Holloway et al., 2000). In South Africa, some farmer cooperatives have recently listed on the Johannesburg stock exchange. Widespread contract farming has also emerged in many developing countries as a means to reduce risk and ensure throughput volumes of known price and quality for downstream processors and distributors, as documented in Africa (Little and Watts, 1994; Jaffee and Morton, 1995), Latin America (Schejtman, 1998; Key and Runsten, 1999), and Asia (Gandhi et al., 2000). Contracts may reduce coordination costs within the agrifood chain, but there is growing evidence that contracts are not necessarily the institutional panacea for small farmer involvement in agroindustrialization. Contract farming typically displaces decision-making authority from the farmer to the downstream processor or distributor, turning farmers into quasi-employees. Given high per unit costs of contracting with smaller farmers, who also commonly have greater problems meeting stringent quality and safety requirements, contract farming in some settings favors more capital-intensive medium and large farmers, lessening the income and employment impact of agroindustrialization for the poor (Key and Runsten, 1999; Reardon et al., 1999; Farina, 2000). Enforcement of contract compliance is also a sticky issue in developing countries, where contract law is less well developed and judicial systems are often less efficient or predictable. Gow et al. analyze the use of self-enforcing contractual arrangements or "internal" private enforcement mechanisms in the Slovakian sugar sector, and show its favorable effects on output and efficiency.

One reason for the rise of cooperatives and contract farming is the increased importance and changing

nature of agrifood grades and standards (G&S). Reardon et al. (2000) show that G&S have grown more numerous and influential over the past two decades in developing economies. Most G&S are established by multinational firms or consortia, less commonly by multilateral organizations, so small developing country firms and farmers are almost invariably “G&S takers.” In some sectors, such as horticulture, meat, dairy, and fisheries, G&S increasingly specify production, processing, and distribution processes rather than outcomes. Unnevehr emphasizes the growing importance of “farm-to-table” quality management systems for food safety, based on documented production practices demonstrated to prevent and control hazards (Unnevehr, 2000). But the introduction and evolution of process G&S requires investments in training, equipment, infrastructure and monitoring systems, and not all firms or governments can afford these expenses (Stephenson, 1997). The rise of G&S may therefore imply scale-biased growth in some sectors. Furthermore, G&S can create new non-tariff trade barriers, sparking serious trade disputes. Unlike conventional trade barriers, however, G&S may resolve consumer uncertainty about product quality, thereby creating trade and increasing both consumer and exporter welfare (Thilmany and Barrett, 1997).

Agglomerations of agroindustrial firms and farms are not always organized, as in cooperatives or through contract farming schemes. Sometimes clusters emerge spontaneously for various reasons, including external economies of scale, reduced transactions cost, and sharing of information, workers, and equipment (Porter, 1990; Krugman, 1991). Clusters need not be homogeneous. Palm sugar and soybean processing in Indonesia rests upon clusters of small firms (Santee and Burger, 2000), while dairy clusters in Argentina, Chile, Colombia, and Uruguay include farms of widely varying scale (Dirven, 2000). Clustering need not protect small producers, however, as Dirven documents in the cases of dairy clusters in Argentina and Chile.

Increasingly competitive and rapidly changing markets put a premium on management skills. In some developing countries, this has led to the emergence of private management service firms, as in coastal Peru, where firms exchange management services for labor supervision and land collateral in some-

thing resembling share tenancy contracts with small cotton farmers (Escobal et al., 2000). In much of the world, non-profit non-governmental organizations (NGOs) are providing such services amid growing fascination with the opportunities of “microenterprise development,” and increased demand in subsectors such as Ghanaian cassava (al Hassan, 2000). Whether NGO entry into these activities truly helps small farms and rural firms, especially when foreign donors heavily subsidize foreign NGOs, or whether they mainly crowd out indigenous private service providers nevertheless remains an open question.

Property rights regime heavily influence agroindustrialization in developing countries. Escobal et al. note that until recently agroindustrial firms could not own land in Peru (in order to force contracts with local farmers). The change in land laws has induced vertical integration by firms and land acquisition by processors. Many states have been recognizing private rights to commercial entities as well. Widespread privatization of previously state-held firms has often brought (lagged) efficiency and output gains, as Li and Rozelle (2000) document among township enterprises in China.

Finally, intellectual property rights (IPR) are a fundamental topic in sectors undergoing rapid technological change. Lesser et al. (2000) discuss the links among IPR, agricultural biotechnology, “upstream” agroindustry multinationals such as Monsanto, national research organizations, such as Brazil’s Embrapa. Licensing arrangements between public sector agricultural research organizations with elite local germplasm and multinationals offering faster access to new biotechnologies may stimulate local agricultural growth and provide needed income for agricultural ministries. But such agreements require complex institutional preparatory steps, including appropriate patenting and other IPR laws, biosafety regulations and institutional policies, and a hospitable macroeconomic environment for foreign multinationals.

### 3.2. *Technology issues*

The rapid pace of technological change is not confined to biotechnology, an area drawing increased scrutiny with respect to food safety and environmental concerns (Batie and Ervin, 2000). There have been substantial improvements in transport and storage



technologies, such as controlled atmosphere storage methods, refrigerated and faster and larger ships, and chemical applications to reduce fungus formation (OECD, 1996). Dehydration techniques for vegetables, small-scale processing machines for cassava (al Hassan, 2000), vacuum packing for milk, and other packaging technologies have also improved. These changes have sparked dramatic growth in some countries' agrifood sectors, including apples and pears in central Chile, vacuum-packed milk in Brazil, and shrimp in Ecuador.

Further upstream in the chain, the use of equipment and chemicals, in order to improve product quality and reduce labor demand and output variability, has expanded considerably in the middle-income countries over the past decade. Of course, increased chemical use remains very controversial because of adverse potential environmental effects (Dasgupta et al., 2000; Pingali, 2000). Even in low-income countries, the adoption of higher-yielding cross-bred cows has greatly increased smallholder milk output in Ethiopia (Holloway et al., 2000) and India (Candler and Kumar, 1998), demonstrating that technological change need not crowd out the poor by inducing substitution of capital for labor. Yet remarkably little is known about possible farm size biases to adoption and use of chemicals and capital inputs needed for farmers to produce crops and livestock having the quality, cost, and risk characteristics desired downstream in the agroindustrial chain. Reduced government input distribution and credit services have diminished access to these inputs by smallholders in many areas of Africa (Reardon et al., 1999) and Latin America (Schejtman, 1998) may constrain their sharing in the gains from agroindustrialization.

At first glance, the induced technological and institutional changes associated with agroindustrialization in the developing world might seem to increase capital/labor ratios and favor medium-to-large farmers over small farmers. At a minimum, increasing processed products' share in the agrifood sector implies an increase in capital/labor ratios, as Ehui and Delgado (1999) estimate in models for Africa. There is also increasing evidence, found in various papers in this special issue, of small firms and farms going out of business under the new competitive pressures.

However, three factors complicate the assessment of the likely employment and poverty effects

of agroindustrialization. First, many organizational and institutional changes (e.g., clustering, cooperatives, private management companies) explicitly foster smallholder participation in agroindustrialization. Second, an increase in prevailing capital/labor ratios does not necessarily imply that aggregate rural employment declines. If access to dynamic external markets increases, output increases may stimulate sufficient growth to increase employment and real wages, thereby contributing directly to the welfare of the poorer subpopulations in most developing countries, which tend to depend partly or wholly on wage labor income. Third, in some cases — such as Mexico's tomato agroindustry in Mexico, described by Barron and Rello (2000) — agroindustry relies on cheap labor to be competitive in global markets, and thus even large firms maintain relatively high labor-output ratios, with employment-increasing effects on poor households, as in the Mexican case.

#### 4. Conclusions and a research agenda

The pace of agroindustrialization has been nothing short of remarkable in parts of Latin America, Central and Eastern Europe and Southeast Asia over the past 5–10 years, and is apparent even in lower-income settings of Africa and South Asia. Developing economies undeniably need improved technologies throughout the agrifood production, processing, and distribution chain, skills transfer, foreign capital, and increased export earnings. So identification of those factors that help to stimulate more rapid and widespread agroindustrialization can provide valuable information to developing countries designing or reforming policies so as to ensure that they participate in the rapid changes taking place, and are not left behind.

The necessity of agroindustrialization is almost indisputable. Yet a plethora of questions remain as to how to get the right kind of agroindustrialization, the sort that stimulates employment, reduces poverty and real food prices, stimulates real wages, improves food safety, quality and consumer choice, and protects the natural environment. Too often the process of agroindustrialization leads to industrial concentration, exclusionary practices that crowd out undercapitalized indigenous firms and small farmers, substitution

of imported equipment and managers for domestic workers and entrepreneurs, enrichment of local urban elites at the expense of the rural poor, and depletion or degradation of the host country's natural resources. So the key questions surround the conditions under which agroindustrialization is most likely to yield broad-based, environmentally sustainable growth that creates wealth and improves human well-being. What are the distributional implications — within and between sectors and regions — of different agroindustrialization pathways, as well as the follow-on political economy consequences of the distributional outcomes? Does agroindustrialization bolster the domestic constituency in favor of openness to foreign trade? Does increased multinationalization of the agrifood sector suppress indigenous development of technologies appropriate to local cultures and agroecosystems? The papers in this special issue examine specific issues and cases and offer suggestive answers to several key questions. Still, much remains to be discovered.

One of the challenges lies in harmonizing language across the distinct disciplinary cultures of agribusiness and international development (Cook and Chaddad, 2000). For example, the role, if any, of spatial clustering and agglomeration effects in determining firms' competitiveness is inherently an industrial organization question. One must understand how the performance of one firm affects that of others. Yet the sort of general equilibrium effects familiar from village economy models in the development literature also lie at the heart of this particular issue. Similarly, while the development literature is replete with work on technology adoption, many of the innovations permeating agroindustrial sectors relate to improved product standards or production processes, rather than to improved inputs or discrete technologies of the sort on which the technology adoption literature focuses. Technological and institutional changes in the agrifood sectors of many developing countries are perhaps better understood using contemporary management theory than conventional production theory. Real progress will therefore depend partly on our ability to bridge the literatures and the languages of different scholarly traditions.

The other main challenge will be to build theory inductively, from the rich mass of case study evidence beginning to emerge. Such methods of theorizing are

at odds with most of our training and instincts. Yet the sheer complexity of modeling institutions, spatial arrangements, technological change, international flows of goods and capital, and general equilibrium employment and price effects limits the ability of traditional, deductive modeling to generate results robust to the fast-changing features of the agroindustrial landscape.

The phenomenon of agroindustrialization is rapidly attracting attention worldwide. The broader community of agricultural economists have much to contribute to understanding the phenomenon and harnessing its energies for good ends. The papers that follow offer some fine examples of the interesting issues and important findings just now beginning to emerge.

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## References

- al Hassan, R., 2000. Issues of response of rural producers to emerging markets for Africa's processed cassava: the case of Ghana. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Barbier, E.B., 2000. Links between economic liberalization and rural resource degradation in the developing regions. *Agric. Econ.* 23 (3), 299–310.
- Barron, M.A., Rello, F., 2000. The impact of the tomato agro-industry on the rural poor in Mexico. *Agric. Econ.* 23 (3), 289–297.
- Batie, S.S., Ervin, D.E., 2000. Biotechnology and the environment: issues and linkages. *Environ. Dev. Econ.*, in press.
- Candler, W., Kumar, N., 1998. India: the dairy revolution. The impact of dairy development in India and the World Bank's contribution. The World Bank Operations Evaluation Department, Washington.
- Cook, M.L., Chaddad, F.R., 2000. Agroindustrialization of the global agrifood economy: bridging development economics and agribusiness research. *Agric. Econ.* 23 (3), 207–218.
- Dasgupta, S., Mamingi, N., Meisner, C., 2000. Agricultural trade liberalization, and chemical pesticide use in Brazil. *Environ. Dev. Econ.*, in press.
- Díaz-Bonilla, E., Rea, L., 2000. Trade and agroindustrialization in developing countries: trends and policy impacts. *Agric. Econ.* 23 (3), 219–229.
- Dirven, M., 2000. Clustering and declustering effects of globalization: based on case studies of the milk sector in Chile, Colombia, Uruguay, Argentina, and the Netherlands. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Ehui, S., Delgado, C.L., 1999. Economy-wide impacts of technological change in the agrifood processing sectors in Sub-Saharan Africa. Paper presented at the AAEA Preconference on Agroindustrialization, Globalization and International Development, Nashville, Tennessee, August 6–7, 1999.
- Escobal, J., Agreda, V., Reardon, T., 2000. Institutional change and agroindustrialization on the Peruvian coast: innovations impacts and implications. *Agric. Econ.* 23 (3), 267–277.
- Farina, E.M.M.Q., 2000. Issues and challenges for the Mercosul food industry in the context of agroindustrialization and globalization. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Gandhi, V., Kumar, G., Marsh, R., 2000. Agroindustries for rural and small farmer development: a study of the issues and lessons from India. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Gopinath, M., Bolling, C.H., 2000. Effects of FDI in developing countries: the case of food and agriculture. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Gow, H.R., Streeter, D.H., Swinnen, J.F.M., 2000. How private contract enforcement mechanisms can succeed where public institutions fail: the case of Juhocukur a.s.. *Agric. Econ.* 23 (3), 253–265.
- Hoff, K., Braverman, A., Stiglitz, J.E., 1993. Introduction. In: Hoff, K., Braverman, A., Stiglitz, J.E. (Eds.), *The Economics of Rural Organization: Theory, Practice, and Policy*. Oxford University Press, New York.
- Holloway, G., Nicholson, C., Delgado, C., Staal, S., Ehui, S., 2000. Agroindustrialization through institutional innovation: transactions costs, cooperatives and milk-market development in the East-African highlands. *Agric. Econ.* 23 (3), 279–288.
- Jaffee, S., Morton, J. (Eds.), 1995. *Marketing Africa's High-value Foods: Comparative Experiences of an Emergent Private Sector*. Kenall/Hunt Publishing Company, Dubuque, IA.
- Jank, M.S., Leme, M.F.P., de Paula, S.P.L., Filho, P.F., Nassar, A.M., 2000. Multinationals and intra-industry concentration: the case of Brazilian agribusiness exporters. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Key, N., Runsten, D., 1999. Contract farming, smallholders, and rural development in Latin America: the organization of agroprocessing firms and the scale of outgrower production. *World Dev.* 27 (2), 381–402.
- Krugman, P., 1991. *Geography and Trade*. MIT Press, Cambridge, MA.
- Lesser, W., Schmit, T., Ruiz, L., 2000. Forthcoming. National breeding programs as technology sellers: Marketing elite germplasm for GMOs by developing countries. *International Food and Agribusiness Management Review*.
- Li, H., Rozelle, S., 2000. Saving or stripping rural industry: an analysis of privatization and efficiency in China. *Agric. Econ.* 23 (3), 241–252.
- Little, P.D., Watts, M., 1994. *Living Under Contract: Contract Farming and Agrarian Transformation in Sub-Saharan Africa*. University of Wisconsin Press, Madison, WI.
- OECD, 1996. *Export Fruit Boom from the South: A Threat for the North? Organization for Economic Co-operation and Development*. OECD Publications, France.
- Pingali, P., 2000. Environmental consequences of agricultural commercialization in Asia. *Environ. Dev. Econ.*, in press.
- Porter, M., 1990. *The Competitive Advantage of Nations*. Macmillan, London.
- Reardon, T., Rello, F., Schejtman, A., Stamoulis, K., 1999. Evaluating the employment impacts of agroindustrialization: hypotheses and illustrations from Latin America. Paper presented at the AAEA Preconference on Agroindustrialization, Globalization and International Development, Nashville, Tennessee, August 6–7, 1999.
- Reardon, T., Codron, J.-M., Busch, L., Bingen, J., Harris, C., 2000. Agrifood grades and standards in developing countries: issues of inclusion and exclusion. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Sandee, H., Burger, K., 2000. Clustered small enterprise under economic distress: the impact of the Indonesian crisis on small industry clusters, with reference to agroindustries. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Schejtman, A., 1998. *Agroindustria y pequeña agricultura: experiencias y opciones de transformación*. In: CEPAL/GTZ/FAO (Eds.), *Agroindustria y Pequeña Agricultura: Vínculos, Potencialidades y Oportunidades Comerciales*. UNO, Santiago.
- Stephenson, S.M., 1997. Standards and conformity assessment as nontariff barriers to trade. Policy Research Working Paper No. 1826. Development Research Group, The World Bank, Washington.
- Thilmany, D.D., Barrett, C.B., 1997. Regulatory barriers in an integrating world food market. *Rev. Agric. Econ.* 19 (1), 91–107.

- Unnevehr, L.J., 2000. Food safety issue and fresh food product exports from LDCs. *Agric. Econ.* 23 (3), 231–240.
- Wei, A., Cacho, J., 2000. Establishing linkages between globalization, developing country economic growth and agro-industrialization: the case of East Asia. *Int. Food Agribusiness Mgmt. Rev.*, in press.
- Wilkinson, J., 1995. Agroindústria: Articulação com os Mercados e Capacidade de Integração Socio-economica da Produção Familiar. In: CEPAL (Eds.), *Las Relaciones Agroindustriales y la Transformacion de la Agricultura*. CEPAL, Santiago, Chile.
- World Investment Report, 1998. United Nations Conference on Trade and Development, Geneva.
- Yumkella, K., Roepstorff, T., Vinanchiarachi, J., Hawkins, T., 2000. Issues and challenges for Africa in the context of globalization and agroindustrialization. *Int. Food Agribusiness Mgmt. Rev.*, in press.

