CR-493
0786

OSU Current Report

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

The U.S. Grain Export Industry: 1980-1984

Venugopal Reddy Pakanati, David M. Henneberry and Thomas Warden*

The United States grain export industry is dominated by a small number of multinational trading firms which handle a substantial proportion of the total grain exports from the United States. Domestic agricultural cooperatives, small private firms and foreign firms which operate from within the United States handle the remainder of U.S. grain exports. The structure of the grain export industry resembles that of an oligopoly with a competitive fringe, thus raising many questions about the competitiveness and efficiency of the industry in world grain markets.

American agriculture is becoming increasingly dependent on exports for its future and survival. More than half of the wheat and corn and nearly three-fourths of the rice produced in the United States is sold overseas. International grain markets are highly competitive. The United States faces particularly stiff competition from rival wheat exporting countries such as Canada, Argentina, and Australia. Countries like China and India have reached near self-sufficiency in food grain production and may soon become significant net exporters of grain. Thus, the U.S. agricultural sector is operating within an environment of shrinking global markets, increased export competition and depressed commodity prices.

In the 1960's there was little reason for concern about the structure and function of the U.S. grain export industry. However, following the large purchases of grain by the Soviet Union in 1973-1974, interest grew in this area. The ensuing rise and instability in domestic food grain prices led to public outcry. There was a widespread belief that the large grain exporters were exploiting the American agricultural system through oligopolistic collusion. Since then research has contradicted the public and supported the industry position that behavior is competitive and efficient despite an oligopolistic structure.

A Survey of Grain Export Firms

The purpose of this study is to complement and update previous research on multinational grain export firms in the United States. In the past, knowledge of the grain export industry has been limited by data availability. Data on the export performance of individual firms is proprietary and sensitive. Sophisticated analysis is impossible without consistent data across firms over time. However, until more complete data is available, the public may benefit from a descriptive analysis of the grain export industry from 1980-1984.

A questionnaire was designed by a team of university, government and business economists interested in the economic performance of the U.S. grain export industry. The areas of interest identified for data collection were the age and size of firm, market intelligence and information sources, market participation by commodity and export destination, use of U.S. port areas, modes of domestic transportation, physical facilities in foreign countries, diversification of risk, barriers of entry to the industry, and P.L. 480 subsidized exports. The Department of Agricultural Economics at Oklahoma State University funded and mailed the questionnaire to 185 grain export firms that were identified through

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* Research Associate and Assistant Professor, respectively, Department of Agricultural Economics at Oklahoma State University, and International Economic Indicators Branch, ERS/USDA. This research was partially supported by the United States Department of Agriculture (Cooperative Research Agreement #58-3J22-4-00298). The authors are solely responsible for the opinions expressed in this study and for any errors committed.

official export licensing programs of the USDA. A total of 58 firms responded to the questionnaire, generating a response rate of 31 percent.

The information provided by the firms is aggregated to avoid disclosure of data related to an individual firm. Additionally, questions were phrased so that firms were not required to reveal their volume of business or market share. Hence, the data reveal trends such as "increased, decreased, or no change."

The Size and Age of Grain Export Firms

The grain export firms were requested to identify the type and size of their respective enterprise. Of the firms responding to the survey, 5 percent were classified as large U.S. based multinational firms, 14 percent as domestic U.S. export cooperatives, 16 percent as foreign based firms and 65 percent as other private grain exporting firms based in the United States. By size of firm, 12 percent of the firms were among the top ten U.S. exporters by size, 41 percent were medium sized and 47 percent were among the 25 smallest firms in the U.S. grain export industry.

On average, the firms responding to the survey have exported grain for 19 years, with the first year the firm exported ranging from 1910 to 1980. However, some interesting trends were observed when analyzed by type and size of firm. The large U.S. multinational firms have been exporting grain since 1929 (on the average). U.S. agricultural cooperatives, as a group, started exporting grain in 1963, and both foreign firms and all other U.S. private firms began exporting in 1969 (on average). Broken down by size of firm, the larger firms began exporting in 1950, with medium sized firms in 1963 and small sized firms in 1974 (on average). This implies that the age of the firm may have had an impact on the growth of firms in the U.S. grain export industry. From the information collected, it is unclear whether or not the smallest firms have a high turnover rate. Since the average year for initiating exports by the smaller firms is 1974, this suggests that many firms were an outgrowth of the volatile grain markets and high commodity prices of the early 1970's.

All firms responded that they were legally incorporated in the United States, but 16 percent of the firms were classified as subsidiaries and had corporate headquarters overseas. These firms were recognized and classified as foreign firms for purposes of analysis and description in the study.

Market Intelligence And Information Sources

Information is a valuable resource in the grain export industry. Firms in the grain export industry are believed to place a high priority on market intelligence from both internal and external sources. One indication of the importance of information is the presence of market intelligence and analysis capability within the firm itself, as opposed to a reliance on external services for analysis. Of the firms responding to the survey, 69 percent indicated that they have their own market intelligence and analysis capability, 28 percent indicated no such capability and three percent did not provide a response to this question. Of the 28 percent of firms which did not possess their own market intelligence and analysis capability, 19 percent were medium sized and 81 percent were small sized firms. When analyzed by type of firm, 13 percent of the firms without market intelligence and analysis capability were domestic export cooperatives, 25 percent were foreign firms and 62 percent were small private U.S. firms. In the case of foreign firms indicating no market intelligence capability, they may act on information provided by parent company headquarters overseas. Chi-square analysis revealed a significant relationship between size of firm and the firm's market intelligence and analysis capability. While all of the large sized firms were capable of collecting and analyzing market information, the number declined for medium sized firms (87 percent) and small sized firms (50 percent). This indicates that small sized firms rely heavily on external sources of market information, more so than medium and large sized firms. It is reasonable to conclude that economies of scale arise in acquiring and processing market information.

A majority (57 percent) indicated that the amount of resources devoted to market intelligence and analysis within the firm over the next five years would increase, 7 percent of the firms anticipated a decrease and 29 percent anticipated no change (7 percent of the firms expressed no opinion). Of the 28 percent of firms without their own market intelligence and analysis system, 50 percent of the firms anticipated an increase, 31 percent indicated no change, and 19 percent expressed no opinion on the amount of resources that they expected to devote in this area over the next five years. The firms with market intelligence capability were also asked to rate their market intelligence and analysis system using the categories of a.) Little or no importance b.) Moderate importance c.) High to very high importance. Fifty-seven percent of the respondents rated their own market intelligence system as being of high to very high importance, 9 percent indicated moderate importance and 3 percent little or no importance. Firms without their own market intelligence and analysis capability did not respond to this question.

Importance Of Market Information Sources

Market intelligence and analysis capability within the firm is supported by several government agencies and private sector information sources. In the questionnaire, firms were asked to evaluate the importance of several commercial wire information sources, various types of United States Department of Agriculture (USDA) market information, Radio, Television, contacts with foreign buyers and contacts with domestic traders.

Commercial Wire News Services Grain export firms were asked to evaluate the importance of the following commercial wire news services: Grain Industry News (GIN), Reuters, United Press International (UPI), Associated Press (AP), Commodity News Services (CNS) and "other" electronic wire new services. Of the above mentioned services, CNS was the most highly ranked with 32 percent of the users indicating a high to very high importance and 50 percent a moderate importance. CNS is the most popular service among U.S. cooperatives (63 percent rating high importance) and foreign based firms (50 percent moderate importance and 50 percent high importance). Reuters received the second highest importance rating, with 25.6 percent indicating a high to very high importance and 38.5 percent ranking it at moderate importance. Grain Industry News (GIN) received the third highest rating, with 24 percent indicating a high to very high importance and 33.3 percent a moderate importance. GIN was given a higher rating of importance by cooperatives and foreign firms. All the U.S. based multinationals rated GIN as being of little or no importance and Reuters and CNS as being of moderate importance as information sources. Only 3.5 percent rated United Press International and Associated Press as being of high to very high importance. Twenty-one percent of the firms used other electronic market information services such as AGNET, Western Union, Durum Net and Radio data systems.

USDA MARKET NEWS The USDA federal and state market news system consists of several delivery mechanisms: Recorded telephone reports, direct telephone contact with the market news reporter, a teletype system and published reports. Of these, firms rated published reports the most highly. Fifty percent of firms responding rated USDA published reports as being of high to very high importance as an information source, and 38.5 percent rated it at moderate importance. Seventy-one percent of the large sized firms rated USDA published reports in the high to very high importance category, compared to 45 percent of the medium sized firms and 48 percent of the small sized firms. No distinction was made between the published reports of the Economic Research Service and those of the Foreign Agricultural Service. The USDA teletype system was the next most popular system with 33.3 percent rating it at high importance, 31 percent moderate importance and 35.7 percent little or no importance. All the large U.S. multinational firms rated this system as being of little or no importance, while it was most popular with the smaller private firms (40 percent rating it at high importance and 32 percent at a moderate importance). The recorded telephone reports and direct contact with the market news reporters were not ranked favorably by the grain export firms. Seventy-one percent of firms using this system said the USDA recorded telephone reports were of little or no importance. Fifty-three percent of the firms using this system said direct telephone contacts with the USDA market news reporter were of little or no importance. Overall, the evaluation of published USDA federal and state market news by grain export firms supports the value of the information provided. The popularity and emphasis placed on USDA published reports may indicate the agency's comparative advantage in economic analysis of markets over medium and long term horizons.

Radio Radio is unquestionably popular as a reliable and current source of market information at the producer level. However, 74 percent of the grain export firms rated radio as having little or no importance as a source of grain export market information. Nineteen percent rated radio as being of moderate importance and only 7 percent rated it at high importance. The low value placed on radio may be due to the time lags in broadcasting market prices associated with the fixed time of broadcast popular with producers. Moreover, market news broadcast over the radio may not be as pertinent to grain export markets as it is to domestic markets.

Television Television received a slightly higher rating than Radio, although by a small proportion. Overall, television was not considered to be very important as a source of market information. Only 13.3 percent of all responding ranked television as having high to very high importance while 20 percent ranked it at moderate importance and 66.7 percent ranked it at little or no importance. Television is more popular among foreign based firms and U.S. private firms.

Contacts with Foreign Buyers An overwhelming majority of firms (84 percent) rated contacts with foreign buyers as being of high to very high importance. Thirteen percent rated foreign buyers as being of moderate importance and only 3 percent said they were of little or no importance as a source of market information. The information provided by foreign buyers covers price and offer data, weather, production and demand in foreign countries, financial information and a wide variety of other important information for the grain export trade. One of the main reasons for the rating of high importance could be the direct contact that foreign buyers have with overseas markets with respect to geographic location. If so, multinational firms with overseas offices and personnel may have a competitive edge in obtaining this type of information. Cooperatives and smaller private firms without such facilities would not benefit from the direct linkage to foreign buyers.

Contacts with Domestic Buyers and Sellers Eighty-three percent of firms responding rated contacts with domestic buyers and sellers as being of high to very high importance. The passage of information within the grain export industry apparently relies heavily on personal interaction among the market participants. Seventeen percent rated contacts with domestic traders as being of moderate importance and none of the firms rated it as being unimportant.

Market Participation By Grain Export Firms

Commodities Exported Grain export firms vary a great deal in the commodities they export and the countries they export to. The large multinational export firms are the most diversified in terms of geographic location and number of commodities exported, and agricultural cooperatives are the least diversified. Corn was exported by 77.6 percent, wheat by 69 percent and soybeans by 62 percent of the firms responding to this survey. Forty-five percent of the firms rated corn as their number one export commodity by volume, including all multinationals, 62.5 percent of the cooperatives, 55.6 percent of the foreign firms and 34.2 percent of the small private U.S. firms. Nineteen percent of all firms rated wheat as their number one export commodity by volume, including 12.5 percent of cooperatives, 33.3 percent of foreign firms and 18.4 percent of small private U.S. firms. Soybeans, on the other hand, were the number one export commodity for only 13.2 percent of the small private U.S. firms.

As mentioned earlier cooperatives, as a group, were the least diversified (or most specialized) by commodity and the large multinationals the most diversified. Cooperatives exported only six of the eighteen major export commodities listed on the questionnaire and none of the responding cooperatives exported more than four commodities individually. This may be attributed to the fact that cooperatives cater mostly to the needs of their members and trade primarily in the commodities produced by the members. The multinationals as a group exported all of the eighteen commodities and as individual firms exported an average of ten of the eighteen commodities. For the foreign based firms, the numbers were more or less similar, as a group exporting sixteen of the eighteen commodities but as individual firms an average of seven commodities. All firms categorized as small private U.S. firms exported seventeen commodities as a group and on an individual basis an average of only four commodities. The diversity of small private U.S. firms as a group may be due to their large numbers. When analyzed by size of firm the patterns were quite different. An "average" large sized firm exported nine commodities, while medium sized firms exported five commodities and small sized firms an average of four commodities. Thus, size and type of firm have an impact on the diversification of firms by commodity in the U.S. grain export industry.

Export Destinations The destination of commodities exported by grain export firms may simply be a function of the geographic location of demand for specific commodities. However, the most important destination countries may also reflect established business relationships which have evolved over time between U.S. firms and overseas importers. Diversification by commodity and, by country, may reduce or eliminate the risk element in grain exporting. Japan was the most important destination according to the exporting firms, and overall 41.4 percent of all firms exported grain commodities to Japan. Interestingly, 40 percent of the firms reporting Japan as their top destination country were foreign based firms. This may be an indication of the increased importance of foreign based firms in exports to important U.S. customers overseas.

The European community was mentioned as a destination by 40 percent of firms, of which 20 percent rated it as their top customer. The small private exporters are heavily involved in exports to the EEC because 75 percent of the firms rank it as the number one export destination, and all firms ranking it as the number two destination, belonged to the category of small private U.S. exporters. The multinational firms and the large sized firms did not indicate a heavy involvement in exports bound for the European Community.

North Africa was the next most important export destination, according to 38 percent of all responding firms, but the pattern of involvement by type and size of firm was quite different. Only 4.6 percent rated it as the top export destination, 22.7 percent rated it number two and 18.2 percent rated countries in North Africa as the third most important customer. Multinational firms, cooperatives and foreign firms indicated little involvement in exports to this region, while small private U.S. exporters indicated heavy involvement.

The importance of South America as an importer of U.S. grain was underscored despite the fact that none of the respondents rated it as their top export destination. Out of the firms exporting to this region, 23.8 percent of firms rated it as second and 23.8 percent as the third most important destination. Once again, multinational firm involvement was comparatively less.

Thirty-five percent of responding firms indicated that Mexico was a destination for their exports. Fifteen percent of these firms ranked Mexico as the first, 35 percent as second and 5 percent as the third most important export destination.

An important point is that comparison between firms is being made based on the rankings provided by the firms themselves and not by the actual volume of grain exported. For example, the volume of an unranked commodity exported by a large sized firm may be much more than the volume of a number one commodity for a smaller firm. A similar point can be made for the case of export destinations.

In the case of the Soviet Union, an important customer for U.S. grain, the involvement of firms is highly specialized. One third of the large U.S. multinational firms ranked it as the top destination and another third ranked it as the second most important destination. Fifty percent of cooperatives said the Soviet Union was their most important customer, and only 11 percent of foreign firms ranked it as their top buyer. Overall, U.S. multinational firms indicated substantial involvement in exports to Japan, the Soviet Union and Mexico; for cooperatives the Soviet Union, South America and Japan were important customers. For foreign firms exporting grain from the United States, Japan and South America were important destinations. North Africa, Canada, and the European Community are regions where the small private U.S. exporters were most involved in grain exporting.

Comparisons by size of firm revealed the most involvement by large sized firms in the Soviet Union and Japan. For medium sized firms the European Community, Japan and an ultimate destination unknown category were most important. For small sized firms Canada, Mexico and Japan were the most important export destinations, probably due to a considerable volume of indirect exports and transshipment exports.

Use of U.S. Port Areas By Grain Export Firms

The use of a particular port area depends upon a number of factors such as the final destination of the commodity, the type and location of the exporting firm, type of facilities and services available at a particular port, relative transportation and handling costs to and at the ports. For the United States to be competitive in world grain markets it is important that port areas facilitate a rapid adjustment to sudden changes in the location of world demand for grains. Since transportation and associated grain handling costs represent from 25 to 40 percent of the total price foreign purchasers pay for U.S. grain, it is important that port areas maintain a competitive cost structure. However, it would be erroneous to over-emphasize the relationship between changes in the use of specific U.S. port areas and changes in the location of foreign demand. Empirical evidence has revealed that changes in the geographic location of demand for U.S. grain exports would not have a large impact on the use of U.S. port areas.

Respondents to the survey were asked to comment on their use of the following U.S. port regions: Pacific ports, Gulf ports, Atlantic ports, Great Lakes, and the St. Lawrence Seaway.

Pacific Coast Ports Most of the grain exported through Pacific Coast ports is sent to Asian countries, especially Japan and East and South East Asia. The chief grain exports are wheat, corn and grain sorghum.

Forty-seven percent of the responding firms exported through Pacific ports, of which 41 percent reported increasing exports through this area from 1980 to 1984. Twenty-six percent reported unchanged exports. These firms included 16.7 percent of foreign firms, 66.7 percent of cooperatives and 26.7 percent of small private U.S. exporters using these ports. None of the cooperatives reported declining exports through pacific ports while 66.7 percent of multinational firms, 33.3 percent of foreign firms and 33.3 percent of small private U.S. firms exported less through the Pacific port areas from 1980 to 1984.

Gulf Ports Almost two-thirds of total U.S. grain exports are handled through ports in the Gulf Coast area. Wheat, corn, grain sorghum and soybeans are the principal commodities exported through Gulf ports to almost all regions of the world. On average, nearly three billion bushels of grain is handled every year through these ports (in the 1980's). Of the 64 percent of all firms exporting through Gulf ports, 37.8 percent reported increased exports, 46 percent unchanged exports and the remaining 16.2 percent decreasing exports through Gulf port areas. All large multinational firms responded that exports through the Gulf ports had remained unchanged over the past five years. The small private U.S. exporters indicated increased usage of Gulf port areas with 57 percent indicating an increase and 29 percent stable exports through Gulf ports from 1980 to 1984.

Atlantic Coast Ports Corn and Soybeans are the most important grain commodities exported through the Atlantic coast, chiefly to Europe and North Africa. Since 1983, exports have been reduced by almost 40 percent, averaging about 350 million bushels annually compared to nearly 550 million bushels from 1980 to 1983. Of the grain export firms 54 percent reported a decrease, 25 percent no change and 21 percent increased use of Atlantic Coast ports from 1980 to 1984. The response rates for firms with declining exports through the Atlantic Coast were 67 percent for both multinational firms and cooperatives, sixty percent for foreign firms, and forty six percent for small private U.S. grain exporters.

Great Lakes During the 1980's export grain movements out of the Great Lakes declined steadily from 312 million bushels in 1980 to 172 million bushels in 1984. Sunflower seed is the most important commodity exported through this region in addition to wheat, corn and soybeans. European Countries are the chief destination for grains exported through the Great Lakes. Thirty-eight percent of firms reported exports through the Great Lakes but only 13.6 percent reported increased use of Great Lakes ports from 1980 to 1984. Multinational firms and foreign firms reported declining usage of the Great Lakes ports from 1980 to 1984.

St. Lawrence Seaway A considerable quantity of the grain exported through the St. Lawrence Seaway includes direct exports to Canada and transhipment exports through Canada. Corn and Wheat are the principal commodities handled out of this region with the primary destination being an "unknown destination" category. The reason for the pre-eminence of unknown destinations may be the large volume of indirect and transshipment exports. Forty-five percent of firms reported a decline in the use of the St. Lawrence Seaway from 1980 to 1984. These firms were 100 percent of the large multinationals, 60 percent of foreign firms, 100 percent of U.S. cooperatives and 18 percent of small private U.S. exporters. Forty percent of foreign firms and 37 percent other U.S. private exporters reported increased use of the St. Lawrence Seaway from 1980 to 1984. The total volume of grain inspected for export from the St. Lawrence seaway decreased from 254 million bushels in 1980 to only 75.5 million bushels in 1984.

Modes of Domestic Transportation used by U.S. Grain Export Firms.

Grain destined for Export is moved from the farmer or terminal elevator to the port areas by a combination of truck, railroad and barge. The mode of transportation used depends on the location of the grain, the location of the port areas and the relative costs of competing transportation modes. Thirty-eight percent of the firms using railroads reported increased use of this mode. Firms indicating significant increases in railroad use were small private U.S. exporters (40 percent) and foreign firms (67 percent). According to USDA sources the volume of grain shipped for export using railroads declined from 2.6 billion bushels in 1980 to 1.8 billion bushels in 1984.

Of the firms using trucks to transport grain for export, only 24 percent reported declining use, 52 percent remained unchanged and 24 percent reported increased use of trucks for moving export grain domestically. All multinational firms reported no change in the use of trucks, as did 40 percent of foreign firms, 29 percent of cooperatives and 56 percent of small private U.S. firms. Official USDA estimates on the actual volume of grain handled for export by truck are unavailable.

Thirty-four percent of firms reported increased use of river barges while 38 percent reported no change and 28 percent reported decreased use of barges. Of these firms, cooperatives, foreign firms and small U.S. private firms reported increased usage while the multinationals slightly reduced the use of barges. Official figures indicate a slight increase in the use of barges to transport grain for export in the 1980's.

Physical Facilities in Foreign Countries

Ownership of physical facilities in foreign countries may be an important factor in the success of grain exporting firms. Foreign facilities range from overseas offices and agents to port elevators and milling plants. Large firms may have an edge in this area due to their size and scale economies involved, while smaller firms might lease and/or purchase the services of grain handling equipment and facilities in important foreign destinations. The survey respondents were requested to provide the number of countries in which they owned, leased and purchased the services of facilities (including such activities performed by the firm's subsidiaries, if any).

Ownership of Foreign Facilities One-third of large multinational firms responding did not own facilities in any foreign country. Of the remaining multinationals, half owned facilities in less than ten countries, and half in more than ten but less than twenty countries. The cooperatives, however, did not own, lease or purchase the services of any foreign facility. One-third of the foreign firms responding owned facilities in less than ten countries. Of the small private U.S. firms, 13 percent confirmed ownership of grain handling facilities in up to as many as ten foreign countries. Analysis of responses by size of firm revealed 66.7 percent of large firms owned facilities in up to ten countries and 16.7 percent of large firms in over ten but less than twenty countries. Seventeen percent of medium sized firms and 4 percent of small sized firms indicated the ownership of foreign facilities in up to but not more than 10 countries.

Leasing Foreign Facilities None of the grain export firms responding leased grain handling equipment and facilities in more than ten countries. Sixty-seven percent of large multinational firms, 25 percent of foreign firms and 3 percent of small private U.S. firms leased facilities in foreign countries (range 1-10). By size, these firms included 50 percent of large sized firms, 4 percent of medium and 3.7 percent of small sized firms. None of the cooperative firms leased facilities overseas.

Purchasing the Services of Foreign Facilities Grain export firms may also purchase the services of (rent) facilities for both short and long time periods. Thirty-three percent of large multinational firms indicated that they purchased the services of grain handling equipment and facilities in more than thirty countries, 33.3 percent in up to ten countries. Twenty-two percent of foreign firms and 15 percent of smaller private U.S. firms also purchased the services of facilities overseas. By size, the firms in this category include 33.3 percent of large firms, 12.5 percent of medium and 7.4 percent of small sized firms. Seventeen percent of large firms, however, were involved in more than thirty countries. The Cooperative firms did not own, lease or purchase the services of facilities overseas. If these activities do indeed provide the firm with a competitive edge, then the cooperative grain export firm might be disadvantaged.

Diversification of Grain Export Firms

One means of reducing the risk resulting from volatility in international grain markets is to expand business operations into areas other than grain exporting. Some firms, particularly the cooperatives, may not be participating in a wide range of commodity markets since they cater mostly to the needs of their members. This form of market participation leaves firms exposed to a high degree of risk since the economic survival of the enterprise might be jeopardized by volatile swings in individual commodity markets. To determine the extent to which this type of diversification has occurred, firms were asked what percentage of their total business was in the export of grains (loosely defined to include oilseeds and their derivatives). Twenty-nine percent of firms indicated that more than eighty percent of their business (both by volume and value) was in grain exporting. These firms included 37.5 percent of cooperatives, 44.4 percent of foreign firms and 26.3 percent of private U.S. firms. However, some differences arose when diversification was analyzed by size of firm. Sixty-seven percent of large sized firms, 33.3 percent of medium sized and 18.5 percent of small sized firms were involved in grain exporting for over 80 percent of their business volume. This indicates a difference in diversification by size and type of firm.

Sixteen percent of all firms had 61-80 percent of their business in the export of grains. These firms include 33.3 percent of multinational firms, 25 percent of cooperatives, 22.2 percent of foreign firms and 10.5 percent of small private U.S. firms.

Only sixteen percent of private U.S. firms reported 41-60 percent of their business in grain exporting. Thirty-three and three tenths percent of multinational firms, 12.5 percent of cooperatives, 11.1 percent of foreign firms and 5.3 percent of small private U.S. firms constituted the firms which indicated 21-40 percent of business volume attributable to grain exports.

Thirty-three percent of all firms reported less than 20 percent of their business in grain exporting. These are probably the most diversified firms of all and the group was composed of 33.3 percent of multinational firms, 25 percent of cooperatives, 22.2 percent of foreign firms and 24 percent of private U.S. firms. The overall summary indicates that multinationals are the most diversified and foreign firms the least with cooperatives also poorly diversified. In the case of foreign firms, they were mostly subsidiaries of larger parent firms based overseas which are probably diversified into areas other than grain exporting. However, since the foreign firms responded considering only their own operations in the questionnaire, the results are understandable. The private firms were more evenly diversified. The diversification among multinational firms into areas other than grain exporting could be one of the factors behind their stability and strength.

Risk Management

Risk is an inherent part of any business endeavour and grain exporting in particular is a high risk industry. Conklin (1981) identified the following major risks which the grain exporter must manage: quality risk, logistical risk, foreign exchange risk, financial risk, political risk, price risk and basis risk. The grain exporters were asked to indicate who bears the foreign currency exchange risks involved in international transactions. The possible answers were the firm itself, the foreign buyer, the financial institutions involved, the insurance agency and an open category. Since risk is often shared by more than one entity, multiple responses were permitted. Foreign buyers were listed as the most frequent bearers of foreign exchange risk. The response percentages varied among multinational firms (75 percent), cooperative grain export firms (100 percent), foreign firms (50 percent) and other private U.S. firms (58 percent) shifting foreign exchange risk to the foreign buyer. The grain exporting firm itself was the next most cited response with 25 percent of the multinational firms, 37.5 percent of the foreign firms and 24 percent of all other private U.S. firms bearing the foreign exchange risk themselves. Six percent of foreign firms and other private U.S. firms indicated that the financial institution involved accepted the foreign currency exchange risk, while nine percent of other U.S. private firm responses indicated that an insurance agency was used. One foreign company, however, indicated that its parent company shared the foreign currency exchange risk.

Barriers to Entry

The rate of entry of new firms into an industry is higher when pre-entry profits are high, when concentration is high and especially when demand is growing rapidly. These conditions prevailed during the mid-1970's when a large number of firms entered the grain export industry. However, the conditions in the early 1980's are quite different with excess supply, reduced demand and increased competition. Twenty-two percent of the respondents indicated that the high value of the U.S. dollar was the main barrier to the entry of new firms. Low profit margins, high capital requirements resulting from initial overhead costs and maintenance of information systems were reported as barriers to entry. Only 3.5 percent of firms cited domination by large multinational firms as a barrier. Other barriers mentioned were competition with established firms, competing with other exporting nations which are heavily subsidized, surplus world grain production and the large number of firms already in the grain export industry.

Public Law 480 Exports and Barter Trade

P.L. 480 The U.S. International Food Assistance Program, commonly referred to as the "P.L. 480" or "Food for Peace" program was passed by Congress in 1954. Since the program's creation the emphasis has shifted in response to changes in the domestic and international environments in which the program must operate. Yet the three primary objectives - promoting agricultural trade, providing humanitarian relief and aiding the economic advancement of developing countries, and promoting U.S. foreign policy remain central to the program's existence and operation. The P.L. 480 program provides two types of commodity transfers: government-to-government concessional sales (Title I) and donations or grants (Title II). Up to the present more than 70 percent of the value of all P.L. 480 transfers have been Title I sales agreements. Since its inception P.L. 480 exports have accounted for 11 percent of total U.S. agricultural exports. Many countries that formerly imported food under P.L. 480 have progressed to the point where subsidized imports are no longer necessary. In fact, several top U.S. commercial grain importers in the 1980's were once significant recipients of P.L. 480 aid. Annual quantities of grain exports under P.L. 480 in the 1980's averaged around 5 million tons.

Sixty-seven percent of multinational grain export firms indicated that less than 20 percent of their grain exports involved P.L. 480 transfers. Of the cooperatives, 50 percent were classified in the same category, of which 25 percent reported nearly half of their total grain exports through P.L. 480. Thirty-three percent of foreign firms and 18 percent of small private U.S. firms reported that less than 20 percent of their grain exports were through P.L. 480. Five percent of the small private U.S. firms reported 21-40 percent levels of P.L. 480 sales. When analyzed by size of the firm, those indicating less than 20 percent included 100 percent of large, 33.3 percent of medium and 3.7 percent of small sized firms. Of these 12.5 percent of medium and 100 percent of small sized firm reported P.L. 480 sales ranging from 21-40 percent, while 4 percent of medium sized firms reported nearly half of their total exports through P.L. 480 transfers.

Barter Barter is one of the oldest trade practices and is still used widely among developing nations. Barter involves exchanging goods for goods instead of payments in currencies. Barter is sometimes used to trade in strategic materials such as minerals. A total of 10 percent of all grain exporting firms indicated that up to 20 percent of exports involved barter trade. These firms included 66.7 percent of large multinational firms, 11 percent of foreign firms and 8 percent of small private U.S. grain exporting firms. Analysis by size of the firm revealed 33.3 percent of large, 12.5 percent of medium and 3.7 percent of small sized firms involved in Barter trade.

Conclusions

The U.S. grain export industry is highly competitive and rapidly changing. While more detailed data and statistical analysis would be desirable, the descriptive analysis presented in this paper is a firm step toward understanding the structure and function of the U.S. grain export industry.

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