SECTION 3: FINANCIAL IMPLICATIONS

For years, textbooks, brochures, bulletins, and other readily available publications describing the basics of futures markets have listed financing as one of the major economic roles that the futures market performs. The scenario is described like this: futures markets are capable of reducing price risks; hence, any firm that hedges or prices forward on the futures market ought to have reduced risks; a lender observing this should be willing to lend the firm more money than if it were not hedged; thus, hedging creates the opportunity for a firm to obtain larger loans and greater financial leverage.

In this section, Patterson with tongue in cheek and writing for a class, amplifies humorously, but effectively, the problem of whether a bank or lending agency should give larger loans when the firm is hedged, as opposed to when it is not hedged. In a hypothetical situation, Patterson describes the deliberations within the bank as its loan policy is reviewed and altered.

The financial leverage obtainable by the commercial firm from using the futures market can be quickly calculated. Patterson refers to the borrower being able to obtain a loan, if hedged, of 90 percent of the value of the commodity used as collateral, and if not hedged, 60 percent. If the commodity is valued at $200,000, the borrower could obtain a $180,000 loan if hedged and a $120,000 loan if not hedged. That is, if hedged, the borrower puts up $20,000 of his own money; if not hedged, $80,000 of his own; an increase by a factor of four in his financial leverage due to hedging. There is no upper limit to this increase in financial leverage if loans are at 100 percent of commodity value when used as collateral under a hedging program.

Unfortunately, empirical evidence to support the specific hypothesis that loan size depends upon a hedging program has been difficult to find. One test was conducted by van Blokland in 1974 and no evidence to support the hypothesis was uncovered. This test was small in scale but tended to confirm a rather general feeling that lending officers in small financial institutions are not familiar with futures markets, while their
counterparts in large financial institutions, such as major Chicago banks where multimillion-dollar loans to agricultural and agribusiness firms are processed, are familiar with futures markets and may require hedging programs by loan applicants.

In a second study done through a Chicago Mercantile Exchange Graduate Student Research Fellowship, Duke conducted an extensive survey of southeastern commercial banks (1977). Out of 362 banks selected for the study, 145 responded. Of those 145, 40 percent cited at least one customer hedging program, but only 22 percent indicated willingness to participate actively in a customer's hedging program. One could infer that in a much smaller percentage of the cases the size of the loan would be a function of whether or not the customer hedged. About 14 percent of the banks did make funds available for margin maintenance. The survey further indicated a positive correlation between the size of the bank and the likelihood that it would have a hedged loan in its portfolio. The Farm Credit System appeared more committed to encouraging a hedging program than did commercial banks.

Due to the volatile agricultural-price fluctuations of the mid-1970s (the time period between the two cited studies above), and with the introduction of the interest-rate and foreign-currency futures markets, evidence indicates a growing awareness and desire for information concerning this financial role and potential financial leverage. Commodity exchanges are conducting programs for lending officers, popular publications and magazine articles describing the use of futures markets to lenders are appearing, and university extension personnel dealing with lending institutions report an intense desire for knowledge about the use of futures markets. The Duke survey indicated 83 percent of the responding bankers “willing to promote the practice of hedging if they could be convinced of its soundness as a financial tool for agribusiness (and credit) management” (Duke, 1977, p. 51). At least one speech in print (Hauenstein, 1975) indicates how a lender uses a hedging program with one of its clients.

Related academic literature is also emerging. Barry and Willmann (1976) developed a multiperiod risk-programming model to evaluate forward contracting and alternative financial choices when external credit is rationed and market risks are involved. Ikerd (1978) presents a theoretical argument that if price risks are reduced producers will increase production. This has significant implication to lenders and to firms in gaining access to credit. In a bulletin designed for lenders, Leuthold and van Blokland (1979) describe the use of futures markets, how lend-
ers might evaluate hedging possibilities connected with a loan application, and how the lender might participate in the hedging program.\(^1\)

Whether or not loan size will ever become a function of the applicant's participation in a hedging program involves at least a minimum understanding of the commodity futures market by the lending officer, and a demonstration that risks can be reduced for the firm through the hedging operation. The understanding comes through education, and the answer to the latter problem is left to researchers.\(^2\) Efforts in both areas are needed and increasing.

\(^1\) For a discussion on a different, but related, aspect that recognizes futures contracts as financial instruments, see Telser and Higinbotham (1977).

\(^2\) An example of a study testing whether or not forward pricing reduces risks is Leuthold (1975).

REFERENCES


Leuthold, R. M. \textit{Actual and Potential Use of the Livestock Futures Market by Illinois Producers}. University of Illinois, Department of Agricultural Economics AERR-141, 1975.


The Worth National Bank of Sioux City

Harlan Patterson

The Worth National Bank is located in Sioux City, Iowa, which is situated on the Missouri River at the heart of the grain and livestock agricultural belt of the U.S. Sioux City's population is approximately 85,000 (metropolitan area population is 130,000). Sioux City businessmen trade by water with ports on the Gulf of Mexico and those on the Great Lakes because of their central location on the inland waterway system of the U.S. The city is also served by a flexible transportation system consisting of five major railroads, two airlines, and a number of short- and long-haul trucking companies.

Six banks and three building and loan associations provide most of the financial services for Sioux City. These six banks held total assets of $316,706,381 at the end of 1970.

BACKGROUND INFORMATION ON THE WORTH NATIONAL BANK

In August, 1883, Sterling B. Worth, Sr., founded the Worth Bank of Sioux City and the bank operated under a charter granted by the State of Iowa for 82 years.

In July, 1965, the management of the bank received a federal charter and the bank's name was changed to the Worth National Bank.

The Worth family has played a dominant role in the management of the bank since it began. Sterling Worth, Sr., relinquished the bank presidency to his son, Sterling Worth, Jr., in 1925. Worth, Jr., held the presidency until 1962, when he became chairman of the board so that his own son, Sterling Worth III, could take over the presidency.

A number of public issues of capital stock had substantially reduced the ownership interest of the Worth family in the bank. At the end of 1970, the Worth family owned only 2,900 of the 10,000 shares outstanding. However, the other five directors of the bank owned another 23 percent.

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Ed. note: The people named in this article are purely fictional.
of the shares outstanding. Since these five directors were closely allied to
the Worth family, both socially and in business affairs, the Worth family
was able to maintain effective working control of the bank, even though
it held only 29 percent of the total shares outstanding.

By the end of December, 1970, total assets of the bank were $30,020,800,
representing a substantial amount of growth since the end of 1883 when
total assets were only $40,000. Over the most recent decade (1960-70),
total assets of the bank had grown at an average annual rate of about 4
percent.

The bank's growth over the period 1883-1953 was almost entirely at­
tributable to agricultural loans — i.e., loans to farmers and to agribusi­
ness firms dealing in livestock and grain products. However, the steady
development of industry and manufacturing in Sioux City and the sur­
rounding area had somewhat reduced the relative importance of agri­
cultural loans made by the Worth National Bank. For fiscal year 1970,
loans to farmers and to agriculture-related firms constituted about 60 per­
cent of the total loan portfolio of the bank. The other 40 percent of total
loans in 1970 represented credit to nonagricultural users — particularly
to firms involved in metal fabricating, machinery manufacturing, and
chemical production.

Despite the decreasing relative importance of agricultural loans, the
Worth National Bank still prided itself on being a "farmer's" bank and
was closely attuned to the needs of agriculture. The top management of
the bank felt that the needs of farmers and agriculture-related industry
would be (and should be) the major source of loan demand for the next
25 to 30 years.

THE BOARD OF DIRECTORS MEETING, JANUARY 29, 1971

This attitude about agriculture on the part of the directors and top
management of the bank was cause for considerable alarm when the
directors met on Friday, January 29, 1971, to review the bank's financial
performance for the fiscal year ending December 31, 1970. The decline
in the volume of business done with the pork-processing plants in the
area was the major issue on the meeting's agenda. For the fifth consecu­
tive year, the total volume of loans made to pork-processing firms had
fallen substantially. The decline in this type of loan did not reflect a re­
duction in the number of pork processors in the banking area served by
the Worth National Bank. On the contrary, eight new pork-processing
plants of small to intermediate size had been established in the past five
years.

The Worth National Bank's policy had been to concentrate marketing
and lending efforts toward small- to intermediate-sized meat-processing
plants. The bank had never done a substantial amount of direct business with the very large meat processors in the area (such as Swift, and Armour and Co.). These processors had traditionally gone to the major Chicago banks to finance their credit needs. They normally had sizable lines of credit open to them on an unsecured basis at these Chicago banks. The Worth National Bank was just not large enough financially to handle the credit needs of these giants of the meat-processing industry. All seven of the bank’s directors concurred that something had to be done to rectify this situation, but disagreed about the underlying cause of the problem.

Each board member had his own idea as to what might be the cause of the problem. One director had read that many firms were now able to fully meet their financial needs through the internal generation of funds (i.e., retained earnings and depreciation allowances) and suggested that the pork-processing plants might fall into this category. Two or three of the directors felt that Elmer Hey, head of agricultural loans to the business department, was the fundamental cause of the problem. They contended that Hey was too old to handle the job and that he had lost his ability “to feel the pulse of the market.” Although other arguments were propounded, none of the directors was able to substantiate or tangibly document his contentions.

Seeing that members of the board had reached an impasse, Board Chairman Sterling Worth, Jr., called a special interim meeting of the board of directors to be held Friday, February 12, and asked that Hey be present at the meeting. He also appointed Ernest Abel, the capable and energetic new assistant-to-the-president, to investigate the situation and try to pinpoint the fundamental reason or reasons that the bank’s business with the pork-processing firms had declined. Abel was to report to the board at the February 12th meeting.

THE SPECIAL INTERIM BOARD OF DIRECTORS’ MEETING, FEBRUARY 12, 1971

The special meeting was held in the Office of President Sterling B. Worth III, with all seven directors, Elmer Hey, and Ernest Abel attending. Sterling Worth, Jr., called the meeting to order and asked Abel to report on his findings. Abel, who had been an assistant vice president in the research department of the Harris Trust and Savings Bank of Chicago prior to coming to Worth National in November, 1970, summarized his findings.

First, he dispelled the notion that pork-processing plants in the Sioux City area generated enough funds internally to handle all of their
credit needs. However, pork processors were taking their banking business to banks in Omaha and Minneapolis, yet they were not getting their funds any more cheaply in those cities. Interest rates in the Sioux City area were competitive in every way with the rates in Omaha and Minneapolis. If anything, bank interest rates had moderated more during the last half of 1970 in Sioux City than they had in either of the other two cities. Abel had also found that the Worth National Bank was strong enough financially to have handled over 90 percent of the banking business which had gravitated to Omaha and Minneapolis.

The only significant difference that Abel could find between the Worth National Bank and the banks in Omaha and Minneapolis was the difference in lending policies with regard to collateral hedged on the commodity futures market. The Omaha and Minneapolis banks involved were presently lending 90 percent of the value of commodities used as collateral, when these commodities were hedged on the futures market, and 60 percent of the value of unhedged commodities used as collateral for a loan. The Worth National Bank followed the policy of granting loans equal to 60 percent of the value of commodities used as collateral regardless of whether they were hedged or unhedged.

Abel concluded by saying that personal interviews with a number of top executives from pork-processing firms in Sioux City revealed that these executives were extremely sensitive to the hedging issue. The consensus of opinion among those executives was that the Worth National Bank’s policy on hedged commodities was completely out of line with reality and with banks in all major cities.

Sterling Worth, Jr., mentioned he had read that an increasing number of farmers, wholesalers, and commodity processors were using the hedge as a financial tool, but he could not remember the details of the article.

Hey pointed out that the bank had followed this policy of 60 percent of collateral value for commodity loans, regardless of whether the commodity was hedged or not, ever since he had come with the bank in 1924. He emphasized that the Worth Bank had survived the Great Depression whereas many of its more liberal competitors had not. He cited a statistic to make this point clearer — more than 5,000 commercial banks had failed between October, 1929, and the end of 1933.

Robert Storeman, one of the bank’s directors and retired president of a local grain corporation, said he could not understand why pork-processing houses would be so attracted by an extra 30 percent of collateral value for hedging their commodities. He stated that processors were charged to hedge their commodities and wondered if maybe this added cost would not offset the attractiveness of the extra loan equal to 30 percent of collateral value.
Charles Holmes, another bank director and president of the Holmes Building and Loan Association, said that processors claimed the hedging operation reduced risks associated with a loan. He felt that lending 90 percent of collateral value rather than the current 60 percent would increase the bank's risks rather than reduce them.

Holmes was also concerned about what the bank would do about interest rates if hedging did change the risks associated with commodity loans. Would rates be raised or lowered to offset the change in risks?

Board Chairman, Worth, Jr., admitted that he did not thoroughly understand all of the mechanics and implications of hedging and the futures market. He added that he felt some good points had been raised by Hey and the directors, and that he, too, had had some of the same questions.

He went on to restate the bank's traditional policy with respect to all loans, including those made to farmers and to agribusiness firms. He cited four factors which he felt were essential in regard to any loan: 1) the integrity and business ability of the borrower; 2) the safekeeping and physical preservation of the commodity used to collateralize the loan; 3) the preservation of the value of the commodity; and 4) the method and timing of repayment made by the borrower.

He said he felt that hedging was intended to preserve the value of the commodity being used as collateral, but that he did not understand exactly how this was possible.

Worth, Jr., said that, in his opinion, preservation of the value of the collateral was not nearly so important to a good loan as the integrity of the borrower. He concluded that even if hedging could, in some way, be used to insure the value of the collateral, he knew of no way to insure against the dishonesty of borrowers.

Hey pointed out that cash and futures commodity prices are in a constant state of flux. They can go down just as easily as they can go up, and these price movements are often quite large. He said he had been a banker for 46 years and had yet to meet a person who could accurately predict the futures price of commodities. Hey noted similarities between banking conditions today and the way they were when he started with the bank and cautioned the directors not to let credit get out of hand as it had in 1927-1929.

The newest board member, Adam Ritt, attorney and senior partner in the law firm of Ritt and Sons, reaffirmed what Hey had said about price volatility in the commodity market. He said he knew of three of his firm's clients who had "lost their shirts" when they tried to speculate in the commodity market. However, he confessed that he did not understand the mechanics of hedging products and thus did not know how this
type of commodity market activity was related to the speculative activities of his firm's clients. He asked if any of the other directors or officers could clarify the objectives and mechanics of hedging in the commodity market.

Sterling Worth III, who was a director as well as president of the bank, said he could not add much clarification to Ritt's request for information, but he had heard that the commodity futures markets were highly competitive and, therefore, not "rigged." He said he felt the operations of these markets were legitimate but too complex for the average investor to understand.

Neither the directors nor the two bank officers at the meeting seemed to truly understand the hedging operation, so Worth, Jr., assigned Abel to thoroughly research the subject of hedging in the commodity markets. Abel was to report on his research at the next regularly scheduled board meeting on February 26, 1971. At that time Abel's report would serve as the basis for a vote on the feasibility of changing the bank's existing policy concerning lending on hedged commodity collateral.

THE WORTH NATIONAL BANK'S NEW LOAN POLICY AND IMPLEMENTATION

Ernest Abel gave a thorough report to the bank directors at their February 26, 1971, meeting and clarified the directors' questions about hedging in the futures markets. The directors then voted six to one in favor of changing the bank's policy on loans made on the basis of hedged commodity collateral.

The new policy allowed the head of agricultural loans to the business department to lend up to 90 percent of the value of commodities, at his discretion, when these commodities were hedged in the futures market. For unhedged collateral, the policy remained unchanged — i.e., the bank could lend up to 60 percent of the value of unhedged commodities used as collateral.

On April 1, 1971, Elmer Hey retired as head of agricultural loans to the business department after 47 years of dedicated service to the Worth Bank. He was replaced by his former assistant, Andrew Newmann.

Newmann was 37 years old and had been with the Worth National Bank for only two years, but he had previously worked for a large, nationally known packing house for 12 years and was considered well-qualified for his position. Most of his experience with the meat-packing firm had been in the area of credit analysis and finance.

Loan activity in the department began to show noticeable improvement. Credit extensions made by the department during the months of April
through August, 1971, were up 20 percent over 1970 levels. By the end of August, 1971 the Worth Bank had attracted the loan accounts of four local meat-processing and packing firms which had previously gone to Omaha to fill their credit needs. All of these newly-acquired meat-processing and packing houses were older, well-established firms; all had been in operation for at least 20 years; and all were in good shape financially. There was little difficulty involved in evaluating their credit worthiness.

Although pleased with the results of his first efforts, Newmann was aware that if his department and the bank were truly going to forge ahead they could not content themselves with serving only the older, well-established firms. They would have to attract the loan business of some of the newer, untried meat-processing and meat-packing houses in the Sioux City area.

Newmann got the challenge he was seeking on September 7, 1971 when Harold Kanner, president of Kanner Packing House, Inc., came to the Worth National Bank to apply for a loan to be used to finance his firm’s expanding inventory of pork bellies.

Kanner Packing House had only been in operation since July, 1968. Kanner had come to Sioux City from Chicago in the spring, 1968. He had previously held executive positions in various Chicago packing houses for 23 years. His last job as a vice-president with Armour and Company would have satisfied most people, but the idea of working for someone else for the rest of his life had lost appeal for Kanner. He sold his home in Chicago and invested proceeds of the sale, plus a large portion of his savings, in the physical properties of a defunct packing house in Sioux City. He was forced to incorporate and periodically make small sales of common stocks in order to acquire working capital.

Kanner Packing House, Inc., specialized in pork products, which worked out quite well since the largest terminal hog market in the world is located in Sioux City. The Kanner operation included full-line production facilities but distribution facilities were sectional. The company’s products were sold in areas other than the Sioux City metropolitan area, but seldom beyond a 300-mile radius.

Harold Kanner had established a sound reputation for himself and for his firm in business affairs in three years. After a slow start, the firm’s sales had begun to show noticeable improvement. Kanner was optimistic about the future of his company. He presented his company’s financial statements for 1969, 1970, and 1971 (see Tables 1 and 2) to Newmann for evaluation of his firm’s financial status. All of these financial reports had been audited by Post, Marvick, and Mitchell and Company, an accounting firm in Omaha, Nebraska.

Kanner Company’s sale of pork products had increased by 54 percent
from fiscal year 1970 to fiscal year 1971. Kanner expected fiscal year 1972 to bring a similar increase over fiscal year 1971. For this reason, he wanted to double his current inventory of frozen pork bellies. Kanner estimated that 465,000 to 470,000 additional pounds of frozen pork bellies would be required to meet the projected increase in sales.

Kanner Company could not afford to finance an inventory expansion of this size. The cash and working capital positions of the Kanner Company were not that strong so Kanner had come to the Worth National Bank with his loan request. He did indicate that his firm would be willing to pledge the bellies purchased as collateral to protect the bank's loan.

Newmann explained the details of the Worth Bank's lending procedure to Kanner. First, the financial statements of the Kanner Company would be analyzed and compared with the Dunn and Bradstreet averages for the meat-packing industry. If the Kanner Company proved strong enough financially, the Worth Bank would lend up to 60 percent on unhedged bellies or up to 90 percent on bellies that were hedged in the futures market. Newmann also indicated that the bank would lend an additional amount equal to the amount of margin that the commodity broker would require for hedging the bellies in the futures market, if the financial performance of the Kanner Company merited it.

Kanner said he would prefer to borrow up to 90 percent of the value of the pledged collateral value, but he had never dealt in a futures market and asked Newmann to explain the hedging process to him. Newmann explained the general mechanics of hedging, then told Kanner that completion of a credit analysis of the Kanner Packing House would take

<table>
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<th>Category</th>
<th>1971</th>
<th>1970</th>
<th>1969</th>
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<tr>
<td>Net sales</td>
<td>$4,070,880</td>
<td>$2,640,820</td>
<td>$1,280,580</td>
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<td>Cost of sales</td>
<td>3,650,379</td>
<td>2,377,900</td>
<td>1,164,613</td>
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<td>Gross margin</td>
<td>420,501</td>
<td>262,920</td>
<td>115,967</td>
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<tr>
<td>Operating, selling, and administrative expenses</td>
<td>309,249</td>
<td>216,314</td>
<td>107,258</td>
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<tr>
<td>Operating income</td>
<td>111,252</td>
<td>46,506</td>
<td>8,709</td>
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<tr>
<td>Interest and debt expense</td>
<td>1,100</td>
<td>1,510</td>
<td>1,722</td>
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<tr>
<td>Profits before income taxes</td>
<td>110,152</td>
<td>45,096</td>
<td>6,987</td>
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<tr>
<td>Federal and state income taxes</td>
<td>52,873</td>
<td>20,280</td>
<td>1,480</td>
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<tr>
<td>Net profits</td>
<td>$ 57,279</td>
<td>$ 24,816</td>
<td>$ 5,507</td>
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### TABLE 2

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Current assets</td>
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<tr>
<td>Cash</td>
<td>$38,000</td>
<td>$22,300</td>
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<td>Accounts receivable (net of allowance for doubtful accounts)</td>
<td>210,965</td>
<td>121,298</td>
<td>69,280</td>
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<td>Inventory</td>
<td>156,200</td>
<td>91,620</td>
<td>55,884</td>
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<td>Prepaid expenses</td>
<td>1,610</td>
<td>1,200</td>
<td>1,312</td>
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<td>Total current assets</td>
<td>406,775</td>
<td>236,418</td>
<td>141,782</td>
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<td>Plant and equipment (net of accumulated depreciation)</td>
<td>165,637</td>
<td>172,818</td>
<td>180,000</td>
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<tr>
<td>Total assets</td>
<td>$572,412</td>
<td>$409,236</td>
<td>$321,782</td>
</tr>
</tbody>
</table>

| Total Liabilities and Stockholders Equity       |          |          |          |
| Current liabilities                            |          |          |          |
| Accounts payable                               | $194,322 | $122,718 | $111,204 |
| Notes payable to banks                         | 14,670   | 20,200   | 24,620   |
| Accrued expenses                               | 2,480    | 3,180    | 2,816    |
| Federal and state income taxes                 | 2,620    | 970      | 630      |
| Total current liabilities                      | 214,092  | 147,068  | 139,270  |

| Stockholders equity                            |          |          |          |
| Common stock — without par value               |          |          |          |
| (authorized 10,000 shares — issued 5,200 as of 6/30/71) | 356,000  | 261,316  | 182,512  |
| Retained earnings                              | 2,320    | 852      |          |
| Total stockholders equity                      | 358,320  | 262,168  | 182,512  |
| Total liabilities and stockholders equity      |          |          |          |
|                                               | $572,412 | $409,236 | $321,782 |
about an hour. He advised Kanner to discuss the specific details of hedging with Wilbur Goodsell, a registered commodity broker on the 10th floor of the Worth National Bank Building, and then return to the bank to discuss the loan application.

Goodsell explained the operations of the commodity futures markets and elaborated on hedging in the futures market. He gave Kanner a copy of the standard futures contract for frozen pork bellies and explained the various provisions. He also gave Kanner the daily market-price quotations from the Chicago Mercantile Exchange for frozen pork bellies and cautioned him that these price quotations on pork bellies represented Chicago prices rather than Sioux City prices. Goodsell explained that these prices could be converted into Sioux City prices by making an adjustment for locational difference — the size of this adjustment for frozen pork bellies averaged about 85 cents per hundredweight.

Wilbur Goodsell said that the rules of the Chicago Mercantile Exchange required a minimum margin deposit of $750 to be posted for each pork-belly contract that was bought or sold in the futures market, but that his own firm required a margin of $1,200 per contract to be posted by all new customers in order to protect the customer as well as the broker and allow for more market movement before requiring the customer to post additional margin. Goodsell mentioned that the margin requirement per contract for the Kanner Company would probably be reduced after his firm had built up some trading experience with the Kanner Company.

Harold Kanner expressed a desire to open a trading account on behalf of his firm and received a customer’s agreement to be completed before an account could be opened for Kanner Packing House. After completing the customer’s agreement, Kanner returned to the Worth National Bank to discuss the loan application with Newmann. Meanwhile, Newmann had evaluated Kanner Company’s financial statements relative to others in the industry and was prepared to give Kanner an answer to his loan request.