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**Decentralization of Grain Trading:
Trends, Implications, and Challenges**

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Australian Wheat Board Address

to the 1995
Australian Agricultural Economic Society
Annual Meeting
Feb. 14, 1995
Perth, Western Australia

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Abstract: An important trend occurring in the international grain marketing system is the privatization of grain import functions. One of the implications of this trend is a tendency for private buyers to have greater specificity regarding quality requirements. This *address* reviews and identifies issues and challenges related to this problem. The paper has five main sections.

The first section presents a selected review of studies on issues related to quality. In the case of wheat, most of the studies point toward increasing differentiation through time, increasing differences in preferences, and significantly changing characteristics demand. Recent studies on policy issues in the United States are discussed. These are primarily focused on issues related to regulations governing wheat cleaning, and results from a survey of importers are discussed. Several of these studies point out that private importers consider both price and quality in making purchase decisions, in contrast to government agencies that are primarily concerned with price. These studies also suggest that quality variability is an area of growing concern among processors, both domestic and foreign. The second section discusses analytical issues related to quality variability. Results are presented using an analytical model that endogenizes risks associated with grain trading under quality uncertainty. This is used to suggest some future issues as grain exporting countries seek reduce quality variability.

Privatization of grain import functions is discussed in the third section. The extent that privatization has occurred and factors contributing to this trend are discussed. Contract specification and purchase behavior under private import regimes are discussed. Data are presented for selected countries that suggests that at least from the United States and Canada, there has been a substantial change in the quality imported after import functions were privatized.

The next section discusses the *commoditization* process. Specifically, most markets go through a commoditization process in which the products ultimately end up being characteristic of commodities over time. This is elaborated upon in the case of the international grain trade. In addition, strategies to attempt to avoid commoditization are discussed in general terms.

The final section provides a summary and identifies implications of these trends for the world grain marketing systems. Specific implications are identified for importing countries, single seller agencies, and intercountry and interfirm competition.

Decentralization of Grain Trading: Trends, Implications, and Challenges

By Dr. William W. Wilson

An important trend occurring in the international grain marketing system is the privatization of grain import functions. This has been occurring for some time, but the pace of change has accelerated in the past decade, driven in part by trade liberalization and pressures from international agencies. In addition, government importing is generally incompatible with the structure of competition that is evolving in many countries. Given the past dominance of government import agencies, this change has important implications for the world grain trading industries, trading companies and agencies, producers, and organizations providing facilitating functions.

One of the implications of this trend is a tendency for private buyers to have greater specificity regarding quality requirements. Review of recent studies each confirms that countries with private importers are more sensitive to both price and quality. In contrast, countries in which imports are procured through a government agency generally are concerned primarily with price. In these countries, quality plays an incidental role in the purchase decision. Preliminary review of import data also suggests that quality has increased following the privatization of import functions.

The purpose of this paper is to motivate discussion on issues and challenges to the world grain marketing system as a result of these changes. The paper has five main sections. The first two sections review recent work in grain quality and international demand and competition. A preliminary analytical model is also presented to illustrate some of the effects of quality variability on trader's strategies and importer competition. The third section documents the extent of privatization that has occurred in the past decade and presents data to suggest that quality specificity has increased after countries' import functions are privatized. The fourth section discusses issues related to the *commoditization*, a problem confronting trading firms and agencies, and suggests strategies for overcoming these problems. The final section draws conclusions and identifies potential implications for participants in the world grain trading system.

Quality: What have agricultural economists been concerned about?

One of the major effects of privatization of grain import functions is the greater demand for quality specificity. As a result, issues related to grain quality have escalated in importance. Before discussing privatization and its implications, some of the issues related to grain quality that agricultural economists have been involved in during the past decade will be

reviewed. Attention is focused to some extent on the United States where the changes occurring may be more subtle and likely not as apparent.¹

Policymakers, grain trading firms and agencies, and agricultural economists have been active in analyzing issues related to grain quality. At least one of the reasons for this is the perception of the increasing importance of quality as a factor in trade and competition.

Hedonic Modeling

Academic and government researchers have made extensive use of hedonic analysis² for evaluating grain quality problems. Numerous studies have been conducted in the case of grains, wheat in particular. In virtually all cases, regression has been used in the following general form: $P = \alpha + \beta C$, where β is the implicit characteristic price and C is the value of that characteristic.

Following is a summary of some of these results for wheat. Wilson (1989) used annual average data on international posted prices. The basic premise of that study was that an implicit market for quality characteristics is influenced by policies, institutions, and agronomic practices, which vary across exporting countries. Results from that study indicated 1) an implied value for spring-planted wheat relative to winter, at least at higher protein levels; 2) a substantial implicit premium for Canadian wheat; 3) a decrease in the implicit premium for hard heats over soft in recent years; and 4) an implied stable value of protein in some markets, but gradually increasing in the CIF Japan market.

Veeman (1987) used annual average data and found that protein content was a significant factor explaining wheat price variability across countries and years. Similar conclusions were found by Larue. Uri and Hyberg used shipment data and transaction prices and found that both test weight and protein content were significant. However, other quality characteristics, such as dockage, moisture, foreign material, and percentage of shrunken and broken kernels, were not significant. These authors questioned the value of measuring these characteristics in the wheat trade.

One of the motivations for using regression analysis is to estimate implicit prices associated with a characteristic. This estimation is required because we (as academic researchers) do not observe transaction prices. However, a shattering experience for researchers who estimate hedonic models is to discover that buyers and sellers of agricultural

¹The emphasis here is on analysis in the United States and issues confronting it and its competitors. Researchers in other exporting countries, notably Australia and Canada, have had a greater and longer tradition in analyzing issues related to grain quality.

²See Ladd and Martin for early contributions to the agricultural economics literature.

commodities³ have explicit values for characteristics. Examples include protein premiums in wheat, plumpness in barley, and oil content in oilseeds. All of these are specifications normally embedded as contract terms.

Characteristic valuation through hedonics can be determined through optimization types of techniques.⁴ These are particularly true in the case of inputs or intermediate goods, as distinguished from consumer goods. Our work is focused in this area. An advantage of these types of techniques is that you can identify reasons why premiums develop for a commodity (i.e., in the case of wheat, the reason why Canada commands a premium over U.S. spring wheats is due to farinograph absorption and the relationships of the values relative to the constraint). From regression applications, at best, you can define the value of the premium associated with that characteristic.

Budget Analyses and Optimization Modeling

Researchers have begun to examine the economics of conditioning grain and the role of market and regulatory mechanisms in providing incentives. These include studies on wheat cleaning by Adam and Anderson; Fridirici, Kiser, Schulz and Wingfield; USDA studies (as summarized by Lin and Leath and Mercier; Wilson, Scherping, Johnson, and Cobia). Johnson and Wilson (1993) developed a blending model with integrated cleaning technology at the country elevator level.

Along these lines, Johnson and Wilson (1995) developed an optimization model that simultaneously determines the importer's demand for quality attributes (in this case, cleaned wheat) and the exporter's supply of conditioner (cleaned and blended) wheat. This analysis simultaneously determined the demand for characteristics (in particular, the tradeoff from an importer's perspective between cleaner wheat and price discounts) and the exporter's intensity of the conditioning activity. The solution algorithm quantifies the importer's characteristic demand and uses it as an input to the exporter's problem. Both the importer's and exporter's problems are solved jointly to determine the optimal price discount and level of cleanliness to offer. Results illustrate that many grain quality problems, which can be influenced by conditioning, must consider both demand and supply for characteristics jointly.

Demand and Differentiation

Other strains of literature have been related to evolving grain quality in recent years. One recognizes and analyzes the extent and effect of differentiation in the world grain (wheat) trade. Grain trading firms and agencies have always recognized the importance of quality

³This is less true for less frequently traded items such as houses and automobiles on which statistical hedonic analysis has more conventionally been applied.

⁴Ladd and Martin made this point and applied their analysis to corn. Ireland also strongly urged using math programming techniques for applying hedonic analysis.

differences among wheat from different origins and their variability through time. However, agricultural economists have generally treated wheat as being undifferentiated from an analytical perspective. In the United States, at least, this could be due to the very important fact that farm policy mechanisms treat wheat (and other commodity groups) as being homogenous, thereby setting a precedence of requiring modeling based upon undifferentiated commodity groupings.

However, wheat has numerous end uses and indigenous characteristics and should be treated as heterogeneous. Wilson (1989) demonstrated that over time, differentiation (using the Hufbauer index) has increased. Hedonic studies generally have similar conclusions. Larue also confirmed that wheat was not homogeneous.

Wilson and Gallagher and Wilson (1989) indicated that through time, there has been a growing diversity of demands for end-use characteristics. In other words, demands have never been homogenous, and the degree of differences in preferences appears to be growing through time. In Asia, there were growing preferences for SRW, HRS, and CWRS relative to ASW, whereas HRW was losing.⁵ In Japan, HRS and ASW were gaining relative to white.

Recent analyses have shifted to the demand for wheat classes. Agriculture Canada analyzed regional import demands for aggregated classes. Others have analyzed demand for wheat classes (Wang; Chai; Chang) using loosely specified models with respect to functional form, relationships among elasticities, and, in some cases, variables included.

Wilson (July 1994) used a translog function to estimate wheat class demands for Pacific Rim countries. Results indicated substantial differences among underlying demand parameters for different wheat classes as well as across countries. In addition, the expenditure level has important impacts on the distribution of imported wheat classes; and preferences have shifted significantly through time, generally toward higher protein wheats. The only country in which ASW had a significant shift in preference was Indonesia.

The results indicated 1) positive shifts in preference for CWRS in two of the four countries importing this class; 2) positive and significant shifts in demand for HRS in three of the five countries (Japan, Korea, and Philippines), and 3) positive and significant shifts in Korea for each class, except for negative shifts in preference of White.

U.S. Policy Issues and Analyses

⁵The following acronyms are used to designate wheat classes: HRS, HRW, SRW, and White for U.S. hard red spring, hard red winter, soft red winter, and white, respectively; ASW for Australian Standard White; and CWRS and CWAD for Canadian Western Red Spring and Amber Durum, respectively.

Countries have numerous mechanisms that influence grain quality and that have very important implications for their evaluation. If the market does not reflect quality differentials, the need to provide mechanisms for differentiation may be minimal. However, as price differentials increase, the importance of being capable of differentiation increases. Thus, given the nature of competition since the 1980s, mechanisms that allow differentiation have become an important component of international competition. In the United States, two major studies addressed these issues. The first was undertaken by the Office of Technology Assessment (OTA). The USDA conducted a comprehensive analysis of issues related to grain quality.

OTA surveyed overseas millers about their feelings toward U.S. wheat. Several major points gleaned from this survey were 1) assuming price and transport costs are the same, U.S. wheats were nearly always the least preferred relative to competitor wheats; 2) wheat class is not a good indicator of end-use quality; 3) important criteria in approximate ranking include protein quality, pesticide residue, insects (hidden, dead), and mycotoxin; 4) overseas millers wanted more information on dough handling properties; and 5) a major concern of survey respondents was an apparent increase in lack of uniformity in end-use quality, baking absorption, dough-handling properties.

Since each country has a multitude of institutions and mechanisms that influence quality, the OTA study suggested a paradigm for evaluating issues related to grain quality. The concept was that a highly interdependent "system" impacts the quality of grain offered for export. This is comprised of variety development and release mechanisms, agronomic conditions, trading practices, grading and standards, and farm policies. The important point of the paradigm is that the institutions and policies which impact the quality of grain exported are more complex than simply looking at issues related to grades and standards. This, of course, has been the traditional area of debate in the United States.

The purpose of variety release and control mechanisms is to provide a means to regulate quality for characteristics not capable of being easily measured in the market system. A prerequisite for market regulation (premiums and discounts) is the ability to easily measure the characteristic. Another implicit effect of these mechanisms is that they provide a means to reduce the extent of lack of uniformity in enduse, an increasing complaint of domestic and export millers.

The U.S. grading system typically only measures physical (not chemical) characteristics, and this is the mechanism upon which the establishment of quality measures for premiums and discounts relies. Trading practices cover a range of issues, but are crucial in making cross-country comparisons. These include the mechanisms by which premiums and discounts develop, whether by marketing boards or through a market system; local competitive environment; trading practices with respect to indigenous and extraneous quality characteristics; regulations regarding cleanliness and hygiene (e.g., infestation); and the extent that variety is used in the marketing system.

Farm policies typically are avoided in any discussion of grain quality. However, these have an important impact on the quality of grain in a number of dimensions, including yield inducing incentives and, therefore, disincentives for quality improvement; and marketing incentives related to cleanliness/hygiene and storage.

The 1990 Farm Bill urged the FGIS to establish or amend grade standards to match levels of "cleanliness" offered by competing countries. As part of that initiative, the USDA conducted a study to evaluate the "economically and commercially practical levels of cleanliness." The study included two major components: 1) economic-engineering studies of the cost of wheat cleaning in the U.S. and estimates of domestic benefits from cleaning and 2) a series of in-country interviews of buyers in major wheat-importing countries to determine the effects of cleaner U.S. wheat on sales in these markets.

The U.S. system with respect to wheat cleaning, which was the primary motive of these analyses, operates differently from other countries. Both Canada and Australia include wheat cleaning either in terms of restrictive factor limits or as a regulation to force cleaning on a large portion of wheat entering the market system. In contrast, in the United States, this is non-grade determining factor. As such, it is a contractual term, the level of which is determined through negotiation and buyer-seller competition. The upshot is that wheat is cleaned extensively in the United States, but only for those competitive conditions in which buyers and sellers specify the limit contractually.

The debate in the United States on this issue is essentially whether to require all wheat exported to be cleaned to an identical standard (i.e., similar to Canada and Australia). The USDA concluded that mandating cleaner wheat could create losses of at least \$8 million for the U.S. wheat sector. Alternative strategies would be to continue as is and to allow niche markets to express their demands in terms of autonomous specifications, rather than imposing regulations on the entire system.

The second part was a survey of importers to identify factors influencing choice of supplier country. These included the role of quality factors in import purchases and importers' perception of wheat purchased from their suppliers, details of preferences as revealed by contract specifications, level of dockage in import shipments and the cost of removal, and, finally, sensitivity of import purchases to cleanliness and the willingness of importers to pay a premium for a cleaner wheat from the United States.

These countries were classified in three groups based on the role of the state in importing: 1) state controlled, 2) mix of state and private operations, and 3) imports operated by private sector. Perceptions regarding sensitivity to prices and quality of wheat appeared to vary in these different groups of countries.

The survey suggested that in countries where imports are state regulated, the choice of source of imports was influenced by factors, such as credit availability, domestic supply, and price situation. The emphasis on quality was limited to the minimum standard requirements

stipulated by the importing agency in the contract. In the majority of importing countries, where imports are state regulated, the United States seemed to maintain a stable market share, and wheat from the United States was preferred. One miller indicated the possibility of compromising on prices for better quality wheat should wheat imports be privatized.

On the other hand, where import functions were privatized, the choice of supplier was influenced by both quality and prices. The United States seems to be losing its market share to Canada and Australia in countries where wheat imports have been privatized, not in government-regulated wheat importing countries.

Instances were identified where private importers were willing to pay premiums for cleaner wheat. This was revealed and confirmed in trade practices and export realizations of wheat cleanliness. Numerous importing countries specified limits on wheat cleanliness. In some cases, explicit premiums for cleaned wheat were embedded in contract terms (Wilson, Scherping, Johnson, and Cobia, p. 20-21). In addition, the average level of dockage in wheat exported has declined.⁶

Quality Uncertainty: Analytical Issues

Problem and Previous Studies

A common undercurrent in the studies is the growing concern about quality variability. One of the important conclusions of the OTA study was that buyers wanted to have more information on end-use performance that they had major concerns about the lack of uniformity in quality. The USDA survey of buyers indicated that wheat from both Australia and Canada was superior to that from the United States in terms of quality variability (and cleanliness). Concerns were raised about quality variability both within and between shipments. At least within the United States much of the research has focused on quality levels, rather than quality variability, even though both the level and variability are critical in commercial processing.^{7,8}

⁶For example, dockage content in exports to Japan declined from an average of about .90% during 1980-84 to .73% and .61 % in 1989 and 1990, respectively. The average level in DNS imports to Taiwan has decreased from .88% in 1985 to an average of .65% during 1986 to 1990.

⁷In particular, large deviations in quality potentially interrupt production schedules, increase processing costs, require additional storage, and reduce product quality.

⁸Much of the hype during the past decade related to *total quality management* is motivated by the objective of reducing quality variability.

There is a very important connection between this problem and the underlying theme of this paper. In particular, buyers tend to become more sophisticated after a country's importing functions are privatized. This has been observed in the United States during the past 5 years. The important characteristic of this change is for buyers to specify more specific contract requirements. This has important implications for competition among buyers, grain exporting countries, and domestic processors.

This problem was analyzed in the case of end-use performance variability by Wilson and Preszler. A chance-constrained math programming model was developed to analyze the impacts of quality variability in end-use characteristics on imports in the high-protein United Kingdom market. Results demonstrated that variances (both conditional and unconditional) for U.S. wheats were up to 10 times as great as those from Canada. Analytical results indicated that even though CWRS was higher priced, it was still optimal to be purchased at least of portion of the requirements. There was a positive relationship between variance and procurement costs. Thus, reducing variances from either source reduced the objective function value, i.e., procurement costs. As the confidence level (requirements) increased, ingredient costs increased. This was due to a shift to those origins with lower variances (and higher prices) as confidence requirements increased.

Reducing Quality Variability: A Marketing System Function

Quality variability has important implications for the grain marketing system. In fact, one of the principal functions of the grain marketing system is segregation and blending to reduce quality variability before first processing. The distribution of quality also affects the composition of customers targeted by exporting firms and countries.

Most quality characteristics for grains have non-zero variances implying risk for market participants. Distributions of these quality characteristics are distinguished as having important spatial and temporal differences.

To provide some indication of quality variability, we developed boxplots⁹ of selected quality characteristics of the North Dakota HRS wheat crop. Figures 1.1-1.____ show boxplots for the 1993 crop. In general, the plots show that across CRDs, the median and dispersion vary considerably for all characteristics, some more than others. There are also strong correlations among some of these characteristics. This is apparent in CRDs 3, 6, and 9 in which damage, test weight, and vomitoxin (a type of damage) are related. Figures 1. - 1. show boxplots through time. Again, the results demonstrate that the distributions change, in this case, through time.

⁹Boxplots show the median, interquartile range, outliers, and extreme cases of individual variables. The interquartile range is simply where half of the observations fall. Outliers and extreme values (circles and stars, respectively, on the plots) are shown and are deemed as being more than 2 or 3 standard deviations from the mean.

Some foreign buyers have a greater demand for specificity (relative to domestic millers) due to the latter's greater ability to mix and blend, and to specify (target) locations for purchases. The challenge to the marketing system is to determine the appropriate levels of segregations and aggregations in the allocation of grains among competing potential customers. As quality variability increases, this becomes a greater challenge.

The shape of these distributions have important implications for the grain marketing system. In particular, grain traders and handlers must procure, segregate, and blend to reduce the variability in quality of product shipped. As importers become more demanding and, in some cases, come to be similar to domestic processors in terms of quality specificity, the challenge to the system escalates. We have been developing an analytical model to quantify the impacts of quality uncertainty on grain trading activity including spatial distribution, procurement, targeted customers, blending and risk (Johnson, Wilson, and Dierson). This is described, along with selected results.

Grain traders make sales which include contract specifications for quality characteristics. The effect of non-zero variances for characteristics is that grain traders must formulate merchandising strategies (including country specifications, procurement regions, and premiums and discounts), recognizing that the probability of not meeting contract specifications is non-zero and procurement decisions must be based on expectations. In the process of buying and selling grain subject to quality uncertainty, traders have several sources of risks. One is the risk of not meeting contract specifications, having the effect of selling that grain into a market with greater discounts. A second risk is that of paying higher prices in purchasing based on false or optimistic expectations. This problem compounds trading strategies in that different penalties may apply for each of the factors that deviate from specification.

There are two important distinctions in our analytical model compared with other blending problems. One is that spatial and contractual competition among regions and buyers is introduced. The other is that uncertainty is introduced by making the probability of satisfying the constraint on the random quality endogenous.

The model includes seven customers denoted by country, each with unique quality requirements. Grain can be assembled (blended) from different origins to attain desired levels of particular characteristics. Destination market prices and transport rates are fixed. The objective is to maximize (expected) sales revenue net of transportation costs, subject to grain availability and quality constraints.

In the results presented here, one quality factor, vomitoxin, was included as a random variable. More than other grain quality factors, vomitoxin is subject to measurement and sampling errors. As a result, merchandisers can only expect to meet contract limits (e.g., no more than 2 ppm for domestic millers) in a probabilistic sense. If a shipment to a customer is rejected, that wheat must be sold to another customer with less stringent requirements at a lower price. The price spread between intended and unintended contracts is equivalent to a

discount that would be applied for the random characteristic. Magnitudes of discounts (and probabilities of avoiding discounts) in different markets are central features of the merchandising problem. Probabilities of satisfying vomitoxin constraints (i.e., maximum parts per million) are endogenous and embedded in the objective function.

Results (Selected) for Northern U.S. HRS Wheat

Some of the results from that analysis are summarized to motivate the issues associated with quality variability. Selected results are demonstrated using parameters from the 1993 Northern Plains U.S. HRS wheat crop.

Base Case Figure 2.1 shows the flows of HRS from North Dakota in what would be considered a normal marketing year, i.e., normal price spreads and assuming no quality variability. For comparison, Figure 2.2 shows the optimal flows under the 1993 crop year which was typified by fairly large variances for important quality characteristics and extremely large price differences among contracts.

Effects of Means and Variances One of the important aspects of quality uncertainty is the risk it imposes on merchandisers and, for that matter, the entire marketing system. As a result, procurement from those regions with greater variances, in quality characteristics will be discounted relative to those regions with less characteristic variance. The important point is that both the mean and variance of characteristics affect the wheat's value.

To evaluate the relative effects of changes in the mean and variance on wheat prices, the model was run with different distributions for vomitoxin in one region. Results were summarized in terms of these independent impacts of the shadow price in that region:

- Lower mean values of vomitoxin increased the value of wheat in a particular region (Figure 2.3).
- The standard deviation also had a negative effect on the value of wheat in a region (high variances result in lower prices in a region) (Figure 2.4).

This confirms the importance of quality uncertainty on the value of wheat (high uncertainty lowers the shadow price for the region and vice versa).

The logic of this relation is that high variances increase uncertainty, which increases the probability of not being able to meet specifications of higher valued markets. As a result, the risk associated with buying wheat in a region with a high variance detracts from its value. The implication of these results is that it is important to reduce the mean value of an undesirable characteristic and also the variance.

Buyer Strategies and Competition¹⁰ Buyers (importers and domestic processors) have two basic strategic alternatives, i.e., adjusting prices (or premiums/discounts for particular characteristics) and/or quality requirements. In the base case, prices and contract terms varied for different buyers. This comprises a form of buyer competition, and price discounts and quality requirements are elements of strategy. In spatially and quality (contract) differentiated markets, importers compete among each other and with domestic buyers.

Price Increase In the base case, the Korean price was \$6.08/bushel compared to \$5.74 and \$5.57, respectively, for Japan and Other at the PNW. However, these were not directly comparable due to the fact that the quality specifications differed. The model was simulated with increases in the Korean price from \$6.08 to \$6.28. Results are shown in Figure 2.5. Results demonstrated that

- with increases in the Korean price, the quantity shipped to Korea increased. The principal competitor from whom Korea draws HRS wheat away was the domestic milling market. In addition, the optimal flows to PNW Other increased.
- As the Korean price increased, the expected value of vomitoxin increased, and the probability of acceptance decreased (Figures 2.6). This reflects that as the Korean price increased, the Korean contract became more attractive, and greater amounts were originated in those regions with a higher vomitoxin level and variance, thereby increasing their risks.

Vomitoxin Specification The alternative strategy would be for buyer's to alter their specifications with respect to quality. This was particularly important in the case of vomitoxin specifications during the 1993 and 1994 crop years for HRS wheat. To demonstrate the effects of this, we simulated the model with different specifications for vomitoxin for domestic mills--the base case was a limit of 2.0. Results demonstrate that (Figures 2.____):

- As the domestic milling specification decreases from 2.5, equilibrium shipments to that market decrease. However, at vomitoxin limits lower than 1.6, shipments to that market decline sharply. Changes in the domestic specification also affect equilibrium shipments to other markets.
- The probability of being accepted in the domestic contract was .95 for vomitoxin specifications above 2.2.

¹⁰Similar simulations are shown in Johnson, Wilson, and Dierson on the effects of alternative domestic buyer strategies.

Privatization of Grain Importing

One of the important commercial changes occurring in the international grain market is the privatization of importing functions (Hallock). This has been occurring for some time, but the pace of change has accelerated in the past decade. This section provides a description of this change and some of the observed effects, notably increased contract specificity.

Dynamics of Privatization

Historically, a vast majority of grain trade was imported by government buying agencies of one form or another. This had an important impact on the conduct of the international grain marketing system. For example, quite frequently a cited reason for the development and retention of single seller agencies was to have a more appropriate organization for selling to grain importing agencies which were largely government.

During the past decade, there have been numerous and notable changes in the organization of importing. Table 1 shows the percent of countries using each type of buying organization by region.¹¹ Results indicate that 37 percent of the importing countries in the world are centralized and 41 percent are privatized. It is significant that decentralized purchasing occurs in 100 percent of the countries in East and North Asia, and South America.

Table 2 shows a list of countries which are privatizing or are likely to privatize. These include countries that have privatized during the past decade. Russia and the FSU is a special case. Technically, Russian imports are eligible to be imported by the private sector, though sovereign credit arrangements as administered has precluded private importers. However, that is in a state of rapid change. China remains largely dominated by Cereals, but is giving way to supply responsibility by city and provincial grain bureaus.

Stages of Privatization Process Typically the privatization process goes through three stages. In the first, a government agency performs the procurement function. In that capacity, government agencies would have a tendency to buy at the lowest cost. The logic to this is that there is an inverse relationship among prices (implied margins), the number of suppliers, and contract specificity. Greater (less) specificity on contract terms reduces (increases) the number of potential qualified suppliers. It is important that equilibrium bids

¹¹Data used to develop these tables were taken from World Grain (selected issues, 1989-1994). Countries were cross-referenced with the Grain Matters (Canadian Wheat Board, May-June 1994 issue). Other sources were used to validate these observations. These include U.S. Wheat Associates' Marketing Plans (1988/89) and the 1993 Strategic. The Australian Wheat Board also identified grain procurement organizations for selected countries.

and margins are inversely related to the number of bidders in bidding competition.¹² As a result of this form of competition, government agencies have a greater likelihood of being less responsive to needs of individual buyers.

The second stage would be the first step in the privatization process. Buyers assume responsibilities of procurement and would simply continue buying more of what they had previously purchased, i.e., no change in quality. This is the stage in which many countries are. The third stage would occur with increased competition within the domestic milling industry as competitors seek advantage by purchasing more specific qualities. In the process of doing so, they can increase margins and use a portion of the increased margin to pay premiums for more specific higher quality imported wheat.

Procurement Organization Under Privatization

Several organizational forms have emerged as countries have privatized. Three types of private import organizations are defined. These include private traders who purchase and resell grain to an importing country, industry purchasing groups such as an organization of millers who collectively purchase grain for their own use, and private processors or end users who import wheat for their own use in milling or baking.

Many countries have approached private procurement by forming an association or an informal purchasing cooperative. For example, after government control over procurement in Brazil ceased in 1990, many mills either merged or formed a buying organization to present a united front to suppliers by working cooperatively. A similar evolution emerged in Columbia, Peru, and Mexico.

Casual observation of these organizations is that they are seeking to exploit economies of procurement (i.e., purchasing costs, shipping and handling) through an association. By purchasing jointly, end users can reduce shipping and storage costs and other costs associated with procurement. This is particularly important because in many of these countries, individual end users, once privatized, require smaller volumes, relative to that which would be associated with minimum-efficient-purchases (i.e., the economic order quantity that minimizes total procurement costs). However, another motivation (or side effect) for organizing procurement as an association is that it provides a mechanism to assure that all end users pay the same average price for their principal ingredient. The effect of this is to preclude procurement competition which should be an important element of competitive advantage for some firms.

The essence of these changes is that channel of influence is changing. The upper panel of Chart 1 shows a prototype of an import agency decision process. End users have an

¹²Preszler, Wilson, and Johnson analyzed the effect of the number of bidders on equilibrium bidding strategies using game theory. Wilson, Scherping, Johnson, and Cobia explained the issue of number of bidders specifically on the impact of quality.

influence over purchase decisions in this type of purchase organization. However, the extent of their influence may be muted for numerous reasons. The lower panel of Chart 1 shows a prototype procurement organization under private purchasing. End users have a greater impact on purchase decisions, specifications, and terms of trade. Thus, the essence of the change to private importing is the change in the influencer. These buyers being directly impacted by different terms of trade (e.g., with respect to quality differences, alternative logistical arrangements) are more capable of assessing their value in terms of cost savings, their ability to produce different products, and profits.

Potential Reasons for Privatization

Reasons for the privatization that has occurred are numerous, and no doubt there are unique circumstances in each country. These include incentives provided by international financing agencies concurrent with broader economic liberalization. In addition, it is common for countries when joining an economic union (e.g., The European Union, NAFTA) to have to relinquish their government monopolies.

Centralized importing was not compatible with the evolution of competition within a country. Without economic incentives and pressures, public procurement organizations typically are not as efficient as private organizations in terms of making critical decisions related to importing. These include decisions with respect to forward pricing alternatives, logistic alternatives (including shipping and storage costs), and quality specificity (including premiums associated with higher quality).

Purchase Behavior Under Privatization

There are several implications of more decentralized grain import decision making. First is a greater tendency for smaller transactions and, potentially, shipments. Second, private importers are more likely users of hedging for purposes of price risk management. As such, purchase decisions become divorced from overall price level. In addition, buyers will have greater interest in alternative pricing options (basis contracts, maximum price contracts). Third, financing grain trade will provide both opportunities and problems. The other is for greater specificity regarding terms of trade. These include primarily quality specifications and logistics.

Contract Specificity One of the most important effects of the privatization of procurement is related to contract specificity. "...These changes [privatization] have transformed countries once willing to take almost anything into active buyers of the very wheat U.S. millers formerly competed only among themselves in purchasing" (Miller). Basically, when milling is privatized, end users want to say more about quality which has great implications for the grain marketing system. In describing Canada's view toward these problems, Wakefield indicated that "feedback from customers in all countries indicates that they are becoming more vigilant and sensitive in their requirements regarding specific quality factors, and are demanding written assurance that our grain meets their standards (p.11)."

Numerous examples demonstrate these effects. In the case of imports from the United States, one of the first characteristics to become more specific was dockage. Taiwan was the first to specify limits on the dockage levels.¹³

Egypt and Bangladesh are examples of countries with dual importing procurement regimes. The Egyptian GSAC contract (government) is used for about 65-75% of the imports. For U.S. wheats, that contract specifies HRW No. 2 or better SRW/HRW/HRS, shippers option. Basically, this is No. 2 lowest cost class wheat. The only extra specification is for 0.8% dockage which is applicable to SRW only. In contrast, specifications for private buyers are for No. 2 HRW, minimum protein at 12%, falling number 300; gluten 25-26 min, and test weight at 77 kg, which is higher than No. 2. The price is higher for the private specifications, but buyers have determined that these more stringent specifications, even at a higher price, yield greater profits.

Before procurement liberalization in Bangladesh, specifications were No. 2 or better, any class and no restrictions. Immediately after liberalization, imports continued under the previous specification. Specifications subsequently switched to HRW 12% protein and more recently to HRS 12.5% protein.

An important market for U.S. hard wheat exports are those buyers off the Pacific northwest (PNW). These include, among others, Japan, Korea, Taiwan, Thailand, and the Philippines. These are also principal buyers of HRS, a higher protein wheat, from the United States. Contract specifications for these buyers during the 1993 crop year are shown in Table 3 for selected characteristics. For comparison, specifications used by the U.S. domestic milling industry are shown. Specifications for one domestic milling contract are shown.¹⁴

There are several major points suggested by these observations.¹⁵ First, several of the large buyers of HRS at the PNW each have unique quality specifications. Second, these specifications are abnormally tight. This is relative to historical purchase specification, and relative to the U.S. domestic market. Though these are for a particular wheat class, similar conclusions would apply to other classes. Second, these specifications were for the crop years

¹³Since then, numerous importers have become more specific in their specifications with respect to dockage (Mercier; and Wilson et al.). Values of their contract limits must vary substantially across importing countries.

¹⁴In addition, the domestic market also trades a "terminal" specification which is generally used for export out the Great Lakes or the U.S. Gulf.

¹⁵Other more sophisticated specifications have been discussed including wet gluten and mixing peak time. However, at least in the United States, part of the problem is the exporters' ability to supply and guarantee these values. Variety specifications have not been used in executing export transactions.

1993 and 1994 which were characterized by what may be considered fairly large price spreads and quality variability.

Shifts in Purchase Patterns (Selected) We are analyzing effects of privatization on purchase behavior. The focus of this study is on competition among higher quality hard wheats between the United States and Canada. As part of this study, we are assembling data which can be used to illustrate some observations.¹⁶

Total Exports Before showing results for individual and selected countries, the proportions of wheat exported from these two countries by grade should be reviewed (Figures 3.1 --- _____). Results illustrate that the vast proportion of exports from the United States is Grade No. 2 for hard wheats, and No. 3 for durum. In contrast, Canadian exports are dominated by No. 1s.

There are numerous reasons for this observation, but two stand out. First, the United States has a large domestic processing industry that consumes primarily No. 1s. Thus, the excess supply by grade available for export is substantially less than that in Canada. Second, the U.S. marketing system encourages and facilitates blending and segregation depending on market incentives. At least in the past, the structure of premiums and discounts has generally encouraged blending and exporting of more homogenous qualities. In contrast, controls and strategies in the Canadian marketing system have a greater tendency to facilitate segregations for longer-term sales strategies. These have important implications for competition in the off-shore market.

Individual (Selected) Markets Exports to some specific markets illustrate a definite trend of increasingly greater amounts of higher quality wheats. In general, for the countries analyzed, demand for No. 1 CWRs increased.

Although these results are not exhaustive, they do suggest and illustrate that in some important markets that have recently privatized, there is an apparent tendency for imports to shift to higher grades and, in some cases, different qualities.

Market Commoditization

The structure of competition in the international grain trading industry is changing. While there are numerous contributing factors, one of particular importance is the privatization of import functions. The second is the gradual reduction of direct export subsidies resulting from the GATT. As a result of these concurrent changes, many grain

¹⁶Data were taken from EGIS which represents inspections of wheat export shipments by FGIS. Trade data from Canada were obtained from GRAINBASE (Canada Grains Council). However, this database does not contain wheat quality characteristics.

industry firms and agencies are evaluating their strategies. These include the Strategic Planning Unit Studies in Australia, a similar study by the Canadian Wheat Board, and numerous similar initiatives taken individually by most U.S. and international grain trading firms.

A common theme among all of these is to initiate efforts to avoid commoditization which sometimes refers to the observation that the temporal dimension of profits in some sectors is cyclic. Commodity-related businesses relate to the difficulties associated with avoiding ruinous price competition. Many products other than grain have characteristics similar to commodity industries. These include personal computers, strapping steel, and blood collection products (Rangan and Bowman). The common characteristics of these businesses are ruinous price competition and minimal product differentiation.

This section describes the nature of competition in commodity types of businesses. For perspective, several definitions of a commodity can be mentioned. Philips (p.6) defined a commodity as "a group of products or product class, that is a group of goods possessing a particular set of characteristics (citing Lancaster 1979). Variations in the characteristic contents of products within the same group lead to what we call *product differentiation*. Each variation gives a different variety, such as different models of automobiles...." Debreu, in defining a commodity, indicated it was necessary to include terms of sale in the list of characteristics to be considered (p. 6). Thus, a good in one place and the same good in another place are different objects..." This suggests that service attributes are an important source of differentiation.

Recent "business-to-business marketing" literature defined commodities differently. For example, Wilson defined it to include "any products which are made to a fixed standard and purchased in response to specific needs" (p. 23).

Dynamic Behavior and Market Taxonomy

The essence of marketing commodity types of products relates to some extent on the inability to differentiate the product due to physical limitations and the need to differentiate the related service attributes. This becomes more important as the market matures and approaches commodity status.

Product Life Cycles Virtually all products and services go through a product life cycle. During the mature phase, customers may become aggressive causing product/market proliferation. The latter is in part due to sellers who try to avoid price competition. During this phase, early warning signs of commoditization become apparent. These include increased competition and reluctance of customers to pay for features. Thus, as the market matures, the cost to serve customers increases and relative prices drop; consequently, margins and profits fall. The ultimate effect of this process is for industry consolidation and realignment. This is exactly what has been observed in the U.S. grain industry during the past decade.

Market Taxonomy Four market types can be distinguished by cost-to-serve and relative price. These are shown in Figure 4.1. Specialty markets (an adjective used frequently in some agricultural markets) are those that have a relatively high price, and the cost-to-serve the customer is low. Using this taxonomy, a commodity market describes those that are relatively low priced and have a relatively high cost to serve. In these types of markets, marketing firms give away its services without being compensated, to retain market share. Intermediate market types are referred to as core (no-frills) and augmented markets.

Dynamics of Market Behavior Longer term products and markets eventually evolve to the southeast quadrant, typical of commodities. This is sometimes referred to as the *commodities magnet* (Rangan and Bowman), since there is a tendency for markets to become commodities. Thus, through time, buyers begin to perceive products and service as becoming more homogenous among suppliers, and eventually price becomes the predominant buying criterion.

Every product eventually becomes subject to the pull of the commodity magnet, and it is up to individual firms/agencies to determine the dynamics of that change. As different firms and organizations choose different strategies, competitors will co-exist across market types.

Alternative Strategies

Conventional strategy prescriptions are for firms to choose either cost leadership, differentiation, or focus strategies (Porter, p.34-44). Cost leadership is normally that strategy to which commodity types of businesses ascribe. However, it is important that this is the appropriate strategy only under special circumstances, including that the firm can truly gain cost advantages relative to competitors and that segments do not exist in the customer market.

A more detailed way to view alternative strategies is to dissect this paradigm diagonally. The axis going from the northwest to the southeast is the *power axis*. In the southwest quadrant from that diagonal, the buyer is more powerful; and northeast, the seller, through differentiation is more powerful. The diagonal running from southwest to northeast is the *value axis*.

Using this diagram we can define two strategies for commodities markets.¹⁷ Of course, these are reactive strategies since first it is preferable to avoid commoditization.

Market Focus Strategy involves moving toward the value axis in the direction of the augmented market type (Figure 4.2). To do so, customers willing to pay for additional services (above the cost of providing it) must be identified and segmented. This strategy involves segmenting customers by price, service, and value requirements. For those with

¹⁷Others for moving from specialty market types include value-added and process innovation.

adequate demand for a service, the product and service are bundled. Service and attributes are provided if they have a greater value to the customers than the cost of providing it.

This strategy, taken by itself, would decrease the market share, but increase profits. This has to result in a true escalation in value for the customer, rather than simply a perceived increase. Otherwise, it would only increase shares and not profits.

Service Innovation Strategy(or service compression) involves a movement toward the value axis in the direction of the core market type. This strategy involves reducing the cost to serve those customers not willing to pay for added services. Customers affected by this strategy would prefer a reduced price, rather than augmented services. Thus, products and services would be unbundled.

In practice, firms and exporting agencies would be expected to pursue both types of strategies. This is based on the concept that the world grain market is comprised of numerous segments that would facilitate coexistence of dual strategies. In addition, given inherent quality variability, it is likely essential to jointly pursue both strategies. However, smaller firms would unlikely be able to penetrate both simultaneously.

Conclusions and Implications for Grain Trading Firms/Agencies

An important trend occurring in the international grain marketing system is privatizing grain import functions. One of the implications of this trend is a greater tendency for private buyers to have greater specificity regarding quality requirements and other terms of trade. The purpose of this paper was to motivate discussion of issues related to this change for the world grain marketing system. This section first summarizes the major points identified in this paper and then explores potential implications for the world grain marketing system.

Most studies of wheat point toward increasing differentiation through time, increasing the differences in preferences, and significantly changing in characteristics demand. Though always important to the international grain trading industry, quality is becoming more important in agricultural economics research and as an element of policy. These studies indicated that over extended periods, there were significant implicit values for quality characteristics, such as habit, hardness, protein, and country of origin. The latter reflected a multitude of effects: the cumulative impact of the production/marketing system in each country as well as institutions, policies, and trade practices.

Second, quality variability is a characteristic of growing importance to buyers and has implications throughout the grain marketing industries. Preliminary results were presented to illustrate some of the analytical issues related to quality variability. Most important is that quality variability increased grain trading risks which are exacerbated as buyer's specifications become tighter.

One of the effects of the privatization of grain importing functions is a greater demand for quality specificity. Several of these studies pointed out that private importers consider both price and quality in making purchase decisions, in contrast to government agencies that are primarily concerned with price. The extent that privatization has occurred was discussed as well as factors contributing to this trend. Contract specification and purchase behavior under private import regimes were discussed. Data for selected countries suggested that at least from the United States and Canada, there was a substantial change in the quality imported after import functions were privatized.

All products are subject to *commoditization*, and reactive strategies include either market focus, or service innovation. In either case, the market must be segmented, and value added to products provided some customers, and costs reduced in serving other customers. Most markets go through a commoditization process whereby through time, ultimately the products end up being characteristic of commodities. This is elaborated upon in the case of the international grain trade. In addition, strategies to attempt to avoid commoditization are discussed in general terms.

These changes present numerous opportunities and challenges to firms and agencies in the international grain marketing business. Most important is that privatization provides some potential for firms and agencies to move away from a market environment typified as commodity businesses. However, competition will be unforgiving. More than before, private buyers will be seeking value and reward those providing it most efficiently in terms of both sales and price. The remainder of this section explores some implications for grain trading firms and agencies from these conclusions.

Importer Organization and Strategies

With decentralization of import functions, the organization of procurement becomes an important strategic decision for affected firms. In some cases (e.g., Brazil), firms have sought to form buyer organizations to behave cooperatively for importing. The purpose of cooperating is to exploit economies of large-scale purchasing and shipping and buyer market power. This also forces homogenous terms of trade among individual processors and precludes procurement from being a competitive issue.

Import associations will have a major challenge in facilitating this type of cooperative behavior, and eventually there will be pressure for them to break down. The reason for this is that procurement costs in grain processing are an important cost of doing business in these countries and by behaving cooperatively, individual firms cannot use procurement as a source of competition. Eventually, some end users will discover that cooperative behavior inhibits growth. Advantages that individual firms could gain (e.g., individual firm economies, versus joint efficiency gains; seeking quality advantages) would be preempted by cooperative agreements on importing.

Buyers will become more sophisticated in numerous dimensions. In industrial marketing, buying teams with expertise from numerous areas are typically used to make procurement decisions. Similar organizations are expected to develop in grain importing. Importers will more likely be hedged, thereby precluding purchase decisions from being motivated by overall price level. This will allow greater time and flexibility to focus on value. As individual buyers, importers will conduct highly detailed analysis to determine their own value of deviations from standard quality specifications. As a result, contracting strategies used by importers will become an increasingly important strategic consideration. Buyers may also initiate vendor analysis programs and qualify or disqualify suppliers depending on their past performance in contract execution. In addition, compared to government agencies, private buyers would tend to be more receptive to backward vertical integration if the competitive environment warranted such a move.

Importers will also have to assess carefully issues related to the tradeoff between bidding competition and quality specificity. A basic tenet of the U.S. grain marketing system that contrasts sharply with competitor countries is its reliance on bidding competition to allocate sales among suppliers. Contracts with less specificity generally attract a greater number of bidders resulting in downward pressure on margins. Thus, importers striving to increase the intensity of competitive bidding have a tendency not to require specifications that would limit the number of bidders. In contrast, contracts with greater specificity result in fewer eligible competitors in the bidding process. This increased quality specificity has the potential to decrease intensity of bidding competition.

Segment Identification and Strategy

A prerequisite to distinguishing between a market focus and service innovation strategy is identification of market segments. Many policies and strategies of selling organizations have the effect of providing the same quality attributes and services to all or very broad groups of customers. These should be referred to as mass marketing strategies and raise systems costs above those that would result if segmentation, or niche, strategies were pursued.

The world wheat market should be viewed as being comprised of market segments. A market segment is a group of buyers who respond similarly to the same stimulus. Several basis for segmentation can be suggested including end use, technology, and purchase organization. However, few studies have addressed these issues in the world wheat trade. Differences among importers are due to desired product characteristics, levels of technological and commercial sophistication, and local competitive situations.¹⁸

¹⁸For example, in the case of wheat cleanliness, the expected value of cleaned wheat should vary substantially. In countries where screenings are highly valued as animal feed, high dockage levels are more tolerable.

Mechanisms to Add Value in International Grain Trading

As firms and agencies evaluate execution of strategies associated with competing in this environment, mechanisms that can be used to add value must be evaluated. Several are suggested.

Quality and Guarantees As buyer's sophistication increases, the demand for guarantees covering terms of trade in transactions will increase. These would be applicable to quality guarantees including limits on acceptable levels. Guarantees are also applicable to other terms of trade including delivery windows and financing. In all cases, those firms having a greater capability of offering and conforming to guarantees will have advantages.

Ultimately, the challenge for marketers will be to reduce quality variability through procurement and handling strategies. In the future, the demand for characteristics that have not been conventionally measured will be greater. In many of these cases, there is greater measurement and sampling error than conventional physical characteristics. The effect of this provides a challenge to suppliers, particularly those without assets. Essentially, this has the effect of increasing risks for traders and handlers due to measurement and sampling error. Ultimately, these risks must be integrated into merchandising decisions.

Change in Distribution Channels In the past, particularly under centralized procurement, transactions and shipments were large. Distribution entailed large shipments, through centralized port elevators and storage, to numerous individual end users, each using relatively small parcels. Under more decentralized importing, one could envision this system breaking down.

A strategy applicable in some countries would be for international grain trading firms/agencies to become involved to a greater extent in internal storage and distribution within the importing country. A grain trading firm/agency could export to a country, retain ownership and title, and store it under bond with subsequent periodic distribution to individual end users. The purpose of this would be to exploit the economies of large-scale shipping and distribution as a seller. This would supplant a role sought to be provided by a import association which may be difficult to achieve due to problems with cooperation.

Just In Time Shipping One of the major motivations for change in buyer-seller relationships in industrial marketing in the past decade has been the movement toward just-in-time shipping. The ultimate objective of this is to minimize total costs, including logistical cost. As a result, quality specificity escalates, inventories are reduced, and data are shared between buyers and sellers. Ultimately, buyers will seek to work with fewer suppliers, and they would become more interdependent. These are all equally applicable to the international grain trading industry.

Technical Assistance and Training A strategy pursued by both single seller agencies and trade associations in the United States is to provide technical assistance and training. It is

common for sellers to provide assistance in the use of particular types of wheat not used previously in an importing country, or on the processing of wheat that deviates from past quality characteristics.

Demands for these services will escalate in the future. Contributing factors include an increase in the number of buyers and an increase in buyer sophistication, thereby making the program more demanding. A major issue is the advantage of integrating these programs with sales and other longer term market strategies. Generally, independent trading firms would have greater difficulty in providing comparable technical assistance.

Single Seller Agencies

There are some unique implications of these changes for single seller agencies. Conventionally, one would think that single seller agencies would be disadvantaged by these changes. However, at least the CWB thinks they have an advantage due to their coordinated efforts toward market development and sales. There are at least four important issues.

Selling Organizations Single seller agencies have typically had centralized selling organization. This is important because a general prescription on the organization of selling is for it to be compatible with that of the buying organization (HBS). Thus, when much of the world grain trade was organized with centralized buying agencies, it became appropriate to organize centralized selling.

However, with greater decentralization of buying, selling agencies will have to reorganize their selling efforts. A model is not prescribed here, but greater use of country specialists, agents, and overseas offices would be appropriate. Regardless, the cost of sales and market development will increase relative to past sales organizations.

Quality Homogeneity An important principle of many single seller agencies years ago was that of homogeneity. Marketing fairly homogenous qualities (or quality attributes) facilitated equity among growers. In the process, selling was easy, and economies of high throughput handling could be exploited.

Single seller agencies have realized that demand preferences are highly autonomous, and treating all buyers the same was inefficient. Thus, changes have been occurring for some time in Australia and Canada. The Australian market system was developed, based on only a few categorizations of wheat. In the past 5 years, the number of segregations has expanded to the extent of reflecting demands for individual buyers. A similar pace of change has occurred in Canada with continual increases in the number of wheat classes and quality segregations. Pressures for more heterogenous marketing will likely continue.

Vertical Control A major issue confronting single seller agencies is control of the vertical marketing system. Vertical control, either through contracting or integration, is essential for exploiting the demand for heterogeneity. However, neither the AWB nor CWB

has been involved in asset ownership, thus requiring them to execute these strategies through contracting (or legislated) relationships. Whether these demands can be met more efficiently through vertical contracting types of relationships or if whether asset integration is necessary remains to be seen.

Pooling Price pooling has been one of the other stalwarts of single seller agencies. In fact, one of the mechanisms that binds these countries' marketing organizations together is pooling risks and related guarantees. However, increases in the demand for specificity instills pressure for an increase in the number of pools. This has occurred in Australia and Canada.

An important issue is that as the number of pools increases, the risk reduction potential of individual pools. If separate pools exist for infinitesimally small differences in quality specificity, the advantages of pooling diminish. The effect of this would be for pooling agencies to seek alternative risk management strategies.

Trading Firm Strategies

Traditionally, trading firms would be thought to have advantages in serving needs of the changing composition of customers. Organization of trading firms, networks of agents, and vertical integration should contribute to their advantage in serving the needs of the evolving buyers. However, during the past decade, the competitive environment and several policies have detracted from their ability to be competitive in these markets. Changes are occurring on both of these fronts. As a result, several firms have reorganized and are in the process of pursuing strategies to serve these market segments. In doing so, there are several important issues.

Cost Leadership An essential strategy regardless of the targeted market segments is cost leadership. Given the effects of high volume on total procurement costs, firms must provide whatever services they provide as efficiently as possible. In pursuing service innovation strategies, success of trading firms would depend on their efficiency relative to competitors. In pursuing market focus strategies, trading firms must provide the service at a lower cost than the customer could on his own.

Selling Versus Bidding Much of the world grain trade evolved during the past decade to be executed using bidding or tenders. This is a result of overt strategies on the part of government import agencies and on the effect of the execution of some U.S. policies, notably EEP. As a result, standard specifications and terms of trade were adopted to the extent that the ability to provide additional services were precluded.

Private buyers, though still being cognizant of the advantages of tendering, will be more receptive to alternative purchase mechanisms offered by suppliers. However, they must truly add value to their operations. To execute these strategies, trading firms will have to focus more on sales and marketing strategies than in the past decade.

Technical Assistance An important tool for foreign market development that will become more important is technical assistance. However, whether assistance offered by independent firms will be as efficient and effective as through more coordinated efforts remains to be seen.

Vertical Integration and Contracting Essential requirements for serving private buyers with autonomous quality requirements will be some form of vertical coordination. The nature of the challenges for controlling quality has numerous implications for handling firms. Generally, those firms having control over handling will have advantages over others more dependent on pure trading. How much advantage they will have as a result of vertical integration versus those pursuing trade through contracting remains to be seen.

Firms with multiple origination capabilities will also have an advantage. This will be due to their ability to procure from multiple facilities within a system across numerous origins. This advantage will become more important as 1) quality variability in production increases; 2) demand specificity by customers increases; and 3) as factors that are more difficult to measure and sample are introduced in to contracts. Finally, with these market characteristics, firms will have to develop a network of customers with diverse demands.

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Table 1. Percent of Countries By Import Organization				
		Simple Percentages		
Region	Number	Unidentified	Centralized	Private
Africa	6	0	67	33
East Africa	16	38	5	13
North Africa	4	25	75	0
South Africa	11	36	36	27
Asia	2	0	5	5
East Asia	1	0	0	1
North Asia	3	0	0	1
South Asia	12	33	17	5
Central America	17	18	59	24
Europe	24	13	5	38
North America	1	0	0	1
South America	6	0	0	1
WORLD	97	22	41	37

Table 2. Countries with Recently Privatized Import Functions or with Pending Changes			
Country	Year of Change	Previous Organization	Form of New (or Proposed) Organization
ARGENTINA	NOV 1991	J.N.G	
BANGLADESH			
BRAZIL	1990	BWB	
CHILE			
COLUMBIA			IDEMA, other private buyers
EGYPT	1992		
HUNGARY	JAN 1990	GRAIN TRUST	
ISRAEL	1990		
MEXICO		CONASUP	Private buyers\ import Assoc.
PERU	1990	ENCI	
THE PHILIPPINE'S	1985		
PORTUGAL	1990	EPAC	
SOUTH KOREA	1990	KOFMIA	
TURKEY	1992	TURKISH GRAIN BOARD	
ALGERIA	PENDING	OAIC	
ECUADOR	PENDING	MECIP	
INDIA	PENDING	MINISTRY OF FOOD AND THE FOOD CORPORATION OF INDIA	
INDONESIA	PENDING	BULOG	
KENYA	PENDING	NATIONAL CEREALS AND PRODUCE BOARD	
MOROCCO	PENDING	ONICL	
POLAND	PENDING	ROLIMPEX, A.R.R.	
RUSSIA	PENDING	ExportKhleb	
TUNISIA	PENDING	C.C.G.C., COCFBLE	
UKRAINE	PENDING	UKRIMPEX	

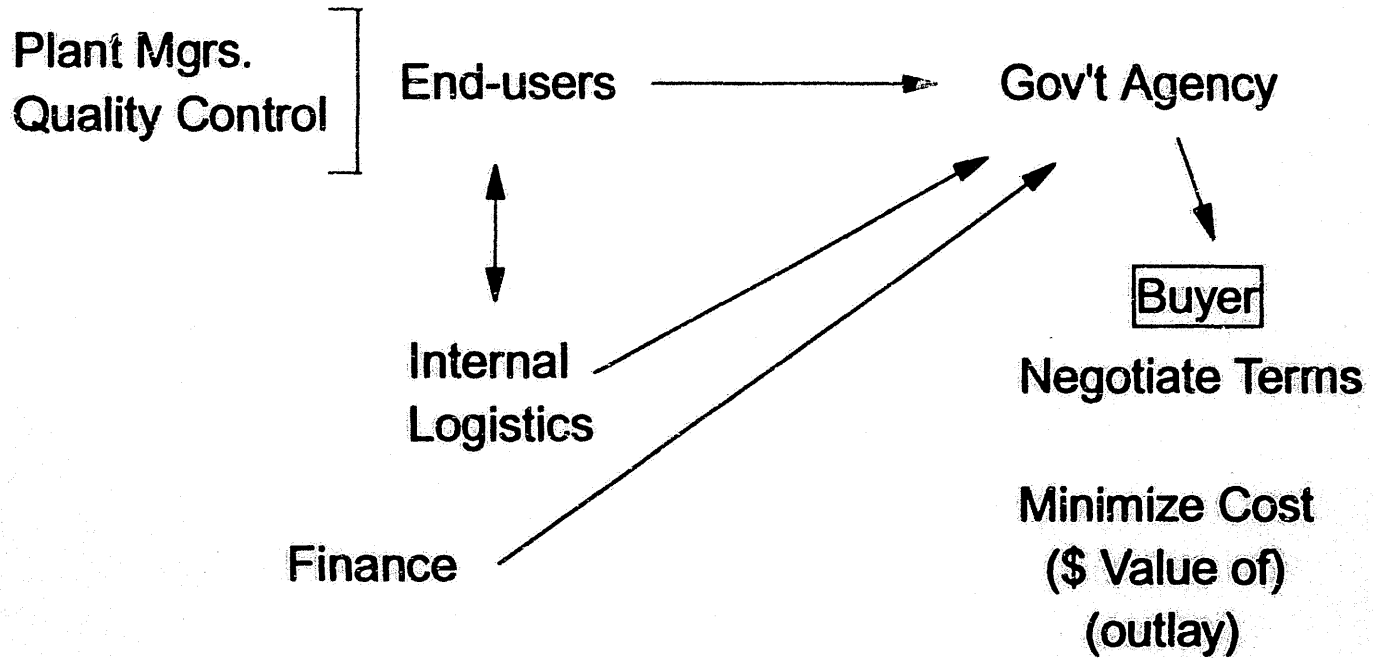
Table 3. Factor and Non-Factor Quality Requirements at Principal HRS Markets ^{19,20}						
	Domestic Milling	Pacific Northwest Export Markets				
	Milling	Japan	Korea	Taiwan	Thailand	Phill.
SUBCLASS	DNS	NS/DNS	NS/DNS	DNS	DNS	ns
GRADE	1	2	1	1	2 ob	2ob
FACTOR LIMITS						
TW	60	57	58	58	57	57
SB	3	5	3	3	5	5
HEAT D	0.2	0	0.2	0.2	0.2	0.2
SPROUT D	ns	0.5	0.5	0.5	0.5	0.5
FM	0.4	1	0.5	0.5	1	1
DAMAGE	1.5	4	2	2	4	4
PROT	14	14	14.5	14.5	15	14
DOCK	1	1	0.5	1	ns	ns
VITR	75	25	25	75	75	65
FN	275	300	350	300	300	ns
VOMIT.	2	scab free	2	2	2	ns

¹⁹Figures shown are normal, or conventional, specifications. Those shown in () indicates values adapted for 1993.

²⁰Besides these the PNW export market has specific specifications for ergot, moisture and treated seeds.

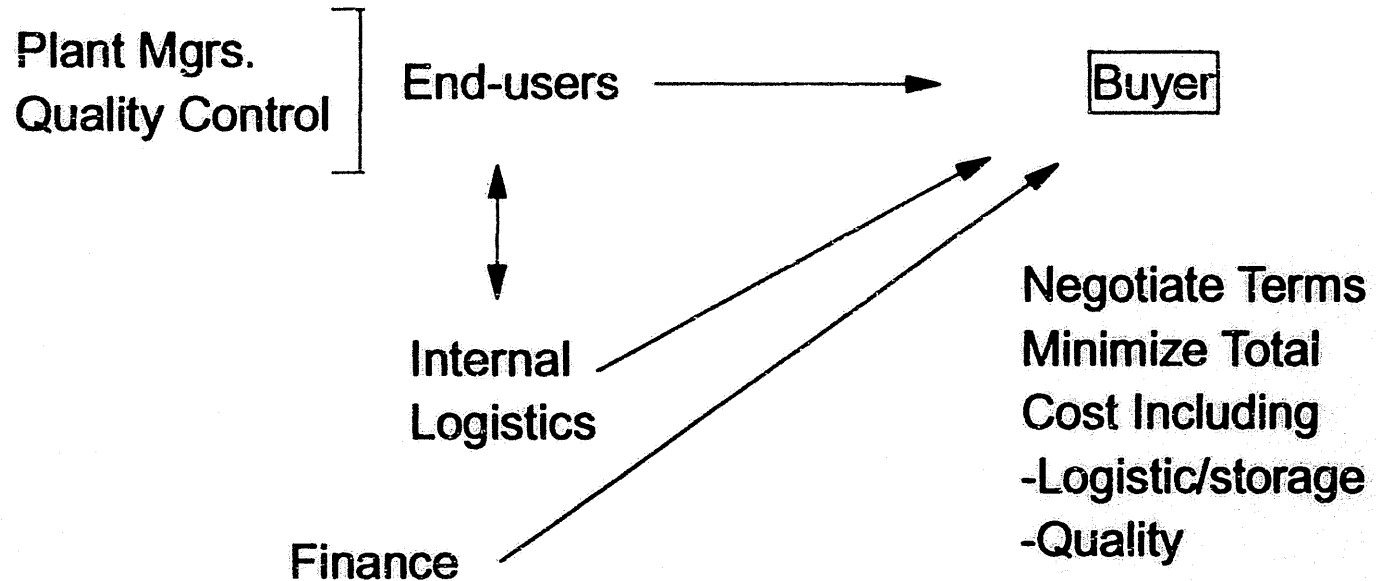
Import Procurement Influence Center

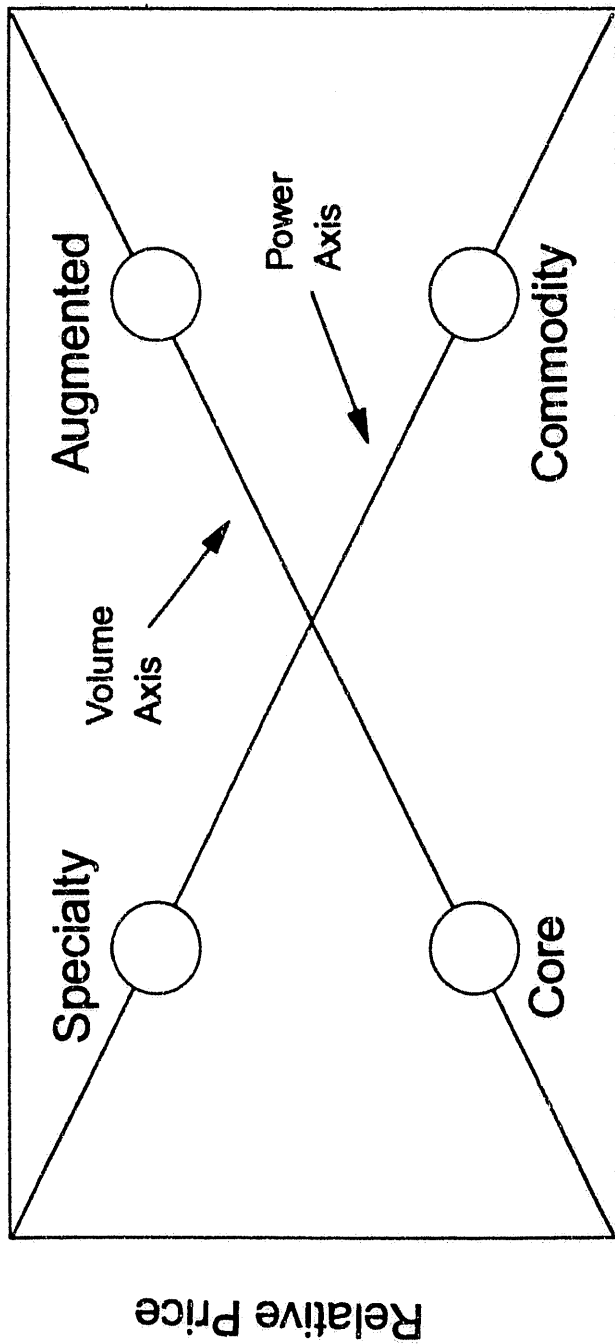
Government Agency



Import Procurement Influence Center

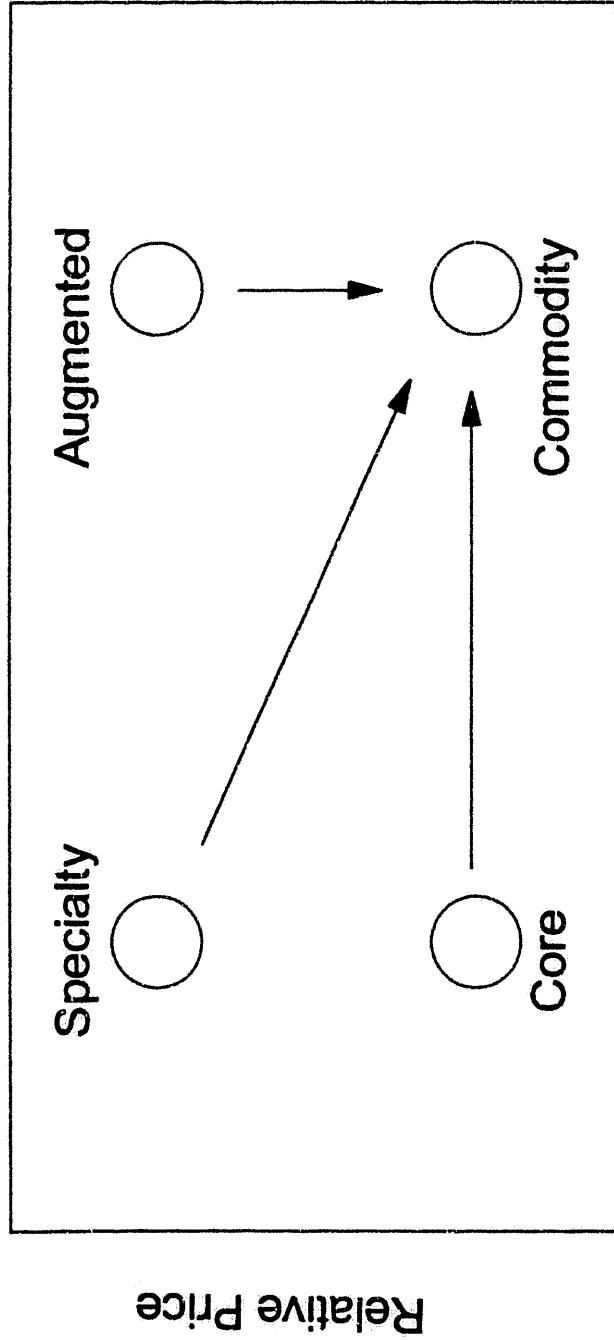
Private Procurement





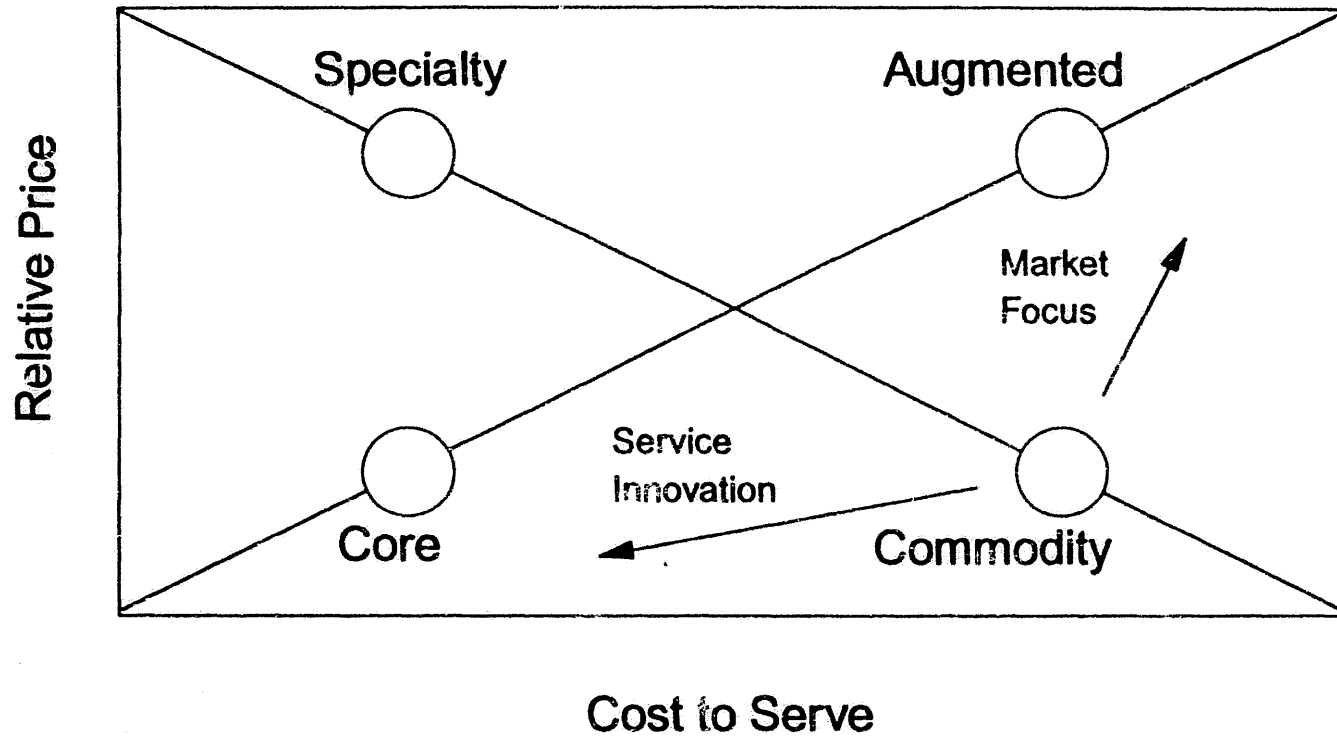
Cost to Serve

Taxonomy of Markets



Cost to Serve

Commodity Magnet



Alternative Reactive Strategies for Commodity Markets