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Some Forces Affecting the Changing Structure, Organization and Control of American Agriculture

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The original broad charge given to us by President Hildreth for this address was to consider "the implications of the changing structure, organization and control of American agriculture." Upon asking for a possible narrowing of the topic, Jim magnanimously agreed to change "the" to "some." Upon suggesting to Jim the names of several economists who knew something about this topic he mumbled that he was looking for a couple of "appropriate types" to go where ". . . angels fear to tread."

At the outset we should say something about the direction and scope of our comments. Our emphasis will be on structural change and control in agriculture, interpreted rather broadly. We single out land value escalation as an issue of major importance and deserving of special attention because of possible effects on the future structure and control of the farming subsystem. It is our contention that the driving forces affecting future changes are coming from outside agriculture, rather than from decisions made within.

Without benefit of divine revelation, analyzing the past is a necessary first step in understanding present trends and future possibilities. Our procedure, therefore, is to provide first a short overview of structure research in agriculture and indicate how the policy/control aspects of agriculture have changed in concert with industrialization. Second, we review some of the major changes taking place in the food and agriculture

system giving particular attention to the interface between production agriculture and nonfarm rural interests.

We then examine the record on rising farm real estate values, considering selected external and internal forces and possible resultant effects on structure and control in agriculture. We conclude with general observations on future developments and problems ahead.

Emphasis of Previous Structural Analysis

The study of structural change and control in the food sector cannot be classified as a neglected area. In fact, many of our colleagues here today have made significant theoretical and empirical contributions on this topic. While no attempt is intended to review this work one would be remiss not to mention the early efforts of the old North Central Regional Committee NCR-20 whose ideas spawned in 1974 the current North Central Research Project NC-117. Also, mention should be made of the contribution of the National Marketing Commission and the National Advisory Commission on Food and Fiber. In addition, there are many fine marketing and farm management studies that have dealt with selective aspects of structural characteristics of agriculture.

The central theme of traditional research on structure has been to define the processes through which organizational changes come about with industrialization and how institutions adjust or are modified to implement reorganization. The industrial organization paradigm of structure-conduct-performance provides the main theoretical base for saying something about efficiency and behavior within rigorously delineated markets and for developing policy with antitrust orientation (Hildreth *et al.*). Yet the recent concerns expressed

about the "global reach" of multinationals (Barnet and Miller), conglomerates, and other actions which transcend markets and countries leads one to believe that our traditional kit of tools comes up short. Furthermore, efficiency measures judged against a competitive model say little about external effects on equity and quality of life considerations with alternative structural/organizational/control configurations.

Technological determinism pervades much of the literature, yet concerns are voiced about the negative impacts of the self-adjusting market economy. Pleas for research about devising protective institutions to cushion the shock or modify the outcomes of markets have been often made but rarely answered. Traditionally, many of the institutions that have developed to modify market outcomes have sought to gain special exemptions for agriculture based upon arguments of uniqueness. But today's agriculture is vastly different and is highly integrated with other sectors of the economy or is becoming so.

Diffusion of Control

Control relates to control over decisions. Traditionally, control meant that farmers commanded decisions about input use and markets. The steady erosion or shifting of the power structure or control away from the farmer has fueled a continuous dialogue around the question: "Who will control U.S. agriculture?" Without succumbing completely to technological determinism, we should note that the evolution of U.S. agriculture policy tends to mirror the industrialization process of agriculture. Putting this same idea in terms familiar to political scientists, the structure of power behind farm policy has progressed, according to Garth Youngberg, from subsystem

to macropolitics. Youngberg maintains that the "subsystem" exerted extraordinary influence upon agricultural policymaking in former times because of a symbiotic relationship between local farm administrators, the commodity-based agencies of the USDA, and the relevant agriculture subcommittees of the House and Senate. Bonnen refers to this policy formation process as the triangle of power and Charles Hardin labels it the bureaucratic influence. Over time, the gradual industrialization of agriculture has brought specialization along commodity lines. This increased interaction among specialized agribusiness firms as Bonnen (p. 20) stated ". . . leads eventually to a fragmentation of economic interests and thus to conflict."

Further complicating this now "polygon of power" were the newer interests from a broader spectrum of the body politic. For example, ecological concerns were voiced by environmentalists in the late 1960's. Inflationary food prices made activists out of consumers during the early part of this decade. The world food crisis of 1972-73, dollar devaluations, and the formation of OPEC essentially added important international dimensions to food policy formation and, indirectly, to control decision at all levels. An expanded list of economic, political, and other factors, therefore, characterize the macropolitics of the 1970's.

Control aspects in all phases of the food and agriculture system have been diffused among a spate of governmental and private institutions. A diverse set of governmental and regulatory rules that bear upon the structure of the food and fiber system has been examined by Dahl. He concludes that most public policies directed to the solution of various income, equity, and growth problems have the perverse effect of increasing the concentration

of firms at each level of farm supply, production, distribution and merchandising. This conclusion seems extreme, but plausible, and certainly worthy of further investigation. Another set of issues relating to proliferation of agencies and rules is their frequent lack of coordination, the increased uncertainty that they engender, and their cost, particularly to small operations, not to mention their cost-effectiveness from a societal point of view.

Major Trends and Structure Characteristics of U.S. Food and Agriculture

We now direct our attention to some key elements and structural changes in the agricultural-food sector. In describing trends and characteristics of the American food and agriculture sector, one is tempted to say merely that the industrialization process of agriculture is continuing. The agricultural labor force is still leaving the farm but at somewhat slower rates than previously and purchased inputs are still increasing at a moderate pace. Markets for food and fiber have continued their long-term expansion trend, first from local to regional and national markets, and now to international markets. The volume of farm exports has increased significantly and now contributes importantly to offset deficit nonagricultural trade balances.

The evidence is still strong that the aggregate agricultural supply is highly inelastic and moving to the right somewhat erratically partly as a result of natural factors and partly by technological change, which some now argue is slowing. Aggregate demand is still highly inelastic, shifted mainly by population growth and now more strongly, but less predictably, by

export demand. Resulting price behavior is extreme if either supply or demand shifts significantly. The extreme price fluctuations of the past few years lend credence to this simplified aggregate perception. Such a simple description, however, probably hides many interesting characteristics of a dynamic, complex, and changing agriculture.

In Table 1 we capsulize the food and agriculture system in terms of key variables and indicators of change over most of this century. In summary, all subsectors of the food and agriculture sector have undergone structural changes generally in the direction of fewer and larger sized firms. Prices are increasingly being determined less by traditional, competitive, open market arrangements and more by contracts and arrangements between highly integrated concentrated subsectors of the food system. The extent of the transition is, of course, highly variable by commodity group and region (Reimund and Martin; Minden; Mueller; Grieg). For our discussion, however, we emphasize the production subsector and its rural interface.

Commercial farms are becoming fewer and larger, continuing past trends, but at a decreasing rate (Gardner and Pope). Numbers of farms in cash grain and other field crops showed substantial gains between 1964 and 1974 whereas numbers declined in cotton, tobacco, dairy and general farms--tending to be consistent with shifts in export markets. Farm output in terms of sales is concentrated towards larger units, the top 40 percent of the farms accounting for about 80 to 90 percent of the nation's output, and the bottom 40 percent for only 3 to 5 percent. These percentages have changed little over the last decade. Numbers of tenant farms continues to decline and full-owner farms increased between 1964 and 1974. In terms of numbers of farms, individual family farms still predominate (90 percent of total); whereas less than two percent were classified as a corporation in 1974.

Table 1. Some Characteristics of the U.S. Agricultural and Food System, Selected Years 1910-1976, and Annual Rates of Change

Characteristic	Units	1910	1930	1950	1960	1970	1976	Annual rate of change 1910-1950	1950-1976	1950-1960	1960-1970	1970-1976
								(percent per year)				
U.S. AND THE WORLD												
U.S. gross national product	(billion 1972 dollars)	N/A[a]	285	534	737	1,075	1,275	3.2[e]	3.4	3.3	3.8	2.9
Gross national product implicit price deflator	1972 = 100	N/A	32	54	69	91	134	2.6[e]	3.6	2.5	2.8	6.7
Ratio of exports to gross national product	percent	N/A	4.3	3.6	3.9	4.3	6.7	--[b]	--	--	--	--
Ratio of imports to gross national product	percent	N/A	3.4	3.2	2.9	4.1	7.3	--	--	--	--	--
Trade balance: agricultural	(million dollars)	+82	-404	-191	+509	+1,272	+12,246	--	--	--	--	--
nonagricultural	(million dollars)	--	+1,173	+3,269	+3,105	+958	-15,477	--	--	--	--	--
FARM SHARES/U.S.												
Share farming/national income	percent	N/A	N/A	7.2	3.9	2.8	2.6	--	--	--	--	--
Share farm labor force/U.S. labor force	percent	30.9	21.2	11.6	7.9	4.0	3.2	--	--	--	--	--
FARM PRODUCTION												
Index of farm output	1967 = 100	43	52	75	90	105	117	1.4	1.7	1.8	1.6	1.8
Index of farm input	1967 = 100	86	101	105	101	99	101	0.5	-0.2	-0.4	-0.2	0.3
Index of total productivity	1967 = 100	50	51	71	89	105	116	0.8	1.9	2.3	1.7	1.7
Input use: nonpurchased	1967 = 100	158	177	152	120	96	90	-0.1	-2.0	-2.3	-2.2	-1.1
purchased	1967 = 100	38	50	71	86	103	113	1.6	1.8	1.9	1.8	1.6
Farm labor	1967 = 100	321	329	222	145	91	78	-0.9	-3.9	-4.2	-4.6	-2.5
Farm real estate	1967 = 100	98	101	105	100	97	94	0.2	-0.4	-0.5	-0.3	-0.5
Mechanized power and machinery	1967 = 100	20	38	85	96	101	113	3.7	1.1	1.2	0.5	1.9
Agricultural chemicals	1967 = 100	5	9	29	50	117	141	4.5	6.3	5.6	8.9	3.2
Prices received by farmers	1967 = 100	41	47	103	95	110	186	2.3	2.2	-0.8	1.5	9.2
Prices paid by farmers	1967 = 100	28	43	77	88	113	192	2.6	3.6	1.3	2.5	9.2
Number of farms	(1,000)	6,366	6,295	5,388	3,962	2,954	2,752	-0.4	-2.6	-3.0	-2.9	-1.2
Land in farms	(million acres)	881	990	1,161	1,177	1,103	1,081	0.7	-0.3	0.1	-0.6	-0.3
Average size of farms	(acres)	139	157	216	297	373	393	1.1	2.3	3.2	2.3	0.9
RURAL SECTOR												
Total U.S. population	million	92	123	152	181	205	215	1.2	1.4	1.8	1.3	0.6
Farm population	million	32	30	23	16	10	8	-0.8	-3.8	-3.8	-4.6	-2.6
Ratio farm/total	percent	35	25	15	9	5	4	--	--	--	--	--
Rural population	million	49	54	54	54	54	N/A	0.2	-0.1[c]	-0.1	[d]	N/A
Ratio rural/total	percent	53	44	36	30	26	--	--	--	--	--	--
Rural-farm population	million	N/A	30	23	14	8	N/A	-1.4[e]	-5.0[c]	-5.2	-4.8	N/A
Ratio rural-farm/rural	percent	--	56	42	25	15	--	--	--	--	--	--
Income from farm sources/total income (farm population)	percent	N/A	N/A	69	61	47	42	--	--	--	--	--
Per capita disposable personal income: farm population/non-farm population	percent	N/A	N/A	65	56	75	82	--	--	--	--	--
DOMESTIC DEMAND												
Real (1972 prices) personal disposable income	(billion dollars)	--	211	362	487	742	890	2.7[e]	3.5	3.0	4.3	3.1
Per capita	(dollars)	--	1,709	2,386	2,697	3,619	4,137	1.7[e]	2.1	1.2	3.0	2.2
Consumer expenditures for food/ personal disposable income	percent	N/A	24	22	20	16	17	--	--	--	--	--

INPUTS	Units	1947	1954	1958	1963	1966	1970	1972
Selected concentration ratios[f]								
Fertilizers	percent	36	N/A	34	34	34	30	N/A
Farm machinery	percent	N/A	N/A	N/A	43	45	40	N/A
PROCESSING AND MERCHANDISING								
Selected concentration ratios[f]								
Meatpacking plants	percent	41	N/A	34	31	27	23	20
Canned fruits and vegetables	percent	N/A	N/A	N/A	24	24	21	20
Frozen fruits and vegetables	percent	N/A	N/A	N/A	24	24	26	29
Cereal preparations	percent	79	N/A	83	86	87	90	90
Bread, cake, and related products	percent	16	N/A	22	23	25	29	29
Average weighted concentrated ratios[g]	percent	37.7	38.0	37.2	37.9	38.6	39.3	N/A
Total retail stores	(thousand)	N/A	N/A	359.5	319.4	294.2	267.4	N/A
Market share of large grocery chains[h]	percent	N/A	29.4	N/A	N/A	36.1[i]	N/A	38.9
Food processing establishments	number	N/A	N/A	23,210	20,228	16,718[i]	N/A	13,180

a/ Not available. b/ Not appropriate. c/ 1950-1970. d/ Less than 0.5 percent. e/ 1930-1950. f/ Value of industry shipments accounted for by four largest companies. g/ Average weighted four firm concentration in 31 food and related industries (Mueller). h/ Over 101 stores. i/ 1967.

The mix of purchased and nonpurchased inputs on farms has been substantially altered with rather continual increases in purchased inputs over time displacing those internal to farms. For specific inputs, farm labor use has decreased since 1930, but the rate of decrease has diminished. The shift towards mechanization was particularly strong during the pre-World War II period, while the use of fertilizers and other chemicals showed the most rapid growth during the 1950's and 1960's. All of these shifts in input use contributed to increased productivity.

Because of the dominant position of the U.S. in world agriculture and trade, productivity changes as well as production capacity assessments are followed with considerable interest and concern. Total factor productivity in the farm production subsector, as measured by the USDA index (1977a), has been substantial--1.9 percent annually since 1950. Some evidence of slowing down in productivity is causing concern, despite the fact that the rate of increase has been 2.0 percent annually during this decade. Schuh expressed this concern of stagnating productivity growth in his invited address to the association two years ago. He cited the declining rate of the USDA productivity index in the 1960's and evidence presented by the National Academy of Sciences showing diminishing returns of fertilizer to land and eggs per hen as portending similar biological limits for other classes of crops and livestock.

On the other hand, D. Gale Johnson (1977), who had participated in the productivity chapter in the NAS study, expressed doubt about the reliability of published measures of productivity in agriculture; one can arrive at different conclusions regarding productivity growth in the 1960's compared

to the 1950's depending on which productivity index is used. Denison shows farm productivity declining only very slightly in the 1960-69 period compared to the 1950's. The USDA (1977a) productivity index, on the other hand, shows a lower growth rate than Denison in the 1950's and a relatively large reduction for the 1960-69 period. Kendrick shows considerably higher rates of farm productivity growth for the 1950-1960 period than either Denison or the USDA but the relative drop off in the 1960's compared to the 1950's is similar to that estimated by the USDA.[1/] Our point in making this comparison is not to criticize any of the methods used but to suggest the need for further empirical and conceptual research in this important area.

The concept of production capacity, however, involves more than just productivity. Changes in output over time are explained by (a) movements along the production function and (b) shifts in the production function. It is the shifts in the production function that we identify with technological change and label "productivity." The production capacity measure relates both to changes in technology and increases in input use. Maximum production capacity corresponds to the maximum point on the new technology production function--that is, a level of production physically attainable at some future specified time (a point assuming zero input prices or an infinite product price). Most capacity studies, however, would identify production capacity with a solution consistent with a "feasible" input/output price ratio. Quite obviously, what is considered feasible may well differ among researchers, and this accounts partially for different assessments by researchers of the future U.S. or global agricultural production capacity. Another source of discrepancy arises from differences in perceptions about future changes in technology and the rate that changes are adopted. We

raise this issue because of its obvious implication for expectations that contribute to the formation of land values, a topic which we discuss in a later section.

While we don't intend to discuss many aspects of rural areas, it is important to note the blurring of the lines between agricultural and nonagricultural interests in those areas. For example, note the trends toward part-time farming and the growth rates of nonmetropolitan areas. In 1930 less than one in six farms were part-time. Now two out of three farm families receive more than half of their income from nonfarm sources. Increased nonfarm incomes have reduced the migration to urban areas allowing a "middle ground" between staying in agriculture and exiting completely. Partly as a result, there has been a slow but steady convergence of income of farmers with that of workers in the nonfarm sector. Income of farm operators from nonfarm sources continues to increase over time and now makes up three-fifths of total income in the farm sector.

There are only one-fourth the number of people on farms today as there were in 1910. The proportion of the U.S. total population on farms fell from 35 to less than four percent from 1910 to 1976. The number of people classified by the census as "rural", however, has been rather constant and now constitutes one-fourth of our total U.S. population. Nonmetropolitan areas in the 1970's, have been experiencing faster growth rates than metropolitan areas. If this trend continues, it will profoundly influence the size and composition of rural populations (Beale) and represents a reversal of one of the nation's best established long-term population trends.

These trends highlight the fact that nonfarmers are of growing importance in the rural areas of the nation. Their competition with farmers for land has exerted an upward pressure on farm real estate prices.

Forces Affecting Land Values and Farm Structure

American agriculture has a long tradition of common ownership and operation of farm units. Recent high land prices bring into serious question the continued feasibility of land ownership by what we generally consider to be family farmers. From 1950 through 1972 the value per acre of U.S. farm real estate increased at a (nominal) rate of 5.6 percent annually, compared to a 2.8 percent rate for general prices. The increase in land values occurred despite rather stable annual levels of realized net farm incomes. In contrast to this earlier record of steady, but modest, increases in farm land values, per acre values jumped sharply over the period from 1972 to 1977, at 16.5 percent annual rate compared to a general price increase of 7.1 percent annually. A tripling of land values has been reported for several Corn Belt states as farmers and others first responded to higher grain and soybean prices in 1973-74 and have continued to bid up farm land prices.

The sources of recent land value increases are less clear than those existing prior to 1972. Traditionally, pressures for farm enlargement and the capitalization of net farm incomes along with urban and recreational demands for farm lands explained a major share of the changes in land values in a market where generally less than three percent of the land changes hands annually. Some of the factors now attracting capital into agriculture include: (1) farmers attempting to expand to achieve economies of scale and/or capitalize anticipated returns from expanded domestic and world markets,

(2) nonfarm investors (and some pure speculators) seeking to realize a hedge against inflation or tax shelter, and (3) part-time and hobby farmers and other persons migrating to rural areas.

Farmers have continued to buy land to expand farming operations to achieve economies of scale. Demands for land more recently have been based additionally on growth in domestic and foreign markets, and fed by heightened expectations and concerns of world scarcity, diminished productivity, and inflation. Demand and consumption of food and agricultural products has been altered over time in most countries due to several factors including income and population changes as well as shifts in policy. The commodity composition and direction of trade flows over the past 25 years provide evidence of pronounced world trends which are mirrored in past structural shifts in U.S. agriculture. The most significant change in the commodity composition of world agricultural trade since the 1950's has been the relative increase in food and especially feed exports (feedgrains, feeding stuff and oilseeds) at the expense of agricultural raw material (cotton, tobacco) exports. The relative importance of food and feed exports (as a percent of world agricultural trade) increased from 45 percent in 1950 to almost 69 percent in 1976. During the same period, agricultural raw materials declined from 29 percent of the total world agricultural exports to 11 percent (Mackie). The trends in U.S. agricultural exports are similar to world trends except feed exports showed an even greater relative increase.

Apparently, the 1972-73 shock has created a more lasting impression on expectations than might be warranted. A recent world food report by the late Tony Rojko and co-workers summarized results from their own study

and five others published between 1973 and 1976. Two conclusions were common to all studies particularly with reference to the grain sector: (1) sufficient productive capacity exists at the global level to meet food needs of the world's population well beyond 1985 and (2) regional food production/consumption imbalances will persist and for some areas possibly worsen by 1985. In these studies, projected regional deficits of cereals in the developing countries vary from a low of 22.5 million tons to a high of 118.1 million tons (Carter, p. 304). Much of this extreme variation can be explained by differences in technology changes assumed in the respective reports. While the studies point to more than adequate physical capacity of the world's resources to produce grain well beyond 1985, the political and institutional problems are viewed as tighter constraints. Nonetheless, it would appear that many land purchasers are "betting" on high deficits, and some, on famine. Scott, for example, shows that income from two additional acres of land in Illinois would be needed to pay for an acre of $4,000 land if the price of corn remains at $2.25 per bushel. Purchases at such high prices can only be rationalized by expectations of a return to scenarios of high 1973-74 commodity prices, or by the investment-like use of land as a hedge against anticipated high inflation.

Windfall capital gains from equity in farm land, realized as the result of the initial land price surge from high commodity prices, further sustained demands even after prices and net incomes slacked off in 1975. Historically, the annual capital gain in real estate value has been less than annual net farm income (e.g., 20 percent of net income in 1960 and growing to 60 percent by 1970). Since 1971, however, capital gains from land were substantially larger than net income (almost 1-3/4 times larger

than net income in 1975). Increased use of credit has also sustained the demand for farm land by farmers. The proportion of transfers on which debt was incurred rose from 58 percent in 1950 to 88 percent in 1977 and the ratio of debt to purchase price of credit-financed transfers rose from 57 percent in 1950 to 77 percent in 1977 [USDA, 1977b]. Melichar suspects that the increased debt financing in the farming sector is concentrated among a relatively small proportion of farmers, primarily those who have significantly expanded their operations in recent years. He also suggests that the repayment of past borrowings will be impossible if cash flows fail to rise above recent levels for heavily indebted farm units. Not only would those farms with heavy debts be affected, but small rural banks which have been heavily involved in farm lending and have low liquidity could be seriously affected. Thus, the structure of farm land and farm credit has been substantially altered by developments in the 1970's.

How does farm land compare to changes in the general price level or with other commodity prices, or even the stock market as an investment alternative for the nonfarmer? The GNP price deflator rose by 7.1 percent annually since 1972, about half the rate for farm real estate. Like land, spot market prices for primary commodities showed a sharp rise from 1972 to 1974, but leveled off at lower prices in more recent years; and the behavior of common stock prices has been "flat" during much of this decade. While land values continued to escalate beyond 1974, spot market prices fell by seven percent from their 1974 level and stock prices rose only slightly. Healy and Short cite the favorable comparisons of land markets with common stocks, and the general price level to show an inflation-hedging motive for land purchase. This contrasts with the 1950's and 1960's when annual rates of return were

found to be greater for common stocks compared to land appreciation rates. Both Kost and Johnson found, however, higher variability in returns for common stocks than for land during this earlier period.

Again we raise the question of whether investors' expectations have exceeded some bounds of rationality. Do expectations continue to push land prices upward in ever self-fulfilling promises of continual land price appreciation? Stephen Roulac reminds us of the "South Seas Bubble" episode in which "land prices were bid up to unwarranted levels as a result of rampant speculation (p. 53)," and suggests the reading of Mackay's 1841 book, *Extraordinary Popular Delusions and the Madness of Crowds.*

Demand for land by hobby farmers, foreign buyers, and those seeking tax-shelters in farm land has been characterized as being price inelastic by Raup. A study of a farm real estate market in California (Johnston) indicated that nonresidents (some of which were out-of-county farmers) paid an average of 36 percent more per acre for farm land of equal quality than residents were willing to pay. The demographic shift leading to larger population growth rates in nonmetropolitan areas (Beale) generates yet another set of nonresident demands for land. Higher per acre prices paid for farm land by nonresidents, regardless of nationality, brings mixed blessings to individuals and groups. Absentee landowners have long provided rental lands to farming operations, but debate about the residency requirement in conjunction with farm units under the 160-acre limitation in the West and about foreign ownership of U.S. farmland are recent expressions of popular concern. Both are debates with more emotional overtones than clear economic rationales, having common ground in the concern about the control of large-scale commercial farms under absentee ownership.

What implications does the land boom have for the structure and control of American agriculture? After all, farm investment and land-price booms have occurred previously in the U.S. Four such periods, preceding World War II, were each followed by about two decades of severe farm mortgage debt distress, but the last complete boom (1941-1952) was not followed by debt repayment problems (Melichar). Agricultural adjustment problems in the 1950's and 1960's were eased somewhat by the fact that, according to Melichar, farm land prices were consistent with the level at which the federal government (or public) was willing to support the prices of major crops. We are now involved in the sixth land boom but the macropolitics would suggest less willingness on the part of the government to underwrite target prices at the "appropriate" levels in spite of militant actions of the American Agricultural Movement (AAM) this past spring.

Consider the family farm, with a moderately flexible definition thereof, in the boom environment. Both Barkley and Raup have stressed the resiliency and capacity of family farms to absorb risk, suggesting the public goods-like nature of these basic units. The comparative advantage in bidding land away from neighbors, however, appears to be with medium to large farmers (Harris and Nehring), giving further impetus to potential increases in the incidence of larger farming units at the expense of smaller units. Although it does not follow necessarily that larger units may deviate substantially from family farm norms, continued pressures that move agriculture towards entities with heavy reliance on capital markets may be particularly threatening to family farm units.

Two other concerns of structural change are worthy of discussion: intergenerational transfer and entry of new farmers. Problems of intergenerational transfer (Harris) compounded in the past by increasing land

values have been eased in one aspect by the recent estate tax revision which permits assessment on the basis of capitalized net rents rather than market values. While there are suggestions of differential tax provisions for agriculture (e.g., capital gains) we have concern that in the general economic setting in which farming now finds itself, special tax treatment will have such perverse effects as: attracting additional capital investment, further driving-up land prices, and further stimulating the separation of ownership of farm land from farm operation.

Entry into agriculture has been made more difficult by higher resource costs (including land) and the growing size of operation, which even if land costs did not rise, would necessitate increased capital investment requirements. With 1976 asset values, capital requirements for farms with $40,000 - $60,000 gross farm sales are estimated to range from $285,000 for fruit and nut farms, of which $196,000 was farm land value, upwards to $573,000 for livestock ranches with $459,000 for land (Hottel and Berry). These are already formidable capital requirements. With land appreciating at 16.5 percent per year as it has since 1972, these land values will double within five years. The effect on capital requirements for entry are evident.

In summary, spiraling land prices have been the result of escalated commodity price expectations and persistent inflation in the general economy, among other factors. The toll may be high in terms of the future structure of agriculture's productive sector, as indicated by difficulties in entry, intergenerational transfer, and unity of ownership and operation. To the extent that lack of clarity or firmness in governmental policy or action

either spawns or sustains these conditions, the structure of farming as we know it is jeopardized. U.S. monetary policy, for example, as it influences the inflation rate has had greater repercussion on farm structure than any policies generated in the USDA. Counteractions of higher support prices, credit write-offs, subsidization, preferential tax treatment, and the like, can no longer be directed just to farmers. Actions of this nature will be capitalized into higher land prices. Consequences of stock corporations in land, or even a landed aristocracy, are not beyond imagination unless the forces in the *maelstrom* are dissipated.

Concluding Comments

We conclude by "treading" lightly over a few main points if for no other reason than to confirm President Hildreth's selection process. Our attention was focused on selective elements and forces in the economic system which we considered important determinants of what we loosely call structure, with particular attention directed toward changing land markets.

A general observation is that after the introduction of the tractor, the most important shock affecting the structure of American agriculture in this century has come from abroad in the form of increased market interdependency. Two years ago at our annual meeting Schuh and Warley both presented excellent papers that emphasized the importance of viewing the agricultural sector in the context of an open or interdependent world economy. Two points are particulary germane to our discussion: (1) the world of a system dominated by only two superpowers has been replaced by one including a number of participants (EEC, Japan, OPEC, multinationals, etc.) and (2) a growing perception that economic interdependence has its costs as well as its benefits.

Many of our trading partners put greater reliance than the U.S. upon direct government intervention either separately or in regional trading blocs. Accordingly, policies that focus upon nondiscriminatory reduction of trade barriers are obviously viewed differently depending on the context of each bloc, or country's, political and economic objectives. The point has been made many times that barriers to trade, of whatever kind, and highly protectionistic domestic agricultural policies, are a source of instability in international commodity markets (Johnson, 1975). Faced with this reality, the U.S. has reaped the benefits of expanded markets for both agriculture and the general economy in terms of reduced trade deficits. However, the costs of these benefits have been in terms of greater price and income instability which is an onerous burden to small undercapitalized farmers. Since much of the trade gains have been associated with feed crops and cereals, the regional impacts of the instability are disporportionate, as well. Some reduction in instability can be accomplished with a buffer stock policy which, of course, is not without its costs.

In addition to trading blocs and trade barriers, multinationals--some with incomes that exceed the incomes of national governments--have become a force of unknown influence and concern in the international economic system.[2/] There is little knowledge about their effects on key economic aggregates either in host or parent countries or how they interact in "mixed" markets.[3/] As economists we simply lack appropriate conceptual models to deal with the newer structural dimensions of international markets and marketeers.

A second observation that we made, perhaps colored by our regional bias, is that the transformation of American agriculture, or if you perfer

the food and fiber system, is now approaching a post-industrial stage. Agriculture, particularly production agriculture, has lost its uniqueness. The special treatment that agriculture has demanded and received in practically every segment of its operation is slipping away. Probably the last vestiges of special treatment involve agricultural labor and legal dispensations for operating cooperatives and marketing orders and agreements. Even these vestigal remains are disappearing, for the recently enacted California Agricultural Labor Relations Act will probably be the prototype for other states, and cooperatives and marketing orders are under intense scrutiny.

It would be premature, however, to consider the agricultural establishment as impotent or agrarianism as completely dead in the current political environment or in future deliberations. We need only consider the Food and Agriculture Act of 1977 and the lobbying efforts of the new American Agricultural Movement (AAM) early this year. Target prices were enriched by the Administration beyond the 1977 Act provisions partly as a result of vocal, and sometimes militant lobbying activities. A strong and concerted effort will continue to be made to incorporate full funding of land costs in computing the cost of production for price supports. New "actors", new coalitions, and new researchable problems are emerging to deal with the broader food and agriculture issues in a post-industrial society.

Mention should also be made of the "small is beautiful" proponents led by the late E. F. Schumacher. Is this a serious counterforce to the persistent trends toward industrialization of agriculture? We think not, at least not in the extreme forms espoused by those preaching a return to a "man and nature" society. The dialogue, nevertheless, is a manifestation of concern

about the impacts of a self-adjusting market. The changing interface between commercial agriculture and quasi-agricultural interests in rural areas and the rising capital requirements in farming suggest an emerging compromise in the form of a dual rural economy similar to that proposed by Wunderlich: (1) large commercial farm units, and (2) smaller farms, the latter based mainly on subsistence, part-time, retirement, and hobby interests. If such a structure is to emerge and coexist in harmony, much research remains to be done on the amelioration of conflicts and external pressures that are already disrupting the rural/urban fringe.

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Footnotes

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1/ Computed annual rates of change in farm productivity are as follows: Denison--1950-59, 3.2 percent; 1960-69, 3.0 percent. USDA (1977a)--1950-59, 2.4 percent; 1960-69, 1.5 percent. Kendrick--1950-59, 4.3 percent; 1960-69, 2.7 percent.

2/ The U.S. is the largest home country of multinationals accounting for over 50 percent of all direct foreign investment, well above the 14.5 percent of second place Britain (Bergsten *et al.*). Next is West Germany at 4.4 percent and Japan at 2.7 percent. It has been estimated that the largest five multinational exporters account for 90 percent of U.S. trade in wheat (Freivalds). There is little reason to believe that the concentration is any less for exporters of U.S. coarse grains and soybeans.

3/ An interesting attempt to look at international markets within a structural and behavior framework is contained in a paper by McCalla. While considering national policy objectives and their impact on world trade, he concludes that much remains to be done before we have a satisfactory model explaining just the international pricing mechanism, not to mention some of the other dynamics of the global market.

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