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Research Review

INDUCED INSTITUTIONAL INNOVATION

by Vernon W. Ruttan*

The interpretation of technical and institutional change as endogenous, rather than exogenous, to the economic system is a relatively new development in economic thought. In a book published in the early seventies, Hayami and I demonstrated that technical change in agriculture had been induced along an efficient path that was consistent with physical and human resource endowments and relative factor prices (5)¹. The fact that much of the technical change had been produced by public sector institutions turned our attention to the problem of institutional innovation. Binswanger and I, along with several colleagues, have further refined and tested the theory of induced technical and institutional change (1, 13). My purpose here is to summarize our theory.

INSTITUTIONAL INNOVATION DEFINED

A distinction is often made between institutions and organizations. Institutions are usually defined as the behavioral rules that govern patterns of action and relationships. Organizations are the decisionmaking units—families, firms, or bureaus. This appears to be a distinction without a difference. What an organization accepts as a rule is the product of tradition or decision by another organization—a court, a labor union, or a religion, for example.²

We have found it useful to define the concept of institution broadly to include that of organization. Institutional innovation refers to change in the actual or potential behavior or performance of existing or new organizations, in the relationship between an organization and its environment, or in the behavioral rules that govern the patterns of action and relationships in the organization's environment.

This definition is sufficiently comprehensive to include changes in the market and nonmarket institutions which govern product, and factor market relationships, ranging from the organized commodity market institutions to the patron-client relationships in traditional societies. It includes changes in public and private organizations designed to discover new knowledge and disseminate it to farmers, to supply inputs such as water, fertilizer and credit, or to modify market behavior through price support, procurement, or regulation. It encompasses changes which occur as a result of the cumulative effect of the private decisions of individuals as well as those which occur as a result of group action.

SOURCES OF DEMAND FOR INSTITUTIONAL INNOVATION

The demand for institutional innovation may arise out of the changes

in relative factor endowments and relative factor prices associated with development. Douglass C. North and Robert P. Thomas (11, 12) explain the economic growth of Western Europe between 900 and 1700 primarily in terms of changes in the institutions governing property rights. These institutional changes were, in their view, induced by the pressure of population on increasingly scarce resource endowments. Theodore W. Schultz (16), focusing on more recent economic history, has identified the rising economic value of man during the process of economic development as the primary source of institutional change.

The suggestion that changing resource endowments and changing factor price ratios induce institutional innovation is consistent with contemporary experience in developing countries. In Thailand, the ruling elite shifted its major economic base from property rights in man to property rights in land as land prices rose relative to the price of labor in the latter half of the 19th century (4). Patron-client obligations were modified in favor of tenants and landless laborers in Indonesia between 1868 and 1928, a period of generally rapid economic growth. Since the late twenties, land prices there have risen relative to wage rates and the balance has again shifted in favor of land owners (19). Rising land prices associated with higher yielding rice varieties and increased population pressure in the Philippines are inducing changes in land tenure and harvest sharing arrangements. Farmers who acquired leasehold and security of tenure rights under the land reform are now finding it profitable to sublease part of their land under share tenure arrangements. Both owners and tenants are requiring laborers to carry out weeding operations to establish their right to share in

hand.³ The extreme example is language, in the growth and changes of which deliberate action hardly figures, but law is in varying degree of the same kind. The other type is of course the deliberately made, of which our Federal Reserve System and this (American Economic) Association itself are examples. With age, the second type tends to approximate the first" (7, p. 51).

*Professor, Department of Agricultural and Applied Economics, University of Minnesota.

¹ Italicized numbers in parentheses refer to items in References at the end of this report.

² According to Frank H. Knight, "the term 'institution' has two meanings. One type may be said to be created by the 'invisible

The suggestion that changing resource endowments and changing factor price ratios induce institutional innovation is consistent with contemporary experience in developing countries

harvest operations (9)

New income streams result from the efficiency gains associated with technical change or improvements in institutional performance. The partitioning of these income streams among factors of production and among social or economic classes is a major source of institutional innovation. According to the Ricardian model of distribution, the gains would flow to owners of the factors with relatively inelastic supplies. However, the primary function of capturing new income streams by the suppliers of inelastic factors—the factors that constrain growth—is establishing a claim on the increased production. As a result, advances in technology can prompt attempts to redefine property rights or change the behavior of market institutions so as to modify the partitioning of the new income streams. Much of the history of farm price support legislation in the United States, from the mid-twenties to the present, can be interpreted as a struggle between agricultural producers and the rest of society to capture the new income streams resulting from technical progress in agriculture.

The demand for institutional change may also shift because cultural endowments change. Even under conditions of unchanging demand, however, institutional change may arise from improvements in society's capacity to supply institutional innovations—that is, as a result of factors which reduce the cost of institutional change.

SOURCES OF SUPPLY OF INSTITUTIONAL CHANGE

Neither the institutionalist nor analytical schools in economics have adequately addressed the issue of the

supply of institutional innovation. The older institutional tradition treated institutional change as primarily dependent on technical change. There is a tendency within modern analytical economics either to abstract from institutional change or to treat it as exogenous. Neither North, Thomas, nor Schultz, whose insights assisted us in our theory building, has suggested a theory of the supply of institutional change.

The sources of institutional and technical change are similar. Just as the supply curve for technical change shifts as a result of advances in knowledge in science and technology, the supply curve for institutional change shifts as a result of advances in knowledge in the social sciences and related professions (law, administration, social services, and planning).

For example, research leading to quantification of commodity supply and demand relationships can contribute to more efficient supply management, food procurement, and food distribution programs. Research on the social and psychological factors affecting the diffusion of new technology can lead to greater effectiveness of agricultural credit and extension services. Research on alternative land tenure institutions or on the organization and management of group activities in agricultural production can increase equity in access to political and economic resources and increase resource productivity in rural areas.

Institutional change is not, however, primarily dependent on formal research. Technical change occurred prior to the invention of the research laboratory or experiment station. Similarly, the innovative efforts of politicians, bureaucrats, entrepreneurs, and others may cause institutional change.

The timing or pace of institutional innovation may be influenced by external contact or internal stress. If we were satisfied with the slow pace of technical and institutional change that characterizes trial and error, we would not institutionalize research in either the natural or the social sciences.

TOWARD A THEORY OF INDUCED INSTITUTIONAL CHANGE

A persistent dualism pervades much of the work of economists and other social scientists who study the historical and institutional dimensions of development. Either institutional change depends on technological change, or technological change depends on institutional change (1, pp. 328-333). Dissent over priority is unproductive. Technical and institutional change are highly interdependent and must be analyzed together.

The sources of demand for technical and institutional change are essentially similar. A rise in the price of labor relative to other factors induces technical changes designed to permit the substitution of capital for labor. It simultaneously induces institutional changes which enhance labor productivity and expand the worker's control of employment conditions. A rise in the price of land induces technical changes designed to release the constraints on production. This price rise also induces institutional changes that lead to redefinition of property rights in capital and land.

The new income streams generated by technical change and by increased institutional efficiency alter the relative demand for products and encourage more profitable innovations. The new income streams also induce

further institutional changes designed to alter the distribution of income

The sources of *supply* of technical and institutional change are essentially similar too. Advances in knowledge in science and technology reduce the cost of new income streams generated by technical change. Similarly, advances in knowledge in the social sciences and related professions reduce the cost of the new income streams generated by improved institutional efficiency.

A large body of literature in economics on institutional change exists, but the radical and reformist thrust of much of it has impeded analytical considerations. When positive analysis has been applied to the issue of institutional change, it has often focussed on such grand themes as revolution rather than the less dramatic incremental changes in institutional performance or the gradual cumulation of institutional innovations.

The theory or model of induced institutional innovation can produce testable hypotheses regarding (a)

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a successfully functioning and efficient economy consists of its natural resources and the people who use them, per capita income and therefore levels of living are resultants of the ratio between these two factors. This ratio can be changed in the long run only by producing economically more valuable products of resident natural resources and dividing the income from them among fewer people.

Carl C Taylor
AER, Vol IV, No 1,
Jan 1952, p 26

alternative patterns of institutional change over time for a particular society and (b) divergent patterns of institutional change among countries at a particular time.

This theory requires clarification of the conceptual relationships among resource endowments, cultural endowments, technological change, and institutional change as they relate to agricultural development. The theory also calls for careful testing of those relationships against past and present experience. However, the methodology available for testing the induced institutional change hypothesis is not yet so rigorous as the econometric tests that confirm the strength of the induced technical change hypothesis.

Case studies provide an important method for testing the hypothesis. As our knowledge of the economic forces conditioning the rate and direction of institutional change improves, we will likely face policy issues similar to those in the areas of induced technical change. For example, price distortions bias current technology choices. The distortions also affect the availability of future technologies. Downward movements in the wheat-fertilizer or rice-fertilizer price ratio have delayed the development of fertilizer responsive wheat and rice varieties by more than a generation in some countries. In several countries, exchange rate bias and direct subsidies have caused premature mechanization. These market distortions also bias the direction of institutional innovation and change.

As a next step, we need to identify and describe economic and political markets which turn latent sources of demand and supply of institutional change into effective innovations. These forces frequently

operate through relatively imperfect or poorly organized markets or through nonmarket channels. Resources that shift the demand and supply of institutional change are distributed unequally among individuals and institutions.

This brief introduction cannot explore these issues in greater detail. In *Induced Innovation: Technology, Institutions, and Development*, we have tried to explore some ways in which economic and political market structure affect the demand for and supply of institutional innovation and bring about actual change (I, pp 342-357).

Neither technical nor institutional change can be treated as entirely endogenous to the economic system. There is an autonomous thrust toward the accumulation of knowledge. Nature imposes constraints on what can be discovered. Changes in the evolution of ideas influence the path of institutional change. We reject the view that human activity can be partitioned neatly into distinct sets of "economic" and "noneconomic" activity. Rather, both economic and noneconomic sources of behavior may condition any dimension of human activity. Some of the goals that societies set are not achievable immediately through any combination of technological and institutional change. Thus, technical and institutional change cannot be fully explained by resource endowments.

No general theory of institutional innovation or economic development, that would have operational value, is feasible. It will be sufficient if we can demonstrate that changes and differences in resource endowments, reflected through either market or nonmarket forces, do influence the direction of technical and institutional innovation.

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A NEW SET OF SMALL-FARM GUIDELINES

By David Brewster and Thomas A. Carlin*

Secretary Bergland has stated that it is USDA's policy "to encourage, preserve and strengthen the small farm as a continuing component of American Agriculture." The Department, he said, will provide assistance "which will enable small farmers and their families to expand the necessary skills for both farm and nonfarm employment to improve their quality of life."¹ The Secretary has also established a Policy Committee on Small Farm Assistance that includes the Assistant Secretaries and the Director of Economics, Policy Analysis, and Budget, Assistant Secretary Alex Mercure serves as Committee Chairman.

The new small farm policy committee has directed that the following criteria be used to identify those families aided by USDA's small farm effort. The families so designated should

- Operate farms by providing most of the labor and management
- Have total family incomes from farm and nonfarm sources below the median nonmetropolitan family incomes in their States
- Depend on farming for a significant portion, though not necessarily a majority, of their incomes

About 52 percent of all U.S. farm families had incomes below the median nonmetropolitan family level in 1975 (table). Most of these families

lived in the South and North Central regions.

These guidelines depict a group whose members share a problem that distinguishes them from other farm families—moderate to low income. The criteria imply two conclusions about the Department's small-farm policy and research that have been noted before.² First, the appropriate unit of concern is the family, not the farm. Second, small-farm programs would develop human resources and both farm and nonfarm income opportunities would receive attention. Thus, the guidelines define a target group, a policy problem, and a framework within which to address that problem.

As a policy tool, the guidelines serve well. As an analytical concept, however, they are deficient regarding the requirement that small-farm families should depend on farming for a "significant" share of their incomes. Being a subjective notion, "significant" is difficult to quantify. Leaving its precise meaning up to individual program managers could cause uncertainty about the families encompassed by the small farm guidelines. Some managers might interpret "significant" to mean 40 to 50 percent, whereas others might choose a much lower figure. Such disparity would cloud any profile that might be drawn of the group served and would likely hinder analysis of programs based on the recommended criteria.

We propose that, at least for statistical purposes, families covered by the guidelines should derive a designated portion of their income from farming operations. While the choice of a percentage is arbitrary, we suggest that it be set at 10 percent—a figure roughly equal to the total nonmetropolitan income accounted for by farm earnings since 1970. In other words, to meet the Assistant Secretaries' criteria, families would be required to have incomes from farming that, at a minimum, are as significant to them as farm earnings are generally to the greater nonmetropolitan population.

For many of the farm families with incomes below the median nonmetropolitan family level in 1975, farm income is a minor part of total family income. Interpreting "significant" to mean that at least 10 percent of family income comes from farming would reduce the number of farm families included in the new policy effort to about 38 percent of all farm families. (This percentage includes low income families whose farm expenses exceed their farm sales.) The resulting set of small-farm guidelines would be suitable for analysis as well as policy.

The Department's new definition

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It is desirable for the creative minds to be protected from the buffeting that comes from the overuse of red tape but they are being buffeted by administrative problems of their own creation.

William T. Wolfrey
AER, Vol. IV, No. 1,
Jan. 1952, p. 24

*David Brewster is an historian with the National Economics Division and Thomas A. Carlin is an economist with the Economic Development Division, ESCS.

¹Secretary Memorandum No. 1967 "Assistance to Small Farm Operators," Jan. 3, 1979.

²Brewster, David "Perspectives on the Small Farm." *Small Farm Issues: Proceedings of the ESCS Small Farm Workshop, May 3-4, 1978* (forthcoming), and Lewis, James A., and Peter Emerson "A Note on Small Farms." *Agr. Econ. Res.* Vol. 30, No. 4, Oct. 1978, pp. 42-43.

We propose that, at least for statistical purposes, families covered by the guidelines should derive a designated portion of their income from farming operations

differs substantially from the older definition of a small farm as any operation with less than \$20,000 in annual agricultural sales. The older definition emphasizes the farm business as the primary policy concern. It is so broad that it fails to describe unique problems. The farms, so defined, account for nearly three quarters of the Nation's total. Their operators tend to be slightly older and less well educated than other farmers. But as Lewis, Larson, and Emerson have shown, farmers in the under \$20,000 sales class share little else in common.³ Some live in poverty yet most do not. Nor do most depend primarily on farming for their incomes. They engage in all types of crop and livestock production. They include in their ranks both white and minority operators. Except for their low agricultural sales, they exhibit much the same characteristics as the general farm population.

Because of its convenience, the \$20,000 sales definition has been widely cited and has sometimes been misconstrued as officially established by the Department or the Census Bureau. But use of the definition is required by statute only in connection with certain research and extension programs authorized by the Rural Development Act of 1972, as amended. Apart from those programs, the Department is free to develop alternative guidelines to direct services to small scale operators and their families.

³ Larson, Donald K., and James A. Lewis. "Small Farm Profile." *Small Farm Issues: Proceedings of the ESCS Small-Farm Workshop* May 3-4, 1978 (forthcoming).

Farm families with income below nonmetropolitan median family income, by region, 1975*

Region ¹	Farm families		Proportion with incomes below median non-metropolitan family income
	Total	Incomes below median non-metropolitan family income	
	Thousands		Percent
Northeast	131	71	54
New England	38	25	66
Middle Atlantic	93	46	49
North Central	976	483	49
East North Central	409	190	46
West North Central	567	293	52
West	249	106	43
Mountain	112	55	49
Pacific	138	51	37
South	844	482	57
South Atlantic	241	144	60
East South Central	301	167	55
West South Central	302	171	57
United States	2,200	1,142	52

*Estimated

¹New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. Middle Atlantic: New Jersey, New York, and Pennsylvania. East North Central: Illinois, Indiana, Michigan, Ohio, and Wisconsin. West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia. East South Central: Alabama, Kentucky, Mississippi, and Tennessee. West South Central: Arkansas, Louisiana, Oklahoma, and Texas. Mountain: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. Pacific: Alaska, California, Hawaii, Oregon, and Washington.

Source: U.S. Bureau of the Census, *Current Population Reports*.

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THE FOOD STAMP PROGRAM AND THE PRICE OF FOOD

By Mike Belongia and William T. Boehm*

The Food Stamp Program (FSP) provides additional "food buying income" to low income households. It allows participating households to purchase nutritionally adequate diets through regular market channels. Prior to the passage of the Food and Agriculture Act of 1977, all FSP participant households of a given size received the same total value of coupons. The purchase requirement, the amount paid to receive the stamps, depended mainly on the household's earned income. The difference between what a participating household *paid* for the coupons and the value *received* in food buying income represented the addition to purchasing power, or "bonus." In fiscal year 1977, the value of the bonus exceeded \$4.3 billion. The 1977 act eliminated the purchase requirement.

Questions have arisen about the FSP's effectiveness in improving the nutritional status of recipients' diets.¹ Questions also have been asked about the effect, if any, of the transfer of food-buying resources on prices.

Some have argued that the program represents a "hidden tax"—higher income households not only pay for the resource transfer directly, but pay indirectly through higher food prices. In this note, we report research on the FSP's *time related* influence on the overall price of food and on prices of selected commodity groups. The FSP, results indicate, has had a statistically significant, positive, but small influence on food prices generally.

RESEARCH PROCEDURES

The bonus is most appropriately treated as a segmented increase in participants' income, rather than as a decrease in the prices participants pay for food.² If the supply of food is assumed to be inelastic, increases in the quantity taken from the market tend to put upward pressure on prices. The extent of the price or quantity impact will depend upon the size of the shift in demand, the income and price elasticities of demand, and the price elasticity of supply.

A set of single equation models—one for each major food commodity group—was developed to isolate the effect of the bonus on the price of food. Factors thought to be responsible for shifting either demand for or supply of the foods were included. Parameter estimates were obtained using ordinary least squares regression. The Consumer Price Index (CPI) for each of the groups was the dependent variable.

The models estimated were

- 1 $CPI(\text{all food})_t = f(Y_t, B_t, M_{t-1}, FP_{t-1}, Z),$
- 2 $CPI(\text{meats})_t = f(Y_t, B_t, L_{t-1}, G_{t-1}, M_{t-1}, Z),$
- 3 $CPI(\text{cereals and bakery products})_t = f(Y_t, B_t, G_{t-1}, M_{t-1}, Z, R),$
- 4 $CPI(\text{dairy})_t = f(Y_t, B_t, D_t, DS_t, M_{t-1}, Z)$

where

- CPI_t = Consumer Price Index for the relevant food commodity in quarter t as reported by the U.S. Department of Labor,
- Y_t = Real disposable per capita personal income, 1972 dollars,
- B_t = Real per capita food stamp bonus, 1972 dollars,
- FP_{t-1} = Index of prices received by farmers,
- L_{t-1} = U.S. total meat production, in millions of pounds,
- G_{t-1} = Quantity of all grain stocks, in millions of short tons,
- M_{t-1} = Index of food processing and marketing costs,
- D_t = Milk production, in millions of pounds,
- DS_t = Dairy stocks, in millions of pounds,
- Z = Zero-one variable indicating the quarters that national price controls were in effect beginning in August 1971,
- R = Zero-one variable indicating unusual foreign grain sales in 1973-74.

Quarterly data were obtained from secondary sources. The period studied extended from July 1970 to June 1977, during which the CPI for all food increased 64.1 percent from 115.8 to 190.0 (1967=100). Price levels for each of the commodity groups increased about the same amount but varied substantially more quarter to quarter. The total value of bonus stamps issued per quarter increased from \$314 million in 1970 to a high of \$1,392 million in the first quarter of 1976. The issuance in spring 1977 was \$1,311 million. FSP participation increased from 6.9

*Mike Belongia and William T. Boehm are agricultural economists with the National Economics Division, ERS.

¹ Sullivan, Dennis H. "A Note on Food Stamp Reform," *Am J Agr Econ* Vol 58, No 3, Aug 1976.

² Southworth, Herman M. "The Economics of Public Measures to Subsidize Food Consumption," *J Farm Econ* Feb 1945, and Sullivan, Dennis H. "A Note on Food Stamp Reform," *Am J Agr Econ* Vol 58, No 3, Aug 1976.

The FSP has not noticeably increased food prices. Significant increases in the percentage of the total market influenced by the FSP could exert more noticeable upward pressure on food prices.

million persons per month in 1970 to more than 19 million in 1976. Participation in 1978 averaged about 16 million persons per month. Mean values for all variables appear in table 1.

RESULTS

The models explained a statistically significant proportion of the variability in food prices (table 2). No evidence was found of any major problem with intercorrelation among the independent variables. Production variables were inversely related to price. Increases in real disposable per capita income were associated with increases in price.

The bonus food stamp variable is significantly different from zero at the 99-percent level in all models but dairy. Results of the all food model indicate that a 1-percent increase in real per capita bonus would increase the CPI for food by

less than 0.07 percent. This change amounts to only 0.14 points on the price index.

The coefficient estimates for bonus in the meats and in the cereal and bakery equations are larger than in the all foods model. This implies that, given an increase in real bonus other things being equal, there will be a proportionally greater impact on prices for these components than on food prices in general.

The bonus coefficient was smaller for dairy than for grain and meat. First, low income households tend to allocate a greater percentage of food expenditures to the cereal and bakery products group than do higher income households. Second, a relatively large proportion of the food stamp households live in the South where dairy product purchases are relatively low.³ Finally, prices of

dairy products are influenced by Government price support and marketing order provisions. In such cases, production—rather than price—adjusts to changes in market forces.

CONCLUSION

The FSP has not noticeably increased food prices. Currently, food purchases with bonus food stamps account for little more than 2 percent of all food purchases. USDA estimates that the present program adds about \$2 billion (less than 1 percent) to food sales. Significant increases in the percentage of the total market influenced by the FSP could exert more noticeable upward pressure on food prices.

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³ Boehm, William T. "The Household Demand for Major Dairy Prod-

Table 1—Means and standard deviations of variables included in the models, July 1970 to June 1977

Item	Unit	Mean	Standard deviation
CPI all food	1967=100	148.13	27.74
CPI meat, poultry, and fish	1967=100	150.78	27.07
CPI cereals and bakery	1967=100	144.96	32.48
CPI dairy	1967=100	138.13	23.26
Y	1972 dollars	995.21	43.31
B	1972 dollars	3.29	1.10
L	Million pounds	9,366.30	530.79
G	Million short tons	94.91	45.52
D	Million pounds	29,449.71	1,858.62
DS	Million pounds	14,547.00	3,446.00
FP	1967=100	1567.33	33.30
M	1967=100	148.55	30.68

Table 2—Results of the parameter estimation

Dependent variable	Number of observations	Constant	Independent variables						
			Y_{dt}	B_t	M_{t-1}	Z	FP_{t-1}	L_{t-1}	
CPI_{food}	27	1.53	0.027 ¹ (1.04)	3.046 (2.13)	0.489 ³ (8.82)	-2.834 ² (-2.12)	0.250 ³ (7.46)	-	
CPI_{meat}	27	-113.69	351 (6.00)	14.695 ³ (4.09)	-0.77 (-48)	-4.728 (-1.37)	-	-0.013 ³ (-4.89)	
CPI_{grain}	27	92.75	-0.84 ² (-2.10)	14.825 ³ (6.00)	565 ³ (5.25)	-4.422 (-1.79)	-	-	
CPI_{dairy}	27	-4.237	0.74 (1.76)	4.647 (1.71)	408 ² (3.36)	-3.920 (-1.46)	-	-	
	Number of observations	Constant	Independent variables						
			G_{t-1}	R	D_t	DS_t	R^2	DW	F
CPI_{food}	27	1.53	-	-	-	-	0.99	1.63	751.34
CPI_{meat}	27	-113.69	-0.024 (-86)	-	-	-	96	2.12	78.64
CPI_{grain}	27	92.75	0.29 (1.49)	14.822 ³ (7.13)	-	-	99	2.22	253.78
CPI_{dairy}	27	-4.237	-	-	-0.0007 (-1.21)	0.001 ² (2.61)	96	1.05	95.77

¹ Values in parentheses are *t* ratios ² Significant at the .05 level ³ Significant at the .01 level

DISTORTIONS OF AGRICULTURAL INCENTIVES

Theodore W. Schultz, editor, Indiana University Press, Bloomington, Ind., and London, England, 1978, 353 pages, \$12.95

Reviewed by Lyle P. Schertz*

The agricultural economics profession has a long tradition of analyzing conflicts among political and economic interests. *Distortions of Agricultural Incentives* states that the outcome of these conflicts in low-income countries has distorted economic incentives in ways that suppress farmers' economic opportunities. The most intriguing of the many secondary themes to this reviewer is that although equity is often used to justify the political decisions causing the distortions, the distortions decrease equity.

People who judge that producer prices in many countries are lower than they should be, as I do, will find comfort and support in this book. Yet those who judge, as I do, that agricultural economists should give more attention to distribution issues will find that this book reinforces their earlier conclusions.

The book includes 22 papers presented at a 1977 workshop. The 22 authors have considerable experience with development and trade problems of low-income countries. Only one author, however, comes from such a country. Half the authors are associated with universities in North America. Four are members of U.S. institutions, such as foundations and the Federal Government. Three work in international research institutes. The others are associated with the World Bank, the British Government, or the Australian National University.

The book reflects the wisdom and influence of Theodore W. Schultz, organizer of the conference and editor of the publication. There are six parts

- 1 Constraints on Agricultural Production
- 2 Resources and Environment
- 3 Distortions in Incentives
- 4 International Markets
- 5 Agricultural Research, Education, and New Institutions
- 6 Quest for Equity

Authors of part 3, "Distortions of Incentives," the largest, devote major attention to price distortions. In addition, David Hopper reviews many government nonprice decisions which have affected production and marketing efficiency. Keith Finlay's comments illustrate issues related to the transfer of technology among scientists in different countries. Randolph Barker points up the importance of public decisions on public investments. Martin Abel reminds us that the process of reducing and eliminating distortions is not continuous. He emphasizes the importance of developing analytical capability to respond to situations amenable to policy change. Other parts of the book, such as the one focused on research, provide important perspectives of forces that influence decisions distorting agricultural incentives.

Implicitly, "distortions" are taken by most of the authors to mean deviations from international trade prices. Schultz, however, avoids saying that international prices should be the standard for the measurement of distortions. Instead, he points to conditions where "an optimum economic incentive provides the information that leads producers to allocate resources in ways that result in a maximum production that will clear the market at the price that maximizes the utility of consumers."

Two aspects of the book merit special mention: the meaning of

distortions and the concept that these have been inconsistent with the realization of greater equity. There are limits to how far even a task master as superb as Ted Schultz can push contributors. They do not make his concept of distortions operational. Sir John Crawford appropriately asks "distortions from what?" He concludes that most of the authors use world prices. Yet, as he points out, international prices are obviously affected by all sorts of activities directly applicable to trade—including tariffs, levies, and export subsidies. Domestic policies in developed and developing countries that affect production, consumption, and prices also influence international trade and prices.

Apart from Sir John, D. Gale Johnson is the only author who deals with the appropriateness of international prices as a standard. He recognizes that international prices are not necessarily fair nor equitable nor do they always reflect underlying conditions of supply and demand. What he emphasizes, too many of us overlook. These prices are reality! And, therefore, such prices reflect alternatives and opportunities realizable by countries to the extent that they are involved in world trade.

The possible inconsistency of distortions and equity is an important issue for our profession. Schultz argues "that economic theory and evidence tell a consistent story about the adverse effects of distortions in incentives on agricultural production and on welfare." Gilbert Brown similarly states "My hypothesis is that agricultural production, income distribution and economic growth would all benefit from reduction or elimination of distortions that reduce agriculture's domestic terms of trade."

*The reviewer is an economist with the National Economics Division, ESCS

Two aspects of the book merit special mention the meaning of distortions and the concept that these have been inconsistent with the realization of greater equity

The authors confirm the postulated effects of distortions on production, but the postulated effects of distortions on welfare and income distribution are not treated in depth empirically. I would like to have seen a closer scrutiny of the wording of this proposition and a closer analysis of the supporting evidence. If supported, the political decisions leading to the distortions will ultimately be exposed as a rip-off of the poor. Such exposure might do much to bring about different decisions. On the other hand, if the empirical evidence indicates a mixed record—as I suspect it might—the evidence will, nevertheless, make political decisions wiser.

I wish that the authors' disagreements had been highlighted. We all know that no one thinks very much

when everyone thinks alike. Casual reading of this book may lead one to think the disagreements are minor. Perhaps. But some disagreements in the book appear fundamental, such as (1) the differences between Sir John and others on the use of international prices and (2) the differences between Schuh's advocacy of uncoupling price and welfare policies and Willett's argument that prices do many things—only one of these being to guide allocation of resources.

Further, the text does not indicate if the participants accepted, rejected, or simply ignored Schultz' concept of optimum economic incentives that is set in the neoclassical paradigm of maximizing utility of consumers. One has a hunch that Emery Castle is not completely

satisfied when he points out "a different efficiency solution will result if the income distribution is varied."

The book makes several important contributions. The authors point up the pervasiveness of distortions in prices, but they also examine distortions in such areas as administrative decisions and public investments. For me, the book has a major lesson. Researchers should be doing much more about measuring income distribution effects of price policies. They need to examine seriously programs justified on equity grounds. Do the programs undercut the realization of equity as well as efficiency? Surely, policies which sacrifice both efficiency and equity should be identified and exposed. Our responsibility here is a serious one.

In Earlier Issues

Ever since the Physiocrats—1756-76—declared that there were natural laws which governed the operation of the economic system, economists have sought to discover what these laws were. We have seen a procession of theoretical systems—classical, Austrian, neoclassical, imperfect competition, Keynesian—each having its day and then yielding to another. Some of these schools had hoped to create permanent systems of economic thought that would have universal validity.

The historical school denied the existence of economic laws, the relativists declared it was impossible to construct a body of theory universally true in both time and space. Each system of thought, they held, was valid only for a particular and definite economic order. As one result of all this, today, economic theory is in a chaotic state—the despair of the professional economist and the laughing stock of the market place.

Max J. Wasserman
AER, Vol. IV, No. 1, Jan. 1952, p. 30

MODELS IN THE POLICY PROCESS: PUBLIC DECISION MAKING IN THE COMPUTER ERA

Martin Greenberger, Matthew A
Crenson, and Brian L. Crissey
Russell Sage Foundation, New York,
1976, 355 pages, \$15

*Reviewed by William E. Kost**

As society becomes more complex and interdependent, its social and economic problems become increasingly complicated. Decisionmakers need to comprehend the structure and behavior of the socioeconomic system to diagnose problems and to propose and evaluate actions that could lead to solutions. They have increasingly turned for help to methodologies based on mathematical formulations of system interactions. Identifying a socioeconomic system and its underlying structure, and then representing it mathematically, is called policy modeling by the authors of *Models in the Policy Process: Public Decision Making in the Computer Era*.

This book focuses on the role of policy modeling and policy modelers in the public decisionmaking process. The authors' basic approach is historical, sometimes anecdotal. They concentrate on case studies that show the development of particular methodologies and describe how models enter the public policy decisionmaking arena. They concentrate on the political process of using models, rather than on their technical nature. Thus, this is one of the few books on modeling that does not require of the reader a strong technical or quantitative background.

The book's first section provides several brief, descriptive cases of the interaction of policy models, modelers, and decisionmakers: (1) the Club of Rome *Limits to Growth* model, (2) gross national product forecasting and the Laffer-Ranson model, (3) the program-planning-budgeting system (PPBS)

movement, and (4) a Jamaica Bay tidal estuary simulation.

The second section contains one of the clearer expositions I have read of the relationships between the "real world," theory, methodology, data, and the formal model. The authors emphasize the idea that a major advantage of policy modeling is that it forces one to think logically about a complex situation. They also emphasize the important role of the modeler in interpreting and promoting the model. This section includes a chapter outlining the historical development of several methodologies for policy modeling: linear economics, operations research, statistical economics, urban and regional development, and engineering. The authors look at the reasons underlying each approach and how each was designed to answer certain questions as well as highlight the implicit biases of each.

Probably other authors would have come up with other categories of modeling methodologies. For example, I would have included the time series modeling of Box, Jenkins, Granger, and others. The categories, however, are not the important issue. What is important is that methodologies are shown to have been developed to fill certain needs and to cope with specific problems. Once this is recognized, a good policy modeler should be able to tailor methodologies to particular issues. Unfortunately, as the authors point out, this is not always the case. Individual researchers tend to have their own favorite methodology which they attempt to apply, with varying success, to all situations.

The third section of the book details three case studies involving the interaction of modeling with policy. The first case involves the

rise of systems dynamics—and the controversy surrounding it—through its applications documented in Forrester's *Urban Dynamics* and *World Dynamics* and in *Limits to Growth*. The authors center on objections raised concerning the validity of the model structure, the conclusions reached, and the absence of supportive data. Particular attention is paid to the system dynamics econometrics methodology controversy.

The second case study involves the parallel rise of large-scale computers and econometric modeling, as embodied in large-scale macroeconomic models. This case study emphasizes the methodology's reliance on formal economic theory, data, and estimation procedures. The approach is contrasted with systems dynamics. The authors follow this general discussion with a rather complete genealogy of modern macroeconomic models of the U.S. economy. They start with Tinbergen, follow through "the Klein line," and culminate in the institutionalization of models in large research-modeling consulting firms such as Data Resources, Inc., Wharton Econometric Forecasting Associates, and Chase Econometric Associates, Inc.

Finally, the authors consider the life cycle of the Rand Institute and its relationship with New York City, particularly with its fire department and health services administration. This case study emphasizes not so much the methodologies used but the political and institutional environment in which policy modelers work.

Decisionmakers have high expectations of policy modelers. However, authors feel that

the growth in the useful application of policy models to the problems facing gov

*The reviewer is an agricultural economist in the International Economics Division, ESOS

The authors feel that a considerable gulf exists between the decisionmaker and the modeler regarding expectations of realistic roles for models

ernment decision makers is not keeping up with the increase in either the number or complexity of these problems. At the same time, the use of models for political purposes is expanding noticeably. The use of models to dramatize or publicize particular points of view is overshadowing their use for the enlightenment of policy makers (p 337)

The authors feel that a considerable gulf exists between the decisionmaker and the modeler regarding expectations of realistic roles for models. The political setting and institutional environment in which models are developed and applied becomes a key factor in bridging this gap. Because model construction and use educates the modeler more than the decisionmaker, modelers—especially those who speak for a model—often prove more important than the model in determining how or if it is used. Therefore, recommendations for improving the potential of policy models should include emphasis on education, communication, and institution building. Decisionmakers must better understand the capabilities and limits of models and expend more effort communicating their problems and objectives to the modeler.

The modeler needs to develop models for problem solving rather than as an academic exercise. Results must be presented in a timely manner, be clearly communicated, and keyed to the client, if they are to have any impact on decision processes.

The authors see two other serious

(and related) deficiencies in policy modeling. Professional standards for modeling are virtually nonexistent. Documentation standards for data, assumption specifications, model structure, programs, validation, and results do not exist. This severely hampers effective use. The authors also find that modelers build or work on their own models and pay little attention to others' models. This phenomenon is reinforced by the modelers' belief that specific models have to be built for each specific problem, and by the professional reward system recognizing individual innovative work as opposed to group efforts or to a series of marginal extensions of others' models. This situation not only hinders the development of modeling standards, but it also limits a model's useful life.

What are needed, the authors strongly believe, are "living" models with long life spans. These models, as they are improved and expanded, are more likely to aid in the analysis of the complex and interdependent socioeconomic problems that face society. To give models a life of their own requires developing organizational frameworks in which these models can exist. It also requires changing the professional reward system so that model maintainers and analyzers, as opposed to model builders and users, are rewarded for doing the day-to-day work necessary to keep models viable. Modeling efforts must be additive.

Anyone interested in modeling, either builders or users, will find this book fascinating. It does not teach how to model. It does, however, give an excellent perspective on the environment in which models are being used and on some of the

problems faced by policy modelers. For economists, the chapter on macroeconomic modeling alone almost justifies picking up this book.

In Earlier Issues

Zoning originated and developed in crowded cities. Its basic regulations were designed for urban ends. Pioneers in the field of rural zoning took these basic raw materials and shaped them to serve the rural community. In the early twenties, in Wisconsin and in a few other States, rural communities began to adopt zoning techniques for protecting rural values on that day's more restricted urban fringe. During the following decade, they established forestry and recreational districts to help bring order out of land-use chaos in the cut over areas of the North Central States. More recently, in the open country and on an expanded urban fringe, which sometimes extends 30 to 50 miles beyond city limits and often overlaps fringe areas of neighboring cities, many rural communities are exercising zoning powers to guide residential growth, to assign commercial and industrial activities to designated areas, and to preserve the safety and carrying capacity of their highways.

Rural people in increasing numbers are recognizing the value of rural zoning as one available regulatory measure for protecting their community and for guiding its growth.

Erling D. Solberg
AER, Vol. III, No. 4,
Oct. 1951, p. 135

ECONOMETRIC MODELING OF WORLD COMMODITY POLICY

F Gerard Adams and Jere R
Behrman, editors, Lexington Books,
Lexington, Mass., 1978, 223 pages,
\$17.95

*Reviewed by Jack Rower**

Adams and Behrman have produced a book that provides something for everyone interested in international agricultural policy and econometric modeling of commodities. The chapters are research papers that present preliminary results of a broad-based study evaluating policy strategies for stabilization of world commodity markets. The major objective is to discover and develop general principles about commodity markets that can be used to formulate optimal policy strategies.

The specific policy issues examined are the strategies for implementing the Integrated Commodity Program proposed by the United Nations Commission on Trade and Development (UNCTAD). UNCTAD's policy objective is to minimize price fluctuations of agricultural and other nonpetroleum commodities through multinational government market intervention. The purpose of modeling international commodity policy is to aid policymakers in choosing "best" or "least detrimental" policy instruments to achieve stabilization goals. The goal of policy modeling is to create, as Adams states, a tool that will generate logically consistent scenarios simulating outcomes of commodity policy applications.

The chapters trace the policy modeling process chronologically. This process falls into three general categories: methodology, implementation, and simulation analysis.

Methodology defines the logical framework in which policy modeling occurs. Model building begins with

theoretical specifications of a commodity market structure. Economic theory provides the basis for abstracting the complexity of commodity markets and reducing, as much as possible, webs of interactions into a set of relationships that describe the economic underpinnings of the market.

The empirical part of model specification is critical to the development of a useful simulation model. In this stage, the theoretical model is translated into an empirical model. No matter how well a commodity model is specified in terms of economic theory, there is no guarantee that an empirical model based on

countries. Detailed modeling of crops such as coffee or food and feed grains is difficult because of the lack of data for countries which are major market participants.

Specification of the empirical model must not only predict and describe the commodity economy, but must also handle the decision making process. Mariana, an associate author, addresses this issue in chapter 4 with a lucid discussion of control theory and its value as a linkage between the empirical predictive model and the decision process of policymakers. Control theory acts as the mathematical medium in which the commodity market structure is handled as a state variable (that is, the way things are), whereas the policy constraints are contained in a control variable. This technique is a recent innovation in applied economics, one that should prove interesting to agricultural economists. Using control theory, the econometric modeler can create many policy scenarios quickly, with a high degree of internal consistency.

The world coffee model exemplifies an international stochastic commodity policy model that is dynamic and that incorporates both the production and consumption market structures.

Chapter 8, an exhaustive bibliography of current commodity models and related literature, is in itself a reason to read the book. The bibliography, compiled by commodity, represents a handy research tool.

Persons seriously interested in international agricultural commodity policy or modeling will find the book helpful. It presents clearly the policy problems involved in the UNCTAD initiated Integrated Commodity Program, as well as the problems and techniques with which the applied economist must deal.

In Earlier Issues

Diminishing returns is present in the feed-egg relationship. But the maintenance part of the ration is large and hens are fed in flocks. This leads to the conclusion that a total curve of diminishing physical return can not be experimentally distinguished from a straight line. Full feeding is usually most profitable for egg production. Practical feeding is a matter of dead reckoning.

Peter L. Hansen
and Ronald L. Mighell
AER, Vol. IV, No. 1,
Jan. 1952, pp. 2 and 7

It will yield useful results. Accuracy relies on such factors as the availability and quality of data required, as well as proxies, that is, substitute variables that can be used where appropriate data are unavailable. Adams notes, for example, the lack of reliable stock data for developing

*The reviewer is an economist in the International Economics Division, ESOS.

ECONOMIC REALISM

Chastain, E D, and Raymond Ritland,
editors, Craftmaster Printers, Inc.,
Opelika, Alabama, 1978, 245 pages,
\$6

*Reviewed by Gerald Schluter**

Messrs E D Chastain and Raymond Ritland deserve an award for courage. Perceiving a void of realistic views on economic phenomena other than those provided by "the helpful textbook, the usual readings book, or the formal and informal oral communication," they commissioned a series of articles to provide these "realistic" views. As if this were not courageous enough, they go on to state that "the present-day world seems to have lost some of its objectivity earlier associated with academic life and the procedures of science." Therefore, they have tried to solicit "realistic, objective views on several economic topics of great importance in everyday life." As one would expect, *Economic Realism* does not meet these high standards.

Nonetheless, this interesting set of papers covers topics that exceed the range of most nonsurvey undergraduate courses in economics. These topics include capitalism, Adam Smith, economic leadership and communication, economic forecasting, the Great Depression, the persistence of inflation, business cycles, the competitive structure of the American economy, the challenge to the free market economy, John Maynard Keynes, the Davis-Bacon Act, farm price supports, international economics, economic development, systems analysis, and the potential for economics research.

In a book of this type, the authors can achieve objectivity either by imposing the desired standards of objectivity upon the individual authors or by balancing the number of subjective articles. Although many

articles in this book have a free market tilt, editor Chastain coauthored an article on Keynes and Keynesian views that fairly presents the government intervention in the market system view of economic affairs.

To achieve objectivity, the editors, therefore, chose a third alternative. Readers may agree or disagree philosophically with individual articles, but most would concur that individual articles are not balanced and the overall mix leans heavily towards the free market view. Yet, by the end, the reader has been exposed to alternative views of the economic system.

Only one article is an outright advocacy piece. One wonders why the editors included the near propaganda by Shirley Smith and Ritland,

who advocate repeal of the Davis-Bacon Act, in a set of readings chosen to provide economics students with an objective view of economic events.

Some articles oversimplify economic problems. In his highly critical study of Government farm programs, Clifton Luttrell rather off-handedly dismisses the problem of factor immobility. Ritland in his article, "Capitalism, Past, Present, and Future," chastises labor union members for "economic shortsightedness" in resisting innovations. Yet he simultaneously cites the effectiveness of the buyers' strike against meat products in 1974 as an example of consumers' self restraint that had the desired effect of lowering prices. One could argue that the 1974-75 recession also reduced demand for

In Earlier Issues

In addition to his reputation as an original penetrating economic analyst, Professor Abba P. Lerner is widely known as an indefatigable and persuasive expositor of the economics of John Maynard Keynes. Although his analysis is penetrating, it will hardly be convincing to the skeptics, but he finds it "necessary to remind almost everyone that the human race is not noted for the promptness with which it acts collectively to adopt reasonable methods of dealing with its problems."

James P. Cavin
AER, Vol IV, No 1, Jan 1952, p 22

▲ ▲ ▲

Direct Federal aid to agriculture has been a part of our national policy since the passage of the Agricultural Marketing Act of 1929 which, among other things, brought the Federal Farm Board into being. The great depression brought further efforts to assist farmers as a part of a general program of economic recovery. Since then, the people of this country through their Government have been accepting an increasing responsibility for the protection of all the people from the harsh winds of economic adversity.

C Kyle Randall
AER, Vol IV, No 1, Jan 1952, p 29

*Gerald Schluter is an agricultural economist with the National Economics Division, ESOS

beef. But if one grants the effectiveness of the buyers' strike and observes the current higher beef prices resulting from the herd reduction following the 1974 drop in cattle prices, one wonders if Ritland was not inadvertently guilty of economic shortsightedness.

At times the free market rhetoric borders on a callousness and paternalism more characteristic of economic writers in sympathy with active Government involvement in the economic system. For example, from an otherwise informative article on the Brazilian developmental experience, Marshall Martin and Julian Atkinson write:

But progress came at the cost of individual and political freedom for many. On the other hand, one must assume that those who make up the lower socio-economic

classes had little to lose and they are, in general, better off in terms of jobs, wages, and social services, including education.

Inclusion of this book on a supplemental reading list for an undergraduate economics class would help to balance those economic readings which advocate a more active Government role in the economic system. Some of the articles are quite good. Arthur Burns' treatment of the 1961-75 period as one long business cycle offers a contrasting interpretation to Dorothy Sherlings's and E. D. Chastain's view of the first half of this period as one in which Keynesian economics was emphasized and regarded as effective.

Thomas Humphrey provides a thoughtful treatment of the persistence of inflation and leads into Burns' paper. Hugh Macaulay

and Bruce Yandles in "The New Competitive Structure of the American Economy," after struggling to prove the existence of competition in our current economy considering the product or brand level rather than the industry level, give an excellent discussion of the role of Government regulation in influencing the level of competition. John Lee provides a useful overview of economic forecasts and forecasting. These papers warrant thoughtful reading by both professional economists and students.

The paper I judge the best was curiously placed at the end of the book. In writing "The Potential For Economics Research," Clark Edwards has provided an excellent framework in which to strive for an objective, realistic view of economic topics, the goal which Messrs. Chastain and Ritland had set forth. The book is worth reading for this article alone.

In Earlier Issues

The importance of cooperation between statisticians and economists is emphasized. An economist should formulate his theories so as to permit measurement, and the statistician should develop "a desire to measure relevant things."

R. J. Foote
AER, Vol. IV, No. 1,
Jan. 1952, p. 23

FOOD AND SOCIAL POLICY, I PROCEEDINGS OF THE 1976 MIDWESTERN FOOD AND SOCIAL POLICY CONFERENCE

Gary H. Koerselman and Kay E. Dull, editors, Iowa State University Press, Ames, 400 pages, 1978, \$8.95

*Reviewed by Thomas A. Stucker**

The Midwestern Food and Social Policy Conference held October 21-23, 1976, in Sioux City, Iowa, brought together public and private agribusiness leaders, academicians, farmers, and consumers. Many of the papers published in these proceedings were presented by agribusiness leaders.

Food policy and the context in which it functions are the major themes of the conference proceedings. They begin with articles on food and the future of civilization, and move through such issues as land tenure, domestic and international distribution of food, regulations and agreements affecting food distribution, and the priorities involved in maintaining a productive agricultural base.

Given this range of issues, the book represents an admirable over-

view. Short summaries of each chapter provide a linkage between the separate papers. The overview nature of the articles means that single issues are not treated in depth. Those who want more detail about specific components of the food system and factors affecting it should refer to sources with a more narrow, detailed focus.

The late Currier Holman, delivering the keynote address, expressed his belief that world hunger problems cannot be solved until food distribution is improved. He views the basic challenge to policy workers as that of understanding "interaction of the parts, which in general are the food industries, the governments, and the publics at large (*both domestic and foreign*)".

The growing imbalance between supply and demand raises moral and ethical questions about food use and population growth. Holman views both specialists and generalists (integrators) as necessary in resolving food problems. "a solution to the

food problem must encompass a multitude of technical disciplines, both broad and narrow, that together are as comprehensive as civilization itself." Politicians are generalists and synthesizers, and Holman urges that they be trained as professionals in these skills. Although this would certainly be desirable, reality dictates that other criteria enter into the political selection process.

Holman concludes on what he calls a pessimistic note, but he urges positive action. In his view, food is related directly and inextricably to petroleum. The current petroleum use rate cannot be sustained, which in turn implies future reductions in food availability unless the energy problem is solved. Holman admonishes that we should act now to resolve the worldwide problems of shortages of food and natural resources.

The proceedings, although not providing detailed solutions, do set forth an interesting perspective on food and social policy.

*The reviewer is an agricultural economist in the National Economics Division, ESCS.

In Earlier Issues

In a substantial number of fields in economics both theory and empirical research have reached, if not a dead end, at least the area of sharply diminishing returns. An attempt at radical departure from traditional forms of analysis should be welcome. Before the findings of one discipline can become the tools of another, it often proves necessary to overcome a certain disciplinary chauvinism.

Gustav F. Papanek
AER, Vol. III, No. 4,
Oct. 1951, p. 150

Attitudes of owners influence the use and management of land. All kinds of individuals and agencies own forest land. They keep it for different reasons, only one of which may be growing timber. Studies furnish knowledge about the people who own the land. This knowledge helps those who are responsible for administering policies of forest land to do a better job.

Adon Poli
AER, Vol. IV, No. 1,
Jan. 1952, p. 8

RESEARCH BROKERAGE THE WEAK LINK

The process by which social science knowledge gets from the producer to the consumer is worth examining. The producer of social science knowledge rarely deals directly with the consumer. Two broad categories of intermediaries can be identified—academic and research broker. Academic intermediaries have a flair for interpreting the technical findings of their colleagues. After the findings are in the public domain, it is up to research brokers to present them for the use of policy makers. The research broker is invariably the crucial point of transmission. It is the most likely breaking point. It is also the point of leverage for getting repairs when the system breaks down.

In the Executive Office of the President is the model for all aspiring research brokers—the Coun-

cil of Economic Advisors. In the executive departments, most of the older departments have research bureaus—the Department of Labor's Bureau of Labor Statistics, the Department of Agriculture's Economic Research Service,* the Department of Commerce's Bureau of Economic Analysis and Bureau of the Census, to name a few. These bureaus are some distance removed from the department heads so there is in most cases an individual who with a small staff serves as a link between the department's research organizations and its policy makers.

An example is the director of agricultural economics in the

Department of Agriculture. The director is the research broker who is in the innermost circle in the Department's decision-making process. Backing up the director is the Economic Research Service,* which not only has a thousand researchers on its own payroll but also has links with a network of researchers in the land-grant colleges. Every department and bureau administering social or economic programs needs a research broker to serve in a capacity like that of the Department of Agriculture's director of agricultural economics.

*Editor's note—Predecessor agency of the Economics, Statistics, and Cooperatives Service.

Excerpted from *Knowledge and Policy: The Uncertain Connection* (1978), p. 126, with the permission of the National Academy of Sciences, Washington, D.C.

In Earlier Issues

ESCS is a unique institution as a body of social scientists in this town. It has a great opportunity to help broaden Government's role in food and agricultural policymaking. Not only can ESCS service USDA, but I can see a certain advantage in its keeping some distance between itself and the Department. Obviously, to remain part of the Department, ESCS must be responsive to the policymaking apparatus in USDA. Yet it cannot take as an excuse to build in isolation from reality in addressing relevant questions. It makes some sense for ESCS to have credibility as an institution, and that might call for a little bit of distance.

Lynn Daft, "Implications for Domestic Policy,"
*Agricultural-Food Policy Review: Proceedings
of Five Food Policy Seminars*, Econ., Statis., and Coop.
Serv., U.S. Dept. Agr., AFPR-2, 1978, p. 15.