5-15-1992

The Adaptation of Flour Milling Based Companies to Environmental Change

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May 15, 1992

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I wish to sincerely thank all of the following persons, without whose assistance this project would not have been possible: Dr. Cyril Ling, Dr. Frederick Hoyt, Dr. Michael Seeborg, Dr. William Walsh, Mr. Robert Bratsman, Mr. Darwin Borden, Mr. Craig Hamlin, Mr. Charles M. Harper, Mr. James Hield, Mr. Josh Sosland, Dr. Rick Whitacre, Dr. Mona Gardner, Mr. Donald Welge, Mr. Donald Berry, and Ms. Elizabeth Roll.

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INTRODUCTION

It might well be argued that no other industry was as important in the civilization of man as flour milling. As man discovered the process of grain milling he was able to evolve from wanderer, to farmer, to city dweller. The sale of flour is considered by many historians to be the first industrial enterprise. Wheat, grown for over 10,000 years, was regarded as a symbol of life and power by the ancient Assyrians, Egyptians, Jews, Greeks, and Romans (Steen p. 19). Both the art and business of grain milling evolved as world population grew. The cultivation and milling of wheat migrated with man from the ancient Syrian/Palestine region to Europe, Asia, and Africa (Storck & Teague p. 35). Each new society contributed some innovation which increased productivity in the industry.

The milling industry also played a pivotal role in the geographic and economic development of America. Corn was the major indigenous crop of the Western Hemisphere, but attempts at growing wheat were made soon after the first colonists arrived. Milling was the most important industry in the colonies. Early American exports of flour were 522,000 cwts (100 pound weight measure) in 1774 and 725,000 cwts in 1789 (Steen p. 30). George Washington himself was an exporter of high quality flour to the West Indies. The post-colonial government made the milling industry one of its first regulatory targets. Some of these early efforts insured the quality of flour exports and others were more protectionist,

prohibiting imports.

As the 20th century approached the milling industry began to change. In response to the rapid expansion of the U.S. in both population and geographic size a new era of technological innovations was born. This period is known today as the "Milling Revolution". It was also during this time that many of the companies that are today the giants of flour milling and other industries, the focus of this study, began to take shape.

PURPOSE & REASONING

This project attempts to trace and analyze the evolution of five United States food processing companies, Archer Daniels Midland, Cargill, ConAgra, General Mills, and Pillsbury from the time of the "Milling Revolution" of the late 1800's through today. This process involves the study of two related subjects, environmental change and industry evolution. Environmental analysis can be separated into the study of two sub-environments, the external and internal. The evolution of the milling industry may be thought of as the combined histories of these and other organizations, their individual products, processes, markets, capital investments, and other factors as they have changed through time. This work initially begins with the identification of critical junctures in the industry's history when environmental changes forced these organizations to alter or adapt their strategic planning. However, this project also attempts to explore

the reasons behind these decisions and assess the results of them on the organizations themselves and the industry as a whole. This is the object of the study of business policy and strategy.

This industry makes an interesting subject for analysis for several reasons. Its significance in the early history of both civilized man and America has previously been noted. The importance of any agriculturally based industry also deserves mention. Peter Drucker stated in The Age of Discontinuity, "Agriculture in the developed countries has become the most productive, the most capital intensive, and the most highly mechanized, and altogether the most "industrial" of all modern industries." (p. 17). The milling industry has also been extremely important in the development of the Midwest. Obviously the Midwestern farmer benefited from the rise of the milling industry, but many cities like Minneapolis, Omaha, and St. Louis also owe a great deal of their early prosperity to this industry. Many other communities grew as a result of their roles as collection points and rail spurs in the transportation of grain. This industry is also one in which, since the 19th century, America has continually been the world leader in terms of productivity, technology, and product development.

There are also reasons for the selection of these specific firms. All five firms in this study are linked together by either a longstanding and/or large current participation in the flour milling industry. They are all of substantial size in terms of employees, sales, profits, and market size and scope. For example,

the Cargill Corp. has been the largest privately held company in America for most of the last ten years. It employs 61,600 persons worldwide, and with revenues of 4.8 billion dollars last year ranked 8th in terms of all U.S. companies (Milling & Baking News Feb. 11, 1992 p. 14). This size subsequently leads to the availability of large amounts of published information in a wide range of areas vital to this analysis.

FRAMEWORK & METHODOLOGY

There currently exist numerous frameworks for the analysis of business and policy issues. The uncertainty of today's business environment in comparison to that of the past might suggest the need to utilize the work of more contemporary business theorists, in contrast to older, more traditional texts. During the last decade the work of Michael Porter, professor, Harvard Business School, has gained a great deal of acceptance in both the business and academic communities. Porter's most read works have focused on the analysis, development, and retention of competitive advantage on both single firm and international levels. The performance of the organizations selected in this work points to the development of competitive advantage. Porter's work has been chosen as the framework for this analysis because of its timeliness, its acceptance, and its relation to this industry in particular.

There is a somewhat more universal consensus among business theorists as to which factors comprise the first of the two sub-environments, the external. For purposes of this work the

external environment will be considered to be the sum of economic, technological, social, and political/legal forces. Porter addresses the issue of the business environment in his Competitive Strategy, saying the following.

> The essence of competitive strategy is relating a company to its environment. Although the relevant environment is very broad, encompassing social as well as economic forces, the key aspects of the firm's environment is the industry or industries in which it competes. Industry structure has a strong influence in determining the competitive rules of the game as well as the strategies potentially available to the firm (p. 3).

In light of this belief he has derived his model of industry competition, which will be considered the internal portion of the business environment for this work.

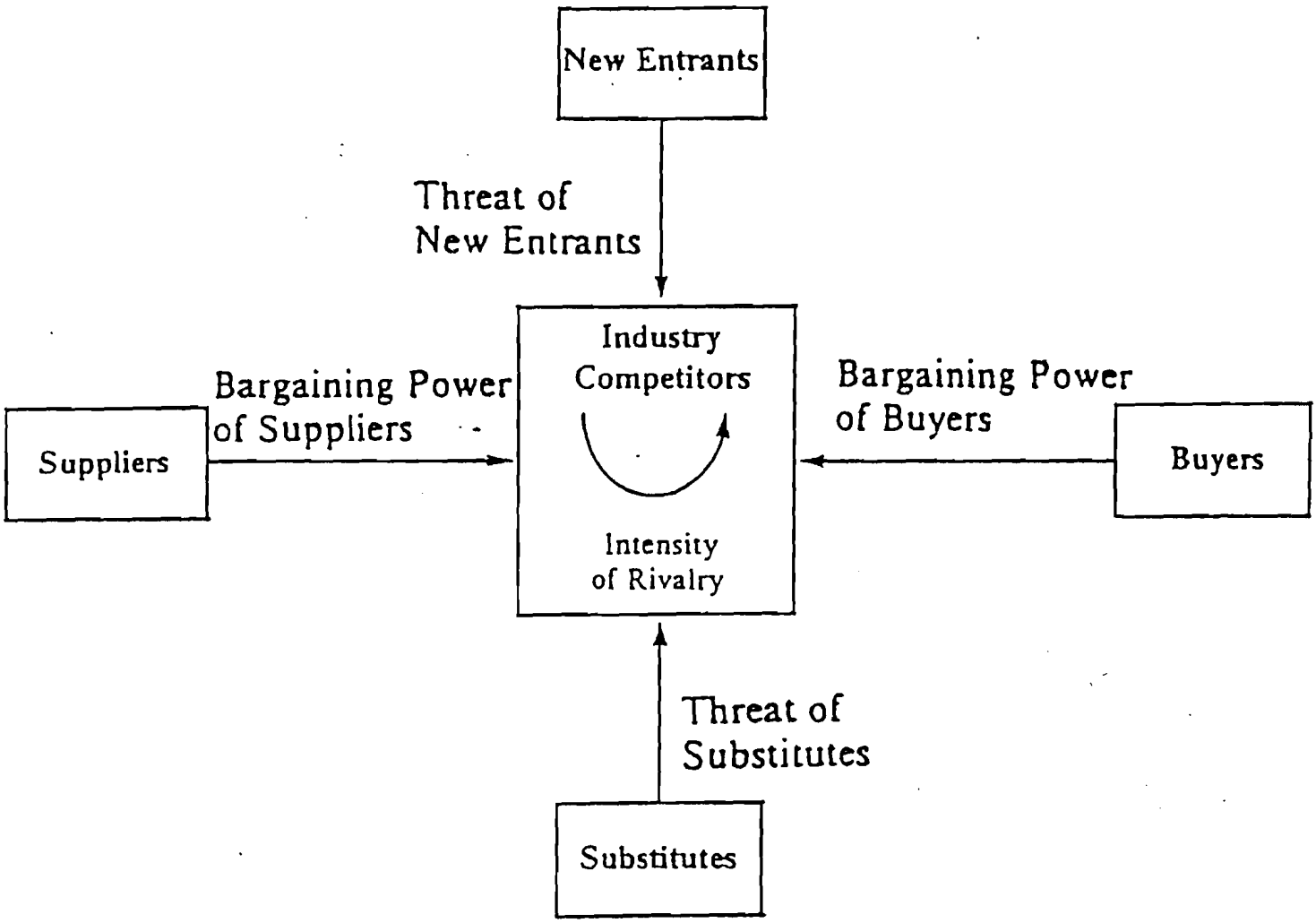
Porter's model of industry competitiveness is shown in Figure 1. He defines "industry" as a group of firms producing products or services that are close substitutes for each other. As the diagram shows, Porter believes the competitive environment is composed of five independent forces which combine to form total industry competition. Competition is of paramount importance to any business, since it is competition that lowers the rate of return on capital and effects the ultimate profitability of an industry (Competitive Strategy p. 6). The individual strength of these forces varies with the industry. Those which are the most powerful naturally become the most crucial in terms of strategy formulation for the firm.

The first of the five forces, Threat of New Entrants, is located at the top of Porter's diagram. The entry of new firms into an industry obviously effects the competitive environment.

FIGURE 1

POLITICAL/LEGAL

ECONOMIC



TECHNOLOGICAL

SOCIAL

PORTER'S MODEL OF EXTERNAL & COMPETITIVE (INTERNAL) BUSINESS ENVIRONMENT

Depending on their size, strength, and the industry arrangement, firms may be pulled into a bidding war for inputs and customers. Profitability can suffer. Countering this threat are what Porter describes as Barriers to Entry. These are "structures" that have arisen either naturally or through the direct action of firms or others that make entry into the industry more difficult for would-be participants. Porter describes seven major types of entry barriers, Economies of Scale, Product Differentiation, Capital Requirements, Switching Costs, Access to Distribution Channels, Cost Disadvantages Independent of Scale, and Government Policy (pp. 10-3).

Proceeding clockwise along Figure 1, the Bargaining Power of Buyers is the next force which affects industry competitiveness. These powers may be of a wide range, determining price, quality, and service and of varying degrees. Generally, the more powerful the buyers are as a group in an industry, the greater the competition. In this model a buyer group is regarded as powerful if:

1) It is concentrated or purchases large volumes relative to seller sales.
2) The products it purchases from the industry represent a significant fraction of the buyer's cost or purchases.
3) The products it purchases from the industry are standard or undifferentiated.
4) It faces few switching costs.
5) It earns low profits.
6) Buyers pose a credible threat of backward integration.
7) The industry's product is unimportant to the quality of the buyer's products or services.
8) The buyer has full information. (pp. 24-7)

The next force in Porter's model is the Threat of Substitute Products or Services. Substitutes are an important component of

industry competition. Porter defines substitutes as a product or service that performs the same function as another. The more substitutes available, the greater will be the competitiveness of the industry. He believes the most threatening substitutes to firms are those which "(1) are subject to trends improving their price performance tradeoff with the industry's product, or (2) are produced by industries earning high profits" (p. 23-4). The more attractive a substitute is perceived to be by the buyer the less range the industry participants have in establishing prices. If prices rise above the relative cost of the next best alternative a switch may well likely occur. In making strategic decisions firms need to consider the full range of substitutes for their product or service.

Continuing along the diagram, Porter next addresses the Bargaining Power of Suppliers. Depending on their strength, suppliers can raise the price of the inputs they sell, or they can restrict the supply of inputs and thereby intensify the existing competition within the industry. Porter believes the conditions that make suppliers powerful, and thus increase industry competition, are similar to those of the buyers. A supplier group is considered to be powerful if:

1) It is dominated by a few companies and is more concentrated than the industry it sells to.
2) It is not obliged to contend with other substitute products for sale to the industry.
3) The industry is not an important customer of the supplier group.
4) The suppliers' product is an important input to the buyers business.
5) The supplier group's products are differentiated or it has built up switching costs.

6) The supplier group poses a credible threat of forward integration (pp. 27-8).

The final force, located in the middle of Porter's model, is Rivalry Among Existing Firms. As firms attempt to gain competitive advantage over one another their actions usually produce countering reactions from other industry participants. These actions may be beneficial or detrimental to the industry as a whole. The effects of a price-war often threaten the existence of some industry participants, but Porter suggests that actions such as advertising battles may create greater differentiation and expand demand which should benefit the industry and the firms within it (p. 17). He further believes that industry rivalry will be more intense under the following conditions.

1) Numerous or Equally Balanced Competitors
2) Slow Industry Growth
3) High Fixed or Storage Costs
4) Lack of Differentiation or Switching Costs
5) Capacity Augmented in Large Increments
6) Diverse Competitors
7) High Storage Stakes
8) High Exit Barriers (pp. 17-21)

The four external environment factors have been placed in the corners of Figure 1. This demonstrates that these factors may influence all five of the forces within Porter's internal or competitive environment.

Porter addresses the issue of industry evolution in Competitive Strategy with the following.

> Industry evolution takes on critical importance for formulation of strategy. It can increase or decrease the basic attractiveness of an industry as an investment opportunity, and it often requires the firm to make strategic adjustments. Understanding the process and being able to predict change are important because the cost of reacting strategically usually increases as the need for change becomes more obvious and the benefit from the best strategy is the highest for the first firm to select it. (p. 156)

Industry evolution is considered by Porter to be the combined effect of those forces over time which can change the elements of the model presented in Figure 1. These are:

1) Long-run changes in growth
2) Changes in buyer segments served
3) Buyer's learning
4) Reduction of uncertainty
5) Diffusion of proprietary knowledge
6) Accumulation of experience
7) Expansion (or contraction) in scale
8) Changes in input and currency costs
9) Product innovation
10) Marketing innovation
11) Process innovation
12) Structural change in adjacent industries
13) Government policy change
14) Entries and exits (p. 164)

Porter believes that these changes vary in magnitude and direction with the industry, but examples can be observed in every industry.

After examining these theories definite relationships between them can be observed. The firms within the industry are acted upon by a combination of the external and internal environmental forces throughout the evolution of the industry. This is the framework with which the adaptation of the five milling organizations addressed in this study will be analyzed.

After the selection of a framework for analysis, research was conducted in three steps. First, a survey of literature in the

history of the industry was undertaken. Next, specific research was conducted to determine financial and economic characteristics for each organization. Finally, interviews were arranged with members of upper-level management of the selected organizations and with industry observers.

There is not an abundance of published work specific to the flour milling industry. Two works however became primary sources of historical data in particular, Herman Steen's Flour Milling in America and John Stork and Walter Darwin Teague's Flour for Man's Bread.

Research specific to the organizations was conducted with general periodicals, trade journals, corporate evaluations, and corporate publications. Information was in most cases fairly easy to obtain, but there were some exceptions. The Pillsbury Company did not respond to any requests for information. The reason is unknown, but it is most likely related to its recent acquisition by Grand Metropolitan. Cargill also presented some problems in obtaining financial information, since it is a privately held company. This organization has traditionally been less public in its operations, and especially so in regards to financial performance. This lack of information in some ways limited the amount of analysis that could be conducted for this organization. There was also a limit to the amount of financial information which could be found for the earliest oldest periods for all the organizations. Especially helpful were complete corporate histories which were available for Cargill, ConAgra, and Pillsbury.

The final portion of the research, interviews, was the most difficult. Inquiries were made to the headquarters of these organizations, and efforts were also made to work up to the top through middle and lower levels. A list of those members of management interviewed is presented below in Table 1. Results were mixed. A face-to-face interview was arranged with Charles M. Harper, the CEO of ConAgra, but persons of such position were not available for all the organizations. Despite this, at least one member of upper-level management was interviewed for their opinions on their organization, its evolution, and its business environment. Dr. Rick Whitacre, a professor of agricultural economics at Illinois State University was also interviewed to obtain information about the inputs of the milling industry, agricultural commodities. Further information was also obtained from Mr. Josh Sosland, co-editor of The Milling & Baking News, an extremely respected milling journal. Perspectives were also provided by the management of the Gilster - Mary Lee Corp., a manufacturer of private-label food products which also arose from a flour milling operation.

TABLE 1

ORGANIZATION	CONTACT	POSITION
1. ADM	Carig Hamlin	Pres. ADM Milling Co.
2. Cargill	James S. Hield	Asst. V. Pres. of Public Affairs
3. ConAgra	Charles M. Harper	CEO
4. General Mills	Robert Bratsman	Contract Manufacturing Manager
5. Pillsbury	Darwin Borden	V. Pres. of Flour Sales & Marketing (Retired)

FINDINGS

I. The Milling Revolution (1870-1899)

Four of the five organizations selected in this study were established before the Milling Revolution of the late 19th century. Archer Daniels Midland was not established until the early 1900's.

The Cargill Corp. traces its origin back to 1865 in Canover, Iowa when William Wallace Cargill opened a grain warehousing business. This consisted of purchasing grain from local farmers and arranging for its sale and transportation to another party for further processing. William Wallace Cargill diversified his young operation fairly early, and by the 1890's the company was involved in coal, lumber, insurance, and flour milling operations with over 100 facilities in four states (Building on Tradition p. 3).

Though not even formed until 1919, the four independent flour mills that would become the Nebraska Consolidated Mills Company, today known as ConAgra, were producing flour by the 1870's. These

were the Ravenna Mill, Hastings Mill, Henry Glade Milling Co., and the Blaidburn-Ferry Mill, all located in the agriculturally rich state of Nebraska. Henry Glade organized a system of grain storage elevators to supply his mills and was one of the first to put many of the new innovations produced by the milling revolution to use. Although he did not live to see the formation of N.C.M., many at ConAgra today, including CEO Mike Harper, attribute much of the early success of the organization to Glade's pioneering efforts (Limprecht p. 22).

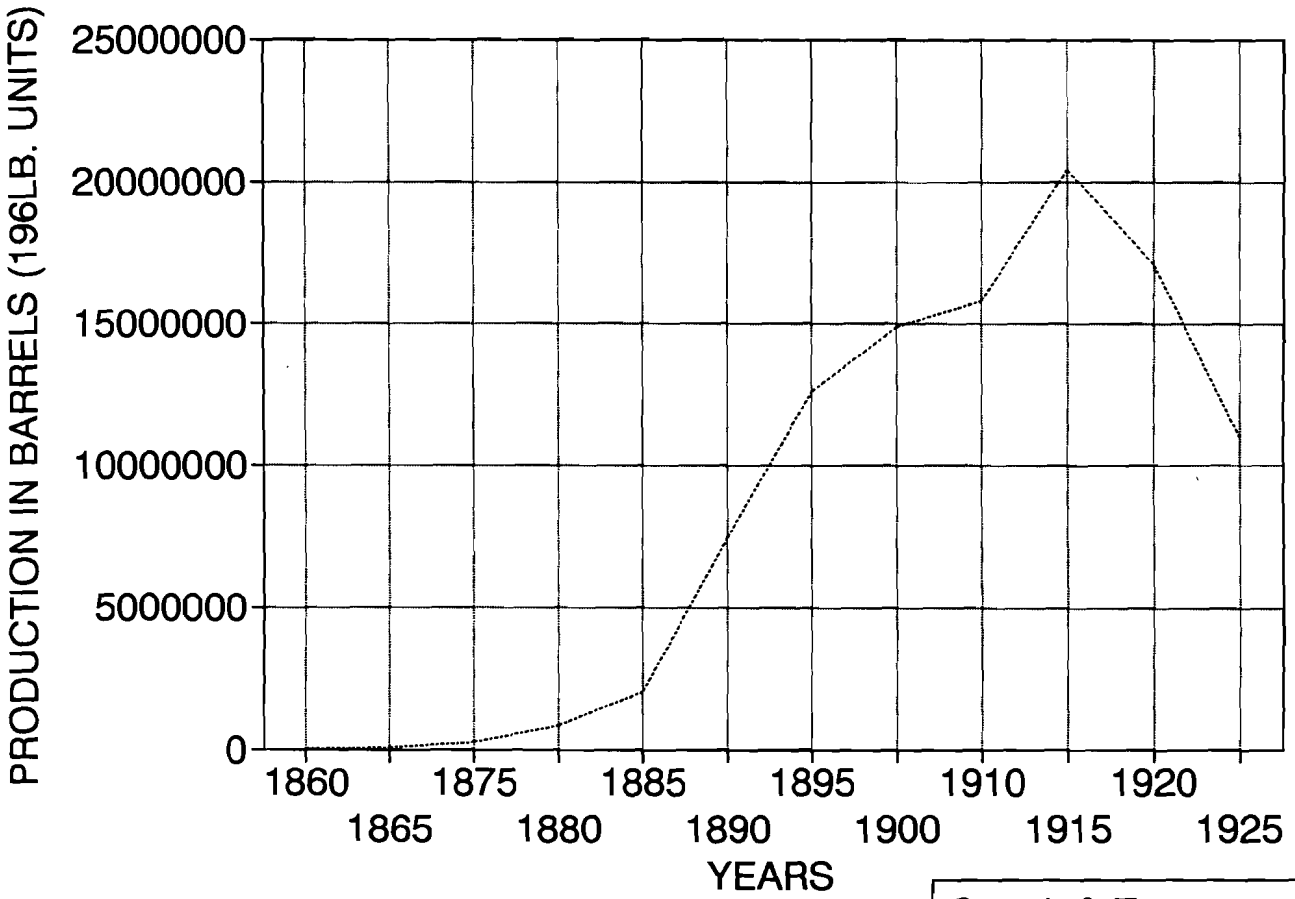
In 1866 Cadwallader Washburn erected a flour mill on the banks of the Mississippi river in Minneapolis, MN. Eleven years later a partnership was entered into with John Crosby, and the Washburn Crosby Co. was born (General Mills Historical Highlights p. 15A). The two men sold three brands of high quality flour, one of which won the gold medal at the Miller's International Exhibition of 1880. "Gold Medal" flour soon became the top selling item of what today is known as the General Mills Corporation.

The Pillsbury Co. was also formed in Minneapolis in June of 1869 with the $12,000 investment of Charles and George Pillsbury. Like the Washburn Crosby Company, the Pillsburys had the foresight to locate their operation in Minneapolis, rather than what were considered to be more established milling centers in the East. Within a few years all the factors required for a successful milling business were available in Minneapolis, ample wheat, cheap power, and good transportation (Powell p. 21).

The "Milling Revolution" was a span of twenty to thirty

years beginning about 1870 when numerous technological innovations occurred in the industry. Perhaps one of the most important was the Evans automatic mill system. This process reduced the total amount of labor needed by more than 1/2, eliminated all of the most strenuous labor, and increased the total flour yield from wheat. The perfection of the Middling's Purifier allowed spring wheat to be milled effectively . Spring wheat grew well in harsh environments, but it was difficult to mill using methods available at the time. A process known as gradual reduction was also rediscovered during this time after a 100 year absence (Steen p. 47). It consisted of a slow grinding rather than complete pulverization of the wheat kernel. This process was more time consuming, but allowed for production of finer quality flours from a greater variety of wheat. The development of the roller mill was also extremely important. The use of a series of rollers in the grinding of grain proved to be very effective in the gradual reduction process. This innovation brought about the end of the traditional millstone of the Middle Ages. Figure 2 shows U.S. flour production from 1860 to 1925 (Storck & Teague p. 210). The greatest percentage increases in production can be seen during the years of the Milling Revolution, the product of these and other technical innovations. American agriculture was also changing during this time. During the decade following the Civil War more than half of all workers in the United States were employed on farms (Building on Tradition p. 7). Wheat production was approximately 200,000,000 bushels annually in the 1860's,

FIG. 2 U.S. FLOUR PRODUCTION
1860-1925



Storck & Teague p. 210

340,000,000 in the 1870's, 480,000,000 in the 1880's, and 588,000,000 by the 1890's (Steen p. 51).

Total American population expanded and demographic patterns were shifting during this time. By 1880 the U.S. population was over 50,000,000, 63,000,000 by 1890, and 76,000,000 by 1900 (Steen p. 51). Throughout most of the 19th century U.S. communities were self-sufficient in many respects. The entire population was generally supported by food produced in the hinterlands. As urban populations grew new methods were required to fulfill the demand. This held especially true for flour.

Those mills which had gained a reputation for consistent quality flour felt pressure to expand their operations in order to meet the needs of the country. As the industry became more mechanized, economies of scale arose. There was a small, but definite decrease in cost per unit as size increased. The modernization of the industry also demanded a great deal of capital. This required mills to become more proficient in the acquisition and management of capital as well. Perhaps one of the most important changes was the growth and development of the railroads. This new means of transportation allowed mills to locate away from the initial grain collection sites and ship their products to new and distant markets.

The large modern facilities spawned during this time became known as the "merchant mills". In contrast to the grain-for-flour bartering that had occurred up to this time, grain purchases and flour sales were now conducted on a cash basis. Supplier and

Customer were no longer necessarily one in the same. Many small mills ceased operation, and hundreds of mergers and acquisitions occurred. By 1900 merchant mills produced 90% of all U.S. flour (Steen p. 53).

There is contradicting evidence as to the threat posed by new entrants at this time. Between 1850 and 1900 the number of milling operations grew from 11,891 to 25,338 (Steen p. 51). However, the bulk of this expansion came in the western regions of the country in response to the population expansion there. Until this time the barriers to entry for new firms had been relatively few, but the use of new innovations required firms to invest large amounts of capital. The effect of the threat of new entrants was probably slight, if existent in influencing industry competitiveness.

The bargaining power of flour buyers as a group had traditionally been minimal. Consumers were usually isolated from any other producer of flour other than their own local mill. With the Milling Revolution this changed. Commercial bakeries began to purchase increasingly larger amounts of flour. Expansion of the rail system and improved roads and canals allowed brands of flour to be brought to markets outside their immediate vicinity. Improvements in communication also allowed for better information exchange concerning wheat and flour prices in different regions. These factors combined to increase industry competitiveness.

Substitutes were not a real threat to the industry. Flour at this time was considered a necessity. According to the Porter model this would tend to decrease the competitiveness of the

industry.

It is difficult to determine the power of suppliers as a group, the thousands of wheat farmers in America, during this period. The suppliers product, wheat, was essentially not a differentiated one. There was little threat of forward integration by suppliers in light of new barriers to entry. The milling industry was an important customer to the supplier, most likely the only one. The Porter model would suggest a decrease in industry competitiveness. However, during this time many farmers came together into "Grange" organizations. Steen believes historically friction between millers and farmers has been so minimal it could be considered neglible (p. 133). Still, Porter's model would expect industry competition to increase as farmers became more organized and gained greater price control. These different effects were most likely offsetting, making little change in total industry competition.

Firm rivalry has traditionally been intense in the milling industry, and this time period was no exception. The industry participants not only had to contend with numerous competitors, but also the high storage costs inherent to the business. Mr. Josh Sosland, coeditor of The Milling Business News, stated that there were no pesticides available to stop insect infestations or preservatives to protect the quality of the product at this time. These factors had a strong influence in increasing industry competitiveness.

Changes in the external environment were generally supportive

of the growth occurring in the milling industry. The economic expansion of the country provided the capital that was needed to invest in new operations. The benefits of new technologies in production and transportation are evident.

Perhaps the greatest impact on the industry was caused by a political/legal change. In 1865 the Chicago Board of Trade began the trading of grain futures. Futures contracts are similar to forward contracts in some respects. Unlike forward contracts though, quantity, quality, delivery date, and delivery point are all standardized. Price is the only variable (Atkin p. 2).

The establishment of the futures market had three important effects. First, it provided a public source of prices, liquidity. Second, price stability was provided as the market greatly reduced seasonal fluctuations. Third, the reduction of volatility and uncertainty made operations in agricultural industries more stable (Atkin p. 18).

Through successful futures market transactions milling companies were able to insulate themselves from some of the danger inherent in their industry. This process of risk management is known as hedging. Unfortunately many organizations discovered that miscalculations in the futures market could have disastrous results. Historically companies that have fared badly from futures transactions have been attempting to speculate, having no interest in the physical commodity, but attempting to make a profit. The use of futures contracts by milling operations at this time was actually minimal, but its importance increased in the years to

come.

Examining Porter's drivers of industry evolution we find several present in the milling industry during the late 1800's. With the rise of commercial bakeries and the urban population there was a distinct change in the buyer segments served and a structural change in an adjacent industry. Accumulation of experience and expansion of scale were also present. The most pronounced of these factors were the many process innovations that occurred during this time and the government policy changes at the Chicago Board of Trade.

The effects of these environmental forces and evolutionary changes can be seen in the strategic decisions of the selected firms. During this time these companies were positioning themselves for future expansion in a time when increased competition would begin to force many firms out of business.

The Cargill Corp., though its milling interest was small in comparison to its total size, established a strong grain supply network and gained experience in grain trading on the futures market. Financial performance information during this time is very limited, as it is for most of these companies. Cargill's early diversification allowed for insulation against some of the risk inherent in commodity based industries. The experience gained in this process set the company at an advantage against firms who later would turn to quick diversification efforts without careful evaluation.

Like Cargill, Nebraska Consolidated Mills also established a

strong network of suppliers and collection points. The company's use of new technologies, though not always successful, allowed N.C.M. to stay steps ahead of their competitors in terms of quality and speed.

The Washburn Crosby Co.'s use of the Gold Medal brand proved to be very successful for the company itself and signaled a change in the way flour was marketed. As the railroads opened up new markets the Gold Medal brand provided consumers with an easily identifiable symbol, and whether or not it was warranted, it created differentiation in an industry which had witnessed little.

The Pillsbury Co. also utilized the milling innovations of the time and the power of the Mississippi river to run their large operations. Despite a disastrous mill explosion, the Pillsbury's set high growth goals and met them. In 1889 Charles Pillsbury was quoted as saying, "The business of making flour had been brought to so close a point by competition that it is only possible to succeed by using the latest machinery and adopting the best system. It is purely a matter of business and must be conducted scientifically." (Powell p. 39). That is what the Pillsburys did.

II. Turn of the Century to the Great Depression (1900-1929)

In 1900 the flour milling industry appeared established and stable, and the business environment was generally favorable. The milling processes were at this time all but perfected. American annual wheat production continued to rise. This combination of

factors contributed to a complacency within the industry. The organizations which still hoped to prosper were forced to adapt to the challenges presented by changes in the American diet and the nations entry into World War I.

During this period the threat of new entrants was essentially neutralized. Most entrants were kept at bay by the high costs of capital investments required to successfully compete in the milling industry. Prime locations, those providing adequate power, raw materials, and transportation, were now occupied by established firms. These firms increased their flour output by a considerable percentage on an annual basis. In fact, the demise of thousands of small, rural mills came about as a result of one of the greatest innovations of the 20th century, the automobile. As the use of autos increased and roads improved the products of larger mills became available in more distant markets. Between 1900 and 1930 the number of rural mills was cut by more than half, from 8,000 to less than 4,000 (Steen p. 71). This total net decrease in industry participants would tend to decrease industry competition according to Porter's theory.

The bargaining power of buyers increased during this time, which, according to the Porter model, would increase industry competition. Competition did increase during the late 1800's, primarily because consumers were presented with a greater selection. Through new advertising and merchandising consumers (households) and the commercial baking industry were made more aware of different flour producers. Flour quality was slowly

becoming more standardized, so few switching costs existed. The consolidation of commercial bakeries during this time also increased the buyer's bargaining power (Powell p. 113).

At this time the threat of substitutes became a real issue. American per capita consumption of flour declined. Steen reports that this figure dropped 20% over 20 years, from 224 lbs. per person in 1900 to 197 lbs. by 1920 (p. 67).

The reasons for this decline are several. The American diet began to diversify at this time. More milk, meat, sugar, and vegetables were being consumed. Sosland reported that historically as a society becomes more affluent its per capita consumption of grains decreases. Commercial bakeries tended to use more non-flour ingredients in baking than household users. Americans also became less calorie focused and more concerned with vitamin intake (Storck and Teague p. 281). With more substitutes available, Porter would expect industry competition to increase.

Supplier bargaining power grew to some degree during the early part of this century. Though the large number of wheat farmers still guaranteed millers numerous raw material sources, farmers and grain merchants benefited from the arrival of a new food industry on the American business scene, prepared breakfast foods. Most millers were initially reluctant to enter this new industry, since they viewed the products as threats to their markets (Storck & Teague p. 274). For a short time before America's entry into W.W.I, when the crops of 1917 were disappointing, wheat prices soared in response to fears of shortages. This temporarily

improved the bargaining power of suppliers, and increased industry competition. This shift in power was soon negated when the Federal government set wheat prices at $2.26 per bushel (Steen p. 73). Over this period of 30 years the bargaining power of suppliers increased to a small degree, increasing overall industry competition.

During this time the first fierce advertising battles were fought between milling firms. When flour was primarily a household item brand recognition was extremely valuable. Steen estimates that the number in use at one point may well have been near 10,000 (p. 71). The importance of brands or "family flour" did decline slightly with the rise of commercial baking. Intense rivalry between firms and the four other forces in Porter's model combined to form an extremely competitive environment.

The most important external environmental changes took place in the political/legal and social areas. Government policy changes were numerous. The Food & Drug Act of 1906 and the Interstate Commerce Act both proved to be beneficial to the milling industry through assurance of quality standards and revision of grain transportation regulations. America's entry into W.W.I also helped to eliminate some of the excess capacity that had arisen in the industry. Allied troops and the starving population of war-torn Europe needed flour, and American mills were able to supply it. The decrease in per capita consumption of wheat flour was also an important social change. This decline would continue from this point, so those companies that wished to increase size and profits

would either do so at the expense of other competitors or through expansion into new industries, like the emerging breakfast food industry.

A case could be made that all of Porter's Drivers of Industry Evolution were present in some form during this time. Several are particularly apparent though. Long-run growth changes began to emerge as American diets were modified. Changes in input costs have also been mentioned. The increased use and focus on brands was an important marketing innovation. Government policy changes and firm exits also influenced the way in which milling firms made policy decisions.

This period of American milling history began as a fairly stable one. Changes occurred however which made this traditionally competitive industry even more so. With market size beginning to decrease and alter in nature, firms were required to establish those policies which would allow them to expand or at least maintain their position in the new environment.

Archer Daniels Midland can be traced back to this point with the formation of the Daniels Linseed Oil Co. in 1902. The operation was primarily involved in the production of linseed oil for use in vegetable oil and sale of the process by-products for use in various protein meals (Atkin p. 140). In 1923 the organization was incorporated as the Archer Daniels Midland Co., and a 1,500,000 bushel grain storage elevator was constructed next to their linseed oil production plant in Buffalo, NY. ADM was not involved in the milling of flour at this point. Through dealings

in soybeans and other commodities however, ADM gained experience in the purchase, transportation, processing, and marketing of agricultural products that would provide definite carryover to the milling industry.

During the first quarter of this century the Cargill Corp. continued the expansion of its grain merchandising network. In 1922 it lead the industry with the installation of a private internal wire system which was essential in the establishment of the company as a international organization (Building on Tradition p. 19). During World War I Cargill actually fared quite well. A profit of $399,000 was earned in 1918 through wheat trading and an additional $872,000 in barley (Broehl p. 227). The organization fell under criticism for earning such a profit at a time when most Americans were experiencing difficulties. Resentment towards grain millers and traders has always been present, and it continues to exist today.

These years were extremely important to Cargill for two reasons. First, the availability of new technologies in transportation and communication coupled with managements' willingness to implement them allowed Cargill to become a force in the world market years before any of its competitors. Second, Cargill management began to diversify along what they described as "The Endless Belt" of commodities, integrating back to the supplier and forward to the consumer (Broehl p. 284). This concept, though probably not a new one, had never been applied on such a large scale or as effectively.

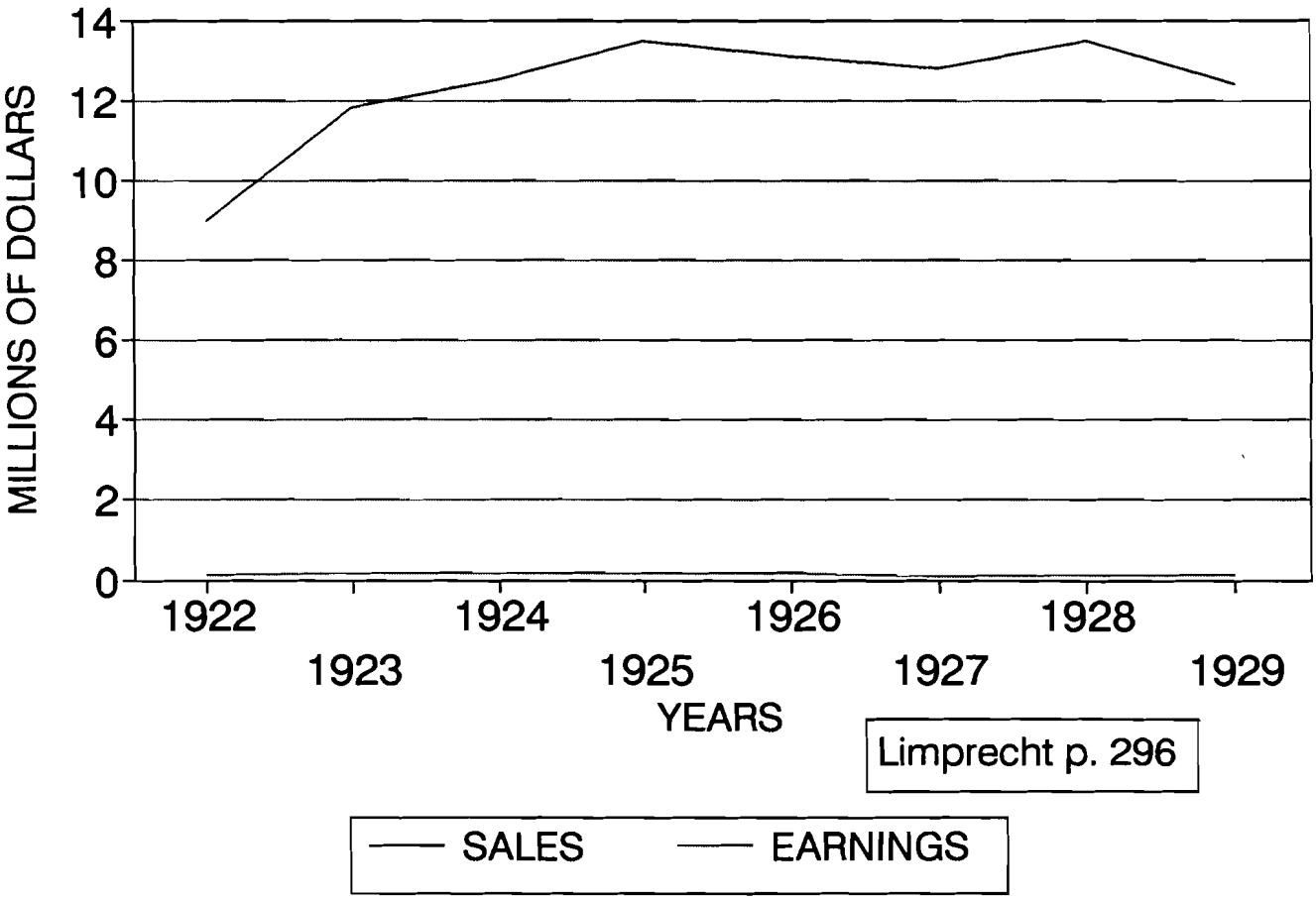
In 1918 a group of Nebraska flour millers proposed the merger of four independent mills in order to ensure their survival and profitability in a business environment which was becoming increasingly more hostile towards the small, rural mill. The following year the formation of the Nebraska Consolidated Mills Company was approved, and in 1920 the organization began to produce flour under its new name. A public stock sale was organized and advertised as "Absolute Protection to the Shareholder Against Any Calamity that May Arise." (Limprecht p. 25). Organizers regarded the $840,000 of stock sold as disappointing. N.C.M. lost $115,000 during its first 15 months, but by 1922 it was reporting $175,000 in profits (Limprecht p. 30). With the purchase of the Updike Mill in Omaha that same year total capacity was doubled. Figure 3 shows Nebraska Consolidated Mills sales and profits from 1922-1929 (Limprecht p. 296).

Much like Cargill, these years contributed a great deal to the current success of ConAgra. Nebraska Consolidated Mills formed a network of strong mills within the state of Nebraska. This provided the organization the strength and finances it would need when it made the move into different geographic and eventually, product areas.

In a speech delivered at a reception at the Harvard Business School H. B. Atwater, Jr., General Mills CEO, spoke about this period of his company's history saying, "our emphasis was on expanding our milling and related activities...to become the world's largest flour mill" (Change and Continuity. 3). In a rash

FIGURE 3 CONAGRA

SALES & EARNINGS 1922-29



of acquisitions during a 5 month period in 1928 the relatively small Washburn Crosby Co. was transformed into a group of 27 associated companies in 16 states (Fifty Years of Growth and Service p. 24).

Important innovations occurred in both marketing and product development in the organization at this time. General Mills produced one of the best known marketing innovations in the history of food processing at this time, Betty Crocker. This fictional female was invented to help answer consumer questions about Washburn Crosby Co. family flour. Betty Crocker soon expanded her advice to all areas of baking and her audience through radio broadcasts of her "Cooking School of the Air" (The Story of Betty Crocker p. 2). In 1923 General Mills already had a small number of consumer products. The following year it introduced a flaked cereal derived from the whole wheat kernel, Wheaties. The company followed Wheaties' introduction with an extensive advertising campaign in both published mediums and radio. This emphasis on both printed and electronic advertising has stayed with General Mills through today.

The beginning of the 20th century almost saw the demise of the Pillsbury Co. The company suffered from a number of problems during 1900-1907, including management problems and faulty bookkeeping (Powell p. 72). In 1907 a cash flow problem arose in part because of a U.S. cash crisis. In 1908 Pillsbury's position worsened, and the company was forced to go into receivership. Albert Loring became president of the newly organized Pillsbury

Flour Mills Co. in 1909. He not only brought the company out of its financial hole, but was also responsible for previously unknown prosperity. Loring made sure the quality of Pillsbury flour was reestablished. In 1913 production facilities were enlarged and the line of flours was broadened. The company also expanded packaging in 25, 50, and 100lb. amounts, not just the traditional 196lb. barrel(p. 102). By improving traditional products such as Pillsbury's Best Flour and expanding into breakfast foods with Health Bran and Vitos Wheat Cereal, Pillsbury once again became a solid and profitable company. In 1923 the company acquired its first mill outside of Minneapolis in Atchison, Kansas.

III. The Great Depression to World War II (1930-1947)

Up until this time milling would have been considered by most to be a healthy industry. Although profits had not been large throughout the 1920's, most medium to large-sized firms possessed the funds which allowed them to modernize their facilities. Antiquated plants were usually forced to close, but this was part of the normal cycle of free market business.

The Great Depression and World War II brought many changes to America and the milling industry. The legislative programs of the New Deal complicated the business environment for milling companies. The demands of a world at war also required the milling industry to adapt.

The threat of new entrants once again diminished during this time. Mergers and acquisitions were a common occurrence, as the number of industry participants dwindled. There had been approximately 4,000 rural mills at the end of W.W. I. This number had dropped to 1500 by the end of W.W. II (Steen p.88). As might be expected, little new construction occurred at this time. Barriers to entry were obviously quite substantial. Total industry capacity remained constant due to large numbers of mergers and acquisitions. Porter would expect industry competitiveness to decrease, since the threat of new entrants was essentially nonexistent.

Between 1930 and 1947 American per capita consumption of flour continued to decline. The strength or organization of commercial bakeries did not change significantly during this time. These factors would tend to either leave the bargaining power of buyers unchanged or reduce it slightly, and thereby be expected to either slightly reduce or leave total industry competition unchanged.

The threat of substitutes increased during this time. As Americans were experiencing financial problems they searched for the cheapest of consumer goods. This included flour. Many old brands lost their following as the search for other types of flour arose, such as buckwheat and rye (Steen p. 83). According to the model this would lead to an increase in overall industry competition.

Wheat prices and supplies fluctuated during this period, and with them fluctuated the bargaining power of suppliers. Farmers

benefited during the New Deal, when wheat prices were held at artificially high levels. When these policies were relaxed and free market forces took over their strength declined. There was a major change during this time in the supply of an input which had remained fairly constant throughout the history of the industry, labor. The Wagner Act of 1935 and the Fair Labor Standards Act of 1938 forced milling organizations to recognize the right of workers to organize and eventually shorten workdays and workweeks. Overall, these changes combined to increase the bargaining power of suppliers and increased industry competition.

The consolidation of the industry also continued. As firms decreased in number the remaining firms became closer in size. The industry, for reasons to be explained in the following paragraphs, also lost a large percentage of its export business. According to the Porter model, this would lead to greater industry competition, and this was the case in the industry during this period.

As might be expected, the external environment was extremely turbulent during this time. Changes, particularly in the political sector, affect the industry still today.

The enactment of a great deal of pro-labor legislation has already been mentioned, but there were other important legal changes. The revised Federal Food, Drug, and Cosmetic Act of 1938, among other things, gave the federal government the power to inspect flour mills. Industry leadership also worked to establish one of the first federal product definitions for flour. The New Deal put wheat prices at artificially high levels in order to

assist the American farmer. The milling industry was forced to reflect this increase in input costs in their flour prices. Since U.S. prices were above world levels the milling industry lost 2/3 of its export business. Firms were forced to concentrate more on the domestic market, dramatically increasing competition (Steen p. 83). A millers tax of 30 cents per bushel was also passed by Congress in 1933. Costs were passed on to the consumer, and in 1936 the tax was declared unconstitutional. This combination of government intervention made market activities difficult.

A major social change came in response to the reduced standard of living many Americans experienced as a result of the Great Depression. Since the diets of many were nutritionally insufficient, millers felt pressure to add vitamins and minerals to flour. The production of enriched flour came in response to this need.

The economic problems of the 1930's also affected some of the milling industry's biggest customers. There were numerous insolvencies of commercial bakeries during this time, and collection on accounts from those still in operation was often difficult for the milling firm.

There was little in the way of milling technological innovations. During the Depression years funds available for research where scarce, and in the years that followed most capital was put towards the war effort.

Three of Porter's Drivers of Industry Evolution seem especially prevalent during this period. The enrichment of flour

was a major product innovation. The exit of the small firm continued, and even accelerated during these years. Of all of these though, changes in government policy were certainly the most pronounced.

The milling industry was challenged by the years of the Great Depression and World War II. The loss of exports experienced during this time was probably the most devastating change. As firms were forced to turn back to their domestic market for sales, new product and marketing innovations were fueled and diversification into new areas became more attractive. Archer Daniels Midland entered the flour milling industry full-force in 1933 with the acquisition of the Commander Larabee Co. Commander Larabee was a group of some 15 mills that could be traced to about 1898. It had been suffering from lackluster performance throughout the 1920's, but at the time it was ranked third in total production of flour (Steen p. 315). Commander Larabee was operated as a separate division of ADM, and several years later its name was changed to the ADM Milling Co. The 1930's were extremely important to ADM's soybean operation. ADM researchers discovered a way to extract lectin, an important food additive, from soybean oil.

The 1930's and 40's were a period of both controversy and prosperity for Cargill. In 1938 Cargill was accused by the Chicago Board of Trade of, if not illegal, at least ethically questionable actions in the trade of corn positions. Whether or not Cargill's actions were merely hedging or speculative was never really determined, but none the less Cargill was banned from the C.B.O.T.

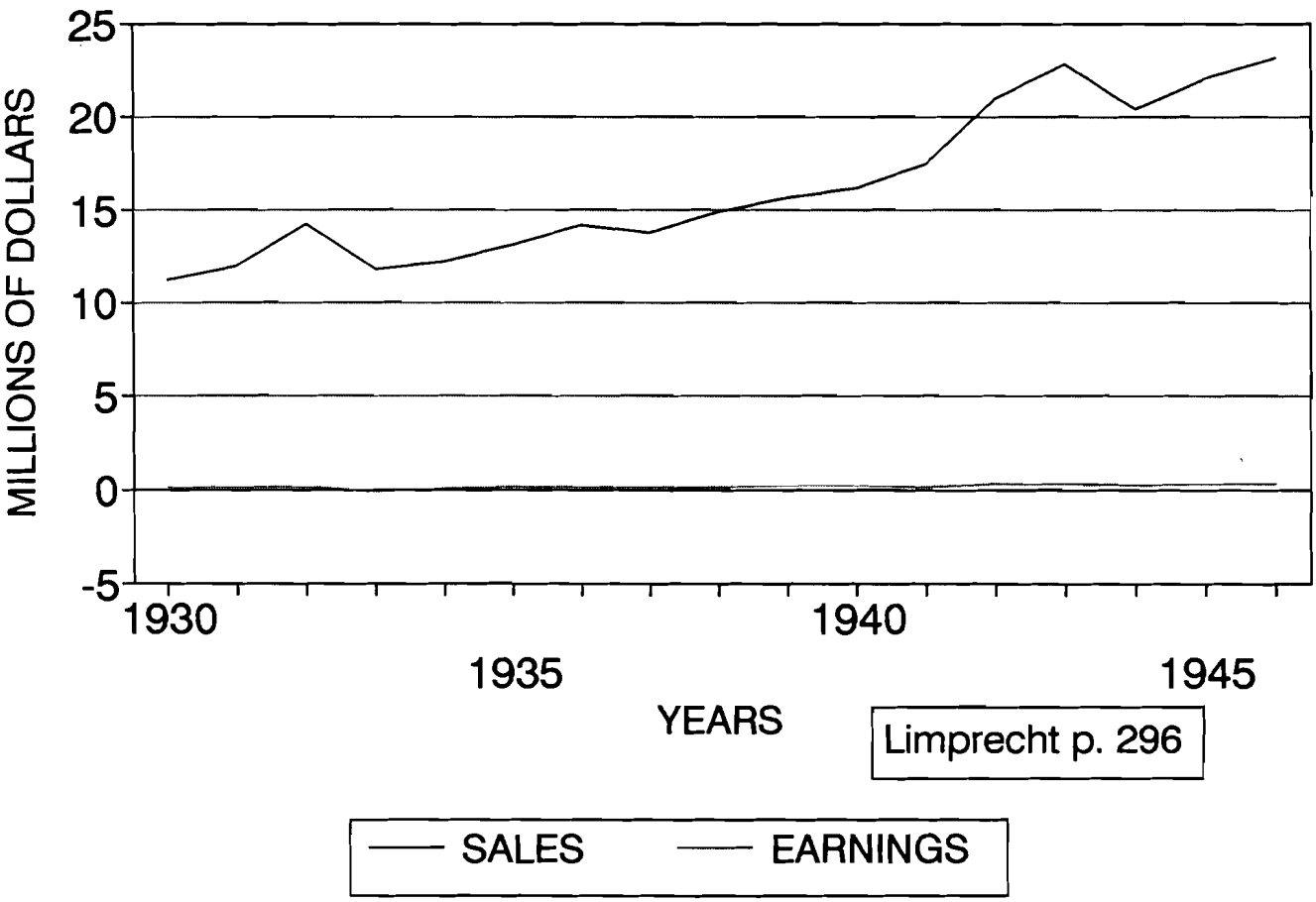
Cargill also entered the formulated livestock feed market at this time with its "Blue Square" label, and began work with soybean meal. Cargill began production of its own fleet of boats during the 1930's to, as Cargill MacMillan said, "keep the boat owners honest" (Broehl p. 558). This proved to be a large source of revenue when the company was contracted by the U.S. Navy to construct ocean going freighters for the war. Though Cargill was restricted in many of its U.S. operations during this time, it was able to diversify and expand its operations internationally enough to remain profitable all but one year during this period (p. 558). Though still only a minor player in the milling of flour, the company was divided into grain warehousing, sales, country elevator, shipbuilding, seed, and administrative and financial divisions by the end of W. W. II. (p. 676).

During this period Nebraska Consolidated Mills concentrated on its family (brand) flour sales and the development of its commercial bakery flours. The company was one of the first to utilize the new "daylight construction" style of mill architecture (Limprecht p. 38). This method utilized natural lighting and good ventilation through large windows and a sturdy, fire-proof frame. N.C.M. also anticipated new population trends in the Southeastern U.S. and located its first out of state mill in Decatur, Alabama in 1941 (p. 44). Like Cargill, it diversified into formula feeds through its "Red Hat" label. Company sales and earnings are shown during this period in Figure 4 (p. 296).

General Mills continued its expansion into consumer foods

FIGURE 4 CONAGRA

SALES & EARNINGS 1930-1946

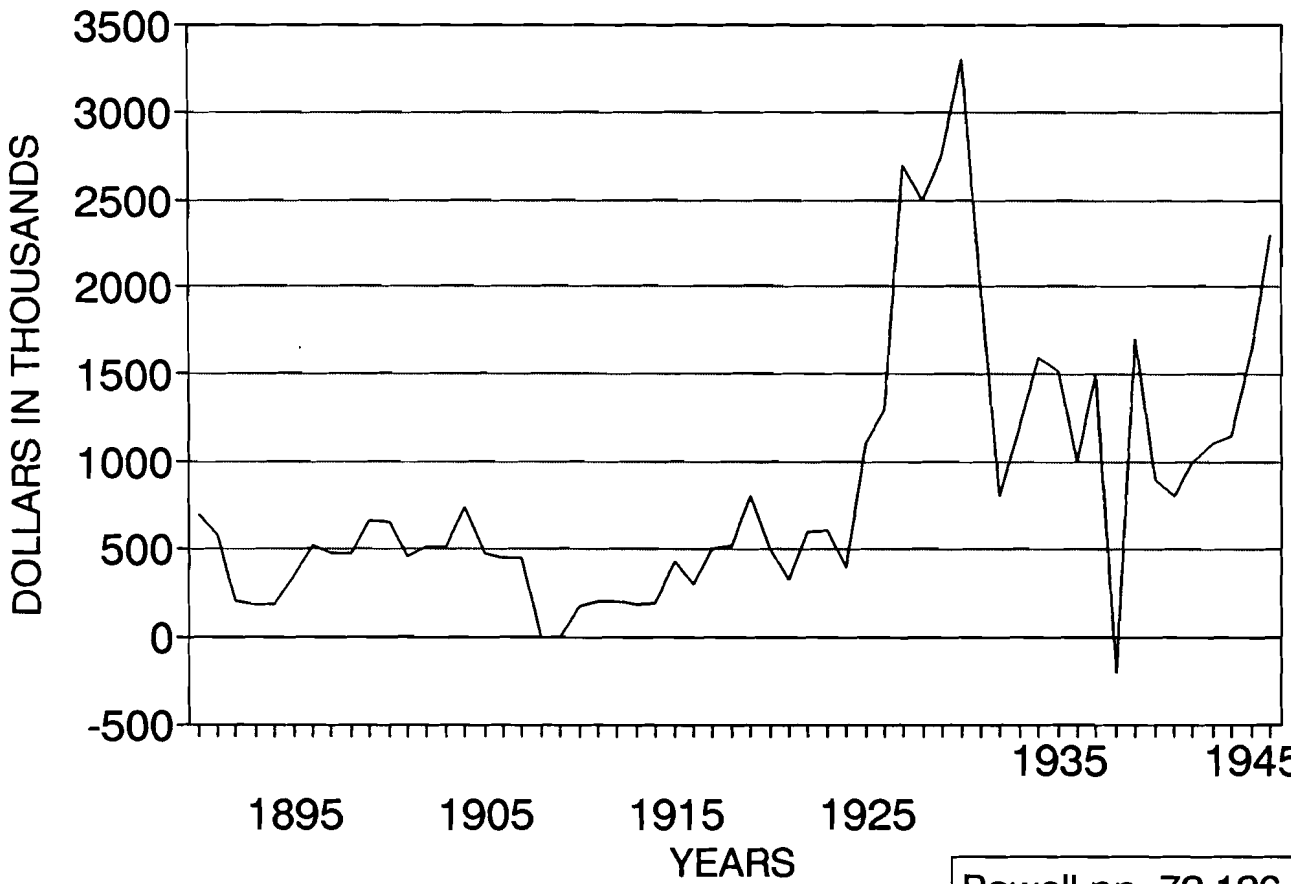


during the 1930's and 40's and still maintained a strong presence in the milling industry. Bisquick, a multipurpose baking mix, and Cheerios breakfast cereal were among the most successful of the new products introduced during this time. The "Breakfast of Champions" Wheaties slogan was also born during the 1930's. General Mills sponsored its first radio baseball broadcast in 1933 and its first television commercial six years later (Big G Cereals Advertising and Promotion Highlights p. A33). New sources of profits allowed General Mills shareholders to receive dividends throughout this period (General Mills Highlights A15). The company diversified into soybeans in 1941 and soon after established its chemical division. Everything from numerous food rations to torpedo directors was produced by General Mills for the war effort. By 1945 the company was approximately 75% milling and 25% consumer food products (Change and Continuity p. 3).

Though Pillsbury had recovered from its financial problems of the early 1900's, the company saw little growth during the 1930's and experienced several severe labor problems. Pillsbury net profits from 1890 to 1946 are shown in Figure 5 (Powell p. 72,126). The company was to a large degree, solely a milling operation, and the company's performance reflected the cycles of the wheat market. In 1940 Philip W. Pillsbury became president of what Powell described as "neither a promising or a progressive organization" (p.131). The company soon established a feeds division, and under the leadership of Philip Pillsbury a post-war planning committee was established shortly after the attack on Pearl Harbor.

FIGURE 5 PILLSBURY

NET EARNINGS 1890-1946



Powell pp. 72,126

Pillsbury had ignored new sources of growth for too long, and was now forced to catch up with its competitors.

IV. Reconstruction (1947-1970)

With the world no longer at war, the process of rebuilding was begun. Much of Europe's food processing capabilities were destroyed during the war years. American firms supplied most of the flour demands for Western Europe in the years which immediately followed. As Europe began to regain its own milling capacity closures and consolidations in the industry resumed. Once again those firms which hoped to survive felt pressure to expand into new areas for profits and growth.

The threat of new entrants would appear to be minimal, if not completely nonexistent during this time. World markets declined as European reconstruction progressed. With this came a new round of mill closures. In a five year period from 1948-1953 the industry lost 132 plants of various sizes (Steen p. 98). There were other reasons for the reduction in the number of mills during this time. Milling techniques were becoming more perfected, and with consolidations came an increase in the number of mills able to produce large volumes of flour. Economies of scale became a sizeable entry barrier during these years. On the basis of this information alone we would expect industry competitiveness to decrease.

The bargaining power of buyers, particularly commercial

bakeries, increased. As the baking industry grew, its purchases became larger relative to sales of the milling industry. Flour as a product also became less differentiated. By 1960 commercial baking was purchasing 75% of all flour (Steen p. 99). Steen commented on this period saying, "During those years, milling was being transformed from the production and merchandising of consumer goods, at least in large part, into becoming the maker of raw materials for secondary processors." (p. 160). As products became less differentiated, switching costs disappeared and greater information became available to the buyer. Porter would expect these factors to contribute to a greater level of industry competition.

The typical American continued to consume less flour during these years. Per capita wheat flour consumption was 155 lbs. in 1940, 135 in 1950, and 119 by 1960 (Steen p. 94). The importance of meat in the American diet increased during this time. This explains the entry of many milling firms into meat and poultry operations. As the threat of substitutes increased, so did industry competition.

It is difficult to determine the bargaining power of suppliers during this time. Wheat production fell slightly after rising to record levels in response to the war effort. The government was still enacting a fair amount of pro-farmer legislation. However, none of these changes were large enough to truly effect the power of the suppliers as a group during these years. This did little to either decrease or intensify industry competition.

Porter would expect the rivalry between existing firms to increase during the years that followed W. W. II for several reasons. Among the most important would be considered the slow level of industry growth and the increasing lack of differentiation and switching costs.

There were numerous changes which occurred during this time in the external environment. Many patterns in the industry developed during these years that have only begun to change as we approach the 21st century.

In the political/legal area the milling industry and the federal government continued their battle over wheat price controls. Though these regulatory policies may have been useful during the Great Depression and war years, many were beginning to question their value. John Cargill, Jr. expressed his opinion on the debate by stating, "We will never have a sound economy until there is a wide realization that a managed economy will not work." (Broehl p. 777). By the 1950's the Administration appeared willing to utilize a more free market system of price determination. The Communist Revolution caused the loss of the Chinese flour trade, particularly hurting those American mills which had been organized on the west coast specifically to facilitate trade with the orient. This period also saw the establishment of the European Economic Community in 1957. This alliance was designed to promote the economy of Europe, and it would become important in terms of U.S. flour exports in the years to come.

During this time there were few major changes in either social

or technological areas as far as the milling industry was concerned. Flour consumption continued its slow but steady decline. There were few major changes in processing technology. Technological changes effecting the industry were mainly in communication (first facsimile machine) and transportation (improved bulk railcars and trucking).

The economic recovery of the world had major implications for the milling firms which had thrived on the world's hunger in the years immediately after W. W. II. The loss of much of the flour export market and the subsequent closure of over one hundred firms mentioned earlier demonstrates the effects of this occurrence. As the American economy began the boom of the 1950's and 60's milling profits were growing, but not at the rate of the rest of the economy. Traditional milling profits fluctuated slightly, but they neither exploded with the booms nor plummeted with economic downturns (Steen p. 101).

Many of Porter's Drivers of Industry Evolution were present during this time. The rise of the commercial baking industry was a major change in the type of buyer segments served. As the world became more politically and economically stable there was an obvious reduction in the uncertainty of the business environment. Government policy changes came in the form of a reduction of price controls.

From 1947-1970 the milling industry settled into a slow growth pattern in which it appeared likely to remain for years to come. Major diversifications took place during this time within the

industry. By 1970 those firms which remained were typically participating in a wide range of areas such as grain storage, grain merchandising, formula feed manufacturing, flour mixes, refrigerated dough, soybean processing, and agricultural chemicals. A quick look at this list reveals that the companies selected in this study were competing in some of these areas years before this period.

Though it experienced some difficulties during this time, Archer Daniels Midland expanded not only its milling operations, but also its chemical and soybean operations. The newly formed ADM Milling Co. was a strong presence in the industry and sold almost entirely to commercial baking operations (Steen p. 263). The chemical division seemed a promising area during these years, but it was actually incurring losses by the end of the 1960's. As this period ended ADM management recognized the importance of soybeans as an edible source of protein in the years to come. Large capital investments were made in this area as the 1970's began.

As the 1950's began Cargill saw little opportunity in its domestic markets and decided to concentrate its efforts internationally. Successful attempts were made to increase its share of the world market in grains, edible beans, and other commodities. The company also began the commodity trade of salt. While Cargill's efforts in the American market were small, they were important. In response to American's increased meat consumption, Cargill entered the broiler chicken industry in 1965. It expanded both its poultry and international operations with a

joint venture with the Korean government in 1968. The company also originated the idea of the "rent a train" that year. By renting an entire 115 car unit the company saved a tremendous amount on transportation costs. Through this operation midwestern grain and oilseeds were hauled from Gibson City, IL to Baton Rouge, LA for export to international markets.

Nebraska Consolidated Mills also diversified during this period into new areas, but expanded its milling operations offshore as well. The 1950's saw an increase in the number of women in the work force. In response many food products that claimed to be labor-saving were introduced. As Limprecht says, "Nationwide a number of companies marketing packaged cake mixes to give housewives the satisfaction of home baking with less of the time-consuming fuss. The trouble was, the cakes didn't taste like much." (p. 51). N.C.M. researchers perfected a quality mix, obtained the endorsement of a well known food critic at the time, and introduced Duncan Hines cake mix in 1951. The product was a tremendous success. The company set an initial yearly sales quota at 100,000 cases and sold six times that in the first six months (Limprecht p. 57). The cost of marketing a highly visible consumer food product began to catch up with the company, however. In 1955 Duncan Hines mix constituted 2/3 of N.C.M.'s total sales, but it also had an advertising budget close to the entire company's net worth (p. 66). Shipping costs were also high, and the rest of the industry was beginning to catch up. The brand was subsequently sold to Procter & Gamble in 1956 for an after tax profit of

approximately one million dollars.

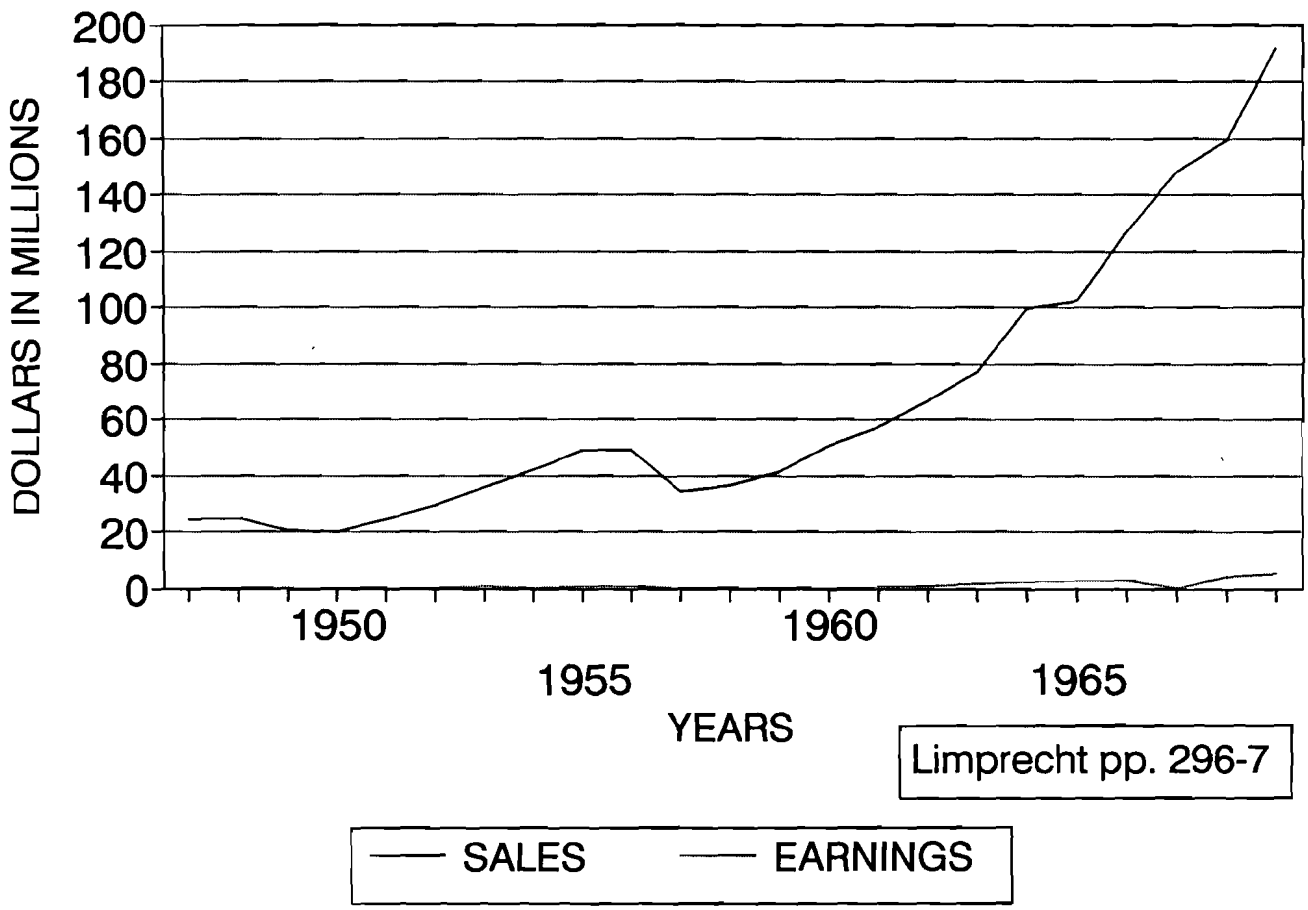
The company also expanded its more traditional operations during this time. In 1959 flour milling operations were opened in Puerto Rico. Though they initially lost money, by 1966 they were producing 1/2 of Nebraska Consolidated Mills' profits (Limprecht p. 79). Poultry operations were opened and quickly expanded, and the sale of formula feeds in Spain was initiated. By 1967, the company's 50th birthday, average earnings on common equity were around 21%. Between 1959 and 1969 earnings per share compound growth rate was 20%. The three largest sources of company profits at the end of this period were 40% flour, 24% feed, and 21% poultry (p. 96). Figure 6 shows Nebraska Consolidated Mills profits and earnings during this period (p. 296-7).

General Mills initially pursued a similar course. In the late 1940's the company introduced a variety of Betty Crocker food products, including pie crusts and desserts. Like other industry leaders it also began to search for new growth outside the U.S. and found it in Canada, Venezuela, Guatemala, Mexico, and Nicaragua.

The 1960's brought tremendous changes to the General Mills organization. 50 Years of Growth and Service, a corporate history, states "we were unlikely to grow and prosper in some of our most cherished and historic product lines." (p. 26). Questioning the company's reliance on commodities and feeling pressure to expand growth into new, more profitable areas, it closed its animal feed, electronics (mechanical), and 1/2 of its flour milling divisions

FIGURE 6 CONAGRA

SALES & EARNINGS 1947-1969

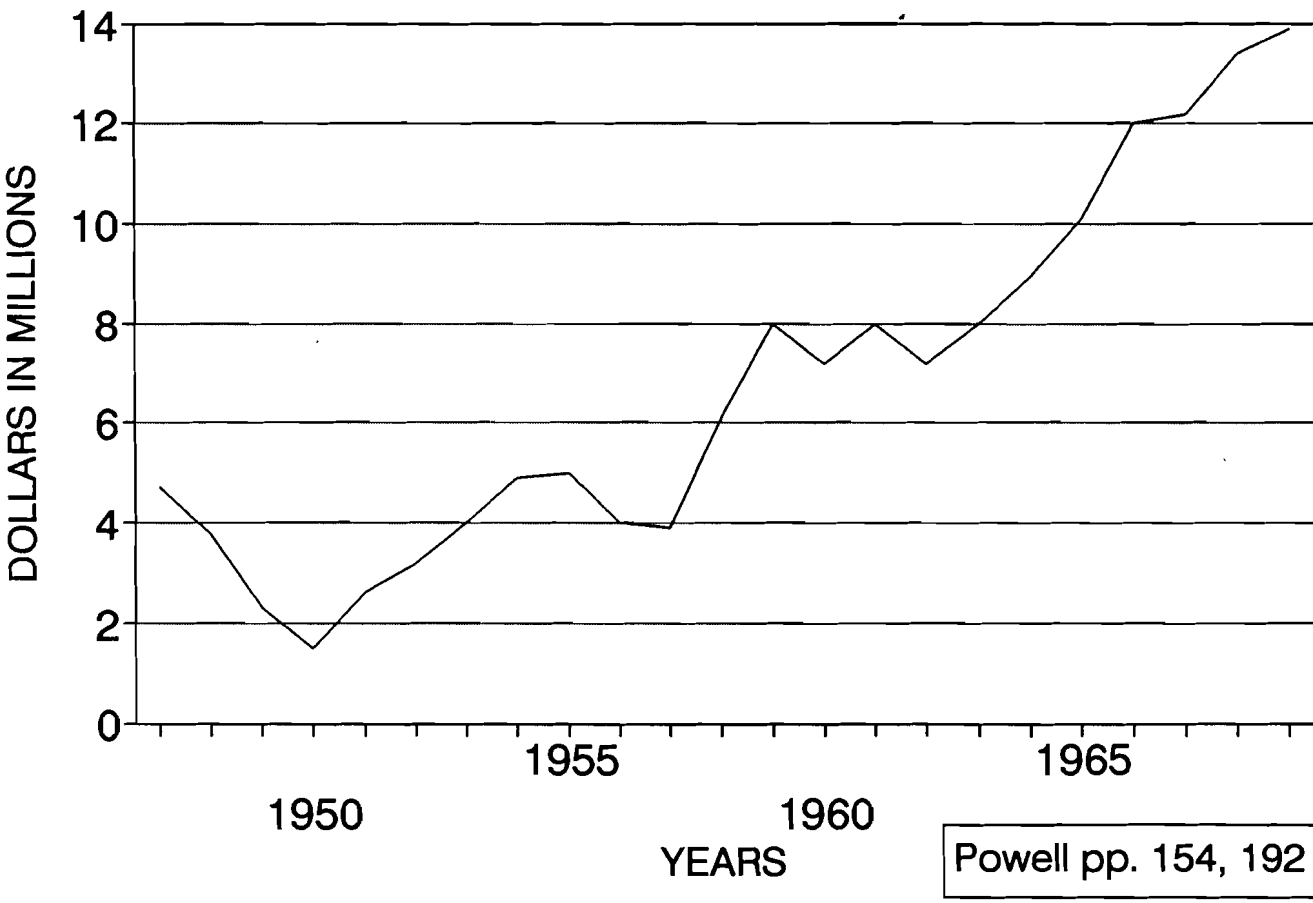


during this decade (General Mills Historical Highlights 15A). Diversification was then pursued in five major areas, consumer foods, toys, fashion, specialty retailing, and restaurants. Consumer foods made up approximately 45% of sales and 76% of earnings during this period (Change and Continuity p. 4).

The Pillsbury Co. entered this period with a three-fold plan for diversification and growth, 1) compete successfully in consumer foods, 2) develop major new markets in the U.S. and Europe, and 3) undertake nonfood acquisitions (Powell p. 153). The company introduced several new food products such as refrigerated dough and potato dinners in the 1950's. There was also a renewed emphasis on Pillsbury's flour. Pillsbury attempted to become the efficient, low cost producer in the industry and increase its bakery sales (p. 177). The company expanded its milling operations in Europe, Australia, and the less developed countries of South America. In 1965 the Pillsbury regained its position as the largest American flour miller. In keeping with the company's restaurant goals, Burger King was purchased in 1967 for over 19 million dollars. In 1969 the company celebrated its 100th birthday with $569 million in sales and $14.4 million in profits. Financial performance during this period is shown in Figure 7 (p. 154,192). Sales could be broken down into 43% consumer food, 35% agricultural products, 14% international, and 8% Burger King (p. 185). In contrast to General Mills, diversification at Pillsbury did not come at the expense of more traditional lines of business.

FIGURE 7 PILLSBURY

NET EARNINGS 1947-1969



Powell pp. 154, 192

V. Approaching Century's End (1970-1991)

This final period was a time of both failure and renewal for many of the milling industry participants. As unrelated diversifications began to fail companies were forced to reexamine business strategies. The 1970's and 80's also saw a changes in American health concerns which proved to benefit the industry in unexpected ways.

Continuing in the established trend, the threat of new entrants was practically nonexistent. Acquisitions of those smaller milling operations which had remained independent up until this time were made by the industry giants. According to Josh Sosland, in 1991 the four largest producers of flour, in order, were ConAgra, Cargill, ADM, and General Mills. The top 3 companies account for between 60 and 75% of total production. Under normal conditions, economic theory would expect this arrangement to lead to an oligopoly. Other factors have combined however to keep this industry at a level of intense competition.

The bargaining power of buyers increased over this period of twenty years. The purchase of flour by households continued to decline as the percentage of flour going to the commercial baking industry increased. Flour could be considered effectively undifferentiated, a true commodity. Switching costs were few in terms of loss of quality or time in selecting a new supplier. The amount of information available to buyers had never been greater. According to the Porter model this would bring about a definite

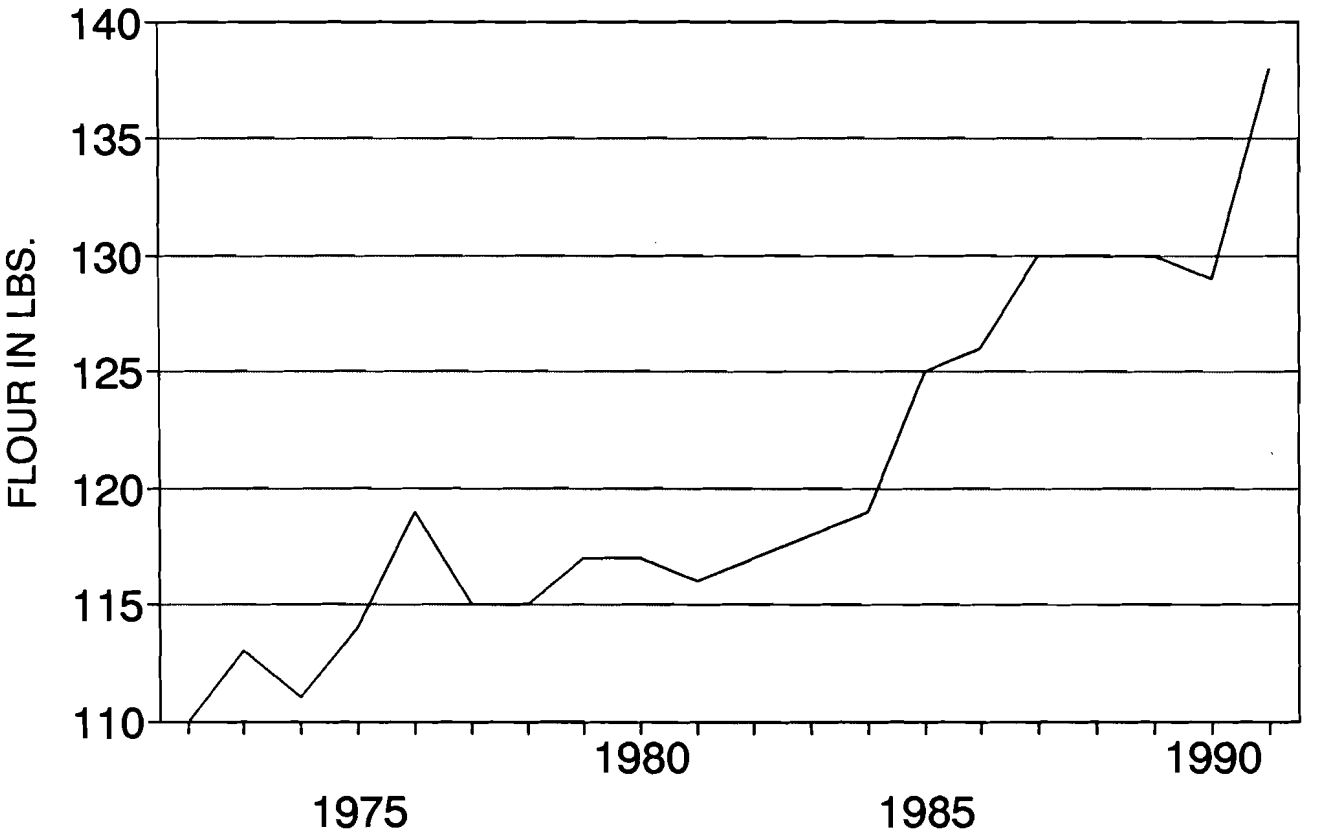
increase in industry competition.

The change in the threat of substitutes during this time is extremely important, in fact Josh Sosland considers it to be the most important change in the industry since the Milling Revolution. Figure 8 shows American per capita consumption of flour from 1972 to 1991 as reported by Sosland. As the graph shows, in the 1970's average consumption of flour began to increase once again after nearly a hundred years of decline. This occurrence went against a pattern that had existed for literally centuries in many different societies and obviously had major implications for the industry. American millers could actually expect market growth. As flour consumption increased it would appear that the threat of substitutes was decreasing, and thereby decreasing industry competition.

The bargaining power of suppliers drastically changed during the early 1970's. Between 1972-73 the Soviet Union secretly entered the American commodities market and bought up large amounts of soybeans, wheat, and other grains. This action sent a wave of panic through the market (Limprecht p. 7). Figure 9 shows Chicago Board of Trade wheat futures prices from 1966 through 1991. In the years before the Soviet purchases wheat prices typically fluctuated between 30 and 40 cents per bushel, per year. The graph shows the panic that ensued in the years that followed. Prices on average now fluctuate between $1.50 and $6.00.

Before this time risks in input acquisition were slight. After 1973 firms were forced to become proficient in the futures

FIGURE 8 UNITED STATES
PER CAPITA CONSUMPTION OF FLOUR



Josh Sosland : Milling & Baking News

FIGURE 9


CHICAGO WHEAT
MONTHLY FUTURES
650
¢ Bu.
600
550
500
450
400
350
300
250
200
150
1966
1967
1968
1970
1971
1973
1975
1978
1983
1988
1993

markets in order to limit their risk exposure. Dr. Rick Whitacre feels this has been the greatest challenge to milling industry participants in the last half of the century.

As the market for wheat and wheat flour expanded the bargaining power of buyers decreased slightly. This change would be expected to decrease industry competition in Porter's model.

Rivalry among existing firms intensified during the 1970's and 80's. Factors in the Porter model which contributed to this were high exit barriers, equally balanced competitors, and lack of differentiation and storage costs.

Changes in the external environment both threatened and nurtured the milling industry during this period. Successful firms adapted to hostile changes and capitalized on beneficial ones. The federal government was in and out of the agricultural sector throughout most of this time. Examples of policies directly effecting wheat and flour prices are numerous. One of the more recent was the Export Enhancement Program of 1985, a subsidy program that was designed to make U.S. agricultural commodities more attractive to European Economic Community members. Sosland stated that this program was deficient because it did not include value added products such as flour.

The most important social change at this time for the milling industry was definitely the increase in per capita consumption of flour. Health conscious Americans became more concerned with fat intake during this time and less wary of starches. Michael D. Walter, president of ConAgra's specialty grains division stated he

sees a "new era of consumer interest in grains and fiber" (Milling and Baking News Jan. 30, 1990 p. 17). He also believes that this is not just a temporary change in the American diet saying, "The benefits of grains and fiber are there, and people are going to continue to eat healthy in the future." (p. 17). As demand for flour increased, an industry that appeared to be firmly in the maturity stage of the product cycle began to grow once again.

There were also changes in the economic sector which influenced the milling industry. The numerous recessions the economy experienced may have actually helped the industry, since during downturns in the economy consumers usually purchase less meats and more grain. Overvaluation of the U.S. dollar is clearly detrimental to American exports. This holds true for flour as well. It is the overvalued dollar that is at least partially responsible for the decline of flour exports during this period. According to Sosland exports today account for less than 10% of total flour production.

The technological area of the external environment did not undergo drastic changes, rather a more gradual refinement of existing processes. Faster, more reliable, and safer machines were designed. Working conditions at the average flour mill have improved dramatically since the turn of the century.

This final period saw the transformation of some milling industry leaders into giants. Some of these giants secured their positions in the industry, most likely for many years to come. It was also during this time that one former giant began to move out

of the industry.

In the July 1990 issue of Money magazine Richard Elam of Blunt, Ellis, & Loewi spoke of Archer Daniels Midland saying, "This is a company of small details. It does a huge number of things, and it does almost all of them extremely well." (p. 60). The company diversified heavily and grew in already established areas throughout the 1970's and 80's. Management saw the demand for processed soybeans expanding and bought up several operations at discounted prices. According to the company's Form 10K filed with the Securities and Exchange Commission ADM now employs 13,049 people and operates 136 processing plants in oilseed, corn, milling, and elevator operations. ADM financial performance and debt structure is shown in Table 2.

TABLE 2

ARCHER DANIELS MIDLAND

Financial Performance Data
(Source: ADM 1991 Annual Report)

	'91	'90	'89	'88	'87	'86	'85	'84	'83	'82
Sales	8468	7751	7929	6798	5775	5336	4739	4907	4292	3713
Earnings (in millions)	467	484	425	353	265	239	164	118	110	155

	1991	1990	1989
Net Earnings per share	$1.47	1.55	1.38
Weighted # of shares outstanding	312,819,000	311,724,000	

Capital Structure as of 9/30/91
(Source 1992 Value Line)

Total Debt: 1,242 million
Due in 5 Years: 215 million
Long Term Debt: 987 million
Long Term Interest: 80.5 million

Debt = 19% of Capital
Common Stock = 81% of Capital

ADM has been involved with the Soviet Union since the early days of the Cold War with soybean and wheat operations. With the fall of the communist party will likely come new and greater opportunities for growth.

Though Archer Daniels Midland might be better known today for soybean processing or amino acid production its presence and success in the flour milling industry should not be overlooked. Craig Hamlin, president of the ADM Milling Co., feels that flour milling is an important part of ADM operations. He said, "Our wheat flour milling allows us to compete in a very important area". Though milling does not offer as high as returns as some of the industries ADM is involved with, it is a stable one which is now providing moderate growth. ADM's presence in the industry is also growing. At the time of this writing ADM Milling Co. is acquiring

approximately 1/2 of the flour mills of the Pillsbury Co.

Once again the Cargill Corp. grew. Operations were expanded into cotton, beef, coal, steel, and metal processing during the 1970's and 80's. Even as early as 1972 Cargill was trading 1/4 of the entire United States wheat crop (Building on Tradition p. 35).

While Cargill's growth was impressive, it did not live up to the expectations of management. In the 1960's the company had hoped to double the company every 5 to 7 years. Cargill was not achieving these results. At the end of this period earnings were approximately less than 1% of sales (Youngblood p. 10). Profit margins have traditionally been small for commodity based companies, but the performance of Cargill was not acceptable. In order to return to past levels of performance the company began to diversify into three areas, 1) joint ventures into new foreign markets, 2) greater presence in consumer foods, and 3) dramatically increasing flour milling operations to take advantage of increasing per capita consumption.

Cargill initiated a series of mill acquisitions in the 1970's which today has placed it as the #2 producer of flour in the country. A Cargill publication, Sometimes Numbers Tell the Story reports Cargill produces enough flour to produce 8.6 million 1lb. loaves of bread each year (p. 3). Among Cargill's most recent expansions and acquisitions was the construction of a new mill in Stockton, CA, one of the nations fastest growing markets (Milling and Baking News Dec. 18, 1989 p. 8), and the acquisition of four Pillsbury mills in 1991 (Milling and Baking News Jan. 29, 1991 p.

1). Within a period of 20 years Cargill built a very solid milling division.

Much more changed at Nebraska Consolidated Mills than the company name during these 20 years. This time period saw the established milling firm at the very edge of bankruptcy and then grow to 20 billion in sales by the end of the 80's.

The company was renamed "ConAgra" in 1971, meaning "in partnership with the land" (Limprecht p. 98). Two years later, in 1973 the company reported a record profit of 6 million dollars. The next year the company incurred a 12 million dollar loss (Limprecht p. 3). The company was caught in a soybeans futures position when in 1973, in response to the panic caused by the Soviet's entry into the market, the U.S. Department of Agriculture arbitrarily canceled 1/2 of all soybean contracts in order to keep the U.S. supply. The Chicago Board of Trade then prohibited entry into old futures contracts. This locked the company into its old contracts, incurring a loss of 17 to 18 million dollars in soybeans alone for fiscal year 1974 (p. 3).

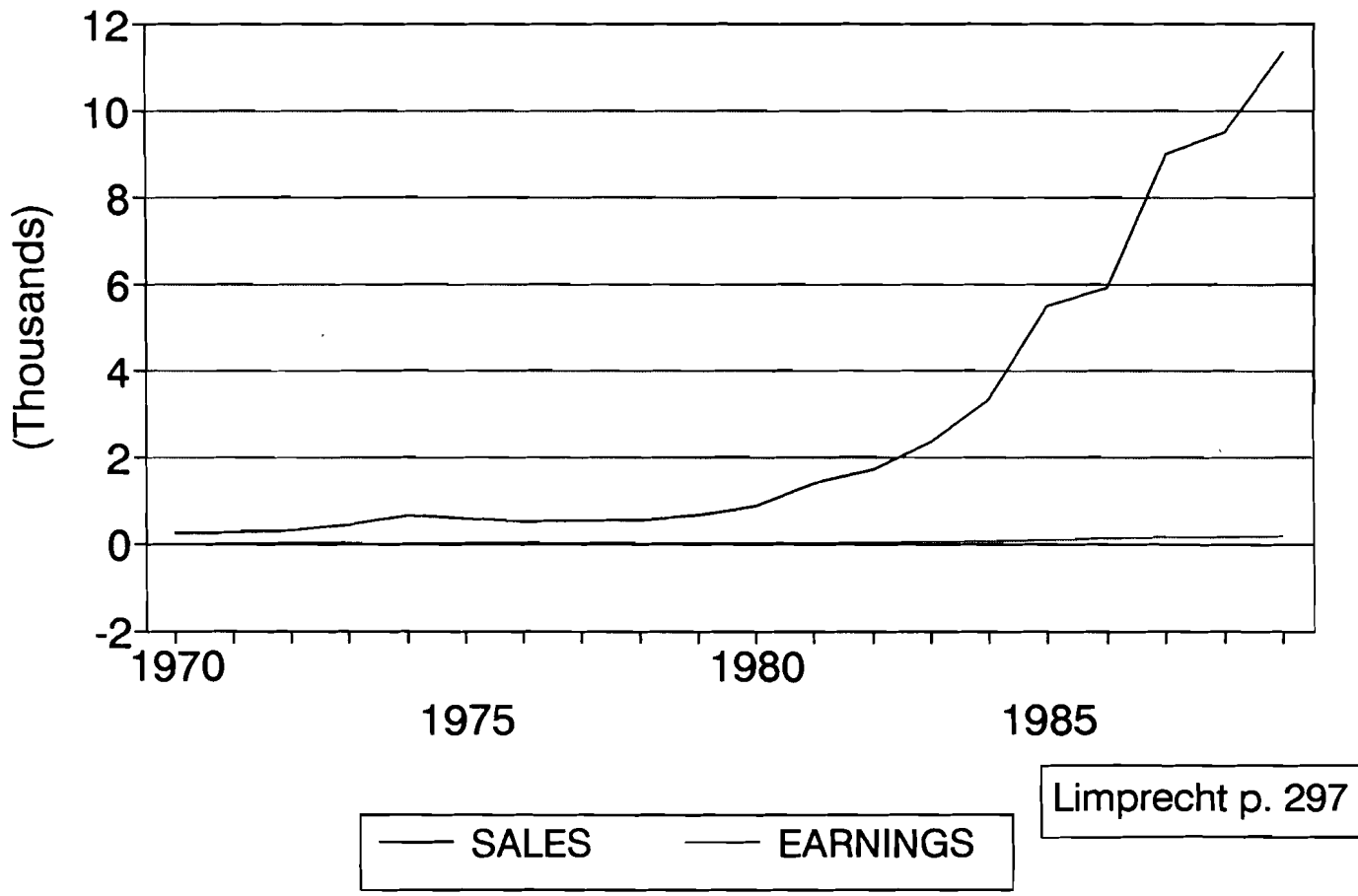
In 1974 Charles M. Harper became president of the ConAgra. His plan for revitalizing the company called for a general "belt tightening" and focusing on simple goals. Harper explained the company was placed in a unique position because ConAgra was in such bad financial shape. "It was sort of a question of what do you want to be when you grow up." he said. Harper stated that the company's goal was to become the "best earning food company in the United States". Decisions had to be made whether or not to remain

in traditional commodities with their dangers or move into new areas. In regards to this question Harper said, "We decided to stick with grain. Grain is a common thread through most food. With the exception of vegetables and potatoes, grain prices and supplies influence meat, breads, TV dinners, and ice cream."

With this plan in mind ConAgra began to rebuild its organization through both traditional grain operations and careful diversification into consumer foods. In 1981 the company acquired banquet frozen foods, and corporate sales reached 1 billion dollars. This figure reached 5 billion by 1986, when Morton, Chun King, and Armor Foods were acquired. ConAgra continued to grow in consumer foods, agricultural products, grain merchandising, and flour milling throughout the 1980's. The company's Healthy Choice line of food products, designed to provide low fat meals that still tasted good, became the number 1 selling premium frozen food dinner in less than 2 years (Liesse p. 53). The company reached 19.5 billion in sales in 1991. More ConAgra financial performance data and debt structure is presented in Table 3. Company sales and earnings from 1970 - 1989 are shown in Figure 10 (Limprecht p. 297).

FIGURE 10 CONAGRA

SALES & EARNINGS 1970-1989



Limprecht p. 297

TABLE 3

CONAGRA

Financial Performance Data
(Source: ConAgra 1991 Annual Report)

	'91	'90	'89	'88	'87	'86	'85	'84	'83	'82
Sales	19504	15501	11340	9475	9001	5911	5498	3301	2308	1709
Earnings (in millions)	311	232	198	155	149	105	92	63	48	33
Net Earnings Per Common Share	$2.13	1.87	1.63	1.29	1.23	1.02	.89	.69	.61	.56
Weighted Average of Common Shares Outstanding (in millions)	136.9	123.2	120.6	118.8	119.3	101.8	101.3	91.8	79.7	58.2

Capital Structure as of 11/24/91
(Source: 1992 Value Line)

Total Debt:	4,303 million	Debt=	47% of Capital
Due in 5 Years:	?	Preferred Stock=	8% of Capital
Long Term Debt:	2,112 million	Common Stock=	45% of Capital
Long Term Interest:	232 million		

Though consumer foods currently make up 77.1% of ConAgra's sales and 76.2% according to the company's 1991 annual report, flour milling is still extremely important to the company (p. 14). Mike Harper gave testament to this, saying, "Flour milling is the bedrock of ConAgra."

The 1970's found General Mills an extremely diversified organization. In consumer foods it was marketing Yoplait yogurt, Gorton's frozen seafood, and Chef Saluto Pizza. Kenner and Parker Bros. constituted the company's toy division. The clothing division held brands such as Izod, Monet, and Eddie Bauer. General Mills competed in restaurants with Red Lobster and York Steakhouse. The 1960's goal of diversification in order to escape some of the

risks of commodity based industries was achieved, but was not a success. General Mills soon found that marketing a Parker Bros. game or an Izod sweater was decidedly different from marketing Gold Medal Flour. The lack of experience in these new industries and the advertising drains of many highly visible brands soon became too great. The company divested many of its less promising and not surprisingly, unrelated operations during the 1980's and concentrated on those which it believed held the greatest growth possibilities, consumer foods and restaurants (General Mills Historical Highlights p. 15A).

Management developed a three part competitive strategy, 1) balanced diversification, 2) competitive industry positioning, and 3) aggressive consumer marketing (Change and Continuity p. 11). Bob Bratsman, General Mills Contract Manufacturing Manager, added, "General Mills has attempted to pursue benchmarking, becoming the low cost, quality producer in whatever industry they compete."

General Mills has successfully expanded both of its two basic segments in the past years. The acquisition of The Olive Garden chain of Italian restaurants has proven very successful. Restaurant sales reached 2.21 billion dollars in fiscal year 1991, up 15% from the year before. (General Mills 1991 Annual Report p. 14) Innovations have also occurred in consumer foods such as microwaveable breads.

In terms of flour milling, General Mills (#4 in terms of production) has attempted to gain more of the commercial baking industry market. The September 5, 1989 issue of The Milling and

Baking News reported, "Milling industry growth is concentrated in the baking flour segment" (p. 27). The company has also attempted to create differentiation by offering an oat blend flour to the commercial baking industry.

General Mills has been held in high regard by corporate analysts for many years. Duff & Phelps reported in their July 15, 1991 evaluation of the company, "We regard General Mills' food division as among the industry's finest, based on its above average record in new product development and unit volume growth" (p. 1). Table 4 shows current General Mills financial data and debt structure.

TABLE 4

GENERAL MILLS

Financial Performance Data

(Source: General Mills 1991 Annual Report)

	'91	'90	'89	'88	'87	'86	'85	'84	'83	'82
Sales	7513	6448	5620	5178	5189	4856	4285	5600	5550	5312
Earnings (in millions)	472	381	414	283	222	183	(72)	233	245	225
Net Earnings per common share	$ 2.87	2.32	2.53	16.3	1.25	1.03	(.41)	1.24	1.22	1.11
Weighted Average of Shares Outstanding (in millions)	164	164	163	174	177	178	179	188	200	202

Capital Structure as of 11/24/91
(Source: 1992 Value Line)

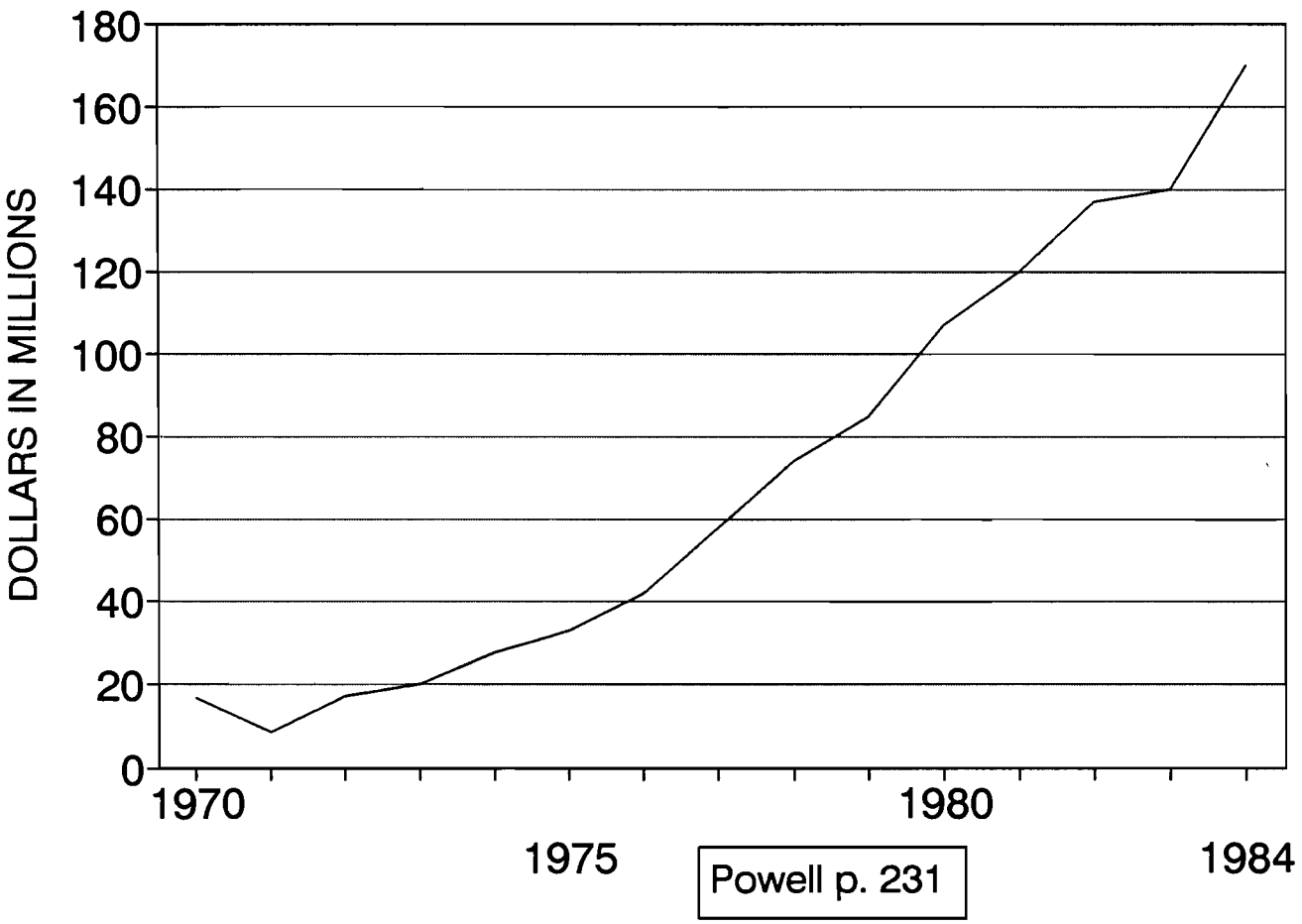
Total Debt:	1,110 million	Debt=	39% of Capital
Due in 5 Years:	445 million	Common stock=	61% of Capital
Long Term Debt:	821 million		
Long Term Interest:	67 million		

Pillsbury began this period with a wave of acquisitions designed to improve the company's lagging performance. The Steak and Ale restaurant chain, Fox Deluxe Foods, and the Green Giant Corp. were under Pillsbury ownership by 1978. Profits hit 2.16 billion dollars a year later (Powell p. 215). Pillsbury sales and profits are shown in Figure 11 (p. 231).

By the mid 1980's however there were signs that Pillsbury was in trouble. Pillsbury stock was consistently behind the industry average. Numerous marketing errors were also being made. For example, Totinos frozen pizza had a 33% share of the market at one point in 1987. Pillsbury decided to raise prices, and one year

FIGURE 11 PILLSBURY

NET EARNINGS 1970-1984



Powell p. 231

later Totinos market share had slipped to 18.2% (Business Week Mar. 14, 1988 p. 37). Pillsbury's hopes for Burger King also never materialized. The May, 1989 issue of Canadian Business summed up Pillsbury's position saying, "In recent years however, Pillsbury became better known for sloppy marketing, sluggish cost cutting, and constant management turnover." (p. 55).

According to Darwin Borden, former Vice President of Flour Sales and Marketing at Pillsbury, those in the very top levels of management took a dim view of all of the company's agricultural operations. Pillsbury budget allocations for maintenance and modernization of particularly milling operations reflect this lack of commitment on part of the company. Along with the rest of the company, Pillsbury's milling operations performed poorly.

In the years that followed Pillsbury eventually became a target for takeover. Several attempts were made, but the offer made by Grand Metropolitan, PLC of Great Britain of $60 per share (5.7 billion dollars) was finally approved in January of 1989. Grand Met believed that Pillsbury would strengthen the holding company's position in its three competitive sectors, beverages, food, and restaurants. Grand Met believes the key to revitalization of Pillsbury is brand building and brand advertising. In that light the company increased ad spending 60% across all businesses (Liesse Jan. 8, 1990 p. 7).

In regards to flour milling, Borden stated, "Grand Met decided that if Pillsbury wasn't going to be committed to the milling industry they would get out. I don't blame them." Numerous

closures and layoffs were initiated. The largest and most recent is the sale of about 1/2 of all mills to Archer Daniels Midland. The company that was either the number 1 or 2 miller of flour for over 75 years is today not even in the top 10.

CONCLUSIONS

There are few industries whose product is of such importance and seems, to the consumer, to have remained so unchanged for literally hundreds of years. This image of consistency is on the surface alone, however. These organizations have adapted to numerous and often hostile changes in their external and internal business environment. The industry leaders have also been forced to reposition themselves in order to weather trends which appeared dangerous and unstoppable, such as the decline in per capita consumption of flour and the massive consolidation within the industry.

Though their performance has varied from year to year, the level of success these organizations have achieved naturally suggests the formulation of effective business polices and strategies. The success of these companies can, to a large degree, be attributed to their effectiveness in 3 important areas.

1. Willingness to Utilize New Technologies

In any processing industry the discovery and adoption of any new technology that will allow you to produce your product better,

faster, or cheaper than your competition is a primary goal. In the milling industry especially, where profit margins have historically been low, any change that may save a few cents per cwt. is a major advantage.

The importance of the Milling Revolution and the innovations it offered industry participants should be obvious by this point. These firms (if they were involved in the production of flour at this time) were among the first organizations to implement the Evans automatic mill system, the improved middlings purifier, and the roller milling. Those firms which failed to utilize these new milling innovations not only lost customers to more technologically advanced firms, but they soon became targets for either sale or closure in the wave of consolidation which swept the industry.

Not all technological innovations important to the success of these firms came directly into the milling process. Cargill was one of the first organizations to utilize an important innovation in communication, the private telegraph. This technology allowed Cargill the information flow it needed to conduct commodity trade on a global level. Other innovations occurred in transportation. ConAgra, Cargill, and ADM improved their performance by utilizing improved rail, barge, ship, and truck transportation.

The recent sale of the Pillsbury mills to Archer Daniels Midland could be regarded as sign that industry consolidation has not yet ended. If this continues those firms such as ADM, ConAgra, and Cargill which appear to be well established in the industry will be forced to adopt new technologies in all areas to keep their

market shares from dwindling.

2. Successfully Adapting to Rapid and Numerous Changes in Federal Government Policy and the International Economy

The federal government has affected the milling industry since shortly after the signing of the Constitution. These actions have come in numerous forms, such as the artificial inflation of wheat prices during the New Deal and the Export Enhancement Program of 1985 mentioned earlier. In many instances these programs and others appear to have made the industry unnecessarily complicated. Management interviewed was asked what changes they would like to see on the federal level. Answers varied. Mike Harper of ConAgra responded jokingly with, "that they'd go away." Craig Hamlin of ADM commented, "We must be realistic and realize that the federal government is going to be present in some capacity. I would like to see approval of products (additives and pesticides) for use in the milling industry sped up. The lag in approval of needed changes is a major problem." Darwin Borden of Pillsbury believes that the main problem with federal government programs is a lack of consistency. "The government needs to decide whether or not it is going to be involved in the production and sale of flour." says Borden.

Borden believes the changing presence and magnitude of government intervention has resulted in a cycle which is very damaging to the industry. He explains that typically the government devises a new program, typically in the form of subsidies of some kind. Firms adjust their strategies to take the

program into account. Usually within a matter of a few years or even months the program expires, or funding runs out, and the program is dropped. Firms change their strategies once again usually just in time for the implementation of a new federal program.

The international economy has also challenged the industry. While traditionally foreign markets have provided opportunities for American millers, today these same opportunities can disappear quickly with fluctuations in currency rates or protectionist policies. The entry of the Soviet Union into the grain market was also an extremely important change. Dr. Whitacre of I.S.U believes it to be the most important since the Milling Revolution. The introduction of new and sizeable risk required major adjustments, including the development of the very difficult skill of commodity futures trading.

3. Careful Diversification Into Related Industries

In response to the uncertainty these firms face in a commodity based industry many sought to diversify into other areas. The successful companies appear to be those which were able to achieve a balance between expansion into new and different areas and maintaining a strong presence in their original business.

Both sides of the "diversify or stay" debate have benefits and dangers. Staying with the established business offers a familiar and perhaps safer environment. There are dangers to this course of action though. In the milling industry those companies which did not seek new sources of growth and profits through diversification

often found themselves facing closure or acquisition by larger, more diversified firms. Successful diversification is definitely a source of growth and profits, but these companies have learned that these undertakings must be made with a great deal of care. In new lines of business organizations often have little or no experience in the face of new challenges. This can often lead to less than desirable results.

The most successful diversifications have been achieved by firms which have 1) developed a primary line of business in order to obtain financial strength and accumulation of experience, 2) diversified into related businesses, and 3) maintained a strong presence in the primary industry. There are many examples of this in the milling industry. ConAgra built a solid flour milling operation, diversified into grain storage and trading, next to meats and poultry, and today with nearly 20 billion dollars in sales, produces not only commercial baking flour, but also animal feeds, fertilizers, Armor meats, Banquet frozen foods, and a wide variety of Healthy Choice brand consumer food products. Though their paths of diversification have been somewhat different, Cargill and ADM have evolved into companies similar to ConAgra, competing in many of the same areas.

Within these organizations there are also examples of unsuccessful diversification. Bob Bratsman of General Mills suggested his company overextended itself when it entered household appliances in the 1930's and clothing and toys in the 1960's. Both of these diversifications proved costly to the organization.

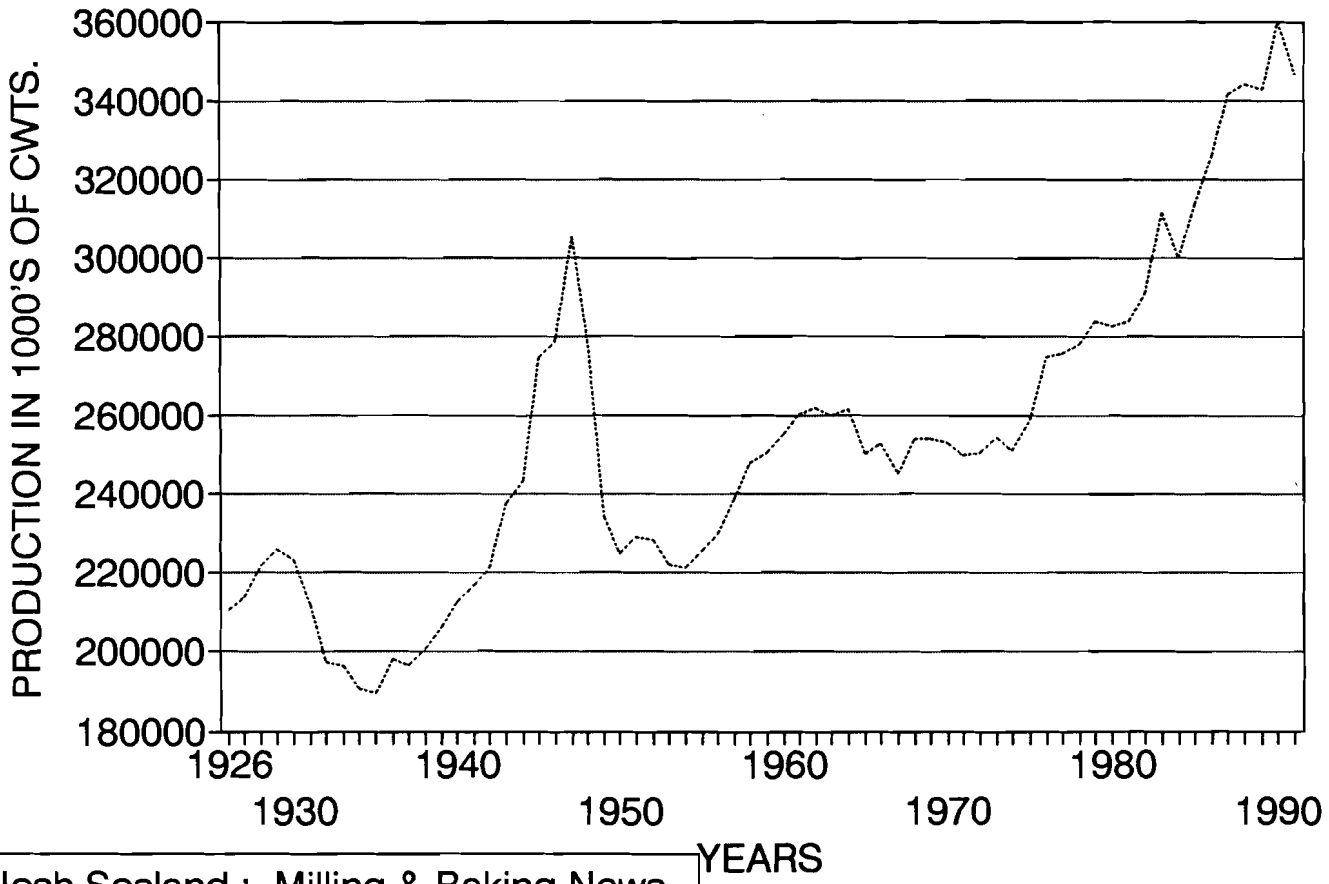
Although there is no specific data to point to, it is suggested that part of the problems the Pillsbury Co. has experienced in recent years could be due to its neglect of its primary industry, milling. Though agriculture operations typically do not offer huge profit margins, they do offer stability in the organizations industry mix. As Pillsbury lost flour customers it not only lost revenue, but also its presence in an important sector of the industry.

The success of the American milling industry can to a large degree be attributed to the success of what are today Archer Daniels Midland, Cargill, ConAgra, General Mills, and Pillsbury. Total U.S. flour production from 1926 through today is shown in Figure 12. The policy decisions made by these firms allowed them no only to survive, but grow in size and profits during a wide variety of environmental changes such as periods of great instability in their input markets, dramatic expansion and then contraction of international markets, and a powerful wave of consolidation which still appears to be effecting the industry today. Through diversification and continued focus on their primary agricultural industries these companies have become some of the most stable in American history.

What challenges the next 150 years will present to the milling industry no one can say. Quite simply though, regardless of any change in political idealogies or space travel, man will still need to eat. It is unlikely the importance of grains in the human diet will decline, and neither will the importance of this industry.

FIG. 12 U.S. FLOUR PRODUCTION

1926-1991



Josh Sosland : Milling & Baking News

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