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Should We Have an Industrial Policy for Food and Agriculture?

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"Industrial Policy" is a term heard more frequently as an alternative pattern of economic or market policy. Not a term that has been important in the evolution of economic policy in this country, it has come into our attention primarily in tandem with concerns about international competitiveness and strategic planning in the public sector (Markusen and Yudken). The purpose of this paper is to describe what is meant by industrial policy and to develop scenarios that illustrate possible applications to the food and agricultural sector.

Industrial Policy—What is It?

In a list of major policy areas one would expect to find at least several of the following:

- Environmental Policy
 - Air Quality
 - Water Quality
 - Endangered Species
 - Resource Conservation
- Food Safety
- Employment
- Science and Technology
- Education
- Industrial Safety
- International Trade

These are categories of concerns around which policies and programs have been framed and implemented. In a sense, one could say they are "horizontal" policies because they relate to the same concern across many products or industries, often with little regard for impacts on vertically-related entities. Historically, we have chosen this pattern of policy. Earlier, the list was shorter—we were less concerned about several of these categories. As society has become concerned about an issue or an aspect of our economic life, we have developed a policy relating to it. Different policies, and their implementing agencies, are sometimes in conflict. A well-known example is the food processing case, in which food safety policy required a nonporous surface to enable cleaning and aseptic operation while OSHA required a porous surface to reduce the safety hazard to workers. While the interaction of various policies at the industry level is infrequently studied, it is often felt that the totality of differently-focused policies has an anti-growth effect. In addition, there is often an attitude of conflict and hostility between firms and regulators.

As our firms and industries have come into intense competition with industries in other countries, it has frequently been observed that, for our competitors, a much

more harmonious atmosphere sometimes exists between the public and private sectors. Also, it often seems that policies elsewhere may be more focused on industry growth and competitiveness concerns. We perceive that public policy takes an active role in strategic planning and positioning industries to be competitive over a long-run planning horizon. Some industries are chosen for emphasis in international trade. These industries are encouraged with public support in science and education as well as public financial support and harmonization of other potentially-restrictive policies such as worker and product safety and environmental protection. While these policies may respond to societal concerns that are similar to those in the United States, and may involve similar rationale for financial help from public agencies, they are different. They are more "vertical" in nature, with more of a common focus on growth and development of a particular industry.

Consistent with these observations we may define "industrial policy" as having the following characteristics: 1) industry focus, 2) a long-range perspective, and 3) vertical harmonization. The industry focus makes the policymakers and implementing agencies "industry advocates." This seems a bit amazing to us because we have a long tradition of playing the "watch dog" role for public agencies. Is there some fundamental reason for changing this established posture and attitude pattern of policy? Education, science and technology, or what may be thought of as investments in intellectual capital, are particularly important in the current environment of global competition. It is possible that closer cooperation between the public and private sectors will be required for success in the future.

The long-term perspective of industrial policy also brings up matters of importance

within our economic ideology. Success in global competition may require long-term investments that were much less important a half century ago. This is especially true in two areas: product quality (science and technology) and brand establishment (consumer acceptance). There is a share of world trade that involves commodities or natural resources such as petroleum, feed grains, coal and timber. Neoclassical trade models are useful in defining trade flows for these products. For this share of global competition, the principles of freely-formed trade determine the outcomes and "planning" is not required. Where global competition is increasingly in differentiated products, the pattern is different (Garcia, Ross and Padberg). Unique product attributes are important to success and long-term investments in distribution capability and advertising are required. Here, long-term policy is essential. Some of the investments, such as the education, science and technology necessary to improve product quality, are public goods. Investments in distribution and consumer acceptance must be continued in cycles during which currency values are adverse to sales as well as in periods when competition is easier. Here, industrial policy may be especially important to the success of private competition for global commerce in consumer products.

The vertical structure of industrial policy is more important than may be apparent. In endangered species policy, we have a list of species classified as endangered and others nearly endangered. We come to the policy arbitrarily—often with complete insensitivity to the effects this policy has on agriculture or industry. At present, we have no way to say which are the most important. If endangered species were a component of an industrial policy, the strategic value of alternative choices would be considered.

Looking from the environmental side, we see farm commodity policy subsidizing crop production—at some level of environmental degradation—where we do not want the crops. We subsidize other countries to buy them. The conflict between these hostile policies creates appalling waste. The subsidies for production of crops we don't need, regulations for protecting the environment degraded by this production and for subsidizing other countries to buy our over-production, cannot be seen as investment positioning us for a better future. It is a waste. There is no way to rationalize this chaos.

Policy Tendencies

For affluent countries with productive economies, the perspective for public policy appears to be quite different compared to the perspective that is quite natural for less productive countries struggling for a threshold of achievement in the vast global economy. The productive and successful system says, "We have a high standard of living; we should now give some concern to environmental protection, worker protection and consumer protection." Those who do not agree are seen as insensitive and/or greedy. This is a natural basis for horizontal policy. Alternatively, the less-advanced country says, "We must find some way to make at least one industry competitive on a global basis. It is in the public interest to arrange and adjust our set of policies across the entire policy space to this objective." This is a natural basis for vertical policy.

As the match plays out, we have the Major opposed by many Minors, each with vertical policy arrangements in one or a few industries. From the game, we can draw some observations. Major will not take vertical policy very seriously as long as her vast superiority is sufficient to win, hold

steady, or lose only modestly in a few industries. Major likes the image that comes with protecting workers, consumers and the environment, and in putting those concerns in a superior policy position to the more crass and self-serving industry concerns about survival and success. However, enough Minor gains may make a Major crisis—sufficient to at least consider the case for a vertical industrial policy of its own. Even so, it is not easy to change policy paradigms. The investment in governmental structure, skills, political capital and ideology creates a momentum not easily altered. It is certainly not a change that can be made as a tactical adjustment. It requires building a different policy ideology and pattern of implementation. Perhaps this is what is currently underway in the U.S. policy establishment. But, it is not yet clear that inducing impotence into horizontal policy brings about effective vertical policy.

The Case for an Industrial Policy

On its face, industrial policy is more activist or interventionist than our political traditions. Having an industrial advocate in government is uncomfortable. We are accustomed to making bold statements about the environment, food safety, education, science and the like (regardless of how conflicting, hostile and ineffective they may be at operating levels), rather than having these concerns balanced by an industry advocate. The issue would not come up at all if it were not for perceptions of declining U.S. market share in global competition, frequently at the gain of competitors with an apparently effective and much more developed industrial policy.

Aside from our traditional preference for horizontal policy, there may be some

difference in the intrinsic or functional characteristics of horizontal policy as compared to the vertical alternative. First, horizontal policy may simply be intrinsically hostile to industry. It may be inevitable that, as the list of societal concerns gets longer, horizontal policy stifles industry, regardless of what industry it is or how it operates. Horizontal policy may work acceptably when the list is short and when there is not intense global competition, but less well when the urge to protect everything and everybody grows and when global competition intensifies. In this case, bad results with horizontal policy could eventually drive a democracy to an alternative. Second, it may turn out successful and affluent societies have a growing preference for societal attributes not captured by a rising level of income, and a decreasing interest in industrial operations. If this is true, a democracy would find it logical to penalize industrial growth in deference to the "correct" horizontal or qualitative policy.

There may be a list of reasons that make it more difficult for Americans to embrace industrial policy than our trading partners. A great part of our political history has a "rural/small town/rugged individual" character to it. This posture, combined with perhaps the greatest ethnic diversity of any country, has led to a general distrust of political or economic power (Padberg and Love). Most of our trading partners and competitors have a history of crowded, more ethnically homogeneous societies with quite concentrated political and economic power. DeTocqueville observed that concentrated power was necessary for most countries in Europe (and Asia as well) because of hostile neighbors and border wars. Throughout the isolated economic and political history of the United States, we were allowed to enjoy the

greater elbow room we preferred (and was probably necessary in view of the great ethnic diversity). This leaves us unprepared for the closer ranks and more focused power required in industrial policy.

What can we learn from the experiences of other societies? It is easy to be confused by historical trends. As attributed to Joan Robinson, "...in economics virtually everything is true: You can find examples of both what you want to be true and its opposite. What you have to ascertain is the stronger tendency..." (quoted in Bhagwati, p. 21). The difficulty of identifying the stronger tendency associated with industrial policy was lifted up by the GAO in its study of international competitiveness, when it observed that "Competitiveness and various aspects of national business environments have been subject to much recent study and inquiry. These studies reached strikingly different conclusions based upon the same historical record..." (p. 2).

Perhaps most encouraging for Americans is the powerful trend of the past decade toward a market economy observed in the dismantling of the Soviet Union and in many developing countries. We tend to see this as an endorsement of our "position" during the decades of the Cold War. Also, this seems as a refutation of "planned industries" that industrial policy brings to mind. Sadly, it is more complex than that. To quote Jeffrey Sachs, "...centrally-planned economies collapsed due to three simultaneous crises: They were doing the wrong things, they were doing them badly, and they ran out of money." A relevant question is, does industrial policy affect—positively or negatively—the probability of doing the wrong thing or doing it badly?

Markets are great instruments to promote efficiency. But, do they do as well in promoting innovation and technical develop-

ment in an era of complex technology and long periods for development, or do they result in under-investment in intellectual capital? Are they capable of responding to inconsistencies in "horizontal" policies, or do they simply result in exploitation of externalities? Do they yield what the community judges to be a high-quality society, or do they promote income growth at the cost of other social values?

It is possible that we need more functional policy instruments to combine the efficiency of the market with the increasing complexity of innovation and development, externalities and equality without jeopardizing competitiveness or our ability to improve our level of living. Industrial policy, as we believe it to be practiced by some of our trading partners and global competitors, is a prototype that at least deserves consideration.

Criteria for Industrial Targeting

Perhaps the most fundamental question is, what industries are targeted? How is it determined which sectors, industries, and/or firms should be expanding or contracting more rapidly than if left to market forces? Critics of industrial policy often argue that public officials and government bureaucrats are not good candidates to make wise choices; they do not put at risk their own money, and they have little knowledge of how strategic decisions are actually made in the marketplace. Related questions are, What keeps the market from bringing about the desired change? and, Is industrial policy superior to repairing the market failure?

Four criteria are commonly advanced for identifying those to be targeted (Krugman and Obstfeld). Their relevance to food and agriculture, however, may be questioned.

1. Industries with high value-added per employee, the rationale being that these generate the highest boost in national income.

For food and agriculture, market forces appear to be moving in this direction despite policy that seems aimed at the opposite. In recent years the story in international commerce has been sizeable gains for value-added foods but, at best, stagnation in exports of basic commodities even in the face of substantial public policy aimed at subsidizing exports of those commodities *and* the absence of much export assistance for value-added products.

2. Basic industries that supply ingredients to numerous other industries, the rationale being a high-income multiplier from expansion in the down-stream industries that benefit from lower-cost (favored) inputs.

For food and agriculture, the expanding American role in global commerce in the down-stream (value-adding) industries has come despite policy that puts a floor under, rather than a ceiling over, the cost of some basic commodity inputs.

3. Industries with high potential for future growth, the rationale being to get a jump on competitors, that is, to create a "first mover" advantage for American industry.

For food and agriculture, public policy appears more oriented to restraining out-migration of re-

sources than encouraging in-migration; certainly so in farming. Arguably, without farm income support policies, more capital and labor would move to other sectors, including the value-adding food sector, in response to market signals. Even so, the relative share of the nation's resources vested in the farm sector continues to decline.

4. Industries that receive preferential treatment abroad as a result of other countries' industrial policies, the rationale being to "fight fire with fire."

For food and agriculture, the idea of "doing unto others" ... appears to be a way to rationalize public support to farmers more so than leveling the playing field, particularly in view of the number of countries that provide less. The French economist Bastiat wrote, "because other countries have rocks in their harbor is no reason to throw rocks in our own." Such a policy would seem to create, rather than remove, a market failure.

Thus, to the extent that U.S. policies aimed at subsidizing exports, supporting prices and farm income, and matching other countries' preferential policies for basic farm commodities can be viewed as components of an industrial policy for agriculture, market forces appear to have worked sufficiently well to overcome whatever disincentives these policies may have for the downstream, food processing and distribution industries. This offers faint evidence of

market failures, but rather testimony to market success. But, this does not tell all. Market failures do exist; failures that prevent resources from moving rapidly to sectors with the highest yields. Is industrial policy the appropriate fix?

Market Failures

Reasons for market failures include externalities and imperfect competition. Externalities mean that either costs or benefits spill over from one person or enterprise to others. When costs spill over, these are negative externalities. Water pollution is an example. When benefits spill over, these are considered positive. Copying technological innovation is an example.

Negative spillovers represent the classic externality case. They accrue due to unpriced or underpriced resources. For example, a farmer who does not bear the cost of water pollution due to pesticide runoff; a food processor who does not bear the cost of eliminating pathogens due to bacterial contamination. As a result, the farmer uses too much clean water; the food processor uses too much disease tolerance, and other users are shorted.

Conceptually, if property rights are appropriately defined, the market will correctly price such resources. But, because of the public-good nature of some resources, e.g., clean water and good health, it is often impossible or at least impractical to fix property rights. Thus, public policy intervenes—typically with horizontal policy, for example, proscription of undesirable behavior such as pesticide over-application or prescription of desirable behavior such as Hazard analysis and critical control point (HACCP) procedures for pathogen control. Numerous examples of such horizontal policies exist for food and agriculture; a

fairly sizeable institutional structure exists to create more. While these would hardly be considered components of an industrial policy, it could be argued that vertical inconsistencies in these policies have the effect of restricting resource adjustments in the sector. However, as demonstrated by Hobbs and others, firms have incentives to adopt vertical contracts as a means of bringing about up-stream or down-stream adjustment in response to horizontal policy. Thus, markets may be responding with vertical solutions in cases in which negative externalities result in horizontal policy interventions.

Positive spillovers may be more representative of the case favoring industrial policy. These arise when a firm or entity that innovates—creates knowledge or intellectual capital, for example, develops a more efficient production or distribution process or designs a product with a high ratio of desirable to undesirable attributes—does not capture full economic rents that society is willing to pay for such innovation. That is, others copy the innovation—reverse engineering is a contemporary term—without full (or any) reimbursement to the originator. Because the innovator does not receive the full stream of rents, there is an incentive to under-invest in creating such intellectual capital. Essentially, the market fails to fully protect the property rights of the investor in innovation.

The point for industrial policy is that the market results in too few resources being allocated to knowledge creation (and, more to other uses with fewer societal benefits). Therefore, policy should subsidize the generation of knowledge that firms cannot appropriate, as well as define property rights for intellectual capital that result in a larger share of rent capture by the innovator. Indeed, the food and agricultural sector has

been favored as a matter of public policy. It benefits from public investment in education and firms therein from copyright and patent protection and from income tax deductions for R&D, as do all sectors of the U.S. economy. It has also been the recipient of a substantial public involvement in targeted applied research, development and knowledge extension.

However, a substantial share of this public involvement has focused at the farm level. To the extent that the downstream, value-adding industries have been targeted it has been justified not on the basis of enhancing growth in those industries, but on creating a bigger market for farmers. Yet, vertical interdependencies throughout the sector are well understood. The relative gains achieved by the value-adding industries in global commerce may be indicative of the success these industries have had in developing vertical marketing systems to help compensate for, or benefit from, the preferential policy treatment of the farm sector. How much greater these gains would be with a vertically-coordinated policy on intellectual capital remains an open question.

A fairly recent argument for industrial targeting locates the justifying market failure in conditions of imperfect competition. Originated by economists James Brander and Barbara Spencer as a rationalization for strategic trade policy, the Brander-Spencer analysis turns on the existence of extraordinarily large scale economies relative to the size of the global market. In a nutshell, this is a case of a natural monopoly in a global context. Excess returns can be earned by the firm (and its home country) with first-mover advantage; if a second firm enters the market, both lose money. A subsidy by a second country to its firm can be set so its firm will earn positive returns regardless of

what the first firm does, but earnings for the first firm will turn negative. If this causes the first firm to quit, the excess profits are appropriated by the second firm and its home country.

The manufacture of wide-body aircraft is nearly always used as the example to demonstrate the logic of this "beggar-thy-neighbor" policy; in particular, illustrating the justification for European subsidies to Airbus. That Boeing remains in business raises some questions with the veracity of the analysis. Regardless, for food and agriculture, to assume the existence of such large scale economies seems preposterous. The more relevant imperfection in the food industries is product differentiation or other unique firm advantage (Garcia and Padberg), i.e., an outcome of investment in intellectual capital.

In the end, what is the case for industrial policy for food and agriculture? An observer of U.S. history would find many of the expected pieces of an industrial policy. We have set aside the usual anti-trust rules on behalf of agricultural producers—the cases of cooperatives and market orders. We have developed special trading rules—the cases of commodity grades and standards of identity. There have been several mechanisms developed to monitor and control environmental degradation. We have developed and encouraged the dissemination of agricultural commodity market news. We have public surveillance of practices involving food safety. A major science and education program has been established in support of agriculture. What could possibly be missing? If there is a need for an industrial policy, it would not seem to be the need for *more* policies. Rather, it is a need for a vertically-coordinated policy throughout the sector, focusing on sector rather than industry objectives. Knowledge policy—

investment in building sector-wide intellectual capital—would seem to be a logical focus.

The Effect of Industrial Policy on Market Development

Almost by definition, industrial policy invites a look at a long-term future. Analysis of future possibilities may be done by objectives or scenarios. Some of the variables are the importance attached to value-added and consumer-ready products, to new product and process technology, and international market acceptance. These require a substantial investment in intellectual capital. If we see a future for U.S. food and agriculture in which trade in basic commodities is the main event, there may be a need to plan differently than if we see a future in which value-added and differentiated goods and services are more important.

Scenario 1. Global Targeting

In this scenario, trading countries set complementary industrial policies. Each targets particular products or commodity groups. Industrial policy is highly developed. Countries invest in ambitious, long-term research and development activities covering production, processing, handling, transportation, safety and environmental aspects. Substantial country specialization results. Every trader in a targeted industry has the support of well-developed assistance programs. Trading by non-targeted industries is difficult. Small countries can play, but typically only in one or a few industries often at the basic commodity level. The highly-developed countries are more likely to invest in applied science and consumer acceptance research targeted to value-added and consumer-ready food products. Much of the coordination between the relatively

specialized industries in the various countries is the province of multinational firms.

For the United States this would probably mean shifting emphasis from farm production to food service, processing and distribution, particularly in publicly-supported research, development and education. This would represent a policy endorsement of what the market has already revealed: U.S. advantage in food service, processing and distribution technology. It would require considerable coordination among countries to avoid destructive beggar-thy-neighbor policies. Given recent multilateral endorsement of the World Trade Organization, perhaps such cooperation is not as far-fetched as it once seemed. Penalties for targeting the wrong industries would be high—both for the national and global economies. It would be at least tacit recognition of the critical role of multinational firms in global commerce. With a high degree of involvement by the multinationals in setting industrial policy in the various countries, perhaps competition among these firms would lead to sensible policy choices. For some countries, this degree of industry-government collaboration may be readily accepted. For the United States it would represent a substantial change.

Scenario 2. Unilateral Targeting of Basic Commodities

Developing countries often have some advantage in basic agricultural commodities. It is frequently easier for them to prevail in basic commodities than in value-added foods, due to the generally lower demand for both financial and intellectual capital. Thus, they tend to specialize in these commodities. But, there is also a tendency for many of the industrialized countries to support production of the basic crops, thus

contributing to an eternal world market surplus and lowering the earnings of basic commodity sectors in developing countries. The United States and other developed countries find subsidies necessary both to keep resources from leaving the basic farming industries and to sell the excess production into world markets. American farmers—and those in many other developed countries find public support essential to maintaining the value of their land—their largest asset—and use the arguments of agricultural fundamentalism to engender that public support.

This scenario is not too much different than what one observes today. Yet, the international advantage of the United States in the downstream food industries is undeniable—more than half of the world's leading food multinationals are U.S.-based. Names such as McDonald's and Kellogg's are every bit as much global as American. It *may* be that subsidized production of basic commodities has been important to the global success of the value-added industries. But, this seems hardly a convincing case. Given the international success of downstream firms, one would expect the importance of domestically-produced commodities to be reflected in market prices. Further, given that much of the global commerce by these firms takes the form of foreign direct investment, the American advantage would appear to rest more in technical knowledge (intellectual capital) than in basic commodities.

Scenario 3. The United States as Global Granary

In this scenario, world population expands faster than the ability of most countries to produce food. International food aid mechanisms are greatly expanded. Most of this originates in the highly developed,

industrial countries with a history of subsidized surplus commodity production. The United States finds a brisk and growing world market for basic food commodities. Policy focuses on the further development and application of agricultural science and on economic safety net programs for farmers. Much of the focus of American agribusiness firms is on commodity trading. Trade and market development are mostly in private hands, underwritten by concessional sales, credit guarantees and other preferential commodity trade assistance policies. Storage and handling capability is privately held, but with some public financial help for storing periodic gluts.

The major policy challenge is to harmonize the increasing environmental sensitivities in the US with significantly expanded agricultural production. It is reasonable to expect commodity export objectives to be explicitly recognized in conservation and other environmental protection policies. Even so, tensions between commodity and environmental interests will intensify. Such tensions will likely hold hostage the evolution of a clearly-defined policy that strikes a sustainable equilibrium; the goal of a vertical industrial policy for agriculture will be elusive.

Scenario 4. Scale Back U.S. Support for Agriculture

Agriculture is of minor interest in U.S. public policy. Demographic shifts and congressional redistricting have sharply dimmed the influence of agriculture in Congress. Food stamps and other food assistance programs are taken out of the agricultural budget. Farm income supports have been folded into a more general income assistance program. Formula funds

for agricultural research and education have been merged into a national program of competitive grants for the sciences. The Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) have taken on jurisdiction for conservation and food safety programs. Both commodity price supports and export assistance have been sharply curtailed.

A way must be found to position the U.S. food and agricultural sector to stand alone in the global market. The much-reduced stream of public support must be directed to achieving the complementary long-term objectives of enhanced sector productivity and global competitiveness. Reliance on a well-functioning marketing system that is robust in both its vertical and horizontal dimensions is paramount. If our current reading of market developments is reasonably perceptive, directing the limited scope for public policy to coordinated knowledge creation and technology development in both the commodity and value-adding components of the system would seem a logical choice.

As we look at the scenarios, it is probably fair to say that many in the agricultural community are most oriented to Scenario 3. This is the favorite fantasy of the typical American agriculturist. By contrast, we spend most of our time trying to deal with the problems of Scenario 2. Scenario 1 should have great appeal to the strongest proponents of industrial planning and perhaps to the large multinationals who see it as a route to market protection. It may be that parts of Scenario 4 are the most prophetic, but what appears to be the logical policy choice may also be very difficult to achieve. It is not made less important, however, for being difficult.

Conclusions

For the most part, we are all incrementalists. We see a small part of the whole picture. We become aware that something in our "part" could be improved. We fix it. We look for the next improvement. This is true in science, in government, in the market and in many aspects of our professional and personal lives. From time to time, there is a need to step back and take a holistic view of events. Since the early 1970s, we have been adjusting to an economy that is more globally interactive. We take into that a domestic policy paradigm designed for the developing American frontier in times of economic isolation. Many of us have a lot of respect for that system and the endless adjustments and improvements that have been made to it. It is time to look carefully at what is needed to make the policy paradigm fit the globally-interactive economy.

Industrial policy can be a means of developing a sensible approach to integrating the U.S. and global economies. We should be careful, however, to focus our discussion of industrial policy on those things that cannot otherwise be done well. Those appear to be the things resulting from market failures. Arguably, if the market fails, the first line of action should be to fix it. In the areas in which it cannot be fixed—our analysis suggests the uniqueness of intellectual capital—policy intervention may be the appropriate response. The bottom line: Enhancing intellectual capital throughout the food marketing system may be the most effective market development policy.

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