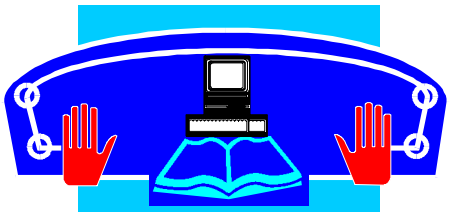

DEVELOPING THE REGULATORY ENVIRONMENT FOR COMPETITIVE COMMODITY M,ARKETS

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DEVELOPING THE REGULATORY ENVIRONMENT FOR COMPETITIVE COMMODITY MARKETS

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FOREWORD

Most countries in the Latin America and the Caribbean region are committed to major economy-wide and sectoral reforms--stabilization, structural adjustment, trade liberalization, and deregulation. Traditionally, the public sector was heavily involved directly in agricultural commodity markets through price and marketing policies. Now, the role of the government in this area is being reconsidered.

Under this new economic environment, the World Bank is intensifying its dialogue with the countries aimed to help consolidate the economic reforms in a framework which enhances the role of the private sector in agriculture.

This publication by Professor Lowell Hill and Ms. Karen Bender on *Developing the Regulatory Environment for Competitive Commodity Markets* is one in a series coordinated by the Advisory Group of this Department on the development of a framework to deal with trade, price and marketing reforms for agriculture.

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ABSTRACT

In 1992, LATAD initiated a regional activity aimed at assessing the relative merits of various initiatives to deal with price instability and price risk management in general. Analytical work in price bands (Quiroz and Valdés) and the joint FAO/World Bank workshop in Santiago in October 1993 were part of this effort. Simultaneously, we initiated a few case studies of the status of commodity markets in the Latin America and the Caribbean region. The focus of these studies has been to identify the requirements for development of (domestic) private commodity markets for the major grains, with a clear specification of the areas where government regulations serve a facilitating role and areas of private sector responsibility. This report by Professor Lowell Hill and Karen Bender identifies the minimum requirements for the development of private commodity markets. Their analysis is based on their extensive experience in Latin American and Caribbean countries as well as in the United States and other regions. In recent years, Professor Hill has been a consultant on this topic in Brazil, Chile, Colombia, and Mexico.

PREFACE

Transition from controlled agricultural markets to a competitive private market is a complex process, which in most countries demands changes in the legal and institutional framework. In Latin America, the current underdevelopment of private markets to deal with price risk has emerged as a major policy issue. Why is this an issue now? Because most countries in Latin America are embarking on a unilateral process of tariffication, eliminating quota restrictions, removing export taxes, and also eliminating legal monopolies by state agencies on agricultural trade which was the case for most imports of sensitive products. Until then, due to QRs and state trading, governments had powerful trade instruments to counteract the instability of border prices. Moreover, through procurement schemes by parastatals, governments could partially reduce the domestic price instability from output fluctuations. Thus, governments are now moving out of direct marketing activities (procurement, storage, indirect price controls through QRs) but the private sector, however, is not yet prepared to provide a range of market instruments to deal with price risks.

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Introduction

Economies in transition from controlled to private enterprise markets are often faced with a dilemma of reducing government participation in market activities without losing the necessary government support for the market institutions. Commodity markets, providing an arena for price making forces to interact, require a regulatory environment that encourages private enterprise. However, government regulations that distort prices and resource allocation, or restrict the ability of price to respond to changes in supply and demand, weaken commodity markets and diminish the incentives for private enterprise. Defining the optimum role for government in the introduction and growth of commodity markets, is a challenge for developed as well as developing economies. There is an on going debate about which activities of government will enhance the development of markets, and which will inhibit their growth. Economic principles supplemented with research results provide some guidance for policy makers as they review their alternatives.

In the transition from an administered system of prices and markets there is a temptation for the central government to maintain strong control in order to minimize social and economic disruptions during the transition and to retain the ability to meet the non market goals of society. Starting with a market that is under the control of the government agency, the danger is greater that there will be too much government rather than too little. Professor Stigler provided some important considerations for policy makers as they review the programs and responsibilities that should be retained by the government and those that should be transferred to private enterprise. "Stigler's Laws" provide the basis for developing the criteria for allocating responsibilities between public and private actions.

> Rule 1: The state cannot do anything quickly.
> Rule 2: Government cannot possibly control the detailed economic tasks required in the management of individual firms.
> Rule 3: The democratic state strives to treat all citizens in the same manner; individual differences are ignored.
> Rule 4: The ideal public policy, from the viewpoint of the state, is one with identifiable beneficiaries, each of whom is helped appreciably, at the cost of many unidentifiable persons, none of whom is hurt much.
> Rule 5: The state never knows when to quit."

Stigler uses these rules to differentiate between what the state <u>can</u> do as distinct from what the state should do. He then identifies four classes of important economic problems that require state involvement. Class 1: monopoly, Class 2: poverty, Class 3: economic distress, Class 4: consumer and worker protection. A free and unregulated market will not resolve problems that fall within these four classes. It requires regulation, policies, and in many cases direct involvement of state or federal governments (Stigler, 1970, p. 80-85).

Paul Samuelson stated and supported the hypothesis (on the grounds of economic efficiency) that "there is needed a certain burden of proof that has to be established by anyone who proposes that the government do something. The balance of advantage in favor of the government must be something substantial or you should stand with the status quo of private enterprise." (Samuelson, 1970, p. 85). However, in many countries the status quo is not private enterprise, and the role of government in stimulating change and facilitating the development of private enterprise is not as clear as Samuelson's statement suggests.

In any economy there must be market rules which identify the rights and obligations which set the limits of actions between buyers and sellers. Some of these market rules are easily demonstrated to be essential for maintaining a marketing system. Property rights, patents, and a legal system to enforce contracts are generally accepted as essential elements in a society as well as in a marketing system.

Responsibility for the traditional marketing functions and the associated regulations has been allocated between public and private entities in many different ways in the countries engaged in production and marketing of major agricultural commodities. The remainder of this paper will be devoted to an evaluation of the advantages and disadvantages of public vs. private responsibility for the most important elements of a market system. An explication of the criteria on which to judge performance will be followed by a description, classification, and discussion of the regulations and policies that affect market performance. These will provide the basis for evaluating the role of government in controlling and encouraging efficient markets (including comparisons among countries with contrasting allocations of responsibilities). The substitution of market forces for central planning, requires that certain regulations be in place to facilitate the development of an operational market. The minimum set of regulations required will be identified and prioritized according to sequential implementation.

Criteria for Evaluating Market Performance

Economists have provided a large number of performance criteria with various norms and strategies for evaluating them.(Economic Research Service, 1973) (Greer, 1992, p. 590). The following criteria selected from that group are believed to be most relevant for evaluating agricultural commodity markets.

1. Efficiency. Increasing the amount of output or quantity of products per unit of input is almost universally accepted as being a desirable goal. Efficiency in production and marketing is therefore given a high priority among the evaluation criteria. The definition of efficiency is sometimes broadened to include consumer satisfaction as the output and economic costs as the input. Using even a small amount of resources to produce large quantities of a product that is not desired by consumers is technically efficient, but it is not economically efficient in the context of allocating resources to their most valued productive activity.
2. Equity. Treating all producers and all consumers as having equal importance is a desirable social goal. Equity in the market place also requires that all firms have equal access to resources, to products and to information. The concept of equity is sometimes extended to include the distribution of wealth or income, and access to a minimum level of those goods and services defined by society as essential.
3. Progressiveness. Firms should be progressive in the development of new products and the use of new production technologies. This goal is related to efficiency and to incentives for satisfying consumer preferences, as well as to adopting lower-cost strategies for producing a given quantity of goods. New product development, promotional activities, and providing a wide variety of consumer goods also fall within this performance norm.
4. Stability. Stable prices and income are important in terms of minimizing undesirable impacts on consumers and producers. Economic stability generates political stability, thus making the economic criterion a social criterion as well.

5. Risk. It is generally desirable to minimize the risk to individuals; particularly risks that can have disastrous consequences either socially, politically, or economically. Policies that allow individuals to shift the risk from those who are risk averse to those who are risk prone increase total welfare.
6. Income Distribution. Primarily for social and political reasons it is important that income not be concentrated in a small segment of society. Policies that increase the concentration of wealth and income are less desirable than those that provide more equitable distribution, other things being equal.
7. Market Responsiveness. Regulations and polices that allow and encourage producers and other decision makers to quickly respond to changes in economic incentives increase efficiency, equity, and progressiveness in the industry. Complex regulations and bureaucratic rigidities diminish the ability of individuals to respond to changing economic conditions.
8. Economic Incentives. The policies and regulations governing the behavior of market participants influence the form and magnitude of economic incentives for firms to increase efficiency, adopt progressive technologies, and respond to changes in market conditions.

Classification of Market Activities

There is an almost infinite number of specific activities and regulations that influence market performance. Nine categories have been selected to represent those regulations and activities deemed relevant for identifying the optimum allocation of responsibilities between public and private entities. The list below is neither exhaustive nor mutually exclusive, but will be useful in identifying those activities, policies, regulations and market structures required for the development of an efficient, competitive commodity market.

I. General Economic Environment:
   1. Competitive commodity markets require a legal system to enforce contracts and to establish and enforce regulations.
   2. The efficiency of commodity markets is directly influenced by:
      (a) monetary policies, including interest rates and the supply of credit
      (b) fiscal policies such as taxation and government expenditures
      (c) exchange rates
      (d) employment
      (e) inflation
      (f) environmental protection

II. Strategies for transferring income among individuals and groups include:
   1. production controls and price supports
   2. crop insurance
   3. emergency disaster loans and grants
   4. food aid-- domestic
   5. food aid-- foreign
   6. input subsidies and taxes

III. Private and government actions to increase price stability include:
   1. price controls, price bands, floor prices
   2. import restrictions and tariffs

3. risk shifting instruments
4. storage programs
5. insurance
6. contract production

IV. The market infrastructure required for efficient commodity markets is determined by government response to the following issues:
1. ownership of
    a. transportation
    b. storage
    c. production, marketing, processing and distribution
2. operation of firms that provide the marketing functions of:
    a. transportation
    b. storage
    c. production, marketing, processing and distribution firms
3. quality control
    a. grades and standards
    b. inspection services
    c. health and safety regulations
4. information control and dissemination
5. trading rules
6. institutions for reducing or shifting risks, insurance against risk and disasters

V. Market access is restricted or assured by the following private and government actions:
1. warehouse licensing, bonding of warehousemen, mandated insurance for creditors in case of financial failure or bankruptcy
2. licenses to regulate operating practices--e.g., grain dealer's license
3. contract enforcement
4. patent laws
5. control of market concentration--e.g., antitrust laws
6. seed licensing or registration of varieties

VI. Regulations to control transactions include:
1. prices of products and inputs
2. prices of services
    a. transportation rates
    b. storage rates
3. pricing practices
    a. delayed price laws
    b. limits on speculative positions

VII. Agricultural trade policies that influence the development of commodity markets include:
1. export sales reporting system
2. trade agreements
3. trade barriers: export and import taxes, quotas
4. export demand expansion

VIII. Demand expansion by public and private actions include:

1. market development
2. advertising and promotion
3. new product research and development

IX. Research and education may evolve under several alternative structures including:
1. educational institutions
2. government agencies
3. private initiatives

Description of Regulatory Strategies for Agricultural Markets

Markets do not develop in a regulatory vacuum, however, the minimum or the optimum set of regulations required to stimulate the development of privately owned marketing firms is not easily identified by experience, logic, or observation. Observation is an especially risky strategy because nearly every market economy is heavily influenced by its culture, history and ideology. Logic combined with recorded experience and analysis probably provides the best guidelines for policy formulation. However, the resulting conclusions are not provable by experimental sciences and are subject to differences of opinion among informed and rational people.

The classification of market activities provides a framework in which to evaluate the alternative strategies for allocating marketing functions (see Appendix) between government regulations and private firm initiatives so as to facilitate development of an efficient market.

General Economic Environment

Markets will not develop and can not operate without a stable political and economic environment. One can not establish an efficient functioning economic system unless there is a cohesive political entity providing the necessary framework for transactions and enterprise. In many developing economies this requirement is taken for granted, but one need only look at the difficulties in the Eastern European block countries and the former Soviet Union to find obvious examples of the failure of the market to develop in the absence of sound monetary and fiscal policies, stable exchange rates, and control of inflation (Bromley, 1993). Markets do not develop and flourish automatically in the vacuum created by the absence of government controls. Centrally planned economies inhibit the development of markets, but removing government controls does not automatically generate a market.

A functioning market requires a legal system that establishes property rights and integrity of contracts. It requires economic policies that control inflation and stabilize exchange rates. The importance of monetary policies, fiscal policies, interest rates, taxes, unemployment, and inflation has been emphasized in numerous studies, including recommendations for developing economies (Bromley, 1993).

Increased emphasis upon environmental policies and concerns over health and safety have generated additional regulations that place restrictions on markets. In general, the more extensive and comprehensive are the environmental and safety regulations, the greater will be their negative impact upon the development of markets. These regulations are necessary for social welfare and long term productivity, but their negative effect upon agricultural productivity and marketing costs must be recognized explicitly and taken into consideration when evaluating the trade-off between economic growth, market development and environmental concerns. (Dinan, et al 1988).

For purposes of this paper it is sufficient to assume that the necessary economic environment and legal systems are in place. This includes a legal system to enforce contracts and a political system to establish and enforce regulations. It includes stable monetary and fiscal policies, with inflation, exchange rates, employment, and other general economic issues under control so they will not interfere with the development of the marketing system. Environmental regulations have also been excluded from the current analysis. For encouraging market development, the optimum level of environmental regulations, other than those imposed by the market, is usually the minimum that societal goals will allow.

Income Transfers

Many policies related to agricultural markets have been designed to transfer income between sectors or groups. Developed economies, such as the United States, Japan, and western Europe, have pursued the objective of transferring income and resources into agriculture through subsidies and price supports in order to meet social goals and maintain stability within the rural sector, including production agriculture. In many developing countries a "cheap food policy" has resulted in an opposite flow of income and resources, with agriculture subsidizing consumers. (De Janvry and Subbarao, 1986, p. 93), (Kahlon and George, 1985, p. 175).

Food aid programs, both domestic and foreign, also have the effect of transferring income even though they may have been established for the purpose of humanitarian aid. These are usually short term programs in response to specific needs. However, the food stamp and school lunch programs in the United States have become a permanent income transfer to low income families and individuals. Emergency disaster loans in response to drought, floods, hurricanes and tornados are also short term income transfers into agriculture although the intent again is one of humanitarian assistance in an emergency. Insurance provides protection against insurable risks. Where average indemnification exceeds the premium that the insured are willing to pay, private insurers have been replaced by public insurance schemes that combine an objective of spreading risk and a method for transferring income into agriculture. (Williams, et al, 1993, p. 435-37) (McGarry and Schmitz 1992, p. 466). Nearly every farm bill back to the 1920s has included funds for disaster assistance and emergency loans. (Rasmussen and Baker, 1979). The humanitarian objectives of food aid, disaster payments and income supports are important social and political goals. However, achieving these goals will often conflict with the goal of a competitive market system.

COTRISA, a government agency in Chile, has a history of purchasing corn and wheat when price or production variability endanger the welfare of the small farm. The disparity between the rural and city standards of living is evident in statistics as well as by observation. Of the rural areas and small towns surrounding Santiago, some form of income transfer to small farmers is politically acceptable and will continue in some form. The important challenge for Chile, as in many countries, is to find a method of making income transfers without creating major disruptions in the performance of the market. Agricultural welfare (and survival of the small farm sector) is too important socially and politically to be ignored. There are some economic benefits as to supporting this sector if the market distortion and misallocation of resources do not completely offset the welfare gains.

Income transfers into agriculture generally encourage agricultural production, reduce the impact of structural adjustments, and meet social welfare goals. They also promote inefficiency and slow adjustments in resource allocation in response to changing conditions (see appendix). In general, programs to transfer income result in some distortion of a market-determined allocation of resources and products. By definition, programs that transfer income among

individuals or segments of society distort the allocation of basic resources and realign resource uses from that which would exist under a market free of regulation.

The recommendation regarding income transfers in the context of market development is similar to that for environmental protection. Minimizing the number and magnitude of these transfers will enhance the development of markets. There are income transfer mechanisms that result in fewer market distortions than price supports and supply control. The minimum distortion which society and the political system will tolerate is the optimum level for market development and efficiency.

Price Stability Programs

Price stability is often a desirable goal to prevent social and political unrest. Stability is preferred to instability. Wide fluctuations in prices are also undesirable because of their impact upon income. Price stability has social as well as economic value. But, the price of stability is often too high for sustained application and has proven politically untenable in most developed economies (D. G. Johnson, 1975, p. 823-828).

There are several alternative strategies for reducing price fluctuations. Price instability may be reduced by storage strategies to stabilize supplies across crop years. Floor prices stabilize prices in a downward direction while allowing price flexibility in an upward direction. Import restrictions and tariffs have been used to prevent or insulate prices of products, such as sugar or ethanol, from fluctuations in world prices. Price variability can also be reduced by instruments such as forward contracts and futures markets. These instruments may reduce long run variability but may increase short run price fluctuations. Prices change frequently on an active grain exchange or futures market, and in the short run, prices may be more stable in a less organized market. The opportunity to hedge sales or purchases of commodities does enable firms to fix prices for a future sale, thereby removing the potential impacts of price fluctuations between the time that resources are committed and the time when the harvest is delivered to the market.

Price Controls

Government actions to stabilize prices either through minimums, maximums, price bands, or direct control will inevitably distort resource allocation. Limiting the ability of price to respond to the market will alter the price signals sent to sellers and buyers. Incorrect price signals to farmers can alter production decisions, distort trade patterns, and reduce efficiency. (Bale and Lutz, 1981, 21). There is ample evidence that price supports in the United States and Canada have allocated production resources in a less than optimum manner. Several studies show that a different geographical pattern of production and different quantities of products would have resulted had there been no price support program for the major grains in the United States. (McGarry and Schmitz, 1989, p. 465), (Fulginiti and Perrin, 1989, p. 5).

Price supports for corn have worked to the disadvantage of grain sorghum production. Under the government support programs between 1985 and 1992 corn produced an average per acre return of $120.29, exceeding returns from sorghum by $3.12 per acre per year. Had there been no government programs for either crop, annual returns from sorghum would have exceeded those from corn by $7.19 per acre according to a study conducted by the University of Missouri. The distorted price and profit signals to producers have resulted in a shift of resources away from sorghum into corn with associated effects on land use, international trade, and total welfare. (National Grain Sorghum Producers, 1993).

Price Bands and Minimum Prices

Price bands place limits on the range over which prices may vary either by fixing prices to producers when market prices go beyond the range, or by controlling imports and exports to prevent wide price swings. (Valdés, 1992). The wider the price band the less government storage stocks, and the greater the incentive for private storage. Price stability does not assure income stability and stable prices may not increase average income. (Tomek and Robinson, 1990, p. 282-3). Evidence in South America indicates that while the price bands have been effective in reducing volatility, they have also restricted the ability of the industry to respond to changing market conditions. Government regulators using running averages to make price adjustments, generate sluggish market responses in an otherwise market oriented economy.

One of the functions of COTRISA, in Chile, has been to stabilize prices and facilitate arbitrage over time and space. The price band system has been developed primarily to reduce price volatility. However, studies have shown greater price variability when price bands were implemented than when they were not. The price band puts theoretical lower limits on prices paid to farmers. However, prices at the farm gate may fall much lower than the minimum on the band. Interest charges, transportation costs, and administrative overhead are often subtracted from the floor price before the farm gate price payment is determined. These charges are not fixed and in addition to lowering the farm gate price, they add additional uncertainty to the market. At their best, price bands place limits on the range over which prices can move and to the extent that they succeed in meeting that goal, they inhibit the development of arbitrage by private firms. At their worst price bands increase short run price variability and inhibit the development of private markets.

Minimum prices provide a safety net below which prices will not be allowed to fall, while allowing producers the opportunity to speculate on price fluctuations above the minimum. The U.S. feed grain program provides a minimum price in the form of the loan price and the target price. For the 1993 corn crop, the target price was set at $2.75; the loan rate at $1.72 per bushel. Farmers who qualify by participating in the acreage reduction program will receive the difference between season average market price and the target price, if market prices fall below the target price. Farmers are free to sell corn at any price that the market offers. Their deficiency payment is fixed by the national average market price and the legislatively determined target price. All farmers receiving payments will receive a direct payment of the same price per bushel, regardless of the price they received in the market.

The loan price provides the farmer with an additional alternative if he has participated in the acreage set aside program. The farmer may place his corn in storage and receive a government guaranteed loan from a bank at market interest rates. If the farmer repays the loan he regains ownership of the corn. If the farmer prefers, he may forfeit the corn to the government and is paid storage charges until directed to deliver the corn to the market. Storage may be on the farm or at licensed warehouses.

Government actions to implement a minimum price plan require government funds, not only to cover the direct costs of deficiency payments and purchases of grain, but also to cover administrative costs associated with the program. These costs represent an income transfer into agriculture and result in market distortions and misallocation of resources relative to market signals.

An additional form of minimum price is now available through the Chicago Board of Trade (CBT). Options markets allow producers to set a minimum price through a futures contract with a per bushel charge often described as “an insurance fee”. If price on the CBT reaches the

specified level the producer receives that price minus handling margins and the option charge. Few farmers have the competence and confidence to participate in this variation on the Futures contract. However some elevators assist farmers by offering a fixed price minimum contract to producers. The manager determines the cost of the option desired by the farmer, subtracts the charge from the desired price, subtracts the elevator's margin from the net price, and purchases the option in the elevator's name. If the price exceeds the target price plus the options charge, the farmer gains. If the price fails to reach the minimum, the farmer receives the market price, less the "insurance fee" that he paid for the option contract. This has been suggested as an alternative to government price supports, but few farmers or elevators are using the options market.

In 1992 the USDA initiated an experimental program in three counties in Illinois, Indiana, and Iowa. Corn producers participating in this experimental alternative to price supports, agreed to purchase December put options with a strike price of $2.90 per bushel. The government will reimburse producers for the cost of the options premium. Approximately 1200 farmers signed up for the program, exceeding the 20-million bushel allocation, and participants were selected by lottery. This strategy provides a market driven minimum price guarantee for producers, but so far farmers have not been willing to participate in significant numbers without subsidy from the government. Whether the total cost to the government would be less under the options market is part of the objective of the experimental program.

Insurance

In addition to the unpredictable income effects of disasters, there are also losses associated with fluctuations in crop yields that do not qualify for disaster relief. These can be alleviated through public or private insurance programs. Agricultural risks range from those ideally suited for insurance to those that cannot be covered by an actuarially sound insurance program. Risks ideally suited for insurance are random over time, spread over a limited geographic area, have a limited liability, cannot be affected by management choices, and have a clearly identifiable loss. A brief description of four types of agricultural risk and their insurability provides a framework for evaluating areas where government help is needed.

The first type of risk is illustrated by hail insurance. The risks associated with hail damage meet the requirement of insurability better than any other hazard. Hail losses on one farm are nearly independent of hail losses on other farms and hail losses in one year are unrelated to hail losses the following year. The event is identifiable, is not subject to any control or action by the farmer, and occurs frequently enough to make farmers willing to pay a fair premium for insurance coverage. Due to this insurability, crop losses by hail have traditionally been insured by the private industry.

A second category of risks are natural hazards associated with weather that affect growing crops. These risks are less insurable primarily because such hazards tend to affect large numbers of farmers in a given year. The incidence of drought is not independently distributed among farmers. From an insurance standpoint this means that there is a probability in each year for a catastrophic loss covering many farmers. Although it may be possible for premiums to equal losses over a period of years, the year to year variability in losses makes it difficult for the private insurance industry to provide "all risk" crop insurance. The Federal Crop Insurance Corporation (FCIC) was formed to provide that type of coverage in the United States.

A third category of risk includes crops in areas where the probability of crop failure is high. With this type of risk the variability and frequency of crop losses are so large that insurance coverage simply cannot be provided on an economic basis at a premium that farmers can afford. The Federal Crop Insurance Act allows FCIC to refuse insurance to any county, to any area

within a county, or even to an individual farm that could be subject to such a high risk. As a result, coverage is not provided where the insurance experience has been so unfavorable as to preclude a sound program.

A fourth category of risk is one that neither the insurance industry or FCIC will insure. It is referred to as "moral hazard." Such hazards involve a personal factor of management or decision-making by the insured. Either the quality of management can affect the amount of loss incurred, or the actual event is a management decision. (Miller and Walter, 1977).

Private insurance has been effective in covering risks of losses due to hail, floods, lightening and fire where farmers are willing to pay premiums greater than average indemnification. Risks that can be spread over a large number of producers with predictable probability distributions (e.g., category one above) provide an economically viable opportunity for private insurance (McGarry and Schmitz, 1992, p.466), (Williams, et al, 1993, p. 435-447).

The FCIC program has not been very successful, in part because of the administrative strategies being used. "The problems of adverse selection and moral hazard[1] are significant problems with current crop insurance programs." (Williams, et al, 1993, p. 435-447). Disaster payments have also weakened the viability of all-risk crop insurance by providing payments for crop losses without requiring farmers to purchase insurance.

Canada also provides crop insurance with financial assistance from the government. Crop insurance schemes not insurable by private firms, are jointly financed by federal and provincial governments. Producers may pay less than fifty percent of the premiums, and the program becomes as much a subsidy as it is an insurance scheme. Distortions in resource values and cropping patterns are associated with this subsidized insurance. (OECD, 1987, p. 51).

Price Stabilization through Storage

If price instability is the result of wide swings in yield and production, these swings can be minimized by storage across crop years. In a developed economy with sophisticated markets and marketing firms, arbitration across crop years is generally accomplished by private firms. In a newly developing economy, especially one with a history of instability, private firms may be unwilling to take the risks associated with building and maintaining long term storage, and government action is required to dampen the wide swings in prices. The objectives of price stabilization and price/income support often merge as programs are implemented, but this section will emphasize the goal of stability. In 1929 the Federal Farm Board attempted to bolster falling commodity prices by purchasing and storing grain, with the expectation that stocks could be released into the market when prices recovered. The Board was allocated $500 million in 1929 to purchase and store commodities until prices reached desired levels. This created a permanent surplus that was eventually released into the market, because the cost to the federal treasury became excessive. Release of stocks lowered prices and there is no evidence that the program stabilized prices above what they would have been under an unregulated market. (Halcrow, et al, 1994, p.116). Benedict concluded that the actions of the Farm Board had no lasting effect on the grain market and no significant effect on the general economy. (Benedict, 1955, p. 113).

D. Gale Johnson has stated that the accumulation and release of stocks will absorb variability in production and demand. Prices can be stabilized within the specified range but not

[1]Adverse selection refers to the opportunity for high-risk and low-risk farmers to purchase insurance at the same cost. Moral hazard refers to the ability of farmers to alter production practices so as to increase the probability of collecting crop insurance.

with certainty and the cost rises rapidly as the range of acceptable variability is reduced. During the 1960s a form of wheat cartel, providing for controlled supplies and storage in the United States, Canada and Australia, stabilized international prices to a remarkable degree. However, as stocks increased, costs rose rapidly and the fear developed that stocks would increase to levels that could not be politically sustained. The three governments then took steps to reduce the production of wheat and thereby reduced the stocks by almost 20 million tons or 1/3 of what they had been. For the crop years 1960 through 1971 wheat prices were held within a range of $59 - $65 per metric ton in 11 of the 12 years, despite the wide variability in world wide grain production. But, the inherent objective of these stocks and the multilateral agreements between the major wheat exporting nations, was primarily price and income controls, rather than price stability. The reluctance to release stocks into the market and depress prices at a time when farmers were rejoicing with higher wheat prices became politically untenable and the program of stabilization was viewed as a high cost strategy for transferring income from taxpayers and consumers to producers. As D. Gale Johnson notes, later in his paper, this strategy also transferred price instability into those countries which were not a part of the trade agreements. Although he admits that the creation of commodity reserves is the only feasible approach for achieving the international price stability, he concluded that efforts to "hold price changes within very narrow limits, such as 25%, would fail due to the unacceptably large cost that would be involved." (Johnson, 1975, p. 823-828)

Canada has also tried to stabilize prices and income using direct price and income supports, deficiency payments, and supply control schemes. The Canadian Wheat Board controls time and quantity of deliveries by farms, acts as a central selling agency, negotiates prices, and schedules deliveries and vessel loadings. (OECD, 1987, p. 38-47).

By releasing stocks in periods of shortages and high prices and accumulating stocks in those years when yields were bountiful, these government programs should stabilize the supply to the market and thus stabilize prices. However, the experience in Canada and the United States, as well as other countries, has demonstrated that government sales during periods of high prices and short supply often meets with vigorous opposition. Farmers, through their political voice, make it extremely difficult for government to release stocks and thereby reduce prices to producers even in good times. Consequently the "Ever Normal Granary" concept can became a permanent storage concept resulting in huge stocks and extremely high costs to the public. (Halcrow, et al, 1994). Programs to increase price stability are usually converted to income transfer programs.

Risk Shifting Strategies

The concern about price instability in a private market can be redefined as a problem of managing risk and uncertainty. Given an appropriate regulatory environment, private enterprise can provide strategies and institutions for shifting risk from those who are risk averse to those who are risk prone. The futures market which encourage large numbers of speculators is perhaps the best known of these risk shifting instruments. Many firms and individuals willing to take speculative positions with the hope of potential windfall gains accept the risk which grain merchandisers or processors are unwilling to hold. The risk is diminished in two ways. First, by taking advantage of differences in peoples preferences, risks can be transferred from those requiring a higher risk premium to those willing to accept a lower risk premium. Second, by taking the large risk associated with large volumes for a single firm and distributing that risk among a large number of speculators, the "disaster potential" faced by a single firm is eliminated. A major price drop for an individual with five million bushels of soybeans in storage

could easily bankrupt the firm. However, if the risk associated with those five million bushels is distributed among one thousand speculators through the sale of forward contracts on the futures markets, the risk associated with a drop in price is no longer of disastrous proportions.

The futures market provides a useful tool for controlling price and income variability. Hedging can reduce a producer's exposure to unpredictable price variability. (Peck, 1975, p.419). The presence and the availability of risk shifting instruments require the development of a market for forward contracts which can be bought and sold. Such exchanges must be regulated with rules imposed by government bodies to protect the participants in the market. However, the futures market is an institution that can not be readily imposed on a newly developing economy. It can not be introduced into a rudimentary developing market structure, but must develop from the experience of traders using a cash market for buying and selling contracts. The history of this development in the United States gives some indication of the process as well as the time frame required for developing a sophisticated futures market with an adequate volume of speculators.

History of the Chicago Board of Trade

With the opening of the Illinois-Michigan canal in 1848 Chicago became a major grain terminus. The Chicago Board of Trade started trading in cash commodities in 1848, to facilitate the exchange of cash grain transactions. Merchants had been purchasing corn and wheat from local farmers in the fall and storing the grain until the following spring when it could be shipped to Chicago after the spring thaw. Farmers usually demanded cash payment so merchants frequently borrowed money to pay the farmers at harvest. But the merchants were unable to repay their loan until later the following spring after they had delivered and sold their grain in Chicago. Prices could rise or fall dramatically between the time of purchase and time of sale. Given the uncertainty about the price of grain when the merchants were ready to sell and deliver, lenders were hesitant to make loans. In order to solve this dilemma merchants started making contracts in Chicago for future delivery of grain at a fixed price (a forward contract). This shifted the risk of price changes away from the merchant to the Chicago businessman or grain dealer who was prepared to take the risk. Chicago grain dealers were also reluctant to take undue risk of price fluctuations and sought others who would be willing to share the risks. With regulations in place to allow and enforce the exchange of contracts, third party sales of warehouse receipts provided an institutional arrangement that reduced the pricing and financing risks of the merchants holding grain. As other traders joined the program the contracts changed hands several times before actual delivery. The requirements at this point were enforceable contracts, warehouse receipts, and an exchange where prices could be ascertained in a freely trading market.

Seventeen years later the Chicago Board of Trade started trading futures contracts with standardized contracts, trading rules established by the exchange itself, open reporting and a deposit of margin funds to guarantee performance. The concept of offsetting a contract before maturity did not begin until 1882. The clearing house as a third party to all transactions was formalized in 1891 at the Minneapolis Grain Exchange. These features completed the evolution from cash sale, to a forward contract, to futures trading on an impersonal basis where contracts were no longer tied to the physical commodity. The futures market became a place where a buyer without any money could buy corn that he did not want from someone who did not have

any. This speculative activity became the mainstay for transferring risk from merchants holding inventories of grain for future sale and delivery.

The price stability and market efficiencies associated with risk reduction were transferred throughout the market channel providing for lower merchandising margins and higher, more stable prices to producers. It allowed producers to make forward sales even before planting time, to reduce their risk of investment of inputs several months before sales could be realized. It enabled country elevators to make forward purchases and contractual arrangements with producers and introduced a series of other pricing strategies to meet the particular financial and cash flow needs of producers, processors, and marketing firms.

The requirements for the market in futures contracts include a standardized contract, an organized grain exchange with a procedure for setting rules, and a regulatory agency, such as the Commodity Futures Trading Commission to place limits on what the exchange could do. It required public information, financial guarantees of contract performance and standardization including grades and delivery procedures. (Leuthold, et al, 1989, p. 21-23).

The futures market developed primarily as a means of reducing price volatility and shifting risk. Active trading on the markets requires that there be fluctuations in prices. Prices that are known in advance or that are completely stable, prohibit the use of the futures markets. For example, trading volume in the United States was very low during the depression when farm prices were low and government programs were in place to minimize price volatility. Fixed prices during World War II also reduced interest in the futures markets. Agricultural price support programs during the 1950s and early 1960s also reduced price risks, and use of the futures market was dramatically reduced.

These examples illustrate another important requirement for a successful futures market. It requires price volatility and instability in order to justify its existence. Government activities to reduce price fluctuations, either through price fixing schemes or trade restrictions, become a substitute for the futures market and will in fact inhibit its development. It is inconsistent to try to encourage the development of a futures market or a grain exchange, and at the same time try to limit price fluctuations through government action. Hedging allows producers and marketing firms to shift risk to other individuals or firms who are more willing or able to accept short term risks in hopes of longer term gains.

Import Barriers to Price Fluctuation

Another strategy for reducing price fluctuations and insulating a market from international price changes, is the use of import restrictions and tariffs. U.S. import quotas and tariffs on ethanol, sugar, and certain cheese products, provide an effective floor under domestic prices. Import quotas on sugar have maintained U.S. sugar prices above world prices, increasing the income of U. S. sugar producers and processors and supporting the market for corn based sweeteners. The legislation has as one of its objectives to stabilize the price of refined sugar. (Lord and Barry, 1990, p. 34).

Import restrictions are generally justified with the “infant industry” argument. New industries with limited capital resources may have difficulty competing with well established industries in other parts of the world. Temporary protection is a strategy for assisting these industries to grow in order to gain the advantages of economies of size and maturity, on the assumption that they will then be able to compete in a world market. Political realities based on an observation of history indicate that the “infant industry” seldom matures to the point where it is politically expedient to eliminate the protection.

In a world where most exporting and importing nations have protection for the agricultural products with direct or indirect supports and income transfers to farmers it may never be feasible for developing economies to follow a completely free trade policy. World prices fluctuate in response to supply and demand, but they also are influenced by agricultural policies of other countries. Some protection against dumping of commodities by countries rich enough to afford export subsidies may be required to stabilize domestic prices and allow the emerging private market to survive and grow.

Contract Production

Specialized crops with low volume sales and high value per acre are often grown under contracts with processors or marketing firms. Uncertain prices, outlets, and demand require assurances to producers that their production can be sold at a profit. Producer contracts become a substitute for open market transactions and assure stable prices within a crop year.

Contract production of specialized horticultural crops has been common for many years in the United States. Quality control, scheduling of harvesting, and uncertainties of seasonal supply and demand have made contract production the primary strategy for crops such as asparagus, sweet corn, and processed vegetables. Starting in the 1960s, contract production and other forms of vertical coordination spread rapidly in poultry production. In the last decade there has been additional contract production in the hog industry. The form of the contracts vary. Some specify only price and quantity. In other contracts the contractor provides capital, management, and all inputs except labor.

Until the late 1980s, the only grains and oilseeds produced under contract were those where a variety of specific attributes were required by the processor. White corn, waxy maize, food quality soybeans, and malting barley were often produced under contract between domestic and foreign processors and producers. The specialized management skills and on-site supervision of production for these crops resulted in the development of firms specializing in organizing and supervising the contracts. Firms such as Specialty Grains and Identity Preserved Seeds have grown in size and importance in these markets. In the past decade, contract production has spread to more generic crops. Corn millers often require special characteristics that are not recorded in routine grading and inspection. Production of hard endosperm corn and control of stress cracks during drying require pre-arrangements with producers, usually accompanied by premiums to compensate for higher management skills and lower yields. Contract production is now relatively common in corn milling, flour milling, malting, and flood quality soybeans. It has been estimated that 7%of all U.S. food and feed grains produced in 1990 was grown under production or marketing contracts. Contract production requires that the identity of the grain be maintained in the market channel. Pioneer HI-Bred International recently predicted that as much as 25% of the corn crop would be identity preserved in the year 2000. Contract production of durum wheat is expanding. Of the 50,000 acres of durum in Arizona in 1992, 45,000 were under contract to a single firm.

Many of the contract experiments in the wheat and flour industries have been started by cooperatives. However, major national and international firms have entered the field and are important players in the domestic as well as the export markets. (For a recent detailed description of contract production in grain processing industries, see , reproduced from Milling and Baking News, August 17,1993, page 19 and 20.)

Government agencies have a minimal role in organizing, developing, or even encouraging the contracts described above, other than the enforcement of contracts through the legal system. Because most contracts are voluntary arrangements between parties that are well

acquainted, there is seldom a need for legal adjudication. In cases of default on the part of the farmer due to a shortfall in production, the local contractor will usually allow the farmer to buy back the contract at market prices.

Producers are free to reject contracts that do not present an economically superior alternative to traditional crops. Price information, quality control, and delivery logistics are dictated by the contractor. There is little need for government regulation. However, in newly developing markets government may need to assume the role of the contractor to encourage production of small volume crops that will later develop into full scale markets. The marketing functions can later be transferred to private industry, but the lack of organized markets preclude production of supplies; a lack of adequate supplies inhibits the development of the market.

Price stability reduces production costs and encourages a commitment of resources. Returns to resources and investments that require several years for full cost recovery, must be discounted to account for potential price changes that reduce returns. New ventures, investments in human capital, and commitment of resources, are slow to respond to economic opportunities under conditions of instability.

Market Infrastructure

Market infrastructure refers to those institutions, regulations, and physical facilities necessary to minimize the cost to market participants of obtaining information about market opportunities, negotiating contracts, consummating transactions, and enforcing transactions that have been consummated. Although discussions about market infrastructure most frequently focus on transportation systems, communications systems, and commodity exchanges the concept is much broader, including such things as pricing mechanisms, market information, and a legal system for arbitration of disputes and enforcing contracts. Many of the elements of market infrastructure may be provided by either private or public institutions. One of the issues in organizing government agencies is, which of the elements of infrastructure must be provided by government and which are better left to private firms.

The ownership and operation of marketing firms is generally detrimental to the development of a private system of markets. The exception is the use of government financing to develop infrastructure that has a very long term payoff, or where the capital requirements exceed the resources available to individual firms.

Transportation

Differential regulations can be used to favor one segment of an industry, encouraging and facilitating growth. For example, the regulatory differences between rail, truck, and barge provide a partial explanation for the change in market shares. In 1925 railroads carried 80% of all intercity freight, trucks 3%, and barges 1%. By the mid 1970s railroad share had dropped to 37 percent while trucks and barges increased their shares to 23 and 13 percent respectively. (Milner, 1970, p. 100). The Staggers Rail Act of 1980 provided greater flexibility in setting rates and enabled railroads to compete more effectively for intercity freight.

The growth in railroad freight was a negative .45 percent between 1973 and 1981 compared with -.12 percent for all modes of transport. Following the Staggers Act the railroad reversed its downward trend with a growth rate of 3.0 percent between 1982-88. In addition deregulation allowed the introduction of lower, demand-driven rail rates. (GAO, 1990).

A comparison among several countries identifies alternative patterns in private vs. public ownership of transportation firms, storage facilities and the production, marketing, processing,

and distribution firms in the market channel. In the United States most of the transportation is privately owned, however, the federal government is responsible for the maintenance of a federal highway system and the primary water routes for use by agricultural shippers. Competition exists in these industries because the barriers to entry are low. User fees or road taxes are used to pay a portion (or all) of the costs associated with the use of the transportation right-of-way. The operating equipment on all three modes is privately owned and operated, except for passenger rail service.

In many other developed countries, including Canada, the entire rail system is owned and operated by the government. Evaluation of the Canadian rail system indicates an inability to respond to changing conditions, inefficiencies in transport of goods, misallocation of production units and misallocation of resources. (Harvey, 1980).

Many economists have concluded that public ownership of the right-of-way provides the necessary inducement for competition without regulating the individual carriers. For example, barge rates have been market driven with little or no regulatory action. Rates have been highly competitive with little evidence of monopoly power. Anyone with sufficient capital to lease a barge can transport grain on the U.S. inland waterways. The trucking industry is also characterized by many competing firms and few economic barriers to entry.

The same opportunity does not exist in rail transport. The company operating the railroad must also own the entire rail system on which the cars operate. Rail cars may be leased, but their operation and movement is controlled by the company owning the roadbed. Private ownership on the railroads led to an oligopolistic structure of the industry, accompanied by price discrimination, predatory pricing, and other abuses of power. (Milner, 1970, p. 99). In response, legislation created a government bureaucracy that inhibited competitive rate-making through 1980. The cost of regulating the freight transportation system was estimated at $8.8 billion in 1968. (Friedlander, 1977, p. 39-77), (McGarry and Schmitz, 1989, p. 470). This in turn led to numerous inefficiencies in building and operating railroads, as well as location of marketing and processing firms. (Wills, 1972, p. 76-77). Competing railroads frequently ran parallel lines and right-of-ways between the same cities, reducing the volume and increasing the operating costs for both companies.

Canadian researchers also concluded that market distortions are often the result of subsidized or regulated rail rates. “Transportation subsidies have been an element distorting resource use among farm commodities in the prairies, as well as restraining the development of processing facilities in the region and a factor enhancing Canadian grain’s international competitiveness on world markets.” (OECD, 1987, p. 76).

Without public ownership of the right-of-way, economic forces will tend towards monopoly. Monopoly power can lead to abuses. These abuses became so flagrant in the U.S. railroad industry in the late 1800s that the Interstate Commerce Commission was created to regulate the rail rates. (Milner, 1970, p. 98). This reduced the effect of the monopoly powers of the rail barons of the late 1800s, but it created rigidities and misallocations of resources. The inability of government commissions to respond to new and changing market opportunities, the number of years required for the Interstate Commerce Commission to approve rate changes, and the politics involved in setting rates resulted in many inefficiencies within the industry. In-transit rail rates and other rate strategies resulted in firms locating processing plants near the point of production, solely in response to the artificial rate system that was created.

In the late 1970s numerous railroad bankruptcies resulted in losses of millions of dollars for stockholders, and the abandonment of unprofitable lines, reduced services to many firms that had built processing plants and grain elevators on the basis of the artificial rate structure created under government regulation.

Under the deregulation required by the 1980 Staggers Act, competitive forces began to dictate a new set of economic decisions. Low volume lines were abandoned, contract rates based on cost of service were negotiated with shippers, and location decisions that were economically rational under rate regulations were suddenly uneconomical. Many of the duplicate lines were merged or abandoned, many processing plants (especially flour mills) were abandoned or relocated with capital losses and labor displacement. The rate regulation that was instituted in the late 1800s to control monopoly power of the railroads, created inefficiencies in plant location, shipping patterns, and investments. Deregulation permitted a more competitive industry to develop and investment decisions to more closely approach those of an economic optimum. However, the large investments required in railroad right-of-way provided a strong economic incentive for mergers, and by 1991 over 64% of the rail traffic was provided by only 4 firms. (Hill 1992). Deregulation increased the competitive **actions** of firms but it did not improve the competitive **structure** of the industry.

Canada also relies on a privately owned rail system with regulated rates; a holdover from a negotiated agreement with the government in 1897. In the 1970s these fixed rates (unchanged since 1897) resulted in operating losses and the beginning of subsidization. In 1977 the Snavely Commission concluded that losses required additional subsidies to cover losses to the railroads caused by rising costs and statutory rates. (Harvey, 1980, p. 2). Indirect subsidies through purchase of rail cars by provincial governments and the Canadian Wheat Board failed to resolve the growing deficit. The *ad hoc* mixture of private and public ownership coupled with government regulation of rates and direct and indirect subsidies resulted in rail service that was unresponsive to changing demands, deteriorating service and capital stocks, lost exports, price discrimination, and distortion of resource allocation. (OECD, 1987, p. 34-35).

In summary, the United States and Canada are among the few grain producing countries where private industry owns most of the rail freight industry. Large subsidies were provided to railroads in their early history. Canada continues to subsidize railroads and transportation rates. The ICC in the United States continues to supervise rates and mergers, but provides little direct subsidy. Although barges have received subsidies in the form of waterway construction and maintenance in the past, user charges are intended to convert part of these fixed cost subsidies into annual charges. Road taxes on the trucking industry serve a similar function to off set the costs of road construction and repair to provide for the heavy truck load factors.

The government-owned railway system in Chile does not operate efficiently. Poor service and high cost has encouraged the use of trucks even for long distance transport of grain. Government operation of rolling stock has resulted in poor service in most countries. Private ownership of the roadbed and rail right-of-way seldom receives adequate short run profits to encourage major investment in infrastructure. Privatizing the entire railroad system does not generally result in optimum service or minimum cost for the industry. Private firms maximize their profits by minimizing investments in long run improvements in the roadbed. Chile has started a small scale experiment in which government-owned rail lines are leased to a private company, moving commodities between Chile and Bolivia. Chile could extend this experiment by investing in a modern rail line serving those markets with sufficient volume to justify a long term investment. The rate of return will be low and will require a long payout period. It will thus not be attractive for private firms to invest capital required to develop an efficient roadbed and rail line. Once the rail line has been developed the government could lease the right-of-way and, in some cases, rail cars to private transportation firms. Rebuilding the lines would stimulate the economic activity, renting the lines and equipment to private firms would convert fixed costs into variable costs. Marketing costs would be reduced as transport service and cost between producing and processing regions improved.

In the opinion of the author the strategy to generate an efficient and competitive transportation system is to use public funds to construct and maintain the right-of-way and to regulate traffic flows while allowing private firms to compete for carrying the freight. The fixed costs incurred by the government can be converted into variable costs through user charges. This is the model currently used for the barge industry and it has resulted in a highly efficient, competitive, and responsive industry.

A developing market system requires transportation infrastructure which is either tightly controlled to prevent monopoly abuses, or in which the fixed costs are converted to variable costs to reduce the economic barriers to entry to allow a competitive industry to develop. Government operation of a transportation system results in high costs and inefficiencies. Unregulated private transportation industries lead to monopolies.

Grades and Standards

Establishing grades and standards and regulations related to health and safety is primarily the responsibility of a public agency. The early history of the United States demonstrated the fallacy of allowing individual firms or even individual grain exchanges and state agencies to set grades. In 1906 the U.S. Department of Agriculture identified over 338 names or grades titles for grain in use in the domestic market. The result was that no one was able to purchase by descriptive grade unless they had had previous experience with the seller and knew what his grading system represented.(Hill, 1990, p. 44). Much of the grain at that time was sold by inspection of samples submitted to the buyer either on the grain exchange or in person. This added significant cost to transactions and reduced the ease of entry that is essential for maintaining competitive levels of profit in the U.S. grain industry.

Federal grades or government controlled grades are not needed for those products where the buyer requires (or prefers) to use visual inspection of individual items. Thus consumers at retail seldom rely on official grades to control or govern their purchases but rely on their visual inspection and senses to make their choice and determine the price they are willing to pay. But generic commodities sold in large volumes on the basis of description require uniform grades and standards.

The importance of grades and standards for grain in promoting competitive markets is evident in comparisons of several countries. Grades are technically present in Chile but are seldom used in commercial transaction in the domestic market. There are few incentives to farmers for improving quality. Farm products are infrequently adjusted for quality differentials. Buyers (especially millers) cannot rely on receiving uniform quality in their domestic purchases and therefore experience difficulty in meeting quality standards for processed products. Since grain quality and related properties are unknown at time of purchase, millers often take protection by lowering the average price, penalizing all sellers for the probability that some loads will be very poor quality. Local buyers, truckers, and traders rarely have the technical skills to judge quality and lack the necessary information on which to base discounts.

The lack of operational grades in the commercial market is a major obstacle in development of a commodity exchange. A standardized commodity is essential for "paper trading" and is a central part of a standardized contract. Multiple sequential sales must have a quality standard. This is evident in review of some successful exchanges in developing economies. For example, the commodity exchanges in Buenos Aires, Budapest, and St. Louis use nationally uniform grades as a part of their contract, relying on quality specifications that are accepted in the physical market and standardized by government agency. The struggling exchanges in Moscow, Bogota, and Santiago are suffering from the lack of uniform grades and a

system of grades and discounts. Although these countries have grades in their legislation and regulations these are not enforced by any government agency and are not uniformly applied throughout the market channel. There are many factors essential to successful operation of a commodity exchange but uniform grades and standards are one of the key requirements in developing and implementing uniform contracts on an exchange.

Information

The dissemination of information is another important requirement for a competitive market. Information has value and therefore a market will usually develop for the accumulation and distribution of market related information. Numerous private firms and agencies in the United States and around the world collect and sell market related information. Private entrepreneurs have a strong incentive to provide useful information and continually strive to improve their information quality, quantity, and delivery system.

In the early 1970s a retired university professor organized a privately funded information system in which market information was distributed to elevator managers via FM radio signals. The elevators installed monitors with a screen capable of displaying the market information being sent by FM radio. The information included current prices, market related news items, weather, and international trade data. Much of the information was obtained from news wire services but provided at a cost below that of leasing a wire service line at each elevator. The venture was sufficiently successful that it was eventually purchased by the Commodity News Service, and continued until new technology made the FM delivery service obsolete.

A new and efficient technology for price discovery and information is known as electronic marketing. It uses telecommunications to create a centralized trading arena which allows a large number of participants to competitively buy and sell agricultural products by description. The requirements for a successful electronic marketing system include: (1) standardized description of the commodity, (2) cost-effectiveness, (3) an organization to develop and operate the system, and (4) consideration of potential users and benefits. One demonstrated benefit of the electronic marketing system is enhanced competition. Other potential benefits include: (1) effective value-based pricing, (2) increased price transparency, and (3) improved efficiency and effectiveness of the sector. (Purcell, 1991), (Rhodus, et al, 1989).

The electronic market generally operates as an auction. Livestock that are being auctioned are described as to kind, class, weight, and quality. In some advanced technology, photographs or live video replace or supplement the description. Current grades for livestock in the United States are not considered to provide adequate information. A flower auction that has been operating successfully in The Netherlands uses live video of the displays and flowers to enable buyers to know exactly the kind and quality on which they are bidding. Buyers and sellers are stationed at terminals with control buttons to indicate bids. Controls, rules and technologies are required to maintain order and consummate sales and delivery. The central agency operating the auction market supervises and records transactions. The central computer maintains the necessary data bank. The extent to which this price information is made public varies among auctions. Participants in the transactions will usually have access to prices of lots as they are being sold, but may not have detailed data on previous dates.

The electronic market for hogs conducted in Ohio was organized with funding from USDA following several years of interest expressed by producers and marketing firms. Other auctions have been initiated by cooperatives and producer groups. In the Ohio experiment, buyers and sellers received current information on their screen. This included a current moving average of prices, data on the last sale, and an end of the day summary. The Ohio Department of

Agriculture publishes price and quantity information along with other statistical data in the market news reports.

Although buyers and sellers need to be well informed about market conditions, including cash and futures prices on the CBT, there is usually no direct connection with commodity exchanges.

Developing economies will not have the necessary communication or market sophistication to use this system, but if properly organized an adaptation could be used as an educational technique and an information technology. Variations in the United States include a simple listing of lots and price desired by the seller, and bids and offers by the buyers. Buyers and sellers then negotiate directly by phone. Some of the market advisory services provide a list of items for sale with brief description and phone number of the seller and update this information on the electronic screen daily. The complexity of the electronic market has required that it develop over time, progressing from basic elements of a market system. A review of U.S. experience indicates that the successful auctions started with an existing market and followed this traditional format as closely as possible in the early stages. Success depends entirely upon acceptance and use by both buyers and sellers, and any radical departure from accepted practices discourages participation.

There are two areas in which government must play a role in collecting and disseminating information. When large private firms are able to maintain a monopoly on market information and either use it to their own advantage or distort what they disseminate to their advantage, government action is needed to provide smaller firms equal access. Market information is limited in both Chile and Columbia. Market news reports are published by the news media but these privately collected data are not always reliable, represent voluntary contributions of a few firms, and are published only after the transactions have been completed. Farmers need more current data (in some cases even hourly data) to assist in their daily choice among alternative markets and to decide the date on which to sell or price their grain. The few large firms dominating wheat and corn processing in Chile conduct transactions that are not public information. Much of the volume of grain in commercial channels does not move under the published prices. Farmers and local traders need at least daily information on price differentials by region and by time period in order to accomplish effective arbitrage.

Another area where government information is needed is in providing long term background information which is used by a large number of people. This improves the overall operation of the market, but the benefit to an individual is not sufficient to cover the cost of the system -- the sum of the benefits to individuals is less than the aggregate benefit to the market system. Examples include the census of agriculture, general long run analyses of cause and effect relationships, and an understanding of market forces.

No one firm is capable of obtaining private price information from a large number of firms to reflect market price levels. Thus the market news service which collects commodity prices and transportation rates and volume is able to assure confidentiality to individual firms and thereby provide information to all firms. A government agency is also required to collect data on the volume of grain shipped by each mode of transport in the United States. These data are currently being published by the Federal Railway Administration (rail shipment volume by commodity) and by the U.S. Army Corps of Engineers (barge volume by commodity by river segment). The record keeping process and the confidentiality problem make it impossible for private firms to collect this type of information.

Chile provides an example where the inaccuracy of government production estimates and the absence of production and marketing statistics that cut across crop years, hampers the development of an effective marketing system able to arbitrage across time. The counterpart to

the U.S. crop reporting service is lacking in many countries including Columbia and Chile. Inaccurate or incomplete information on production estimates creates additional uncertainty in the market and causes price changes that do not reflect true conditions of supply and demand, and increases the cost of marketing as firms take larger margins to cover risk. The lack of production and marketing data also hampers long range planning, increases the uncertainty about expected returns on investment and increases the cost of marketing. Private firms in many countries generate some production and marketing information but they generally control that information to their own economic advantage.

Government agencies are not as successful as private industry in reporting short term trends and current information. Buyers and sellers in the commodity markets are looking for price information on a minute by minute basis. Untimeliness in assembling and analyzing government information, limits their ability to provide current market reports. On the other hand, crop production statistics, livestock numbers, planting intentions, and average annual prices received by farmers are delivered by public agencies in the United States and used by the private firms in their daily interpretations and transmission of information.

Producer Organizations

Cooperatives

Producer cooperatives have long been used as a means to increase bargaining power for farmers in buying and selling. Producers with similar economic goals organize into an economic unit and share in its profits. The advantages of a cooperative include pooling of capital, specialization of managerial skills, reduction of marketing margins, and providing competition in a monopolized industry. Cooperatives may also focus on small specialized market segments where their members may have a competitive advantage.

Cooperative organization is not a panacea. Cooperatives must still compete with existing private firms that may be very large, efficient, and better capitalized. Farmer directed cooperatives, often under-capitalized and managed by committee votes, must compete with private firms for market access and managerial skills. Patronage on the basis of loyalty usually gives way to economic opportunity and poorly managed coops lose customers to their corporate competitors. Both cooperatives and corporations must provide the basic marketing functions at competitive cost. (Sorenson, 1964, p. 210-213).

The Agricultural cooperatives are not immune from the antitrust laws. As a cooperative increases in size, sophistication and membership, it gains market power with support from state and federal legislation. This market power provides the potential for actions that may violate antitrust laws. Agricultural exemptions can be used to encourage growth and development of agricultural markets, but adequate checks and controls must be maintained to protect consumers and other parties in the industry.

The Sunkist Growers, Inc. provide an excellent example of cooperative power used in a manner unacceptable to social welfare, as interpreted by the Federal Trade Commission. In 1977 the FTC charged Sunkist Growers with monopolizing the California-Arizona citrus industry. Charges included unfair competition and mergers intended to create a monopoly. The federal marketing order under which the growers were operating was not accepted as a defense against the charges. Sunkist had been a successful cooperative having gained 70% of the fresh market and a price leadership position in the industry. Although the case was settled with a consent agreement rather than adjudication of fact or law, the 4 years of litigation demonstrates the importance of balancing the desire to promote agriculture cooperative activities against the need

to set conduct and performance standards beyond which not even cooperatives are allowed to go. (Mueller, et al, 1987, p. 4-6).

The primary justification for encouraging cooperatives is to provide competition in an industry where barriers to entry have created excess returns to resources. Under these conditions, government assistance may be warranted. This assistance may come from several sources. The United States government has provided financial help to cooperatives, especially in the early years of encouraging agricultural development of efficient markets. The federal government provided funds for loans to farmers to establish and finance cooperative activities through the Bank for Cooperatives. Since the cooperatives returned all profits through patronage refunds, the firm technically had no income and was therefore exempt from corporate taxes. Refunds were taxable at the rate applicable to the farmer receiving the refund. However in recent years tax laws have been changed to remove some of the tax advantages which the cooperative had over the corporation. (Kohls and Uhl, 1980, p. 288).

Currently, cooperatives can maintain a tax exempt status if 98 percent of their shareholders are also active patrons. This exemption allows the cooperative to claim patronage refunds to patrons as a business expense deducted from income prior to calculating income taxes. Farmers pay taxes on the dividends which they receive. If the cooperative does not have exempt status, income taxes are calculated on income before payment of patronage dividends. The dividends are considered as taxable income for the cooperative and taxed again as part of the farmers' income. The cooperative pays the same tax rate as other corporations. The same rules apply to the Bank for cooperatives. The local cooperatives receive dividends from the Bank for cooperatives in proportion to their patronage. If the Bank meets the tax exempt requirements, then the dividends are taxable only at the local cooperative.

Marketing Pools and Marketing Boards

The Canadian Wheat Board as sales agent in the export market was the result of an evolutionary process. Canadian farmers formed a wheat pool in the late 1800s to increase their market power. The agreement was to pay all farmers the average price. However, falling prices in the early 1900s left the pool in financial difficulty. The Canadian government created the Wheat Board (CWB) in 1935 offering farmers a voluntary alternative to the pool and private grain firms. But when private firms began to out bid the CWB, volume declined and the Board was faced with raising per bushel costs. The solution was to make the CWB the sole buyer, precluding all other agents from competing in the export market. They lost the competition battle on the battleground of efficiency but won the war by government decree.

The CWB and other marketing boards have been criticized for high costs, inefficiency, and failure to generate adequate levels of farm income. Gislason concluded that "the overall price to the Canadian farmers would have been greater if there had been no government or farmer interference with the marketing of Canadian wheat." (Gislason, 1959, p. 509).

Marketing pools provide growers with additional market power, allowing them to sell in larger quantities, bargain from a stronger position, and utilize more expensive marketing expertise. However, the "free rider" problem has reduced the economic viability of the pool. If current market price exceeds the pool average farmers are enticed to shift volume from the pool, further reducing the average price for pooled grain. When prices are falling, the reverse strategy weakens the pool price even more.

Marketing Orders and Agreements

Marketing orders and agreements were established to assist producers to control the supply and encourage more orderly marketing. Orderly marketing reduces problems of seasonal shortages and surpluses with the expectation that this would increase producer prices and therefore incomes. The legislative authority for these orders and agreements are the Agricultural Marketing Agreement Act of 1937, amended by several subsequent farm bills. This enabling legislation permits, but does not require, producer organizations to generate self-help programs with no treasury outlays. Marketing orders are issued and supervised by the U.S. Secretary of Agriculture. A marketing agreement is a voluntary contract endorsed by the Secretary of Agriculture and by those handlers who agree to abide by the rules. The agreement is binding only on those who sign the contract. In contrast a marketing order is mandatory once two-thirds of all handlers of a commodity, controlling at least one-half of the volume in a production or marketing area, approve the order through a referendum.

The regulatory provisions of marketing orders for fruits, vegetables, and specialty crops differ markedly from those used in fluid milk. Although current data are not available, in 1981 there were 47 federal marketing orders for fruits vegetables and specialty crops, with over 50% of the fruit and tree nuts and 50% of the vegetables produced in the United States marketed under federal orders. Marketing orders may influence total supplies but are more frequently directed towards finding markets and sequencing delivery or disposal for whatever farmers produce. Commodity marketing orders attempt to protect farm income by specifying the quality and quantity of a commodity that may be shipped, by prohibiting unfair methods of competition and unfair trade practices, and by establishing research and development programs to help promote the products. (Cramer, 1991, p. 341).

In contrast, federal milk marketing orders establish minimum prices for grade A milk through government action. Both state and federal programs set prices for class 1 fluid milk and control supplies of processed dairy products. Milk marketing orders protect farm income through fixing minimum prices that handlers must pay producers for various classes of milk.

A marketing order may be initiated by an industry group or the Secretary of Agriculture. Following a public hearing, the Secretary may organize a referendum in which the producers have the right to vote for or against the program that has been proposed. Administration of the program is generally conducted by a committee of producers and/or handlers with action subject to approval by the Secretary of Agriculture. The provisions in marketing orders differ among crops but they may include, for example, allocation of the crop between alternative outlets, product destruction to reduce total supplies, and setting quality standards that may go beyond those of USDA grades.

Although originally designed to encourage orderly marketing and allocate products among alternative uses, much of the effort under the marketing orders and agreements has been toward enhancing producers income at the expense of consumers through supply control and discriminative pricing.

A variation of the pool is used with marketing orders that force participation when supported by a majority of farmers. The marketing order requires federal or state enabling legislation). With mandatory supply control, discriminatory pricing, strategic marketing and market segmentation, marketing orders have increased producer income by capturing consumer surplus. Some have become so successful in capturing monopoly profits that they have been curtailed with antitrust action. (Sorenson, 1964 p. 298).

Managing Market Access

Competitive markets require that all participants have equal access to market transactions. Economic or legal barriers to entry are generally associated with market power and inefficient operation of the market. Since it is almost always in the best interest of an individual firm to restrict the entrance of competitors, most regulations that promote access to markets fall within the responsibility of public agencies. For example, anti-trust laws and other regulations to prevent monopoly domination of the market by one or a few firms is often necessary where the cost of entry is high or there are opportunities for market domination. Where there are large economies of scale, unhampered competition will almost always lead to dominance by one or a few firms. Thus government action may be required to reduce the economic barriers to entry through the ownership of facilities or converting fixed costs into variable costs for operating firms.

Although the development of a private market system requires minimum barriers (economic and legal) to entry and exit, markets do not always operate effectively in the absence all barriers to entry. Regulations that restrict entry to those who will perform the marketing services and functions in a responsible manner, are often essential to stability and confidence in the market. Warehouse licensing, bonding of warehousemen, grain dealers' licenses, patent laws, seed licensing and registration, and licenses to regulate operating practices, all limit entry, but they are essential to maintain a reliable and efficient marketing system. The justification for limiting access to the market is primarily one of assuring that participants are qualified financially and technologically to perform the services within the industry where they intend to operate. These barriers to entry are necessary to provide protection to both parties in a transaction.

Warehouse Laws

State and federal warehouse laws provide legal protection for farmers storing grain in commercial facilities. These laws assure a farmer that the quantity and quality of grain deposited for storage will be maintained. Early warehouse laws required the warehousemen to maintain the integrity of each lot of grain deposited, but since grain is in general a homogeneous interchangeable commodity, the need for segregating each lot unnecessarily increased the cost of storage. Most state warehouse laws now allow warehousemen to commingle grain from different depositors. The warehouseman may refuse to accept grain if the depositor insists on maintaining the identity of the lot. (Hill, 1985, p. 403).

Under current warehouse laws each farmer receives a warehouse receipt for the quantity and quality of grain delivered. Following a series of bankruptcies at elevators in which farmers lost one and a half million dollars, (Hill 1985, p. 404), (Casey, Conley and Ahlen, 1984), the Illinois Department of Agriculture was given authority to raise bonding requirements for grain dealers whose financial position was questionable, authority to restrict speculation by grain dealers, and to require annual financial statements. This increased protection was still considered inadequate and on August 16, 1983 Illinois passed the Grain Insurance Act. (Hill, 1985, p. 404). This provided for the collection of mandatory premiums from grain warehouseman creating an insurance fund that provided more complete protection to anyone with grain stored under Illinois warehouse law. A recent example in Illinois shows the importance of government agencies in guaranteeing returns to farmers. As a result of poor management the debt to equity ratio in a local elevator reached a point where the regulatory agency for the State of Illinois determined that the company was no longer solvent. They immediately took action to prohibit

further trading by suspending the companies license. The State of Illinois then has the right to liquidate the companies assets, pay off the creditors with the returns and use the insurance fund to guarantee farmers that they will receive at 85 percent of unsecured losses (article describing situation is enclosed). Even this system is not perfect as bankruptcy proceedings in the case permitted a judge to terminate the liquidation process, leaving farmers without compensation for several months until the problem was resolved.

There are warehouse laws on the books in Chile and Columbia (but no grain insurance scheme). However, legal action to enforce violations or default are expensive -- prohibitively so for small farmers. Inspection of the premises and the grain in storage under uniform code and a guarantee of quality as well as quantity is needed in Chile to make the warehouse receipt a viable alternative to producers and small traders.

Anti-trust

The reverse side of restricting market access is restricting concentration and monopoly practices. The United States enforces a series of anti-trust laws designed to regulate acquisitions, mergers, and predatory practices. The principal laws controlling monopoly practices include the Sherman Act of 1890, The Clayton Act of 1914 and the Federal Trade Commission Act of 1914. These acts cover a wide range of non- competitive actions by firms and groups of firms. The Commodity Exchange Act was passed in 1922 to regulate futures trading in more than 30 agricultural commodities. These regulations were created to improve efficiency, assure equity, and to protect buyers and sellers. (Sorenson, 1964, p. 275-292). These restrictions on private enterprises have often been applied to agriculture, especially to marketing and processing firms such as those in the sugar, corn products, meat, farm machinery and milk industries. The application of these laws has varied, depending on the administration's philosophy, but they provide a limit beyond which firms may not go. For example, restrictions on mergers have been relaxed under recent administrations, but flagrant violation of price fixing laws are frequently enforced. In a recent action by Federal courts. (Henriques, 1993). Federal and State investigators found evidence that the largest national and regional dairy companies conspired to rig bids on milk products. As of May 23, 1993 forty-eight people and forty-three companies have been convicted or have pleaded guilty to federal criminal charges of price fixing and bid rigging.

Agriculture has been given several exemptions from the antitrust legislation. When joint action by farmers under cooperative organizations was ruled to be a form of collusion under the antitrust laws, congress initiated legislation to exempt cooperative actions by farmers. Section 6 of the Clayton Act (1914) and the Capper-Volstead Act (1922) explicitly exempted agricultural producers from these regulations allowing a cooperative to operate as a business corporation. It was no longer considered an antitrust violation for farmers to "collude" by joining together to set prices and agree on supply control. These exemptions apply only to firms that are owned by farmers and organized under the rules of cooperatives. However, nothing in these acts expressly exempted mergers, predatory pricing and acquisitions from scrutiny by the antitrust enforcement agencies. (Dahl, 1975, p. 1) Agribusiness firms operating as cooperatives still must adhere to antitrust regulations that control undue exercise of market power.

The small size of the market in many countries such as Chile lead to excessive market power in the hands of a few firms. Without violating anti-trust laws, two firms control most of the feed grains market in Chile and three firms control most of the imported wheat. There is a similar concentration in the processing of wheat, soybeans and feed grains in Columbia. In these markets, the production and consumption volume is inadequate to support a large number of firms. More anti-trust legislation would probably not solve the problem of a non-competitive

industry structure. However, lowering the barriers to entry could reduce the danger of the exercise of monopoly power. Lowering barriers to entry such that the threat of entry in response to large profits is the best safeguard against monopoly profits and discriminatory pricing. Potential entry discourages profit taking through market power by the large firms. If there are firms able and willing to respond to the economic opportunities (private or cooperatives) then any attempt by large firms to widen their profit margins provides an umbrella for the small firms to come in and provide better service at lower cost.

As economies shift from government control (with its own set of ethical and moral violations of economic principles and human rights) to private ownership of production and marketing firms, there must be safeguards against the abuse of power. Economies of scale in a competitive market system lead towards fewer and larger firms. "Survival of the fittest" in a free market economy often means the survival of the few whose economic power also provides them with political power. There must be safeguards within the system to limit that power or at least to limit the ability to abuse that power to the detriment of producers, consumers, and the general welfare. The best control of monopoly power is the freedom of entry by other firms. Government policy designed to reduce barriers to entry is an effective strategy for controlling excess profits and overpricing of services.

Regulations to Control Transactions

The United States has frequently used commissions and government agencies to set prices of services. The Interstate Commerce Commission was established primarily to protect producers and consumers from the undesirable impacts of natural monopolies generated in the transportation industry. Other than the price controls during World War II, the U. S. government has seldom controlled prices of agricultural goods and services directly. However, government actions have often had indirect effects on prices. Government agencies have had an indirect influence on storage rates in the United States by setting negotiated rates with private firms for government stored grain. Direct control of prices of products or prices of services reduces or removes the influences of the market and prevent prices from responding to the forces of demand and supply. This usually results in a misallocation of resources and a distortion of market signals and inhibits the development of private enterprise within the market channel.

However, there are regulations related to pricing that may be required to avoid abuses. These include limits on speculative positions for elevators failing to meet adequate financial requirements. This regulation was created in Illinois to prevent grain marketing firms from taking unnecessarily risky speculative positions beyond their ability to withstand the loss, thereby endangering their farmer customers and creditors.

Delayed pricing is a transaction in which farmers give the elevator title to the grain but do not receive payment until later when the farmer elects to set the price. The farmer delivers grain to the elevator. It is weighed and graded and the farmer is given a contract specifying that information. The contract also includes other information regarding conditions of sale and the rights of both parties. These contract forms are usually prepared by the state departments of agriculture. The important content of the contract is the transfer of ownership of the grain to the elevator and the right of the farmer to notify the manager at any date in the future that he wishes his grain to be priced on that day. When the farmer comes to the elevator one month, or even one year later (contracts usually specify a maximum time that the grain may be left on the D.P. contract) and asks that he receive that days price. Since elevators post daily prices throughout the year, the farmer receives the competitive price posted by the elevator for that day. By using delayed price the farmer has the opportunity to speculate on price without the responsibility or

costs associated with storage and quality maintenance. The elevator manager has control of the grain and may take advantage of opportunities presented by cash sales and transportation logistics. Once the contract has been signed and the grain delivered, the grain may be sold, stored, or transported at the manager's discretion. The farmer has no control or legal rights to the grain.

The state's controls over the use of delayed price were designed to protect producers from potential mismanagement by country elevators. The primary motivation is to reduce the risk that the firm, through poor financial and market management, will be forced into bankruptcy and will be unable to pay its creditors, who are primarily small farmers.

Delayed pricing provides an opportunity for producers to speculate on price changes without incurring the costs or management skills associated with physical storage of the commodity. This speculation is especially important immediately following harvest when prices are usually at a seasonal low and farmers have insufficient storage capacity or cash reserves to hold grain until seasonal supplies are back in balance with demand. Delayed pricing provides the marketing firm greater flexibility in meeting seasonal demands of the market since they may sell the farmer's grain at any time, whether or not the farmer has been paid. The farmers' risk is increased because the farmer becomes an unsecured creditor for the grain handler. Financial failure of the elevator can have serious financial consequences for farmer - creditors. This and other pricing strategies provide greater marketing flexibility and increased pricing flexibility but require safeguards against mismanagement and financial failure of the buyer.

Baldwin et al (1987) found that delayed pricing strengthened the basis in 2 out of 4 years, with no significant change in the other 2 years. The delayed pricing technique has gained wide-spread acceptance with 28 percent of corn sales, 32 percent of soybean sales, and 26 percent of wheat sales, moving under a delayed price contract. With little storage capacity on-farm, Brazilian farmers also use delayed pricing contracts on as much as 85% of their transactions. (Hill, 1987). The primary disadvantage of delayed pricing is the risk of financial failure by the buyer, leaving farmers with no assurance of payment. In Illinois the state government was asked to reduce this risk through regulations. The regulations have taken 2 forms: (1) restrictions governing management practices of the elevator to prevent bankruptcy and (2) indemnity or insurance schemes to reimburse farmers after a bankruptcy occurs.

Ohio has taken similar action, requiring grain handlers to maintain records and meet financial standards, including physical presence of the grain on the premises, rights to the commodity in other locations or 90% of the value of the delayed price grain in the form of liquid assets. The insurance fund in Ohio consists of two funds: (1) an Indemnity Fund to be used to reimburse grain depositors for losses in case of financial failure; and (2) a Regulatory Fund to pay fees and administrative costs associated with enforcing the indemnity funds. The Indemnity Fund is financed by a fee of one-half cent per bushel of grain deposited, paid by the elevator. The Regulatory Fund is financed by an annual license fee. (Smith, et al 1983).

There must be rules regarding trades and limits on what individuals, firms, and groups of firms may do. These rules may be developed as part of government regulations, but they may also be developed by common consent among the members of a group of firms with a common interest. An example of government regulations of transactions is found in the Commodity Futures Trading Commission. In the late 1960s and early 1970s trading volume on the commodity exchanges increased rapidly. Attempts to trade unregulated commodities were identified as fraudulent and congress received numerous complaints from producers, marketing firms and traders. In response, congress established the Commodity Futures Trading Act of

1974, which now regulates all futures contracts in the United States, and has the right to approve or disapprove the introduction of new contracts. The unregulated competitive market created an imbalance in power among the market participants and government regulation was required to protect public customers, farmers, and small firms. (Leuthold, et al, 1989, p. 371). The rules and responsibility of the regulatory body supersede the rules of the organization itself.

Trade association regulations can substitute for government regulation, often with an increase in effectiveness and efficiency. For example, the bylaws of the National Grain and Feed Association provide for binding arbitration among its members, resolving many disputes that would otherwise require court action. The Association provides a number of regulatory services to its members under a broad statement of purposes. The purposes listed in Article five of the Articles of Incorporation include: to advance and protect the interest of the members, to formulate rules for the transaction of business among firms in the grain and feed trade, and to arbitrate according to bylaws, rules and regulations any and all disputes arising in the grain and feed industry. (National Grain and Feed Association, 1992, p. 378).

Arbitration activities of the Grain and Feed Association include such topics as contract terms, grading and inspection, billing instructions, weights, trade practices, confirmation of sales and transportation. The Association's arbitration system provides members with an effective alternative for resolving trade disputes, thereby contributing to the orderly marketing of grains and maintaining industry integrity. The arbitration committee has the authority to assess damages and the conclusions of the committee are binding upon all parties. Arbitration is a valuable alternative to litigation and is a compulsory means for resolving conflict among members of boards of trade, grain exchanges and trade associations. An arbitration clause is often included in the contract.

Purely competitive prices are not always considered in the long run best interest of an industry or a society. There are pricing practices that lead to undesirable conduct on the part of competing firms, unfair trading practices, and unacceptable risks to participants in the market transactions. State and Federal governments have designed legislation to minimize these social costs and provide stability in the market. These regulations in some countries have taken the extreme form of direct state control of prices of products and inputs. Even in the United States legislators in some states have introduced bills to set minimum prices for grain and to legislate discount schedules to be used by grain buyers. (Vuich, 1981). Producer organizations have also proposed to set minimum prices by agreements to withhold sales, or through bargaining with processors. (Kohls and Uhl, 1980, p.281). A more commonly recognized example is the use of the Interstate Commerce Commission to control transportation rates, storage rates and pricing practices in the grain industry.

Regulations to control transactions may in some cases be important contributors to an efficient marketing system. However, they also generally place limits on what is considered to be perfect competition in the theoretical sense of competitive markets.

Agricultural Trade Policies

Most trade policies fall under the heading of "general economic environment". However, in an agricultural economy trying to develop new export markets, direct financial and organizational help to develop markets by a government agency may be justified. Trade policies, including trade agreements, export enhancement programs, subsidies, taxes, quotas, and trade barriers are designed to enhance the competitive position of one country vis a vis its trading partners. Trade policies in general restrict free trade and inhibit competition. They are generally considered necessary either on the grounds of the "infant industry" argument or as a strategy for

protecting against "unfair" trade practices by other exporting nations. The development of free trade zones is an attempt to reduce previous trade barriers and thereby enhance competition by allowing a freer movement of resources and goods between countries with common interests. However, as progress toward free trade on a global basis is quite slow, free trade among geographic regions has become a popular alternative. Canada, Mexico and the United States are establishing a North American Free Trade Agreement. The European Community is likely to continue its expansion to include more countries and regional agreements in Latin america are being negotiated as well.

Negotiating trade agreements and reducing trade barriers in importing and potential importing countries is also a function that must be initiated by government agencies. However, lobbying efforts of private firms influence the form of these trade polices, and are almost always involved in implementing the agreements in the form of market transactions. These trade agreements provide support and protection for private firms. Enforcing trade agreements is the responsibility of government. In the United States, the private sector may forward complaints to the federal government when they believe unfair trade practices are occurring. Unfair trade practices may take several forms such as "dumping" (selling goods in a foreign country at a lower price than in the domestic market), not abiding by quotas, and subsidizing exports. When a complaint is made, the U.S. government will review the case, and if unfair trade practices are found to exist, the U.S. government may impose trade sanctions on the offending country.

Demand Expansion

Countries that are in the process of developing a new market structure or expanding their production of commodities, need to expand the demand for those commodities in international markets. In a well developed market economy, private firms assume the responsibility for much of the advertising and promotion required to expand the demand for their individual products. However, in a newly developing market economy, commercial firms often lack the resources and expertise to conduct advertising, promotion and market development activities, especially when the sales are targeted towards other countries. Private marketing firms in developing economies usually require government assistance in the form of regulations, agencies, and institutions to expand demand domestically and abroad. The benefits of such programs extend beyond the agricultural sector and the costs generally exceed the capabilities of individual firms, thus justifying government involvement. Even in industrialized economies such as the United States, promotion of generic undifferentiated commodities (primarily grains and oilseeds), requires help from government agencies that have assumed a major role in developing and servicing markets overseas. The Foreign Agricultural Service has entered into a partnership with the American Soybean Association and the U.S. Feed Grains Council to invest funds in overseas market development. Their trade servicing programs are considered to be effective in increasing the U.S. market share and generating satisfied customers abroad. (Howard, 1989). In an interview with the Argentine Secretary of Agriculture, he stated that government promotion of grains in foreign countries was one advantage the United States had over Argentina and one which they should try to emulate in the future. (Hill, 1991).

Commodity groups and producer organizations have also accepted this responsibility and conducted successful and extensive programs in demand expansion for commodities such as milk, pork, feed grains, food grains, oilseeds, citrus, and apples. Producer check-off programs provide funds for extensive promotion and trade servicing activities. Several commodity research and promotion programs are authorized by federal laws but supported primarily by collection of funds from farmers in the form of check-off programs or special levies. Examples

include the National Wool Act, the cotton Research and Promotion Act, the Wheat Research and Promotion Act, the Potato Research and Promotion Act, SPARKS -- the National Checkoff Program for Soybeans, and the Consumer Information Act. (Kohls and Uhl, 1980, p. 301)

Two programs operated in the United States have received public attention in recent years. The Targeted export Assistance Program (TEA) was authorized in the 1985 Farm bill, and provides federally funded financial assistance for short term market development. It was modeled after the Cooperator Program described above. The level of funding has grown from $110 million in 1986 to $200 million in 1991. Another effective government action to expand export markets is the Export Credit Guarantee Program (GSM-102) and the Intermediate Export Credit Guarantee Program (GMS-103). The willingness of the U.S. government to guarantee loans to countries in order that they can purchase commodities on credit has had a major impact on sales to specific countries. Both of these programs were created initially as a response to "unfair" competition from other countries. Recently several countries have defaulted on these loans for grain with the result that it has become another government subsidy with the costs borne by the taxpayer -- income transfer.

Public Law 480 also provides for financing exports through low-interest, long-term credit to foreign governments. Not only are the private loans guaranteed, but if the receiving country meets certain requirements, the debt is forgiven. P.L. 480 also includes direct donations, often justified on the basis that consumption will generate future commercial demand.

These programs are recognized to have been effective in increasing imports of grains and meat products in selected countries. However critics argue that the increase in total exports does not justify the cost, that retaliation by other exporting countries has increased costs, realigned trading partners to the detriment of efficiency, and benefited importers with lower (subsidized) prices. In addition, critics charge that the benefits have not gone to small firms in the United States as originally planned. McDonalds received $465,000 in 1992 to promote chicken. Campbell Soup received $450,000 to promote V-8 juice. Ernest & Julio Gallo received $5.1 million to sell wine in Europe. Furthermore, attempts to prove that these countries were using American agricultural products have been less than conclusive. The Agriculture Department officials say that they have tried to monitor firm size and sources but control is difficult. It is difficult to recommend these programs as a panacea for developing nations seeking to expand exports. A study by Bohman, Carter, and Dorfman (1991) concludes that the country offering a targeted export assistance program may experience a welfare loss, depending on the actions of third parties (neutral countries) in the bilateral trade. The authors conclude that "the model fails to provide justification (on national welfare grounds) for widespread use of targeted export subsidies such as the export enhancement program" used by the United States.

Canada also provides assistance from federal provincial governments for export promotion and market development. This assistance includes short term financing, identification of export opportunities, export guarantees, product promotion, and credit guarantees for importers. (OECD, 1987, p. 24).

The market development activities by government and commodity organizations should not interfere with the development of a competitive marketing system. These efforts are intended to increase consumption of particular products and may have some small effect upon allocation of resources. However, the efforts by government or private entities are essential to increasing the volume of infant industries to reach an economically efficient level of production, marketing, and exports. Market development programs that encompass several firms or commodities, generate benefits that are difficult to capture by individual firms trying to invest in market development efforts. Commodity groups and government agencies are needed to generate the potential gains from increased exports of generic commodities.

There are opportunities for government agencies to contribute to commodity promotion and trade servicing, and the regulations should be in place to permit joint funding programs between commodity organizations and government agencies. Related to demand expansion is the need for research on new products, new product forms, and improved marketing efficiency. In many instances the benefits of this research can not be linked directly to the firm making the expenditures, it therefore requires the involvement of a public agency.

Research and Education

The development of expertise for private markets often requires new information, new skills, and different attitudes. The concept of an individual firm lifting itself by its boot straps is probably not accurate in the area of self education. The self education process, even if it is effective, is far too slow for developing economies who are shifting from administered markets to private enterprise markets. Therefore a government agency must take responsibility for research and education including extension education activities with producers and marketing firms.

Research and educational activities in agricultural commodities can be shared between government and private entities. When the research and education has a direct payoff that can be realized by the entity initiating the work, private enterprise has been successful and has accepted a major role. However, much of the research and education has such a long payout period or is distributed among such a diverse and wide spread group of recipients that individual firms can not recover their costs and a return on their investment. In those instances, research to develop new production techniques, new varieties, new marketing systems, and new demand opportunities must be conducted by public agencies for the benefit of the total industry, the agricultural sector, or society in general.

In the United States the land grant system of research, the responsibilities of the U.S. Department of Agriculture and the effective programs of the Extension Service have all generated a high return on investment in research and education. Numerous studies have been conducted on the returns to research and extension in agriculture. Almost all of them show high returns to public and private investments in agricultural research -- many above 10 and 15 percent after adjustment for inflation. It would be difficult to find a more favorable return to any investment in developing economies. The difficulty, however, is that the return is seldom visible in the short run and the advantages of these investments are difficult to sell in most political arenas. (Ruttan, 1982 p.241)

Returns to consumers and producers have in general far exceeded the investment supported by taxes and have resulted in increased economic productivity and general welfare. High risk research on new products with a low probability of success have generally been undertaken by government agencies. However, once the potential for economic return on investment is realized the responsibility is shifted to private firms. The Northern Regional Research Laboratory on utilization has generated many new products from corn and soybeans, such as “super slurper,” modified starches, ink, adhesives, and plastics, to name only a few. Once these products and manufacturing procedures have been established, commercial firms have generally conducted the production, marketing, advertising and promotion of the products.

Perhaps the most effective government action that can be implemented to improve competition in commodity products is education. Producing and marketing firms must understand the principle of comparative advantage, competitive markets, middlemen, marketing functions, and arbitrage over time, form and space. Many of the marketing tools of developed competitive markets are theoretically available in Chile, for example, but few farmers understand the techniques of forward prices, delayed pricing, staggered sales, and alternative storage

strategies. Nor do they understand the risks associated with the holding of stocks in storage and alternative strategies for speculation with limits on potential losses. Educational programs by government such as the leadership training programs described in the Chile report, expanded work by extension agents, and short courses by universities, government or boards of trade could do more to change the competitive structure of commodity markets than any other single action. Research and education have a positive effect on efficiency of production, development of market infrastructure, marketing efficiency, and expanded domestic and export sales. It is therefore an important and often necessary function for government agencies in order to establish a competitive market.

Requirements for Development of Private Commodity Markets

Areas Requiring Direct Government Involvement

The birth and nurturing of private commodity markets requires several actions by government which directly involve the government in investment decisions and regulation of the actions of private individuals. Private enterprise may develop a marketing system in the absence of some of these regulations, but efficiency, equity, and growth will be dramatically improved with the following government actions, policies, and regulations. As stated earlier in this report, it is assumed that general economic and political requirements have already been met.

1. Warehouse Regulations. Warehouse laws are needed to assure producers that grain placed in storage will be available to them upon request. This will usually require bonding of the warehouseman and in some cases, an insurance fund to guard against financial failure of the warehouseman. Negotiable warehouse receipts provide a valuable financial instrument for producers and marketing firms, and enhance arbitration transactions in the market. The sequence of procedures for establishing a set of warehousing regulations is described in detail by Thomas Glaessner, et al in appendix , in McGarry and Schmitz (1992).

2. Regulated Entry. Restricted entry may appear to be counter to the principle of competitive markets, but some restrictions are essential for the development of a market. Patent laws that provide sufficient protection to achieve a reasonable return on investment, are needed to encourage invention and development of technology and products. Licensing of grain dealers and marketing firms is needed to restrict entry by firms or individuals that are either financially or managerially unqualified to buy and sell grain. Oversight of the licensee should include legality of operations and should guard against unnecessarily large risks to other firms in the market. This will also include regulation of pricing practices that are predatory or that jeopardize the economic survival of other firms. Regulated entry into transportation industries may also be required, depending on the structure of the transport industries.

3. Grades and Standards. It required nearly a century for the United States to develop the basic legislation which supports the current system of grades and standards. The debate and experimentation during the search were expensive in terms of time, lost markets, and market inefficiency. The value of nationally uniform standards is recognized throughout the U.S. grain industry, but is especially important for grain in the export market. Equally important to an efficient export system, is the mandated supervision of all grades and the law that requires federal inspectors at the ports. (P.L. 94-582 U. S. Congress, 1976). The credibility of U.S. grade certificates allows the sale of over 85% of exports on the basis of the origin grade,

rather than requiring the less efficient alternative of grades determined at destination. Voluntary grades and standards was found to be an unworkable system in the United States. The government must take control of commodity grades and standards, enforcing their use in domestic and export markets. In addition to their value in physical transactions, they are essential to the functioning of a commodity exchange.

4. Regulating Transactions. Markets must operate with a set of rules enforced by some authority. Some of the market rules can be set by exchanges or by trade associations, where all parties in the transaction can agree on rules that are mutually beneficial. However, other rules are needed to protect unorganized parties in the market (e.g. farmers) and in some cases to protect marketing firms from their own self interests. Unfair pricing practices, speculative positions that could financially injure third parties, legal documentation required for transactions, (especially those relating to forward or delayed price contracts) are a few examples of the regulations of transactions that are needed for a private enterprise market to operate effectively and efficiently. Supervision of scale weights and other equipment used to determine quantity and quality are also the responsibility of government.

5. Providing the Physical Infrastructure. The physical infrastructure such as transportation and communication facilities, are often a limiting factor in countries where marketing has been under the control of an agency that has been insulated from the discipline of the market. Although several countries are experimenting with private ownership of highways, railroads, airlines, and communication systems, there are several examples of the potential dangers of relying on private enterprise to provide this important infrastructure. One of the dangers is that privatization of a transportation system may simply substitute a private monopoly for a government monopoly. Both forms may not respond to the essential needs of the market. The transportation and the communication system must be responsive to market signals or an efficient market is impossible to achieve. The compromise position is for the government to develop, own, and maintain the right-of-way (i.e., provide the high fixed costs of the transport and communication systems) and allow private firms to provide operating capital, equipment, and technology. The government investment in the fixed costs should be recovered through user charges, thereby transforming a high fixed cost acting as a major barrier to entry, into a variable cost. The ease of entry assures a competitive industry operating the transportation and communication system under economic incentives that reward performance and rapid response to changing economic conditions.

6. Information. Although private firms can provide much of the market information required for transaction and investment decisions, there are several types of data that require a central agency with authority to assure continuity and objectivity. Detailed benchmark data (such as a census of agriculture), production data on crops and livestock, and price and consumption data, along with analysis of these data, are essential information for decisions by private firms. These data are unlikely to be provided without significant input from a government agency.

7. Limiting Market Power. An economic system that encourages competitive behavior among firms, often contains incentives for growth leading to monopoly and market power. The objective of regulations should be to encourage the growth of competitive firms while placing limits on monopoly power. This requires effective anti trust legislation, and regulations to prevent private firms from creating barriers to entry.

8. Safety Net Legislation. The development of new forms of market organization entails risk of financial loss. Risk is a part of a private enterprise market. Entrepreneurs that have become accustomed to stable prices, incomes, and quantities often have difficulty accepting the unfamiliar role of risk takers. Even in developed market economies, government often evaluates some risks as unacceptably high and provides assistance in some form. Government must establish limits to the amount of risk to a newly developing entrepreneurial class. The alternatives for reducing the impact of excessive risks include: disaster loans or payments, crop insurance, floor prices, welfare and unemployment assistance that includes agricultural firms, and bankruptcy laws. Some combination of these strategies will be required to encourage new entrepreneurial activity in an unknown or unstable economic environment.

9. Trade Policies. All major commodities are marketed under the trade policies of trading countries. While the form of these policies varies widely among countries and among commodities, there are no completely free commodity markets. Consequently markets in transition from controlled to open must take careful stock of the trading rules of potential trading partners in the international markets. Bilateral agreements, export enhancement, tariffs, and import-export taxes are appropriate options for government agencies. Free trade cannot be instituted unilaterally. The extent to which a country should deviate from the principle will depend on the specifics of each situation. The concept of "infant industry" provides a partial justification for instituting trade barriers, but additional criteria are needed to determine when and how temporary protection should be removed.

10. Reducing the Impact of Adjustments. Government agencies have the responsibility to reduce the magnitude of economic impacts resulting from adjustments in marketing rules, institutions and investments. The obligation is partly social in nature, but also has a justification in economics. Major losses of invested capital, costs of retraining labor, reluctance to invest under uncertainty, and disruption of market-related services during transition are all potentially costly to society. A planned process of adjustment from one set of investment strategies to another can speed the adjustment process, reduce the cost of adjustment, and increase output during the reallocation of resources.

11. Research and Education. Educational programs to develop managerial skills are not likely to develop without direct government assistance. Education and retraining of workers generally has a high payoff, but the costs can seldom be recovered by private industry. Research that has a long run payout or that has benefits that are too widely distributed to be recovered by an individual firm must be conducted by government. A research institute funded from public sources should be developed to conduct research on topics where private firms will lack incentives. Priority topics include: decreasing production and marketing costs, developing market infrastructure, policy alternatives, organization of production and marketing systems.

Areas Where Government Regulations Serve a Facilitating Role

Private industry frequently needs the support and encouragement provided by a government regulation or agency. In some cases this may take the form of enabling legislation. In other cases it may require a joint venture between government and private firms. These

opportunities will differ among countries and commodities, making generalizations difficult. Private marketing firms can develop in the absence of these regulations, but their presence creates a favorable environment, facilitating new investments.

1. Enabling legislation. Many marketing institutions that may be developed and operated by private firms require permissive legislation. Marketing orders, producer check-off funding of marketing activities, and a commodity exchange require some type of legislation and regulation before they can be operationalized. Certain types of market transactions also rely on regulations or changes in regulation before they can be used. Prohibitions or impediments to use of the Chicago Board of Trade by grain buyers in Brazil add to the cost of risk shifting. The enabling legislation may need to extend to financial institutions including currency exchanges, as well as the grain merchants.

2. Agricultural Cooperatives. Agricultural marketing cooperatives often require government assistance in order for them to become established. This may take the form of loans or tax concessions or management advice to assist in their early development and growth. Agricultural cooperatives are given financial privileges in many countries as a means of increasing competition in a market dominated by a few private firms.

3. Access to Capital. In the early stages of development, many agricultural marketing firms are unable to compete for capital funds at commercial rates. Rapid development of marketing firms and infrastructure often require subsidized access to capital. Availability of low interest loans to agriculture must take into account the time required for enterprise development and differentiate between short run operating loans (e.g. for fertilizers) and long term loans for capital improvements or purchase of land. Both interest rates and repayment schedules must be tailored to the agricultural enterprise and based on ability to generate the necessary return on investment and potential cash flows. The farm credit system in the United States as presently administered provides a partial pattern from which to develop a system to meet the unique needs of other countries. Credit. Both the United States and Canada maintain programs to increase the availability of credit to farmers. Assistance is in the form of subsidized interest rates, guarantee for commercial loans, and loans to high risk producers.

4. Promotion and Trade Servicing. Few private firms in developing markets are capable of conducting a multi-country program of promotion for generic commodities. Newly developing markets can be greatly strengthened by an aggressive export marketing program. Although much of the responsibility for market development and trade servicing can eventually be assumed by commodity organizations, in the early stages these commodity groups will not have the skills or personnel to conduct such programs. In most cases, these organizations will not even exist in the early stages of the transition to a private market. Responsibility for developing export markets is a natural extension of the responsibilities of the embassy. As the opportunities and responsibilities expand, a separate organization should be developed that incorporates the commodity groups.

Responsibilities of Private Firms

Private firms cannot be coerced to move into the void left by the reduction of government regulations in the marketing of agricultural products. Incentives, education, and encouragement are the only devices available to the government to persuade entrepreneurs to enter the market.

The primary requirement for a private market is that private entrepreneurs make the necessary investments and assume the managerial decision making role. There are some activities in which the private firms must cooperate with one another to develop new institutions. Knowledge of the success of these efforts in other countries should be sufficient inducement for one or a group of firms to initiate actions in the following areas.

1. Commodity Exchange. An institution, including physical facilities, in which prices of cash grain are discovered in a public exchange is essential to pricing efficiency. This requires a number of buyers and sellers in communication with one another, it requires standardized contracts, and it requires uniform descriptive terminology for qualities and quantities. Prices and quantities must be made public in a timely manner, in order that the larger market can respond to that information. Sales of forward contracts will be a natural extension of the cash market. A futures market is not essential in most countries. An effective futures market requires a large speculative volume in addition to the cash and forward contract volume. Few countries in the early stages of market development can generate the necessary number of small speculators required to shift the risk of price variation from marketing firms. Access to futures markets in other countries will usually permit producers, marketing firms, and processors to conduct the necessary risk-shifting transactions.

2. Trade Associations. Organization of marketing firms into trade associations allows private firms to contribute to education, arbitration, financing, and market development. These activities relieve the government agencies of these responsibilities and are often performed more efficiently by the association than by the government.

3. Information dissemination. Short term market information and firm-specific advice can be provided most effectively by private management or market information firms. These firms often rely on government generated information, which they adapt to meet specific situations. A reliable source of basic data and public information about prices are prerequisites for the development of these private advisory services.

Regulatory Impediments

Although most of this report has focused on the regulations that enhance the development of private markets, it is important to list some of the regulations frequently used by governments that are deemed to be the most detrimental to the development of competitive markets. While some of these regulations may be considered essential in order to meet social, political, or environmental objectives, their negative impacts on the market should be explicitly recognized and factored into the total welfare equation.

> "In one area after another -- environmental policy, trade negotiations, transportation, regulations, food standards -- governments make choices that can hinder a growing industry or open the door to greater progress." (Corn Refiners Association, Inc., 1993).

1. Ownership and management of marketing firms. There many examples of the relative inefficiencies associated with management of firms when decision makers are not subjected to the discipline of a competitive market. There are few strategies for involving a government

agency in the operation of grain handling, processing, and exporting that do not result in less than optimum allocation of resources and an increase in cost of production and marketing.

2. Price control. Limiting the free movement of prices in response to forces of supply and demand reduces economic efficiency and distorts resource allocation from that obtained under a free market. Restricting price fluctuations in the market will also eliminate the opportunity for economic gains from arbitrage, thus weakening the commodity exchange.

3. Supply management. Attempts to increase or reduce supplies of commodities entering the market will have many of the same negative effects as encountered with price controls. In addition, many of the techniques used to influence supply (e.g., storage or acreage restriction, or input subsidy) will have undesirable consequences on government budgets.

Environmental regulations. Increased attention to the environment is inevitable in every country. The point to be made is that the benefits of alternative strategies for reducing environmental impact must be balanced against the cost of developing competitive markets. There may be opportunities for sequencing some of the environmental programs that will allow the market to develop before the major impact of environmental regulation occurs.

A Summary of the Minimum Requirements for Market Development

An efficient privately organized marketing system requires the following elements:

1) negotiable warehouse receipts,
2) a grain exchange on which cash transactions may be completed in an open and public forum,
3) a system of grades and standards,
4) the opportunity to shift risks either through government programs or through access to futures markets in another country such as the Chicago Board of Trade,
5) government ownership of transportation right-of-way allowing private firms to compete for transportation services,
6) basic economic information and analysis providing background material to be adapted and disseminated by private firms,
7) regulations to control monopoly power and to protect traders. Part of these regulatory activities can be provided by trade associations,
8) government assistance in negotiating trade agreements and reduction of trade barriers,
9) programs of research and education to assist private marketing firms to develop,
10) financial institutions or direct government assistance in the form of providing credit for private firms in the market channel,
11) long term investments in infrastructure and education where benefits are distributed over a wide range of individuals and cannot be tied directly to cost and investment,
12) legislation to minimize negative impacts of adjustments, especially where the injured sector can become a future impediment to marketing efficiency,
13) investments in technology where the inventor is unable to reap the benefits (specifically related to patent laws).

Appendix

A Functional Approach to Evaluating Market Performance

Every market must perform a basic set of functions whether it is a primitive barter type of exchange or a highly regulated market with sophisticated rules and technology. Not all functions are performed equally well by all markets, nor do they all receive the same relative emphasis. Different markets also allocate responsibility for performing the functions to different market participants.

In the simplest form of a market, there are only two participants exchanging goods, with each benefiting by giving up one product for another. All market functions are performed by either the buyer or the seller. As this market develops, money becomes a medium of exchange permitting a wider range of participants. With increasing market sophistication, individuals start specializing in one or more marketing functions. As a result we have middlemen, information agencies, regulatory bodies, and a wide variety of market institutions.

In all stages of market development the functions performed can be classified into three categories: (1) physical functions, (2) exchange functions, and (3) facilitating functions. As discussed at length, (Kohls and Uhl, 1980, p. 24), there is not unanimous agreement on this classification or on the functions included. However, every market must provide most of the functions that are described below. Primitive markets differ from sophisticated markets primarily in the degree to which the functions are performed by specialized firms.

Physical Functions

The physical functions identified by most marketing textbooks are storage, processing, assembly, and distribution. Unless products are consumed as soon as they are produced, they must be stored. This is especially true for agricultural products because production is seasonal and consumption continuous.

Most agricultural products must be processed before they can be consumed. In addition to the obvious types of food processing, this category of market functions includes such diverse activities as grain drying, packaging of cereals, and cooking by the consumer.

Unless consumer and producer are the same person, transportation of the goods from the production point to the consumer is also an essential function. By dividing the transportation function into an assembly function and distribution function, we can identify specialized firms, agencies, and institutions. Agricultural products must be assembled from many producers located over a wide geographical area, and then distributed to an even larger number of consumers often scattered over an even greater geographical area.

Exchange Functions

In most textbooks the exchange function is divided into buying and selling. However, this division implies that buying and selling are separate activities when in fact they merely identify the two parties involved in a single transaction. A more useful categorization is the transactions function—exchange of title, consummation of the contract, etc.—and the pricing function. Regardless of the simplicity or complexity of the market system, title to the goods must change hands and social and legal rules governing the rights associated with title and contract inevitably must be developed.

The pricing function differs among marketing systems but is always present. In a barter economy it is the process of setting the value of one good in terms of another. This is often a process of negotiation between buyer and seller. In a system of administered prices such as those found in the European Community or in centrally planned economies, prices are established by commissions or government agencies, who try to equate forces of demand and supply within the context of other social and economic goals. In a market economy the price is established through a series of bids and offers interacting within a market. This may involve several middlemen, government agencies, and private entrepreneurs operating within a set of rules and regulations and using arbitrage through time and space.

Facilitating Functions

The list of facilitating functions differs from one textbook to another but the list that I prefer includes information, risk shifting, standardization, and financing.

The importance of the facilitating functions increases with the complexity of the market system, although they are present to a limited extent even the in the simplest market. For example, the function of financing is highly developed in sophisticated markets. But even in a two-person market one party may arrange for partial advance payment before delivery or the buyer may find it necessary to accumulate funds prior to a purchase. In the grain industry forward contracts, delayed pricing schemes, and the futures markets all depend heavily upon the market (i.e., the middlemen and their institutions) to provide financing while the grain is moved from the place of production to the final consumer.

Standardization is also an important function in developed markets. Large volumes of products and large numbers of transactions are possible only if transactions can be based on description rather than inspection. This method of buying and selling requires a set of uniform terms and regulations that define the correspondence between descriptive terms and the economic characteristics of the product. It is not surprising that in the absence of government grain grades before 1850, the trade itself developed terms to describe quality characteristics. The lack of uniformity of these terms among traders and among states created strong pressure for federal grain standards to facilitate the marketing of large volumes. (Hill, 1990).

Unless the consumption of a product is simultaneous with production there is risk to the owner of the product. This risk can be of two forms — risk of price changes or risk of loss in quality and quantity. The price risk obviously depends on the degree of price variability over time. This risk is often shifted among participants in the market by means of various market devices and institutions. Hedging a commodity on the futures market shifts most of the risk to market speculators who are willing to accept risk for a lower premium than the firm that is hedging. In this way total costs of marketing may be reduced. Forward contracts are also used to shift risk from seller to buyer. If the producer retains ownership of a product while he waits to market it, then he bears the price risk.

Losses of quality and quantity during storage are generally the responsibility of the storer. This risks can generally be reduced by increased expenditures for improved facilities or equipment.

The information function is provided by a large number of firms, individuals, and public agencies. In direct selling (road-side markets, etc.) the information function is handled by each consumer and each seller exchanging price and quantity information. At the other extreme is the extensive private and government international information network supplying price and quantity data on grain crops around the world. The quality of information and the cost of obtaining it differ widely for different commodities and market systems.

The functional approach to the study of marketing systems is useful because it identifies activities and services that must be provided by some entity in the public or private sector. The performance of the market can be dramatically altered by shifting these responsiblities between the sectors. An evaluation of market performance can be used in making policy recommendations.

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