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Industrialization and Sustainable Development, Are We Ready? Discussion

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The authors in this session are to be commemorated on their attempt to integrate the bodies of knowledge of agricultural industrialization and sustainable development. Drs. Davis and Langham's broad based paper explores the domestic vrs. international markets, small vrs. large farmers, North vrs. South theory, and finishes with the unique issues of developing countries. Dr. Drabenstott's paper is primarily concerned with domestic industrialization. This paper is full of examples of how industrialization has taken place and explores the possibilities of the future. Drabenstott does not attempt to answer or to discuss the issue of sustainability. Instead he focuses on the new consumer demands being placed on firms for quick services and quality products.

The major forces influencing industrialization were described in both papers. However, they failed to define how these factors are linked. We are witnessing change as a result of several dynamic processes that are interlinked. What is clear in both papers is that Agricultural Economists are presently uncomfortable and/or unable to determine what is going on in the marketplace. Many of these farm firms have vertically and horizontally integrated supposedly to minimize risks, depending on who you listen too. However, any practicing business person will tell you that there is a lot more to this story. That is why this paper has the subtitle, "Are we Ready." Are we ready to approach these issues? If we are,

then the issue of are our current practices sustainable must be addressed.

The point is, we will have to try something different to model the changes that are occurring in our industry. As mentioned by the authors, the pure competition - static model will not estimate the decision making process of the hog producer Drabenstott talks about, or the decisions of the developing countries that Davis and Langham refer to. Our profession has to develop the tools to explore these complex relationships and move away from the comfort zone of the oversimplified assumptions.

In reviewing these papers, they can be characterized as having four driving forces for industrialization which are: technology, institutional changes, human capital and preferences, and the natural resource base. Comments are made for each group indicating if these activities are sustainable or not.

Institutional Change

The inevitability of institutional change is made apparent throughout both papers. For example, the more open markets along with increasing trade will force countries to restructure their laws and utilize their resources more efficiently to become or remain competitive internationally. This phenomenon will assist in

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reducing the use of outdated chemicals, and the use of inefficient production methods around the world, because most agricultural chemical companies produce more environmentally friendly chemicals for the industrialized countries. In addition, with the passage of GATT, laws will have to be passed so that food stuffs imported from developing countries meet industrialized country's standards. Therefore, the chemical companies will have to sell environmentally friendly chemicals everywhere. This form of institutional change will assist agriculture in becoming sustainable.

The next issue concerning laws and institutional change is intellectual property rights. A large number of the developing countries do not have sufficient laws protecting research and development. Therefore, modern technology does not flow freely to those countries. For example, Sub-Saharan Africa will not be able to commercialize their agriculture until intellectual property laws are implemented and enforced (Weatherspoon, 1994). In Zimbabwe, a major seed company recently withdrew from the country because their intellectual property laws were too weak. This is the situation for multi-national and local African firms.

Many developing countries however, do not prescribe to the concept of intellectual property rights. They believe that knowledge should be made available to them at a minimal cost because the economic development of an impoverished country benefits the world. The industrialized countries rely on the returns from research and development (R&D), and believe that if these returns are not forthcoming, then less research and development will be conducted which is a detriment to the world (Mansfield, 1993; and Maskus, 1993). The estimated overall annual loss in revenue due to pirating of U.S. technology alone is close to \$61 billion.

In the U.S., pirating of agricultural technology is not significant. The U.S. is one of the leaders in trying to convince and sometimes force other nations to abide by the conventions of the World Intellectual Property Rights Organization. However, one gets the idea from Drabenstott's paper that soon we will have designer food as we have designer clothes. The question will then be, is it worth the expense and time to seek protection

with such a faddish market? Intellectual protection may not be an option in the years to come in some markets, at least not in the present format in which property rights are given and enforced.

Technology

As urbanization continues around the world, the rural areas are released from the slash and burn type agriculture as Davis and Langham mention, but the demands for production from these areas will increase. The utilization of modern technology specifically designed to meet the needs of the ecosystems and cultural needs must be developed through new R&D.

Both papers include scale economies as an important force of change towards industrialization. Drabenstott clearly illustrates the benefits of industrialization with the hog industry's cost curve and quality control. Davis and Langham also list the bargaining power, transportation costs, greater concentration of consumers, labor specialization, genetics, and human and physical capital as creating new economies of scale.

Future savings will also come from the information superhighway. The superhighway will make it possible to reduce costs by coordinating the markets and making them more efficient. Farmers will receive price signals sooner, consumers will order directly from the farm, firm, or country. The entire agricultural marketing system will be streamlined, eliminating middle people and inefficient operations. Instead of derived demand, the firm will know exactly who is demanding what and when. The savings of natural resources and fuel is a force that will positively influence sustainability.

Human Capital and Preferences

The main driving force for change according to Drabenstott is the consumer. Consumer preferences have altered the market place to reflect easily prepared, highly processed foods. The increase in single headed households and or double income families are considered to be the primary cause (Kohls and Uhl, 1990). The idea that "I want it all and the all that I get better be good" syndrome is going to be with us for awhile. This

attitude is and will continue to make the market extremely risky for entrepreneurs.

Given the predominantly american attitude, what does this mean for international suppliers to the U.S.? More will be demanded of them as well. They too will have to develop the skills to make new products over night and begin to feel comfortable with operating with more risks. If they do not want this responsibility, as the North - South model indicates, those countries will be stuck with producing raw products and imitation goods. The capital intensive and technically superior North will import these raw products at low prices and reexport a transformed good to the South at a higher price (Krugman, 1979). The message is clear, developing countries will have to invest in human and physical capital to produce exportable specially designed final goods.

Natural Resource Base

The natural resource base imposes a growing constraint on the industrialization of agriculture. Agriculture is well on its way to becoming industrialized, but is it doing so at the expense of our environment? While pursuing my B.S. in Agronomy, it was made clear that the farmer who leases land for production usually causes the most damage to the leased land via their production techniques. The reason being, they want to maximize output regardless of the damage to the land. The same mentality appears to be rampant in many of our farmers, agribusiness firms, and countries. They make production decisions as if they were only leasing the land or space. Obviously, if one owned the environment in which they operate and produce, they would not contaminate their own water source, allow their soil to fly or wash away, or slash and burn their natural carbon-oxygen filters.

When the economics of the situation are considered, then these decisions are more understandable, but only if we leave out the costs incurred by the environment. Most of our models have not attempted to include the environment. Our

implicit assumptions were that the earth can regenerate forever. However, we now know that is not true. Davis and Langham stated that the current generation will have to sacrifice something to promote sustainable agriculture.

In reference to developing countries, they have a number of complex issues that must be dealt with concerning industrialization and sustainability. The present U.S. method of agricultural production is not environmentally sustainable. Why then do we continue to pressure developing countries to adopt our political, social, and economic structure? Davis and Langham cunningly point out that a market failure is nothing more than a policy failure one step removed. The political structure must be stable and reflect the culture in order to obtain economic growth which in turn promotes agricultural growth.

Advances in technology usually displaces labor. Developing countries need to employ more people, not find labor saving technology. For example, the World Bank received bad press because their dam projects force thousands of people to be relocated (Lachica, 1994). The culture and practices were not the only things that were lost. When the post benefits and costs were tallied, the costs far outweighed the benefits in most cases. The number of people in the world is increasing, why are we fixated on labor saving technology which creates new environmental problems? Is this really progress? Can this be sustained?

Conclusion

Economists will have to adjust quickly to be able to "say something" about the performance of markets in the next century. One approach presently being pursued at several institutions is mixing more business with economics. I believe by including the behavior of the firm and other business and accounting relationships in our structure we will create better tools to analyze the real world. Indifferent to the approach, Agricultural Economics as a field has an exciting future attempting to merge theory with an increasingly complex reality.

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