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METHODOLOGICAL ISSUES IN EXAMINING EXPORT MARKET PERFORMANCE: THE ARGENTINE CASE

by

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INTRODUCTION

The post World War II history of the Argentine grain marketing network offers the export performance system researcher a unique opportunity to observe differences between a market-managed and a market-oriented policy environment. Since 1945 the policy environment in Argentina has vacillated between a market-managed system and a market-oriented system.[1/] A grain board was first created in Argentina in 1933 by government ministers and ratified by the legislature in 1935. At that time it was given control over foreign sales and the authority to fix minimum prices for wheat, corn, and flax. Grain handling facilities were still controlled by the private sector, but the government paid them for handling charges. The board initially came into existence because of the pressures the world crisis put on grain producers.[2/]

When Peron came into power in 1945, two of his main objectives had a profound effect on the policy environment for Argentine agriculture. One objective was a plan for industrialization, and the other was a plan for massive income redistribution to transfer wealth from the agricultural sector to urban consumers and industrial producers. Peron created the Institute Argentina de Promicion del Intercambio, IAPI, (Argentine Trade Promotion Institute) in 1946. It was developed partially for the purpose of creating a "single seller" to deal with a "single buyer," which is how the Argentines viewed the Allied purchasers after World War II. The Board was

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1/ Initial examination of secondary data suggested that analyses of four periods was appropriate. But after further investigation, the first three periods appear to be less well-defined, leaving a mirage of a 30 year market-managed period from 1945 to 1975 and a well defined market-oriented period from 1976 to the present. Further comments on this observation will be highlighted in the performance section and conclusions.

2/ To date, specific historical documentation of the move towards a board has not been encountered.

then put under the supervision of the IAPI and reorganized to eliminate producer participation. The IAPI established official prices, monopolized the purchase and sale of principal grain crops, and established margins for processors.

In 1955, Peron was exiled, and a military provisional government took his place. For Argentina, this was just the beginning of a long succession of presidents and military leaders and a period of political instability. In 1956, the National Grain Board was reorganized again. Half of the directors on the Board then came from the public sector, as opposed to only one-third before the Peronist era. This reorganization was intent on maintaining a certain amount of government control over commodity marketing.

The official National Grain Board of the sixties and seventies was established in 1963. From that point until 1973, the Grain Board was organized to allow grain trading through private firms and cooperatives, but it still exerted influence in several ways. The Board was obligated to buy crops at the official support prices, but the only grain purchased in significant quantities was wheat. The Board could act as direct seller in large state trading sales and negotiated the bilateral sales agreements with agencies of foreign governments. The Grain Board also had the power to issue export licenses and establish embargoes in years of tight supply.

In 1974, the role of the National Grain Board was greatly expanded when Peron returned to power. It became the sole legal market for all Argentine sales and purchases of wheat, corn, and grain sorghum. All producers and purchasers were obligated to deal with the Board; and any merchants, brokers, or cooperatives were considered agents of the Board and paid commissions. The Board was also responsible for establishing domestic and export grades and standards.

Peron died in July of 1974, and after spiraling inflation and government

instability under his wife, a military coup took over leadership of the government in 1976. A major reorientation of agricultural policy immediately took place. The agricultural sector was returned to a market-oriented system, and the National Grain Board relegated to minor administrative responsibilities and various information functions. A major change differentiates this period form the previous three. The export retention tax, which had been in effect since the Peron era, was eliminated. Another significant difference between this period and the previous board period was the unification of exchange rates that had previously discriminated against agriculture.

Operating within this complex and changing policy environment, four levels of the grain marketing sector will be evaluated: production, first-handler, second-handler, and end-use. The first purpose of this paper is to describe the role of these levels in the Argentine grain system. The description also includes an examination of the physical and exchange linkages between the four levels (figure 1). The second objective of this paper is to surface a number of problems in measuring export marketing system performance. The final objectives of this paper are a) to question the relevance of grain export marketing systems as a policy issue, b) to stimulate interest and discussion regarding the welfare implications of changes in marketing systems, and c) to pursue alternative methodological approaches in measuring export performance.

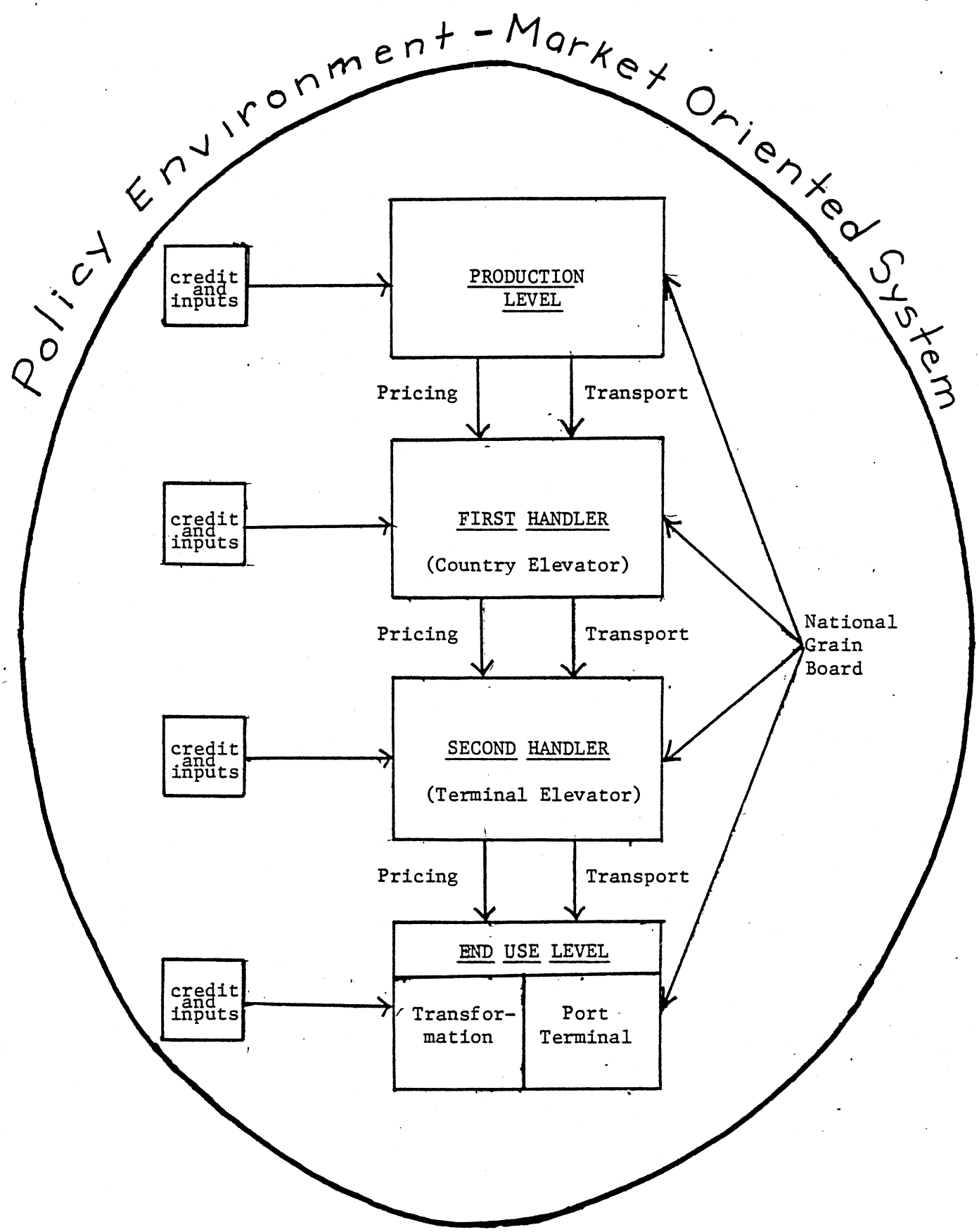

Figure 1. A Schematic Diagram of the Policy Environment and Subsector Levels in Argentina, 1976-1980.

DESCRIPTION OF THE ARGENTINE GRAIN MARKETING SYSTEM

A. Production

The major producing area for Argentine agriculture is the Pampa region (figure 2). The characteristics of the Pampean topography, soil, and climate make it one of the richest agricultural regions in the world. It provides pastureland for 80 percent of Argentina's cattle production, and is the major wheat, coarse grains, and oilseeds growing area. Trends in Argentine grain production have been affected by three important price related factors in the past fifty years. In general, there has been a trade-off between area devoted to grain crops and area devoted to pastureland, depending on market signals and/or government policies. Another significant influence on Argentine grain production patterns has been the introduction of grain sorghum. Wheat has historically accounted for the largest area planted to any single grain, corn area has shown an overall decline since the 1940's, and grain sorghum hectarage has increased substantially since 1950. In the 1978/79 marketing year, grain sorghum planted area, up from less than 1 percent in 1953/54 marketing year. The third factor influencing production trends is the cultural practice of double-cropping wheat and soybeans.

Land ownership is still fairly concentrated due to Argentina's traditional land tenure pattern. In the 1960 census, 5 percent of the landowners held nearly three-fourths of all private agricultural land. In 1965, more than one-half of the land in the Pampa region was concentrated in farms of 1012 hectares (2500 acres). In 1978, Rudbeck estimated the average farm size to be just under 400 hectares (988 acres), roughly two and one-half times the average size in the U.S. at that time.

Input utilization by Argentine producers is largely a function of investment incentives and land tenure conditions. Policy to protect most

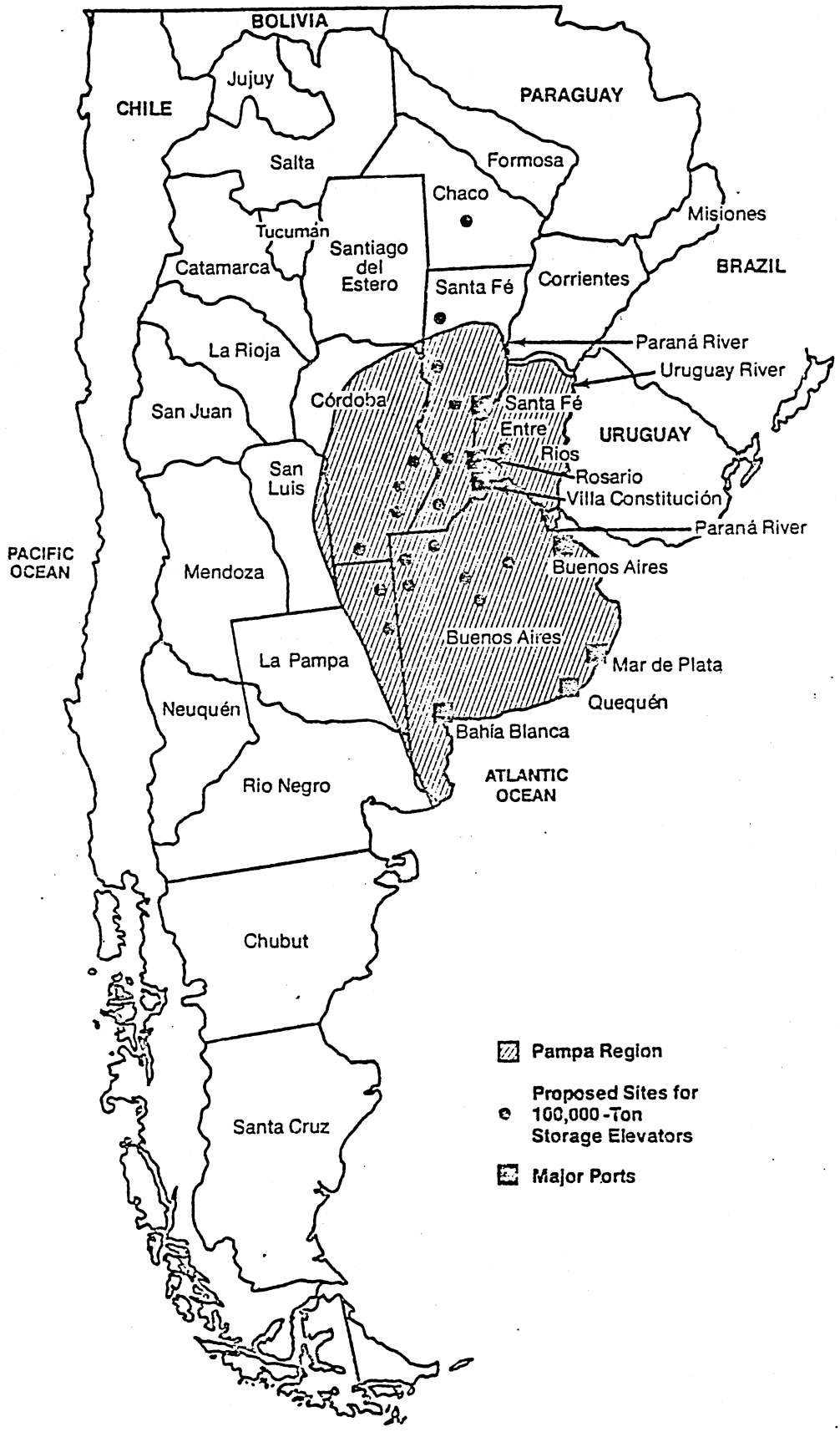

Figure 2. Argentina: Principal farm production region, ports, and proposed elevators.

Source: Foreign Agriculture, January 1978.

of the domestic input industries has been a major factor in reducing the profitability of investing in modern input technology.

Due to the extensive method of farming, mechanization occurred early; but continued at a low rate of investment in comparison to other sectors of the economy up until the mid-fifties. Since then, mechanization has increased at a fairly high rate, although prices for machinery in Argentina were substantially higher than most other major agricultural producing countries due to policies protecting the domestic industry. However, in 1977 the high import duties affecting tractors were reduced leading to relatively lower prices.

The use of fertilizers in crop production is another aspect of modern technology that has been limited by protectionist policies. The use of fertilizers in grain production has historically been minimal, although recently there has been a small increase in the utilization of nitrogen based fertilizers. At present, fertilizer usage continues at its relatively low level due to three major factors. The small improvement in yields, especially in corn and grain sorghum production, from the use of fertilizers has not been able to offset their relatively high cost. Second, Argentina's susceptibility to weather variability could cause extensive burn damage to a crop in years of drought if fertilizer usage is increased without increases in irrigation practices. Third, Argentina's crop research has traditionally fostered new seed varieties which were developed to respond to the Pampean soil and and climate rather than to fertilizer use. However, this trend may be changing with respect to wheat and corn where new varieties are being developed that do respond well to fertilizer use.

The practice of irrigation is concentrated mostly outside of the Pampa region which is the major grain growing area. In 1976, the Pampa region only

accounted for approximately 12 percent of total irrigated area. Total irrigated area comprises only 6 percent of total planted area in Argentina.[3/]

B. First-Handler Level - Country Elevators

The primary collection system is characterized by a lack of adequate storage facilities. There is limited on-farm storage, and the major storage facility at this level is the primary elevator which receives grain directly from producers. The most recent estimates show 10.0 MMT in-country and 3.4 MMT on-farm storage capacity, of which 9.1 MMT is estimated to be commercially owned (International Wheat Council).

There are currently two major programs being developed to alleviate the inadequate storage problem. The National Administration for the Building of Grain Elevators is developing a project to expand government owned storage capacity by 340,000 MT. However, not all of the planned expansion will be at the primary collection level, as some of the increased capacity will be at inland terminal elevators.[4/] The second major program, financed by the World Bank, plans for the construction of twenty in-country elevators with storage capacity from these two projects (to be completed by 1982) is 2.340,000 MT, and increase of 14 percent (see next section). Annual investment in government controlled grain elevators has been high variable in the seventies. It has ranged from 7.1 million to 27.2 million (table 1).

3/ As of yet, no complete annual cost of production studies, similar to the Brazilian, Australian, and U.S. series, have been found. In-country data collection will concentrate on filling the gaps in available cost of production statistics.

4/ In the proposed study and after in-country data collection, a separate section will not only expand upon the first-handler level, but will also describe a second-handler level.

Table 1. Annual Investment in Government Controlled Grain Elevators in Argentina, 1970-1978

Year	US $
1970	9,200,000
1971	9,200,000
1972	7,100,000
1973	7,700,000
1974	15,000,000
1975	9,000,000
1976	8,500,000
1977	19,100,000
1978	27,200,000

Source: Economic Information on Argentina, Dec. 1, 1979.

Investment in increased storage capacity by the private sector has traditionally been low, but the availability of credit through the Banco de la Nacion for the construction of private grain elevators may be changing that trend also. This credit extension supported by the Inter-American Development Bank is available for expanding storage capacity 1.5 MMT. Since February of 1977 when this credit line was established, the storage capacity of private grain elevators has been increased 528,000 tons. The number of primary elevators controlled by the private sector will soon increase when the National Grain Board completes its planned transfer of 82 primary elevators through a rental system (Economic Information on Argentina).

C. End-Use Level - Port Terminals and Transformation System

The same problem of inadequate storage also exists at the port terminal level. The storage capacity at the ports is estimated to be 2.6 MMT (IWC). Hence, total country, terminal, and port elevator storage capacity in Argentina sums to 16 MMT. This capacity is equivalent to about one-half of annual grain and soybean production. Limited total storage capacity creates severe congestion at harvest

time (December - January for wheat, April - May for corn and grain sorghum) when a rapid flow of grain into the ports occurs. Between 1975 and 1979, shipments of grains, soybeans, and meal averaged 1.8 MT per month from April to July compared to only .6 MT per month from October to December.

Ownership of all the port elevators has remained in the hands of the Grain Board since the first Peronist era. Current consideration is now being given to transfer control to the private sector. If this policy is adapted, port elevators will be rented on a monthly tonnage capacity per month basis to the private sector for a ten year period.

The major grain shipping ports are Bahia Blanca and Buenos Aires which were the only two ports in 1978 with harbors that could accomodate ships with drafts of 30 or more feet. Bahia Blanca had a 4.1 MT port throughput in 1977, and Buenos Aires' port throughput in 1977 was 3.9 MT. The main upriver ports on the Parana River, Villa Constitucion, Rosario, and Santa Fe, have water depths of approximately 25 to 30 feet; and cargo topping off of ships then is completed at Buenos Aires. Improvements in handling facilities at Argentine ports since 1978 has allowed loading capacity to reach new records. The average from April to July in 1979 was 2.6 MMT per month, including almost 3 MMT in the month of June, a relatively large increase from the 1 MMT per month maximum in 1976 (Economic Information on Argentina).

D. Transportation Linkage

The two main modes of transportation of grains from farm to elevators are the rail and trucking industries. Rail rates for movement of grain in comparison to trucking rates have been low, but the inefficiencies of the system, which was nationalized in 1947, decreased its competitiveness as a mode of transportation for grain. Since 1970, the railway system has been improved through increased labor productivity, a reduced number of workers,

more efficient use of capital, and improvements in the quality and quantity of rolling stock and in loading and unloading facilities. However, there still remain a number of major problems including a shortage of suitable grain cars, several different gauges, and routing.

Trucking has been the main mode of internal transportation for grain.[5/] Although the rail system has been improved in the seventies, trucking still dominates the internal movement of grain. In 1970, several long-distance and international trucking firms were in operation, but the majority of trucking firms were short-haul single vehicle operations.[6/]

E. Pricing Linkage

The Buenos Aires cash market is the most important in determining price, and it generally sets the price levels for the other minor cash markets. The futures market in Argentina is not as important because of the high inflation rate. Pricing behavior is much more complex since the removal of price controls in 1976.[7/]

5/ In 1970, 70 percent of the grain moving through the market was transported by truck.

6/ Our understanding of the Argentine transportation system is minimal; particularly with respect to the more recent developments in quantity and quality of rolling stock, rail and truck rate and route regulation, ease of substitutability, and other related transportation problems.

7/ Time series of prices at the farm level, country elevators, and terminal elevators have not yet been collected; but data on export prices and wholesale prices are available.

Export Market System Performance

After describing the system and the policy environment, the question arises as to how the policy environment has influenced the performance of the export marketing system. In this section, four general performance criteria are examined: a) technical efficiency, b) price efficiency, c) export response, and d) equity. A number of conceptual measures[8/] are identified for each performance criteria. And for each conceptual measure, a number of operational methods can be utilized. Time and space preclude an evaluation of all these measures. Since the intention of this paper is to examine some methodological issues, only one conceptual measure under each of the performance criteria will be studied at an in-depth level.

A. Technical Efficiency

Ideally, there are a number of ways of conceptualizing technical efficiency as a performance criterion including a) level and stability of supplies and b) productivity. This paper will examine some operational methods to measure level and stability of supplies.

Level and stability of supplies is an important conceptual performance measure to study, especialy in the case of Argentina, due to its history of alternating market-managed and market-oriented policy environment surrounding the agricultural sector. A stated objective of most grain boards is to introduce some stability into the market in an effort to increase producer welfare and a country's reliability as a supplier. Therefore, we will approach this measure with the intentions of separating the effects of the two market-managed

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8/ In the proposed study, the operational method for analyzing each conceptual measure will be evaluated.

periods from the two market-oriented periods since 1945, which will hereafter be referred to as Board I (1945/46-1957/58), Free Market I (1958/59-1972/73), Board II (1973/74-1975/76), and Free Market II (1976/77-present).

Since Argentine farmers exhibit relative flexibility in substituting the various grain and oilseed crops according to the applicable price ratio, the appropriate data to use for "supplies" is total grain and oilseeds production. Figures for production are used (figure 3), rather than domestic consumption or exports (or some measure of the commodity's availability for those two end uses), because we are not separating the domestic and export markets at this point.

The operational method utilized in this paper for measuring the level and stability of supplies is comparison of the means, slopes of trend lines, and coefficients of variation between the four periods (table 2). The level

Table 2. Statistical Figures on Argentine Grain and Oilseed Production, 1945/46-1978/79

	Mean (1000 MT)	Slope of Trend	Coefficient of Variation
1945/46-1957/58 (Market-Managed - Board I)	13,680	198	0.22
1958/59-1972/73 (Market-Oriented - Free Market I)	19,561	579	0.19
1973/74-1975/76 (Market-Managed - Board II)	24,727	-1562	0.10
1976/77-1978/79 (Market-Oriented - Free Market II)	31,263	-360	0.04

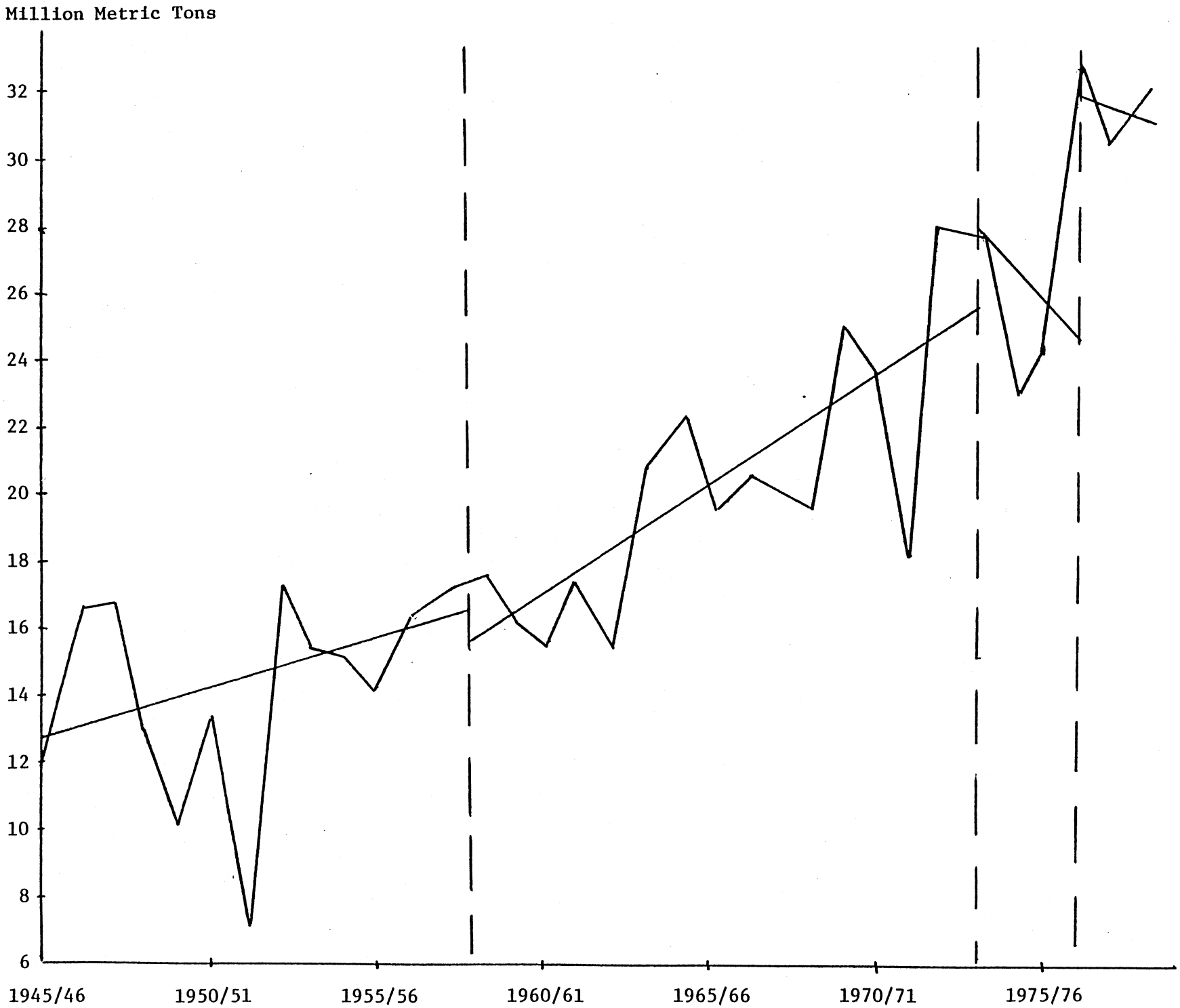

Figure 3. Total Annual Argentine Grain and Oilseeds Production, 1945/46-1978/79, and Linear Trends for Board I, Free Market I, Board II, and Free Market II

of grain and oilseed production in Argentina has often fluctuated widely from year to year since 1945, but has demonstrated an increasing trend since that time up until the present. During the first two periods, both trend line slopes are positive; but production increases roughly three times faster in the Free Market I than in the Board I. Both slopes from the latter two periods are negative, but the rate of decline is four times faster in Board II than in Free Market II. It is important to note that the level of production the year before Board II began was at 27.5 MMT and declined from there, while the first year of Free Market II showed an immediate increase of 8 MMT from the last year in Board II and then declined only slightly from that point.

The coefficients of variation for the separate periods indicate a decline in variability over the entire period since 1945. There is only a three percentage point difference between the coefficients of variation from Board I and Free Market I, but the latter two periods' coefficients exhibit a much greater decline in variability.

It is difficult to conclude from this analysis that there is a definite causal effect from structure to level and variability of supplies. The level of supplies is expected to increase over time due to increasing world demand and increasing technology. It is interesting to note however that during Board II, which was characterized by an especially high world demand, the trend for level of supplies was decreasing. Also, Free Market II exhibited an extraordinarily rapid increase in level of supplies that has generally been sustained. These two factors might indicate a causal effect between structure and level of supply, but further analysis on the rate of increase is necessary. A comparative study of other countries or an analysis of the appropriate price series might shed more light on what would be considered an average rate of increase regardless of the market structure.

Table 3. Correlation Coefficients Between World Wheat and Corn Export Prices and Argentine Wheat and Corn Planted Area

	Wheat	Corn
1954/55-1957/58 (Market-Managed - Board I)	0.454	0.008
1958/59-1972/73 (Market-Oriented - Free Market I)	0.233	0.009
1973/74-1975/76 (Market-Managed - Board II)	0.094	-0.498
1976/77-1978/79 (Market-Oriented - Free Market II)	0.986	-0.894

and area, but the correlation is very low. There is a small increase in correlation from Board I to Free Market I. Both Board II and Free Market II have negative correlation coefficients, indicating that corn price and area are negatively correlated during those periods. Free Market II has an especially high negative correlation.

The correlation coefficients for wheat price and area are positive. Wheat price and area are almost perfectly correlated during Free Market II. Board II shows the least correlation of all four periods, while the correlation in Board I is higher than the correlation in Free Market I.

Utilizing this limited operational method, it is difficult to make rigorous conclusions about price efficiency with respect to corn. This is in part due to the frequent practices of rotation and substitution; and therefore, an in-depth analysis of response relative to various price ratios is necessary. For instance, although the world corn price was falling during Free Market II, the price for a substitutable crop may have been falling even more, and therefore the increase in corn area resulted. Also, further study

on the correlation between export price and yields would be very useful in evaluating pricing efficiency.[9/]

With respect to wheat, the real difference (area response) appears to occur in Free Market II which appears to be highly price efficient in comparison to the other three periods.

Some improvements could be made in this operational method. Although the U.S. export prices show the same general trends as Argentine export prices, use of Argentine export prices would be better.

C. Export Response

We defined five conceptual performance measures for export response including growth in sales response to export demand changes, growth in foreign exchange earnings, foreign market development, and credit assistance. In this brief overview we examine the growth in sales. The growth in sales to Argentina's major export markets and the growth in Argentina's market share of world exports is examined.

One method of examining the rate of change in wheat and corn exports is to compare the trends and the averages for the four different time periods. The linear trend slopes are compared for Argentina's wheat and corn exports to each of its major export markets and for Argentina's market share in world wheat and corn exports in an effort to conclude whether the rate of change is affected by the different market systems.

Argentina's major traditional export markets for wheat and corn are Europe and South America. The U.S.S.R. and People's Republic of China have imported large amounts of Argentine wheat and corn at infrequent intervals. In some years, the U.S.S.R. imported 50 percent or more of Argentina's

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9/ The average level of corn yields increased 50 percent from Board II to Free Market II.

wheat exports. Since 1974, Argentina has exported annually an average of 746 thousand MT of corn and 625 thousand MT of wheat to the U.S.S.R.[10/] From 1962 to 1966, average annual exports to China of wheat and corn were 850 thousand MT and 142 thousand metric tons, respectively. Since exports to these two countries have been so sporadic throughout the four time periods, the analysis of trend line slopes will only refer to exports destined for Europe and South America.

Table 4. Linear Trend Slopes and Averages in Argentine Wheat Exports by Destination

Year/Destination	--Europe[1/]--		--South America[2/]--	
	Slope	Average(1000 MT)	Slope	Average(1000 MT)
1949/50-57/58 (Board I)	118.9	1048	42.4	1058
1958/59-72/73 (Free Market I)	-41.9	893	-0.7	1201
1973/74-75/76 (Board II)	-74.8	340	-646.1	611
1976/77-78/79	-115.1	429	-550.8	1030

10/ In July 1980, Argentina signed a five year agreement calling for the sale of 4 MMT corn and sorghum and 500,000 MT soybeans to the U.S.S.R. annually.

Table 5. Linear Trend Slopes and Averages in Argentine Corn Exports by Destination

Year/Destination	--Europe[1/]--		--South America[2/]--	
	Slope	Average(1000 MT)	Slope	Average(1000 MT)
1951/52-57/58 (Board I)	52.6	870	-2.4	11
1958/59-72/73 (Free Market I)	173.7	2929	14.6	61
1973/74-75/76 (Board II)	-852.7	2966	-2.0	28
1976/77-78/79 (Free Market II)	128.4	2825	74.9	111

The average level of wheat exports to Europe increased 26 percent from Board II. Up until that point, the average level of wheat exports to Europe was declining each time period. The trend line slopes for wheat exports to Europe indicate a decline in all four periods except in Board I, which has a positive slope.

The level of wheat exports to South America is highest in Free Market I, although the trend is declining slightly during that period. Board I shows the only increasing trend of the four periods, while Board II has the fastest decreasing trend and the lowest average level of wheat exports to South America. Free Market II is also characterized by a decreasing trend, but the average level of exports jumped 69 percent from the level during Board II.

The highest level of Argentine corn exports to Europe occurs in Board II, the only period of the four that exhibits a declining trend in corn exports to that destination. Free Market I has the highest rate of increase in corn exports to Europe, and its average level increased 237

percent from the level in Board I.

The average level of corn exports to South America is also highest in both free market periods, showing the highest level in Free Market II. Corn exports to South America demonstrate a declining trend in both board periods and an increasing trend in both free market periods, with Free Market II having the greatest rate of increase.

Conclusions are difficult to draw from this limited analysis, but it appears that the policy environment does have some effect on growth in exports. Of course, a more in depth examination of exports (including demand in country of destination) to all Argentina's export markets is necessary to make any definite assumptions. It is also desirable to further analyze Argentina's market share of these various import markets to determine how well Argentina's export marketing system can respond to the different policy environments and structures within importing countries.

Argentina's market share of world wheat and corn exports is analyzed in this paper as another measure for growth in sales (table 6). In each of the four periods, there is a declining trend in Argentina's market share of world wheat exports. The greatest rate of decline is in Free Market II, but the average market share increased 67 percent from the average market in Board II. Up until Free Market II, the average market share declines from one period to the next.

Argentina's average market share of world corn exports declines from one period to the next up until the present. There is a declining trend in all of the periods except for Free Market II. Of the three negative trends, Free Market I has the lowest rate of decline.

The effects of any change in policy environment on Argentine exports appear to be more pronounced in corn exports. However, market share analysis can be deceiving. Analyzing the trends in world exports in combination

Table 6. Argentina's Market Share of World Wheat and Corn Exports

	Wheat		Corn	
	Average Market Share	Slope of Linear Trend	Average Market Share	Slope of Linear Trend
1945/46-57/58 (Board I)	0.10	-0.004	0.26	-0.034
1958/59-72/73 (Free Market I)	0.05	-0.002	0.14	-0.003
1973/74-75/76 (Board II)	0.03	-0.010	0.09	-0.005
1976/77-78/79 (Free Market II)	0.05	-0.015	0.08	0.020

with this analysis is necessary in order to determine exactly why the changes in market share are occurring. Also, analysis of price ratios with respect to other competing crops is necessary.

D. Equity

The performance criteria, equity, may be conceptualized in many ways. Such conceptual measures are the level of consumer prices, the stability of consumer prices, income distribution, market access, sales restrictions, and employment levels. This paper examines an operational method for evaluating income distribution.

Income distribution is one of the traditional concepts of equity, and is particularly pertinent to Argentina's case. Up until 1976, the government's basic policy was one of increasing industrialization at the expense of the agricultural sector. Income was transferred from agriculture to industry through taxes on agricultural exports and import duties on products that competed with domestic industries.

The operational method for measuring the effects of this policy is comparing trends and average levels between the different time periods for the agricultural sector's contribution to gross domestic product (GDP) and the manufacturing sector's contribution to GDP (table 7).

The average level for both the agricultural sector's contribution to GDP and the manufacturing sector's contribution to GDP increases from one period to the next, except for a decline in the average level in the manufacturing sector from Board II to Free Market II. In 1976, the manufacturing sector's contribution to GDP immediately fell 4.4 percent from the year before, in contrast to the agricultural sector's contribution which increased 3.4 percent in that year. In 1977, the manufacturing sector came back to a level equal to the average in Board II, and the agricultural sector reached an all time high level. The rate of growth in both the agricultural and manufacturing sectors slowed during Board II, while the highest rates of growth for both sectors occurred during Free Market II.

Table 7. Argentina: Linear Trend Slopes and Average Levels of the Agriculture Sector's Contribution to GDP and the Manufacturing Sector's Contribution to GDP

	Agriculture		Manufacturing	
	Slope	Average (billions of 1960 pesos)	Slope	Average (billions of 1960 pesos)
1950-1957 (Board I)	3.8	139.1	10.7	215.4
1958-1972 (Free Market I)	3.1	170.5	22.2	384.8
1973-1975 (Board II)	2.3	203.8	9.6	634.0
1976-1977 (Free Market II)	13.9	216.9	25.5	618.7

Up until 1976, the growth rate and average level in contribution to GDP in the agricultural sector was quite low in comparison to the manufacturing sector, indicating that the policies to increase industrialization and transfer wealth to that sector were somewhat successful. However, Board II appears to have been detrimental to Argentina's economic growth rate in general. It is also interesting to note that the manufacturing growth rate increased 100 percent from Board I to Free Market I.

Further analysis on actual income and wage rates in the different sectors is desirable. Also, data prior to 1950 and after 1977 are necessary to make the analysis more complete.

CONCLUSIONS

Preliminary observations lead us to conclude that the Argentine grain export marketing system is considerably more complex than the Australian system. There are more levels within the subsector of the Argentine system leading to a greater variety of functions. The policy environment is also more complex. The history of political instability has in general lowered the performance on the macroeconomic level. A different policy environment exists in each of the four periods defined in this paper. The vast complexities of the Argentine grain export marketing system make further in-depth study and analysis necessary to draw any rigorous conclusions.

The description of the Argentine system and the brief outline of selected performance criteria surface a number of other disconcerting issues. These issues can be categorized into four general areas: a) the scope of economic policy environment, b) methodological issues, c) implications for clientele, and d) implications for the agricultural economics profession.

A. The Scope of Policy Environment

Is the real issue board versus nonboard? We think not. The question is of greater magnitude - what is the economic policy environment, market oriented or market managed and what objective function is the economic policy environment and its related institutions attempting to optimize? Can it therefore be hypothesized that the adaptation of a board is predetermined by the choice of economic policy environment (figure 4)?

The Argentine system up until 1976 is a prime example of differing degrees of regulation in a market managed policy environment. The period since 1976 to the present is an excellent example of a market oriented policy environment since the degree of regulation has been lowered considerably.

B. Methodological Issues

1. No set of well developed testable hypotheses has been found linking policy environment - grain boards - market performance to a commonly accepted body of economic theory. The simultaniety of relationships between performance and its determinants makes conceptualization difficult and empirical measurement even more formidable.

2. Selection of testable performance criteria can prove very difficult. A certain degree of subjectivity is involved in selecting any criterion. Our five criteria and 26 conceptual measures do not exhaust the list by any means, but we feel that superior results will emit from an initial selection of a broad spectrum of performance criteria. McCalla and Schmitz use eight performance indicators in comparing the performance of the U.S. and Canadian grain export marketing systems. Martin suggests the use of eleven performance objectives and 25 performance indicators. Therefore, we conclude that attempts at an analysis of the entire spectrum of export market performance criteria,

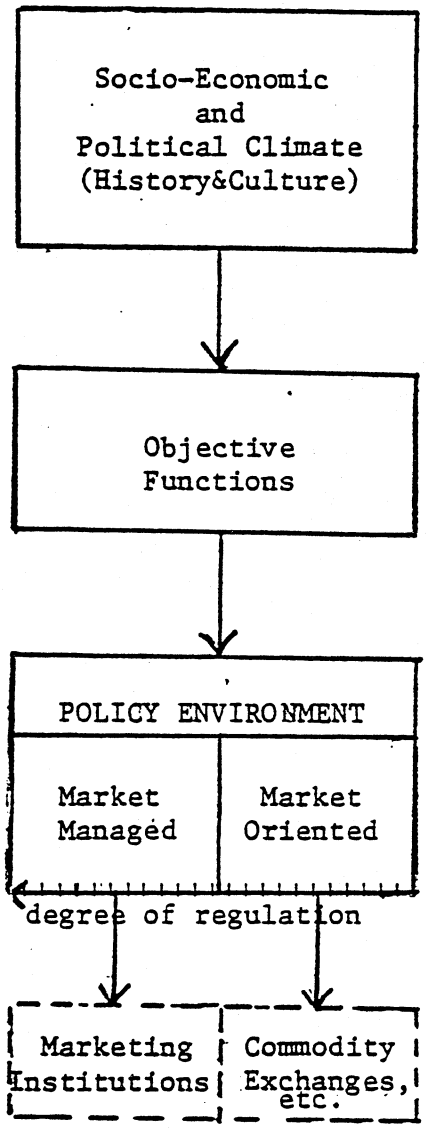

Figure 4. Conceptual Development of a Marketing System

though initially superficial, will yield incremental gains to knowledge that may prove invaluable to future endeavors.

3. Marion and Hardy point out it is difficult to combine performance objectives into a comprehensive index. Martin further emphasizes this point and adds that performance criteria may attempt to achieve conflicting goals. Therefore, we recommend a three step examination of export market performance. First, a disaggregated performance analysis is used to lay the groundwork for comparative studies and objective function measurement. This disaggregated analysis would examine each performance criterion in depth, similar to the Thompson and Dahl study. Assuming society is attempting to optimize some objective function, a norm is specified and attempts made to achieve it. Comparative studies can then be viewed as a tool or a benchmark in measuring how well a system is accomplishing its own objective functions.

4. Very few market managed or market oriented systems have developed exogenous to the policy environment and political and economic history. Therefore, we feel it extremely important to develop a thorough historical description of agriculture and food policy, general economic development, and evaluation of the grain marketing network. This description will aid in developing a concensus concerning the objective function of the grain marketing system and its encompassing policy environment.

5. From this brief exercise, we conclude that the ability to use rigorous descriptive techniques may prove as valuable as the use of sophisticated inferential statistics.

C. Implications for Clientele

1. With respect to its end use, export market performance research has implications at two levels: macro and micro. The implications on the macro

level involve public policy decision making and the benefits of welfare analysis. When viewing contemporary policy issues such as the Weaver Bill and Roth-Stevenson Bill, welfare analysis takes on added importance (table 8).

2. On the micro level, the efficiency and quality of economic decisions within a firm may be improved by the disaggregated performance analysis described in this paper. The firm level decision maker could use this analysis in enhancing the competitive position of the firm through improved long range planning and development of short run marketing strategies. Investment decisions, inventory control, pricing, and marketing arrangements can also be enhanced through this analysis.

D. Implications for the Agricultural Economcis Profession

Because of training in theoretical and welfare analysis and familiarity with marketing institutions, agricultural economists are uniquely qualified to objectively explore and evaluate the advantages and disadvantages of such an important public policy issue.

Table 8. Disaggregated Welfare Analysis of Export Market Performance

Performance Criteria	Taxpayer Surplus	AgBus/Empl Welfare	Producer Surplus	Consumer Surplus	Sum of Prod & Con Sur	Net Gains
Pricing Efficiency	(+) (-) Comments:					
Technical Efficiency						
Export Response						
Progres-siveness						
Equity						

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