

THE USE AND GRAPHIC PRESENTATION
OF FINANCIAL RATIOS

by

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A THESIS

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THE USE AND GRAPHIC PRESENTATION

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Purpose

It was the purpose of this study to illustrate the use of financial ratios in determining areas of strength and weakness within the financial structure and policies of the business. The accountant of a firm has the responsibility of informing management of any financial areas which appear to be out of balance with accepted industry figures. The accountant should present his findings to management complete with concrete evidence of these findings. The use of financial ratios provides the accountant with facts concerning the company's conditions in comparison with its own industry as a whole.

Accountants are frequently aware of financial difficulties in the business, but are not anxious to approach management with their findings. The use of ratios in presenting this information allows both management and the accountant the opportunity of evaluating company policy on a nonpersonal objective basis.

Methods

The actual financial data used in this presentation was obtained from the individual companies included in the study. Background information was obtained from text books and

articles of professional publications. Eleven Ratios were selected for use, and these ratios were applied to the data of the selected companies.

The ratios were presented by comparing individual company ratios to the typical figures of the company's industry as a whole. This comparison was shown in graphic form to illustrate the clarity and brevity possible through the use of financial ratios. A short discussion of each ratio followed this presentation to show the process of analysis that is made possible by the ratio method.

Findings

This study revealed several facts which are presented in the following order:

1. The accountant of a business should be responsible for informing management of present or apparent future problems of financial nature.
2. In presenting such information, the accountant should be equipped not only with his own professional opinion, but also with concrete facts with which to support his opinion.
3. The most effective method of presenting evidence of financial weaknesses is through the use of financial ratios.
4. Ratios which compare company financial positions

to typical figures of the industry as a whole reflect specific areas which may require further investigation and corrective action on the part of management.

5. Management can more readily determine any variance between company and industry ratios from illustrations presented in graphic form.

6. Although yearly ratios are vital, ratio trends may provide more significant information.

7. Each ratio has its own use and function. Individual ratios should be used in conjunction with other ratios to arrive at a complete analysis of the business.

8. Financial ratios function merely as guides to management by pointing out specific problems in the firm's financial structure and policy. Ratios are not intended to be substitutions for good and sound managerial judgments. Their use makes known financial areas that should be investigated; they do not make corrections or changes in policy. It remains the function of management to act upon the information provided by ratios.

Approved:

Supervising Professor

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CHAPTER I

INTRODUCTION

The purpose of accounting is to provide management with information to guide its decisions toward the ultimate goal of a perpetual and profit-making business. This information is provided in the form of the balance sheet, the income statement, and the reconciliation of surplus. "Every managerial policy, or absence of managerial policy, is reflected somewhere in the figures--in the balance sheet, in the income statement, or in the reconciliation or surplus."¹

The managing of a company involves the direction and coordination of the functions of research, production, distribution, and finance. Of these functions, financial planning and control is most vital to the future of the firm, and yet is also the most often neglected. Much data may be found regarding effective production, increased sales, and the necessity of research. Admittedly, these are points of weakness, and therefore important, for many firms. Yet, a great number of businesses disregard the most common cause of business fatalities, that of poor financial planning

¹Roy A. Foulke, Practical Financial Statement Analysis, p. 4.

and control. Annually, studies are conducted to ascertain the causes of business failures in this country. These studies frequently indicate that a great majority of businesses which were discontinued during the year were results of management failures--inexperience or incompetence. In a vast number of such cases, the term "management failure" often means "financial structure failure."

This high fatality rate among business firms attributed to a faulty financial structure brings to light the importance of the role of the accountant to present, in the most efficient possible manner, information concerning financial structure, planning, and control. Failure of the accountant to report such vital information, or management's failure to act with sound judgment as based on this information will lead, as verified by constant statistical data, to a certain and fatal termination of business operations.

Statement of the Problem

Accountants and some members of management are quite often aware of financial weaknesses which exist in a company, but often find it difficult to communicate these facts to company officials. "When the accountant expresses his opinions, such as 'there isn't enough working capital' or 'inventory is too high' . . ., the executive may feel that

it is the accountant's opinion against his own."² The mere expressing of the accountant's opinion is not sufficient in itself, it must be enforced with concrete facts. A very effective method of presenting financial weaknesses to management is by comparing the company's figures with those of similar companies. By comparing his own company's situation against those of other companies in the field, he can secure and present concrete facts to the management which could lead to effective action to correct the situation before it gets out of hand.

The making of such comparisons is not an easy task. Two complexities readily appear; one problem, that of size, is apparent, since larger firms possess greater financial strength and resource and therefore could not be validly compared with smaller and less powerful companies. In the same light, a comparison of companies engaged in vastly different fields of endeavor would not be meaningful because of different financial requirements and distribution policies.

"The better method of making comparisons is through the use of ratios."³ By using this ratio method, comparisons are not based or presented in dollar amounts, but rather

²William E. Westerdahl, N.A.A. Bulletin, p. 30.

³Ibid., p. 31.

in percentages or multiples.⁴ A ratio is a computation expressing the relationship of two sets of figures. By making this comparison on a ratio basis, the accountant can avoid the problems of exact similarity of size and nature. A determined error must be made however, to secure data from companies which are as closely related as possible in the areas of size and nature.

The use of ratios to isolate and correct weaknesses in financial structure and control is a relatively new concept in the business field. One of the pace-setters in the chemical industry, E. I. du Pont de Nemours and Company, Incorporated, has established this ratio method in a majority of their operational areas. A spokesman for DuPont's Sabine River Works Plant in Orange, Texas, recently stated, ". . . we have found that the use of such ratios, and their graphic presentation, provide a very satisfactory picture of our operations and future potentialities."⁵ The use of this method is not presently wide spread, yet the proof of actual results, together with the growing necessity of more strict financial control, indicate that the potentialities are many.

⁴Percentage is such as the dividing of one figure by another and expressing the result of a percent of the figure. Multiple is the relationship of two numbers expressed in terms of "times."

⁵H. C. Reese, Control Supervisor, E. I. duPont, Inc., in an interview conducted on Nov. 21, 1962.

Purpose of the Study

The purpose of this study is to present and graphically illustrate the use of several important ratios as applied to actual company financial statements. There exist many different types of ratios, each of which has its own distinct function. For the purpose of this presentation, eleven ratios were selected from an annual publication of Dun & Bradstreet, Incorporated, entitled "Fourteen Important Ratios."⁶

Each of these eleven ratios will be applied to financial data of these companies in order to achieve actual results of the ratio method. Each individual ratio reveals an important indication of financial structure status as of the date on which it is applied. These periodic indications are of vital significance to the management of a firm. Of more meaningful significance however, is the combined results of each ratio applied over a period of years in each particular business. The trend which is established by combining these periodic computations is the most important and significant result of the use of ratios. These trends not only point out weaknesses at specific dates, but give valid indication of the long-run financial trouble areas which necessitate corrective action.

⁶Fourteen Important Ratios, Dun & Bradstreet, Inc.

Each ratio computed is plotted graphically and then compared to typical ratios of that specific industry as contained in Foulke's Statement Analysis. This table of standard typical ratios divides the companies of each field into three classifications: upper quartile, median, and lower quartile. The assumption must be made that these trade averages are "typical" figures.

When specific figures and trends have been established for each ratio for each company's financial data, this information must be presented to management for use in decision-making and corrective action where indicated. The most concise and meaningful form of presentation is the graphic method through the use of charts and graphs. This type of presentation offers the advantages of simplicity, readability, and brevity. These reports in graphic form are readily accepted by management, and are generally most widely requested by all levels of responsibility and authority within the business firm.

The specific purpose of this paper is to present to the reader the basic importance of the use of the ratio, to demonstrate the use of ratios as applied to actual financial data, and to present in graphic form the results as determined by each individual ratio.

Limitations of the Study

The ratios used within this study were selected on the basis of importance, acceptability, and purpose. The number of ratios is limited to eleven as derived from many ratios which are in use today. This group of ratios is representative, but is intended to be neither complete nor exclusive. For the more interested reader, the Financial Statement Analysis, and Dun & Bradstreet publications should be consulted for a more complete listing of commonly used ratios. The eleven ratios utilized here are:

1. Current assets to current debt
2. Net profits on net sales
3. Net profits on tangible net worth
4. Net sales to tangible net worth
5. Net sales to working capital
6. Net sales to inventory
7. Fixed assets to tangible net worth
8. Current debt to tangible net worth
9. Total debt to tangible net worth
10. Funded debt to working capital
11. Net profit on working capital

The companies whose financial data was used in this study were selected at random with consideration only for nature and similarity of operation. The companies selected were:

1. Socony Mobil Oil Company, Inc.
2. Gulf Oil Corporation
3. Standard Oil Company (New Jersey)
4. Texaco, Inc.
5. E. I. duPont deNemours & Company, Inc.
6. Dow Chemical Company
7. Firestone Tire & Rubber Company

The companies selected are engaged in the fields of basic petroleum and chemical products. All are recognized as sound financial firms, and are among the largest firms in their fields. Again, these selections are for the purpose of illustration of the use of ratios. The reader should be aware that any group of relatively similar companies would be an equally valid selection.

The selected ratios were applied to financial data for the fiscal years 1950, 1955, 1960, and 1961. The use of these particular years is again a mere random selection. The importance of these years is only to establish a trend. The general rule in this regard is that the more years that are applied, the more valid is the resulting trend. In this paper, a period of 12 years is included, 1950-1961.

Methods of Investigation

The method of investigation used was to apply eleven ratios to financial data obtained from the individual firms. Introductory information was obtained from historical research. The ratios used in the computations are defined and discussed briefly as they appear throughout the text.

The results of the ratio computations are plotted graphically, and are presented as trends. A brief evaluation and discussion follows each of these trend presentations. Use was made of the books and bulletins found in the college

library, as well as text books found in private collections.

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CHAPTER II

RATIOS MEASURING ASSETS

Current Assets to Current Liabilities

The assets of a company represent the items which have monetary value. Assets may be physical, which are called tangible assets; or rights, which are called intangible assets. The assets of a company are commonly classified into two groups: current assets and plant (fixed) assets. "For accounting purposes, the term current assets is used to designate cash and other assets or resources commonly identified as those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business."¹ For the purpose of this paper, current assets will be considered, in the light of the preceding definition, as those assets that will be converted into cash or consumed during normal business operations within the period of one year. This group of assets is normally listed in the order in which they are expected to be converted into cash. Assets usually included in this group are cash, notes receivable, accounts receivable merchandise inventory, and marketable securities.

Plant (fixed) assets are those assets which are of

¹Foulke, op. cit., p. 71.

relatively permanent nature, and which usually are intended to be retained for use in the company. The order of listing for these assets is not uniform.

"The shortest-lived plant assets may be listed first or the permanent may be listed first."² The list of plant assets normally includes delivery equipment, store equipment, office equipment, building, and land. Plant assets lose value with passage of time. This expiring of value is known as depreciation. The only plant asset on which depreciation is not recognized is land. In this paper, plant assets are reported, and used for computation, at net figures; that is, cost minus depreciation.

The assets of a company are an extremely important factor in any field of endeavor. These assets must be kept in proper balance for several important reasons. One concept presents the idea that current assets should be large enough in total to meet the demand of payment of current liabilities. Current liabilities are those debts of the business which will become due within one year. These current debts include notes payable, accounts payable, accruals, taxes, dividends, and reserves for contingencies. The idea in general theory is that current assets, if forced to be sold, should bring enough cash to make payment

²Howard S. Noble and C. Rollin Niswonger, Accounting Principles, p. 27.

of current liabilities. This comparison of current assets and current liabilities is known as the Current Ratio. It is determined by dividing total current assets by total current liabilities. It is expressed as "times" current liabilities. The use of the current ratio gives a valid picture of this relationship at any specific date. The current ratio changes daily as transactions affect both current assets and current liabilities. The current ratio is the oldest financial ratio to be used in this country. Its early followers set the desired standard current ratio to be 2:1. This ratio assumed that if liquidation was forced, the factor of inflation could be overcome by having twice the amount of assets as liabilities. This 2:1 standard has been revised to meet the needs of each business field, and while 2:1 is still a general rule, specific standards are presented within this presentation.

The current ratio was applied to the actual financial data of three of this nation's largest chemical producers-- E. I. duPont de Nemours, Incorporated, Dow Chemical Corporation, and Firestone Tire and Rubber Corporation. The results of these computations together with the typical ratios for the chemical industry are presented in Table I, page 13. Table II, page 13, contains the typical figures for the petroleum industry together with individual company ratios.

The current ratio as applied to the data of duPont

TABLE I
CURRENT ASSETS TO CURRENT LIABILITIES (TIMES)

Quartiles	Upper		Median	Lower
Chemical Industry	3.79		2.66	1.86
Companies:	1950	1955	1960	1961
duPont	4.55	5.20	5.92	6.58
Dow	2.43	2.25	1.98	1.45
Firestone	3.54	3.47	3.19	3.10

TABLE II
CURRENT ASSETS TO CURRENT LIABILITIES (TIMES)

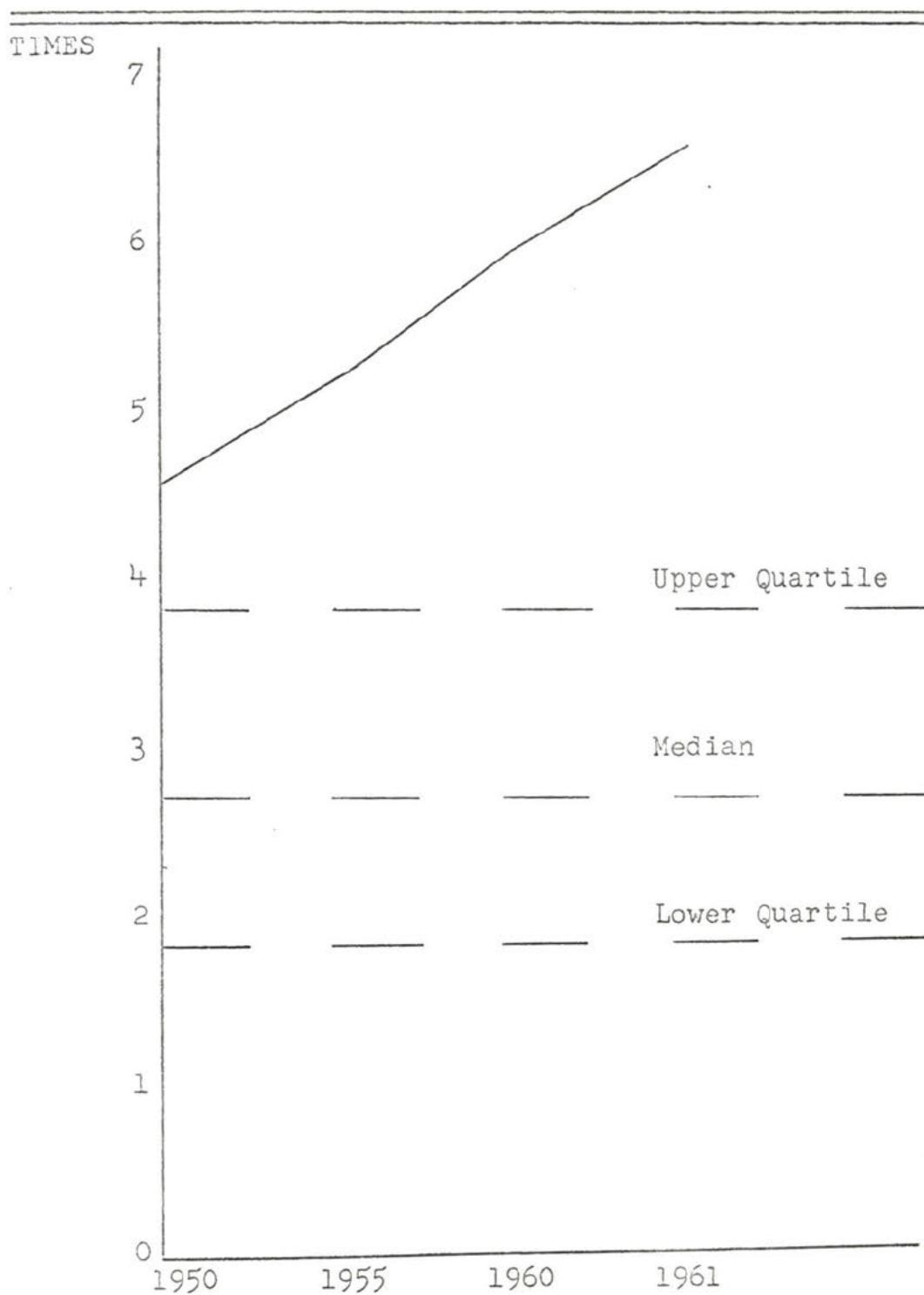
Quartiles	Upper		Median	Lower
Petroleum Industry	3.00		2.46	1.75
Companies:	1950	1955	1960	1961
Mobile	2.33	2.51	2.39	2.24
Texaco	3.94	3.82	2.39	2.49
Standard	3.12	2.40	2.09	2.06
Gulf	2.18	2.16	2.57	3.04

shows this company to be financially strong in this specific area. In 1950, the ratio showed 4.55, indicating that at this particular date the company's current assets were about 4-1/2 times the current liabilities. Compared to industry standards, duPont, ranked high in the upper quartile. The trend indicated that the ratio increased steadily until the 1961 figure of 6.56 to 1 was obtained. The specific yearly figures together with the trend indicated give an excellent current ratio picture for this company. Of course a detailed study would indicate the areas which resulted in this completed figure. The fact should be pointed out that a high ratio could possibly arise due to a high inventory figure. Because inventory must be sold to secure cash, its value in computing this ratio is arbitrary. Therefore a refinement of the current ratio may be used as a double check. This refinement uses the total current assets, less inventory, divided by the total of current liabilities, and is called the "acid test." In regard to duPont, the acid test revealed the following data: 1950--3.21, 1955--4.30, 1960--3.93, 1961--4.35. The acid test indicated again the favorable position of the current assets of this company. Although the ratios here were somewhat smaller than those of the current ratio, they were strong and showed a steady upward trend. This double check of current ratio and acid test points to a sound situation in regard to current

debts. Figure I, page 16, illustrates the comparison of the company's current ratio to the typical ratios of the industry. This graphic presentation gives management a relatively simple and clear picture of their firm's financial condition in regard to the typical figure. The graph shows the ratio for each specific year, and the ratios are joined together with lines to form the long-run trend line. This trend is of utmost importance because it gives pictorial basis to the improvements or failures of the business in regard to each financial area. Management can readily see that conditions are either improving or falling, and take action accordingly.

In regard to the financial position of Dow Chemical Company, the current ratio indicated a vastly different situation. The ratio for the year 1950 showed a figure of 2.43 to 1, which is slightly below the industry median of 2.66 to 1. In this specific year, the company was in relatively good condition in regard to their current asset--current liability relationship. Figures for 1955, 1960, and 1961 revealed however, that the current ratio dropped steadily until a low of 1.45 to 1 was reached in 1961. Relative to the industry lower quartile standard of 1.86 to 1, the company was apparently allowing itself to drift into dangerous position. If the company was forced to liquidate current assets to satisfy the ^{be}mand of current liabilities, there is

FIGURE I
CURRENT RATIO (TIMES)
DU PONT



some doubt that enough cash could be obtained to meet such current debts. The application of the acid test pointed out more definitely the dangerous trend indicated. The acid test revealed the following figures: 1950--1.66; 1955--1.61; 1960--1.01; 1961--.74.

The 1961 figure of .74 to 1 shows that if current assets, excluding inventories, were forced to be sold, the proceeds of such a sale would cover only slightly less than 75% of the current liabilities. The use of the current ratio, together with the acid test, indicated a definite need for further investigation and possible corrective action on the part of the company's management. Because of the limited scope of this presentation, no attempt was made to perform further investigation. However, the reader should be aware that such research would reveal pertinent information regarding the causes of this financial condition. In some cases, management would be wise indeed to take prompt corrective steps. In other cases, management might be quite aware of the extremely low position in this area, but might also have valid reasons for allowing such a condition to exist within the business. The importance of the ratio is merely to point out such conditions. "Ratios are guides only. The important thing in the use of ratios is to be aware of the fact, when company's figures are significantly different from the industry, and to determine the

reasons for variance."³ Managerial personnel have a wide source of financial information to use as a basis for more intense research into causes of variances. The ratio brings unusual financial data to the attention of proper authorities, leaving to them the necessity of determining causes and taking corrective actions where needed. Figure II, page 19, graphically shows the relationship of the company's current ratio and industry standards. Notice should be taken of the unfavorable trend shown by the chart.

The third chemical firm included in this study, Firestone Tire and Rubber Company, showed a relatively high and stable current ratio. Table I, page 13, shows the current ratio for the year 1950 to be 3.54 to 1, 1955--3.47 to 1, 1960--3.19 to 1, and 1961--3.10 to 1. Figure III, page 20, pictorially compares these ratios to the industry's typical figures.

This comparison points out two significant facts; that the yearly ratios are ranked in the upper quartile; and that the trend is one of gradual, but steady decline. As related to the typical upper quartile figure of 3.79 to 1, the current ratio of Firestone appears quite strong. All current ratios show that current assets are about three times larger than current liabilities, and would be of sufficient

³W. E. Westerdahl, Comparing the Company with Its Industry by Ratios, p. 42.

FIGURE II
CURRENT RATIO (TIMES)
DOW CHEMICAL COMPANY

TIMES

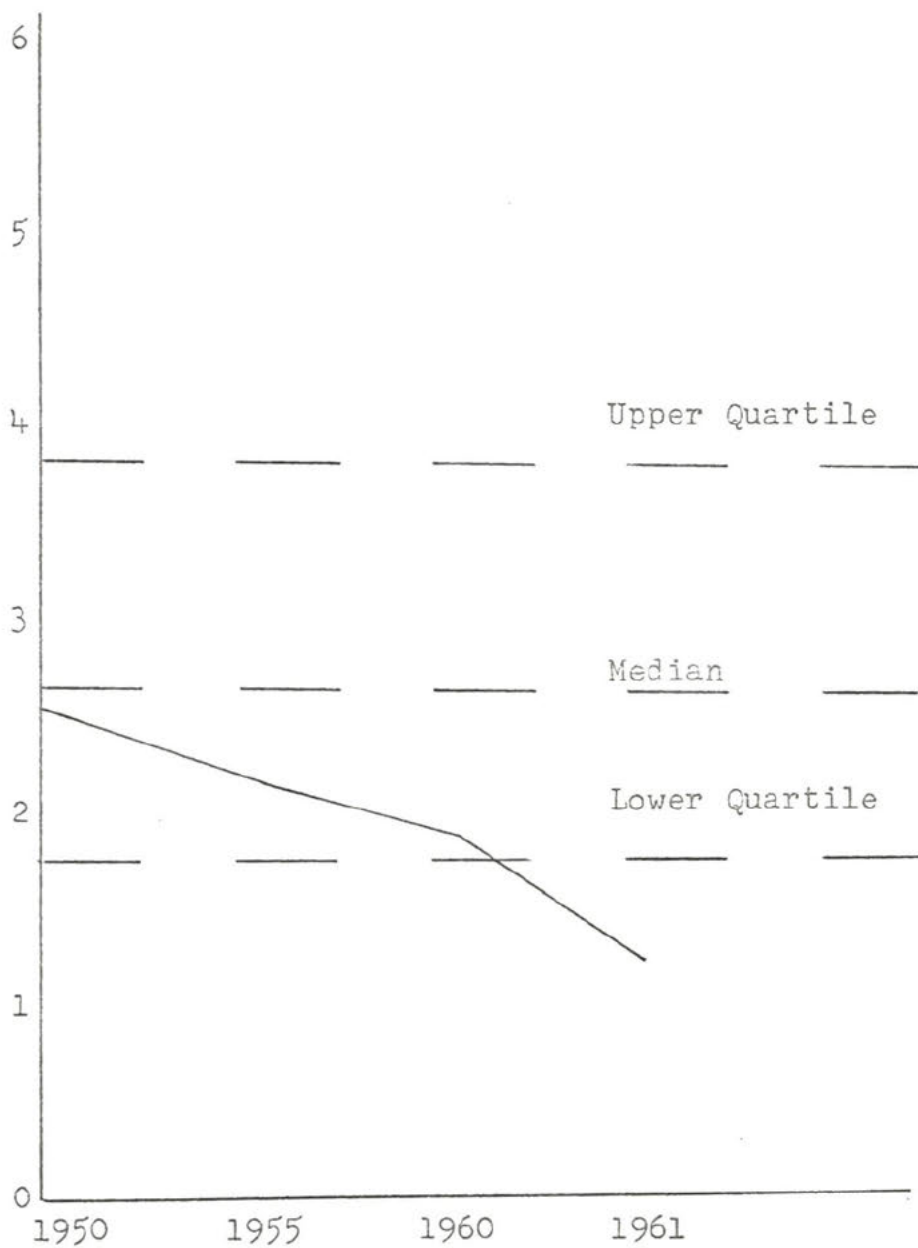
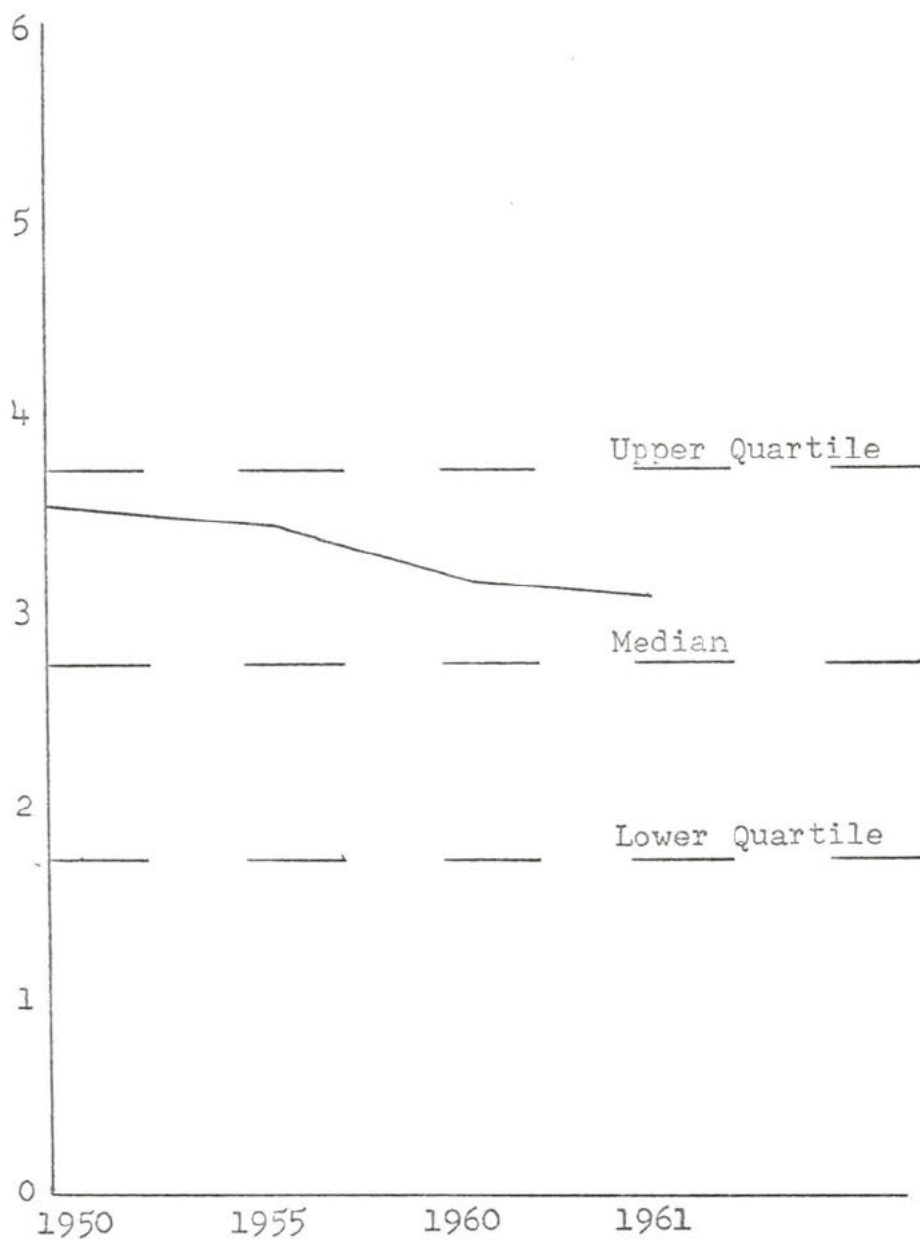


FIGURE III
CURRENT RATIO (TIMES)
FIRESTONE

TIMES



size to fulfill the requirements of current liabilities if needed. The acid test has shown that the firm was relatively strong in the current asset to current liability relationship. Results of the acid test were as follows: 1950--1.89; 1955--1.78; 1960--1.56; 1961--1.52.

The trend indicated here presented a slightly different long-run outlook. While the yearly figures remained individually strong, the ratio showed a steady decline. The drop from 3.54 to 3.10 over the period of 1950-1961 was not impressive in absolute amount, however the trend was a steady decline, and if allowed to continue unchecked, the long-run outlook could show a much unhealthier picture.

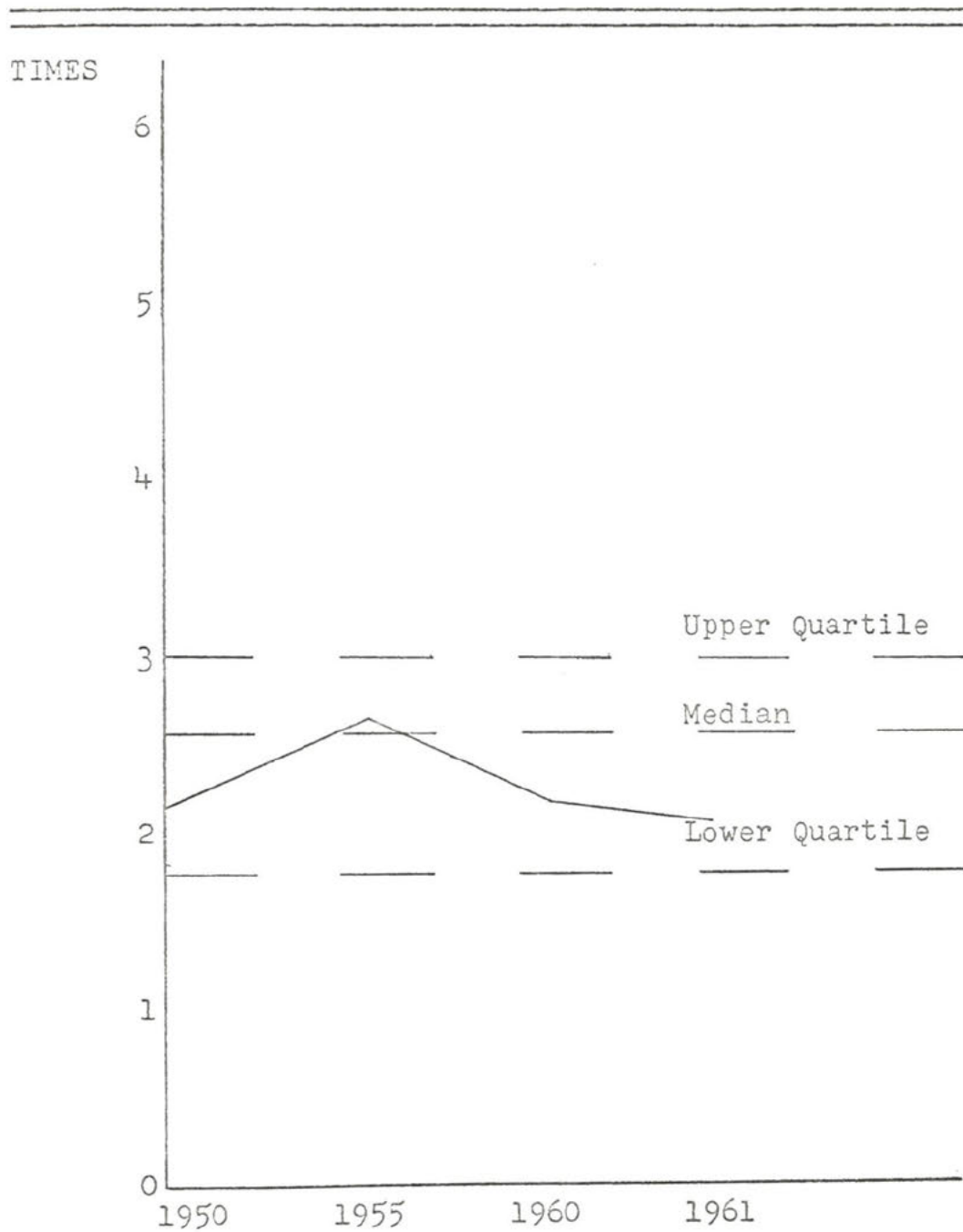
The current ratio as applied to an industrial field will yield slightly different typical ratio figures. Because of the variances in requirements of the different fields in regard to types and size of assets, liabilities, capital, sales, and other financial and operating areas, comparisons are valid only if made with the same field. The previous use of the current ratio was in the field of chemical operations. In contrast, the current ratio as applied to the petroleum industry reveals the typical figures of upper quartile--3.00 to 1, median--2.46 to 1, and lower quartile--1.75 to 1. Note is made of the variance in industry ratios in relation to those of the previously presented chemical ratios. From the petroleum industry four well-known firms

were selected for illustration. These four firms were Socony Mobil Oil Corporation, Texaco, Incorporated, Standard Oil of New Jersey, and Gulf Oil Corporation. Standard Oil is not technically a producer, but is a holding company having majority interest in subsidiary companies who are producers. For the purpose of this paper, Standard Oil was included as a true operating producer. The yearly current ratios of each company together with typical industry figure are presented in Table II.

Socony Mobil's financial data revealed a very interesting current asset--current liability relationship. From a 1950 ratio of 2.33 to 1, a significant increase to 2.51 to 1 in 1955 was shown. From this 2.51 figure, the ratio declined to 2.39 to 1 in 1960 and 2.24 to 1 in 1961. Figure IV, page 23, presents a graphic form of the comparison of these yearly figures to the industry's typical figures.

This comparison points out the fact that while the current ratio fluctuated, it remained only slightly under the median figure of 2.46 to 1. Current assets were generally in fair condition, being about twice the size of current liabilities. If needed, current assets would be sufficient to satisfy the demands of current debts. The trend line indicated the variance found over this particular period of time; an increase in 1955 followed by gradual decline in 1960 and 1961. The use of the current ratio pointed out

FIGURE IV
CURRENT RATIO (TIMES)
SOCONY MOBILE OIL COMPANY



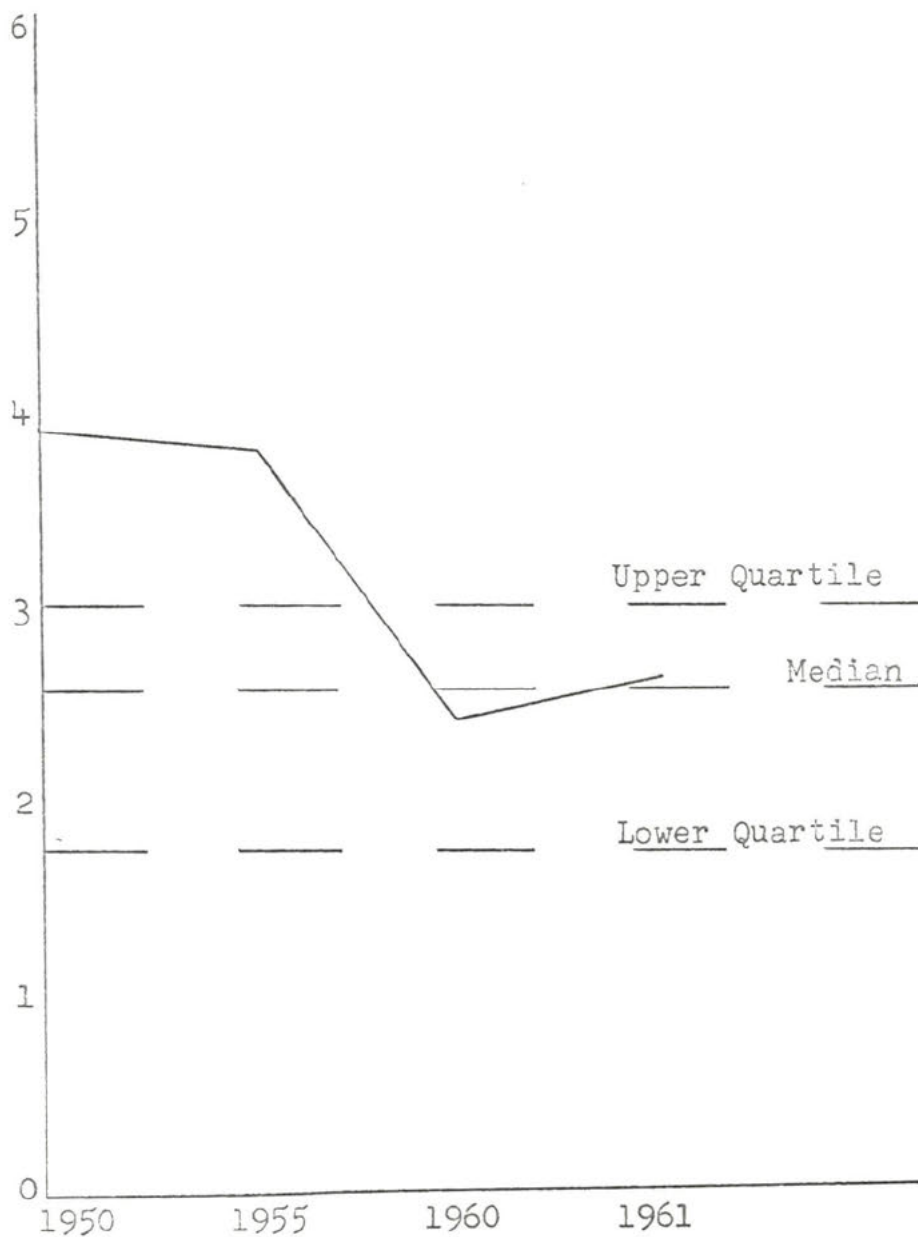
the need for investigation to determine the causes of the increase and following decline. If the trend is allowed to continue in its present downward direction a dangerous problem could develop in this financial area.

The acid test pointed out thin positions of the current ratio during the current decline of the ratio. The results of the acid test were as follows: 1950--1.37, 1955--1.64, 1960--1.59, and 1961--1.49. As indicated, a forced sale of assets other than inventories would result in the acquiring of cash that would barely cover current liabilities. This condition strengthens the necessity for a closer look into the current asset--current liability relationship, and possible corrective action.

Texaco's current ratio is presented in Table II, page 13. There again is an example of strong yearly figures indicating ample current assets to meet any demands of current debt. The 1950 figure of 3.94 to 1 was well above the upper quartile's 3.79 average. The ratio decreased only slightly to 3.82 in 1955, however 1960 revealed a sharp decline to 2.39. From this low 2.39 figure, the ratio showed an improvement to 2.49 in 1961. Figure V, page 25, reveals the widely fluctuating trend of this firm's current ratio. With such fluctuation, the need of deeper research is indicated. The extreme drop from 3.82 to 2.39 between the years of 1955-1960, and the upward trend movement in 1961 demand

FIGURE V
CURRENT RATIO (TIMES)
TEXACO, INCORPORATED

TIMES

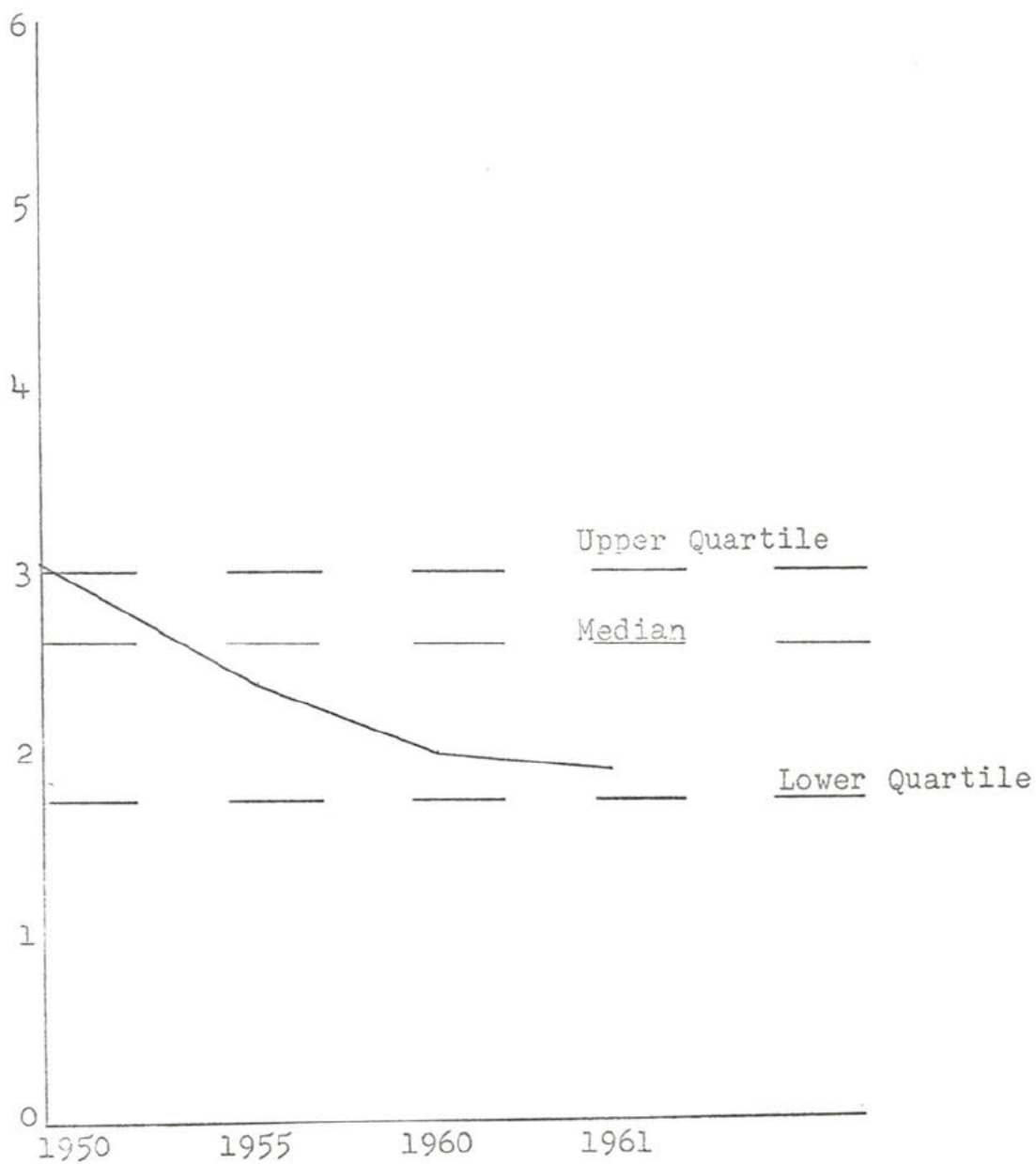


a thorough investigation by the company's accounting department. Although the current ratio had great variance in this case, the acid test supported the fact that the firm was in relatively strong position in regard to its current assets and current liabilities. The results of the acid test were: 1950--2.56, 1955--2.53, 1960--1.71, and 1961--1.81. Current assets remain sufficiently strong to support the burden of current liabilities.

As previously mentioned, Standard Oil of New Jersey is in reality a holding company, having controlling interests in petroleum producers such as Humble Oil Company. For the purpose of presenting financial ratios, the consolidated financial data of this company is appropriate for the application of ratios. The ratios of this company are presented in Table II, page 13. These ratios again reflected a wide degree of variance among the yearly figures. Figure VI, page 27, graphically describes the comparison of these ratios with the industry's typical figures. The 1950 figure of 3.12 indicated a very high ratio, however a sharp decline to 2.40 in 1955 pulled the ratio well below the median figure of 2.66 for that year. Another decline in 1960 dropped the ratio to 2.09, and finally to 2.06 in 1961. Despite the definite decline in the ratio, the company was still in a relatively safe current asset situation. Current assets remained at least twice as large as current liabilities,

FIGURE VI
CURRENT RATIO (TIMES)
STANDARD OIL OF NEW JERSEY

TIMES



which is generally sufficient to secure enough cash to cover any current liability demands arising. The acid test bore out this relative safe position. Results of the acid test were: 1950--2.09, 1951--1.76, 1960--1.54, and 1961--1.52. The importance of graphic presentation was again pointed out in this specific case. While the yearly ratios remained in a rather normal situation, the trend line formed was of vast significance. The trend here was one of definite and sharp decline from the 1950 figure of 3.12 to the 1960 figure of 2.09. The trend appeared to be attempting to level off in 1961, falling only to 2.04. The indications given here were of dangerous decline. Possibly the accounting department of this firm foresaw the long-run implications and presented this facts to management. Or perhaps the decline was a planned action on management's part to facilitate some business transactions or operation. Whatever the case, intensive investigation is required to determine the causes, and to make certain that this extreme downward trend is not allowed to progress further in the firms future.

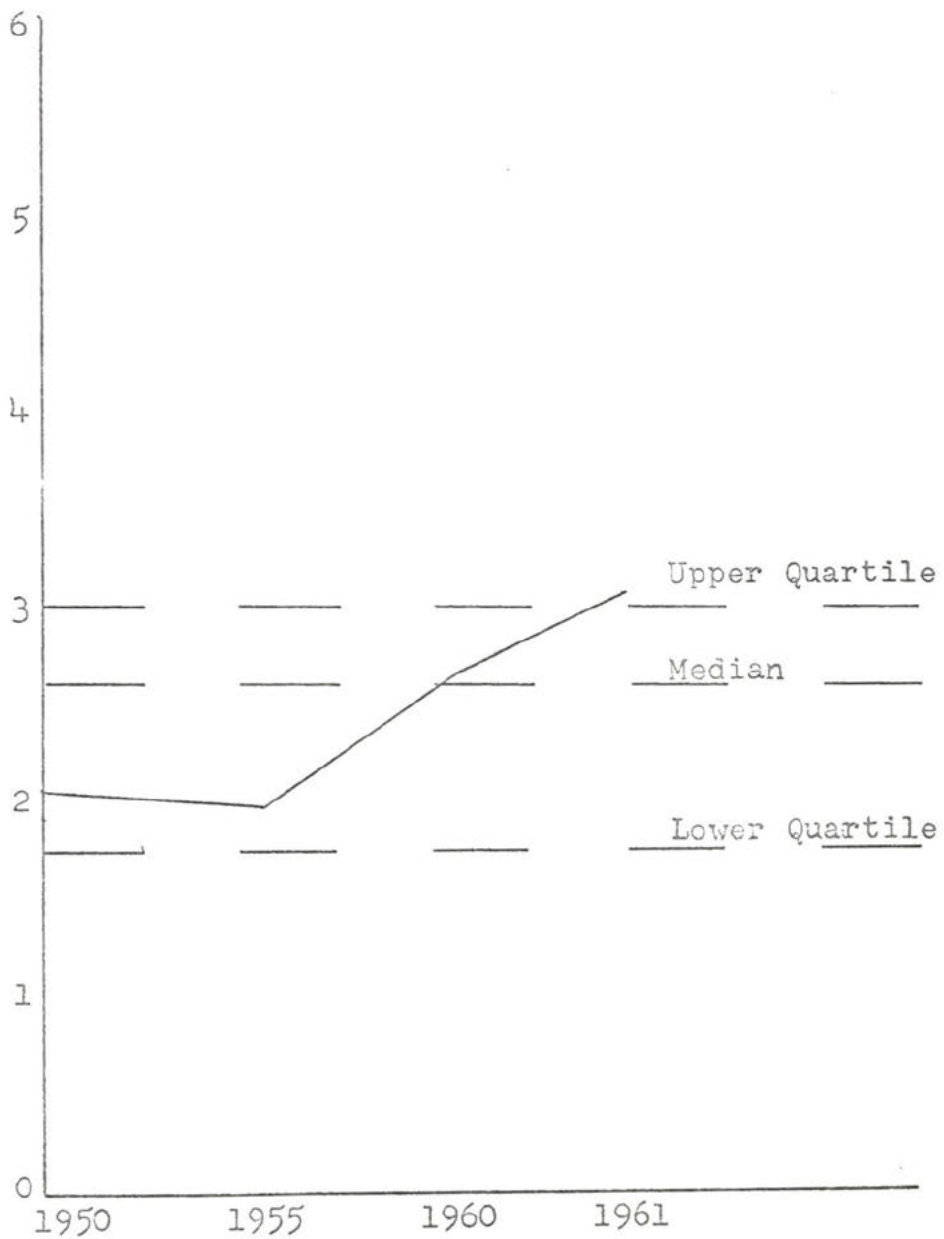
Gulf Oil Company's data revealed a current ratio in direct contrast to previous ratio of Standard. Table II, page 13, shows that Gulf's current ratio began with a relatively average figure of 2.18 in 1950, remained approximately the same in 1951, and then began a steady increase

to 2.57 in 1960 and 3.04 in 1961. This steadily increasing trend is expressed graphically in Figure VII, page 30. This trend was definitely favorable, increasing from 2.18 to a upper quartile ranking of 3.04 in 1961. Indications were that Gulf will maintain and or improve this excellent current ratio picture in future operations. The acid test supported the increasingly strong current asset--current liability relationship. Acid test results were: 1950--1.62, 1955--1.77, 1960--2.04, and 1961--2.48. The significance of the acid test figures are again pointed out in this case. Forced sale of current assets would bring ample cash to cover all current liabilities if these funds are needed. For example, the current assets, less inventories, in 1961 were nearly two and one-half times as large as current liabilities. Their sale would normally provide funds in excess of the needs of current debts.

The current ratio is a measurement of two variable factors, current assets and current liabilities, at a specific point of time. The purpose of the ratio is to determine the ability of current assets to meet the demand of payment of current debt under forced sale conditions. While specific yearly ratio figures are important, the long-run trend gives a more meaningful and valid picture of the present and future relationship of current assets to current

FIGURE VII
CURRENT RATIO (TIMES)
GULF OIL CORPORATION

TIMES



liabilities. Extreme variances from industry average figures demand company investigation to determine the exact cause of such variation, and to take corrective action where needed. In the same light, any sharply increasing or decreasing trends warrant additional research and possible action.

Comparisons should be made to other companies operating in the same field of endeavor and to predetermined industry standard figures. The results of such comparisons are readily understood when presented in the form of tables and figures.

Fixed Assets to Tangible Net Worth

Fixed assets are those assets of the company which are relatively permanent in nature and not held for resale by the business. For the purpose of this presentation, fixed assets are used at cost less depreciation with the exception of land, which is used at cost. Typical fixed assets included are land, buildings, machinery, equipment, furniture, fixtures, and trucks. Tangible net worth as used here represents ". . . the sum of all outstanding preferred and common stocks, retained earnings, and undivided profits, less any intangible assets"4

For each field of business operations, there is a

⁴Foulke, op. cit., p. 643.

certain proportion of the tangible net worth which is typically invested in fixed assets. A smaller proportion is favorable for the individual firms.

A higher proportion is unfavorable for two simple reasons: first, the annual depreciation charge that must be assumed in the income statement is proportionately heavier than for competitors; and second, if the fixed assets are very heavy, the concern has either a low net working capital with subsequent over-trading, . . . or a funded debt to furnish adequate net working.⁵

The ratio is found by dividing the total of fixed assets by the total of tangible net worth, and is expressed as a percentage figure. The purpose of the ratio is to measure the size of fixed assets in relation to tangible net worth, and to point out any extremely high figures or unfavorable trends. The importance of this measurement is revealed by the common belief of management that increases in the size of building, offices, and equipment will bring about larger profits for the business. Under some conditions, this belief may prove technically sound. More frequently however, this judgment proves unsound and fatal to the business. Expansion and remodeling require the use of capital funds, rendering these funds unavailable for use in the normal operations of the business. "Capital once invested in fixed assets is there to stay Interest, dividends,

⁵Ibid., p. 283.

salaries, wages, and burden cannot be paid by excessive investments in bricks, mortar, or beautiful furnishings."⁶

Table III, page 34, presents the fixed asset to tangible net worth ratio of three producers of chemicals: duPont, Dow, and Firestone, together with the typical upper quartile figures for the chemical industry for each of the years selected for this study. Table IV, page 34, gives the industry's standard ratios for petroleum companies, together with ratios of companies selected for the study.

The ratio of fixed assets to tangible net worth as computed from financial data of duPont revealed a very weak position in this specific area. In 1950, the company fixed assets amounted to 134.8% of tangible net worth, which was well above the lower quartile figure of 76.3%. This extremely high ratio decreased gradually to 98.3% in 1955, 95.9% in 1960, and 94.6% in 1961. These figures as presented in graphic form in Figure VIII, page 35, shows a gradual improvement, from 134.8% in 1950 to 94.8% in 1961. Although the trend was one of favorable nature, the ratio was still well above the lower quartile figure and must continue to decrease until a safer and more sound position is obtained. A thorough review of managerial policy is a necessity to determine the reasoning for allowing such an extremely high ratio to exist.

⁶Ibid., p. 284.

TABLE III
FIXED ASSETS TO TANGIBLE NET WORTH (%)

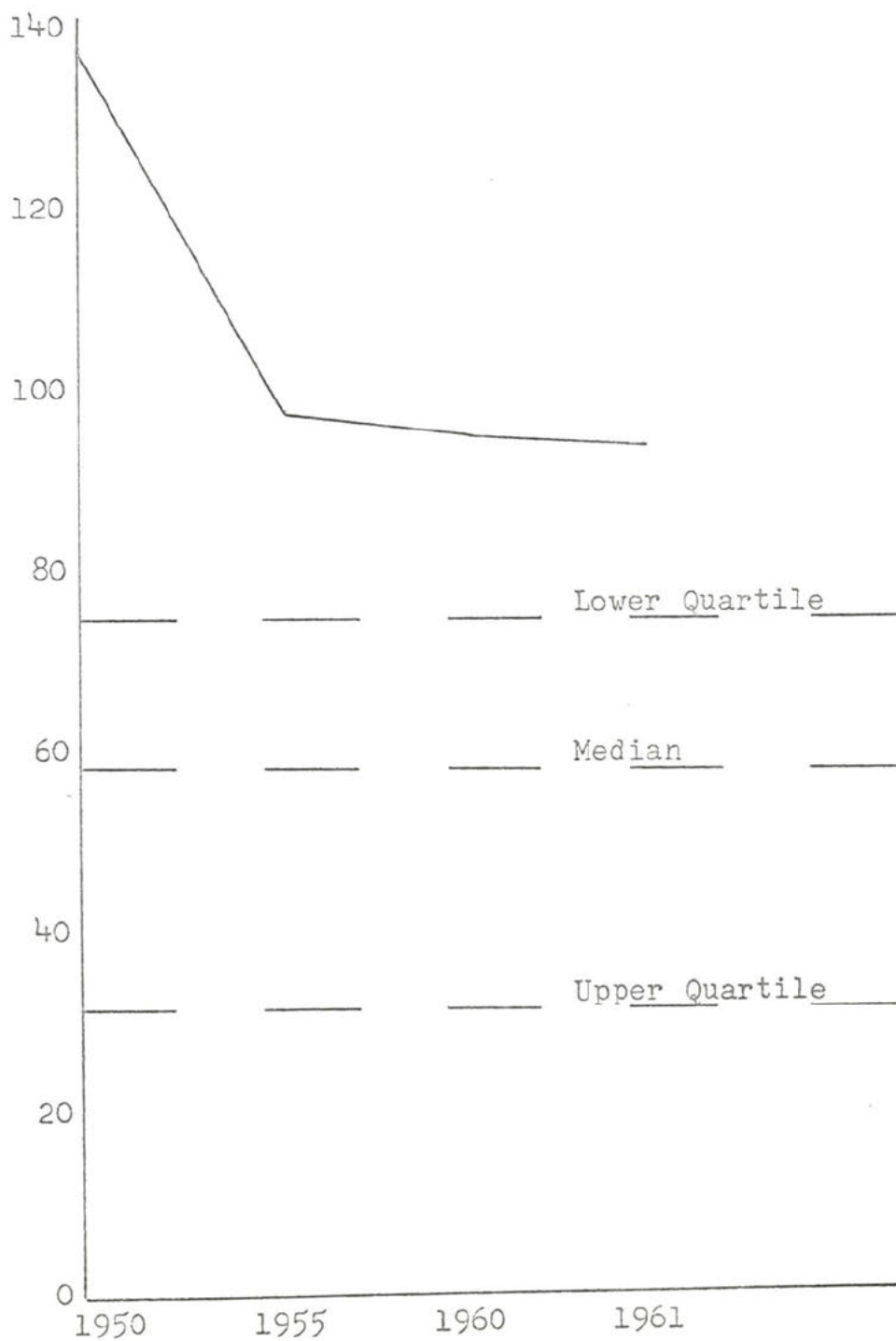
Quartiles	Upper		Median	Lower
Chemical Industry	32.2		58.0	76.3
Companies:	1950	1955	1960	1961
duPont	134.8	98.3	95.9	94.6
Dow	122.5	124.4	95.4	95.2
Firestone	74.3	61.8	52.9	52.9

TABLE IV
FIXED ASSETS TO TANGIBLE NET WORTH (%)

Quartiles	Upper		Median	Lower
Petroleum Industry	73.5		89.6	105.0
Companies:	1950	1955	1960	1961
Mobile	67.2	76.2	71.6	71.6
Texaco	84.5	83.1	90.4	114.1
Standard	82.1	82.8	88.8	88.4
Gulf	78.7	75.1	76.4	55.4

FIGURE VIII
FIXED ASSETS TO TANGIBLE NET WORTH (%)
DU PONT

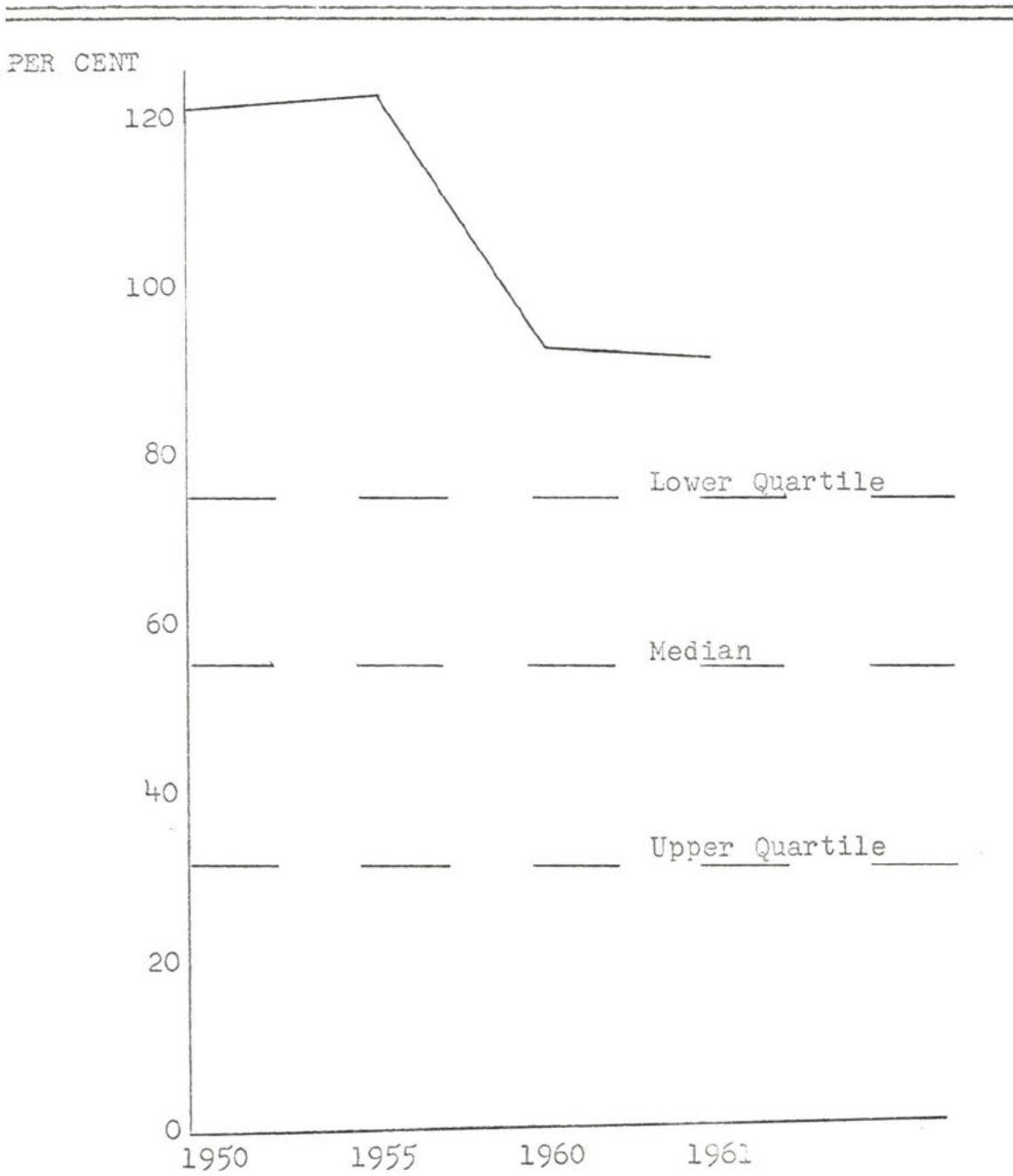
PER CENT



Dow Chemical Company's ratio of fixed assets to tangible net worth showed approximately the same higher-than-average results as did duPont. The comparison between these two companies is reflected by the figures on Table III, page 34. Figure IX, page 37, presents the ratios in graphic form to provide a clear picture of this high ratio position. Dow's fixed asset to tangible net worth ratio also showed a slight declining trend, from 1950's 122.5% to 95.2% in 1961. Here again, a complete investigation into company policy and reasoning should be conducted to determine the basic causes of such an extremely high ratio. Such probing might well reveal that the company feels that this large investment in fixed assets will provide future profit increases, thus offsetting the current disadvantages resulting from these practices. Whatever the motivation, the function of this ratio is to point out the extreme position of the fixed assets, and to bring the need for research to the attention of management.

A more typical picture of the fixed asset to tangible net worth ratio was presented by the data of Firestone Tire and Rubber Company. Table III, page 34, shows the yearly ratios in comparison to the typical industry ratios. In 1950, Firestone's ratio of 74.3% compared favorably to the lower quartile average of 76.3%. The ratio moved into the more favorable range of the median of 58.0% by a drop

FIGURE IX
FIXED ASSETS TO TANGIBLE NET WORTH (%)
DOW CHEMICAL COMPANY

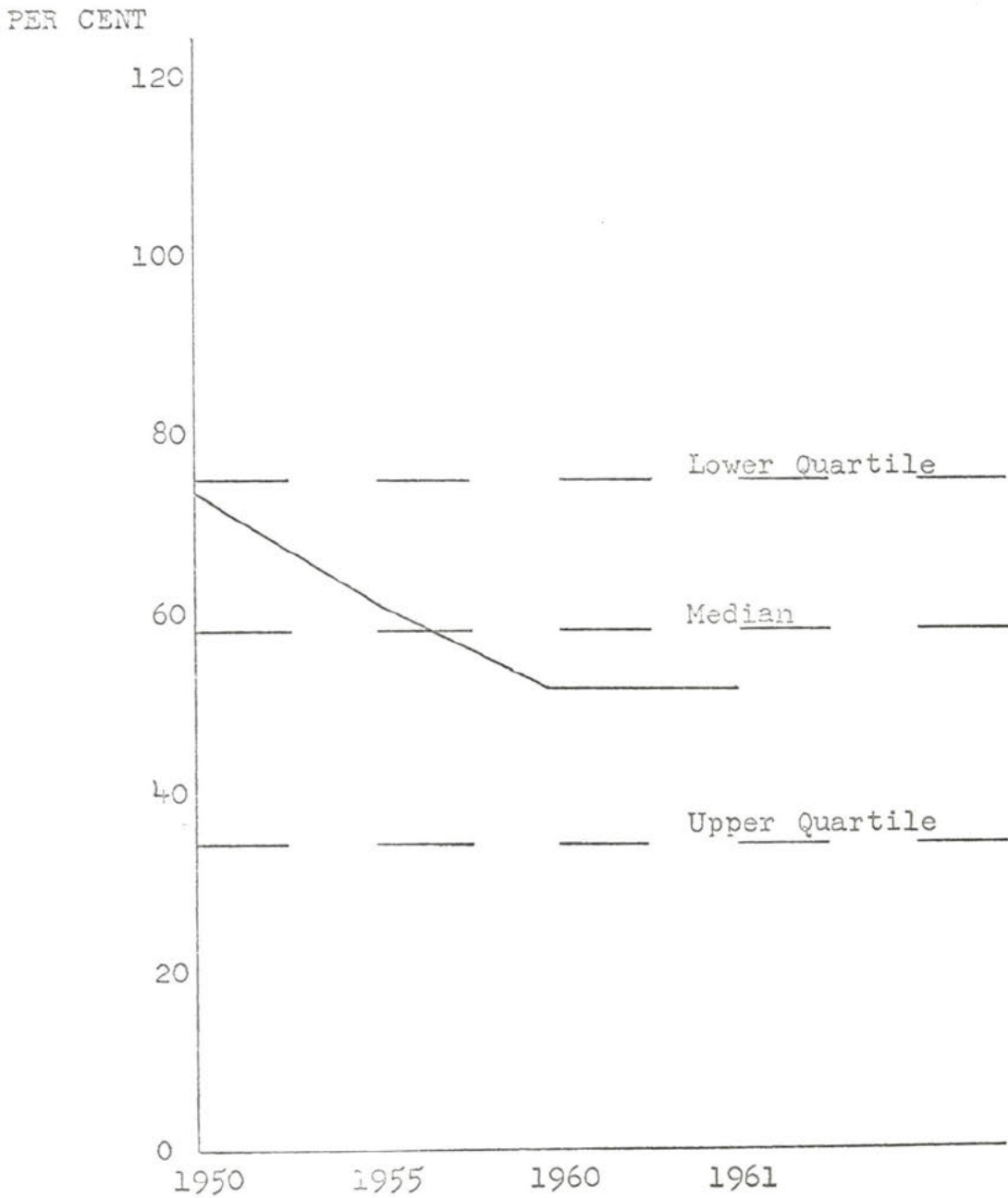


to 61.8% in 1955, 52.9% in 1960 and remained at 52.9% in 1961. These figures indicated very favorable yearly ratios. The typical amount of capital was being invested in fixed assets. As a result, the company was not overburdened with excessive depreciation charges, or heavy funded debt to secure working capital. By keeping the fixed assets in balance, the company apparently was avoiding the competitive disadvantages of heavy depreciation expenses and funded debt. The trend is shown in Figure X, page 39. This trend was favorable in that a sharp decrease occurred between 1950 and 1955, and again between 1955 and 1960. Between the years 1960 and 1961 a leveling-off occurred at a 52.9% figure, representing a ratio slightly better than the median average of 58.0%.

Due to the very nature of refining processes, the typical industry figures for the producers of petroleum goods have a much higher range. Table IV, page 34, presents these industry figures together with individual ratios for Socony Mobil Oil Company, Texaco, Standard Oil of New Jersey, and Gulf Oil Corporation.

The fixed assets to tangible net worth ratio for Socony Mobil Oil Company indicated a relatively strong financial position in this particular area of business activity. As indicated in Table IV, page 34, the company's 1950 ratio was at 67.2%, 1955--76.2%, 1960--71.6%, and

FIGURE X
FIXED ASSETS TO TANGIBLE NET WORTH (%)
FIRESTONE TIRE AND RUBBER COMPANY



1961--71.6%. Compared to the industry upper quartile figure of 73.5%, each of these ratios were rated as excellent. The advantages of keeping the fixed assets in balance with tangible net worth are no excessive depreciation charges to reduce net profits, and lack of necessity of excessive borrowing to obtain funds for daily operations of the business. Figure XI, page 41, pictorially shows the trend of the ratio for the years selected. From a low of 67.2% in 1950, the trend showed a sharp increase to 76.2% in 1955. A gradual decline and leveling-off occurred between 1955, 1960, and 1961. The trend was variable, but was not in excess of reasonable limits. At this point, Socony Mobile's ratio appeared to be under control and in better than average condition.

This ratio, as applied to the data of Texaco, Incorporated, showed a different type of financial position as reflected by Table IV, page 34. In 1950, Texaco had a fixed asset to tangible net worth ratio of 84.5%, which declined to a 83.1% figure in 1955. Compared to the industry media figure of 89.6%, the company was in good balance during this particular time period. The ratio climbed to 90.4% in 1960 and 114.1% in 1961. This increase placed Texaco's ratio below the industry lower quartile ratio of 105.0%. More significance can be obtained by studying the trend as graphically presented in Figure XII, page 42. This trend

FIGURE XI
FIXED ASSETS TO TANGIBLE NET WORTH (%)
SOCONY MOBILE OIL COMPANY

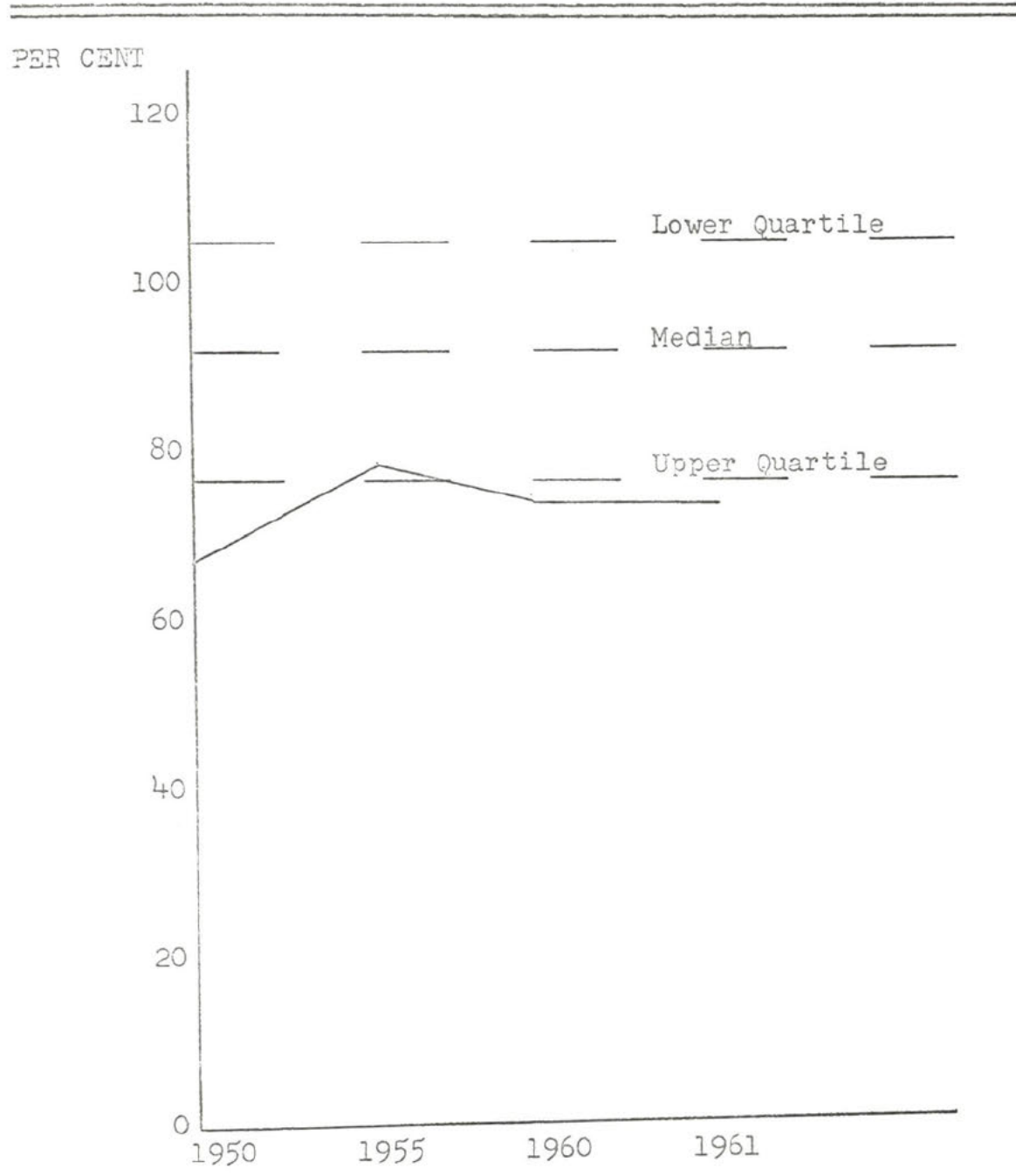
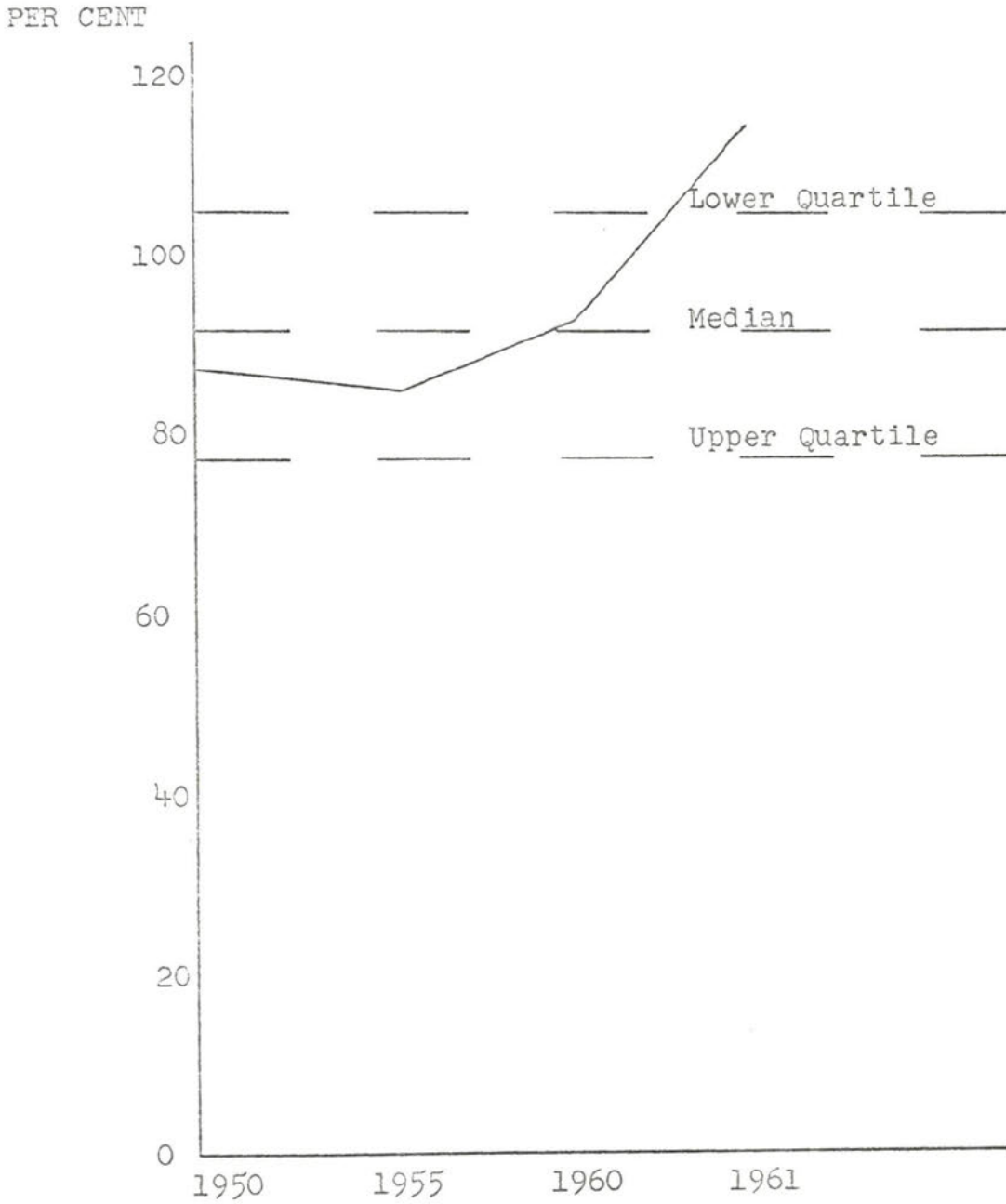


FIGURE XII
FIXED ASSETS TO TANGIBLE NET WORTH (%)
TEXACO, INCORPORATED

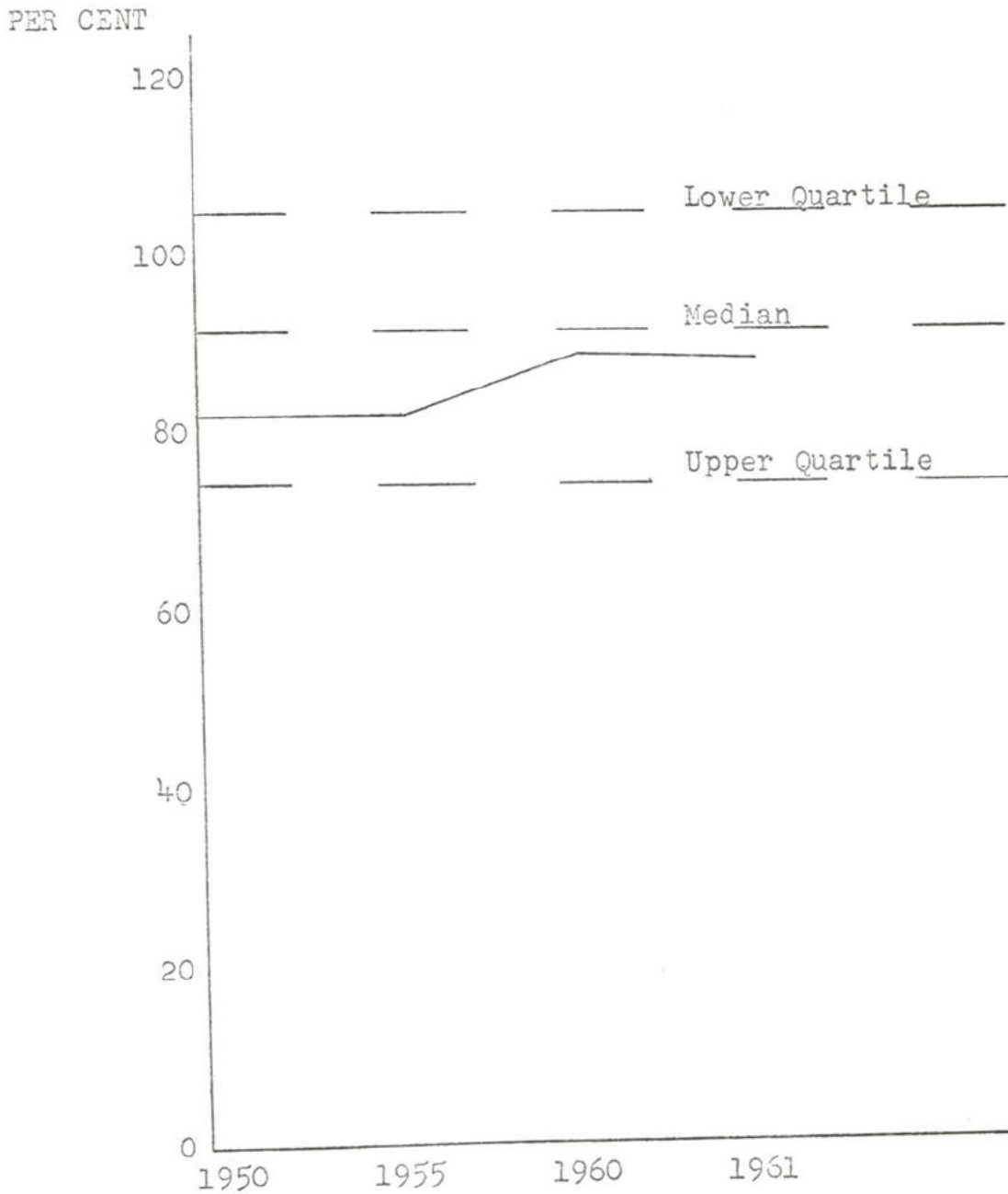


line showed the unfavorable condition of an increasing ratio figure, from a relatively good position in 1950 of 84.5% to an extremely poor condition of 114.1% in 1961. A thorough investigation should definitely be conducted to determine the causes of such a drastic ratio movement. If left unchecked, this trend indicates a future trouble area for the company.

Standard Oil of New Jersey provided an example of a relatively strong and stable fixed asset to tangible net worth ratio. As revealed in Table IV, page 34, this company's figures were: 1950--82.1%, 1955--82.8%, 1960--88.8%, 1961--88.4%. Compared to the median industry average of 89.6%, Standard showed a good average ratio figure. Figure XIII, page 44, plots the trend line, which in this case is nearly a horizontal line indicating very little fluctuation of the ratio. Apparently this firm has found a satisfactory level of investment in fixed assets and is keeping this investment under control. The benefits of this practice are many. Lower depreciation write-offs, more working capital, and less funded debt are some definite advantages.

An extremely good yearly ratio and trend are indicated by the ratios of Gulf Oil Corporation. As Table IV, page 34, points out, the ratios were: 1950--78.7%, 1955--75.1%, 1960--76.4%, and 1961--55.4%. With the upper quartile ratio of the industry set at 73.5%, the comparison revealed that Gulf's yearly ratios were relatively low and sound

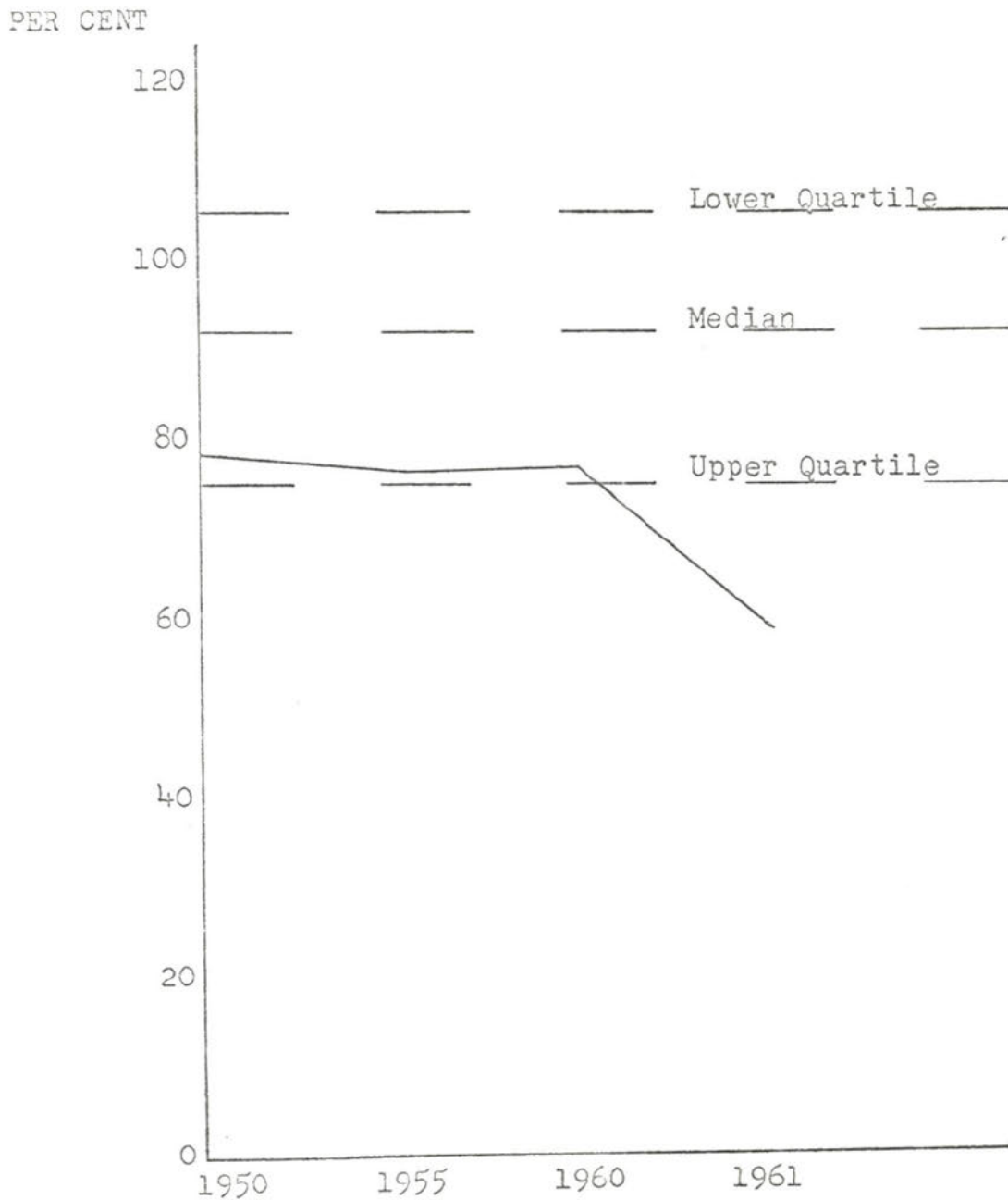
FIGURE XIII
FIXED ASSETS TO TANGIBLE NET WORTH (%)
STANDARD OIL OF NEW JERSEY



during the entire period of study. As shown on Figure XIV, page 46, the trend has favorable indications as it was fairly stable during the 1950-1960 period, and declined to a desirable figure of 55.4% in 1961. More information regarding the sharp decrease between the years 1960 and 1961 should be obtained by the accountant. Although the decline was favorable, the exact cause should be noted and studied for possible future application.

The ratio of fixed assets to tangible net worth is a measurement of the size of the investment in fixed assets. The lower relationship is more desirable because of resulting lower depreciation expenses, more working capital, and lower amounts of funded debts. Companies having a high percentage of investment in fixed assets are at a competitive disadvantage due to these factors of depreciation expense, low working capital, and necessity of high funded debt. The common business theory of increased assets being the basis for more profits is replaced with sound facts when this ratio is used in the business firm.

FIGURE XIV
FIXED ASSETS TO TANGIBLE NET WORTH (%)
GULF OIL CORPORATION



CHAPTER III

RATIOS MEASURING PROFITS

Net Profit on Net Sales

The business world has widely accepted the concept of "increasing sales means increasing profits." In every business there exists a point where revenues from sales exactly equal all expenses occurred in that business. This definite level of sales volume is known as the "breakeven" point. Net sales above this point produce increasing net profits because all fixed costs have been covered below the break-even point, all variable expenses will not increase in the same relation as profits. Thus, any net sales above the break-even point will normally create more net profits until the point of full capacity and full efficiency is reached. As volume reaches this point of full capacity, additional facilities must be added bringing about higher fixed expenses. "The primary factor in profits is sales volume, and the value of increased sales volume per dollar of sales, due to these increased sales not adding to fixed charges, is far greater than any additional selling expense which would be required, in the majority of cases and under normal conditions."¹

¹Harrison G. Charter, What! No Reports At All, Mr. Knudsen?, p. 9.

Each individual business must have some knowledge of their profits-sales volume relationship. The measure of this relationship is the ratio of net profit on net sales. The ratio is computed by dividing net profits by net sales and is expressed as a percentage of net sales. "Net Profits on Net Sales has long been considered another key ratio to measure the profitability of a business."² Net profits as used in this ratio normally mean net profits after taxes. Net Sales includes all sales less any returns, allowances, and discounts. As indicated by Tables V and VI, page 49, the net profits on net sales ratio is smaller than normally expected. According to typical figures, chemical manufacturers have to sell about \$20 of goods in order to realize \$1 of net profits. Firms involved in the manufacturing of petroleum products must sell about \$14 of goods to realize their \$1 of net profits. A figure below the median and lower quartile rates is in need of investigation and corrective action. Ratios in excess of the median and upper quartile figures are considered to be indications of financial and operational strength, however rates in extreme variance of typical figures should also be watched as the point of full-capacity or full efficiency may possibly be nearing for the company.

The typical figures for the chemical industry together

²Pitt and Quarry, p. 101.

TABLE V
NET PROFIT TO NET SALES (%)

Quartile	Upper	Median	Lower	
Chemical Industry	6.91	4.54	3.04	
Companies:	1950	1955	1960	1961
duPont	14.42	15.30	11.62	11.87
Dow	13.12	9.57	8.69	5.51
Firestone	4.78	4.94	5.39	5.41

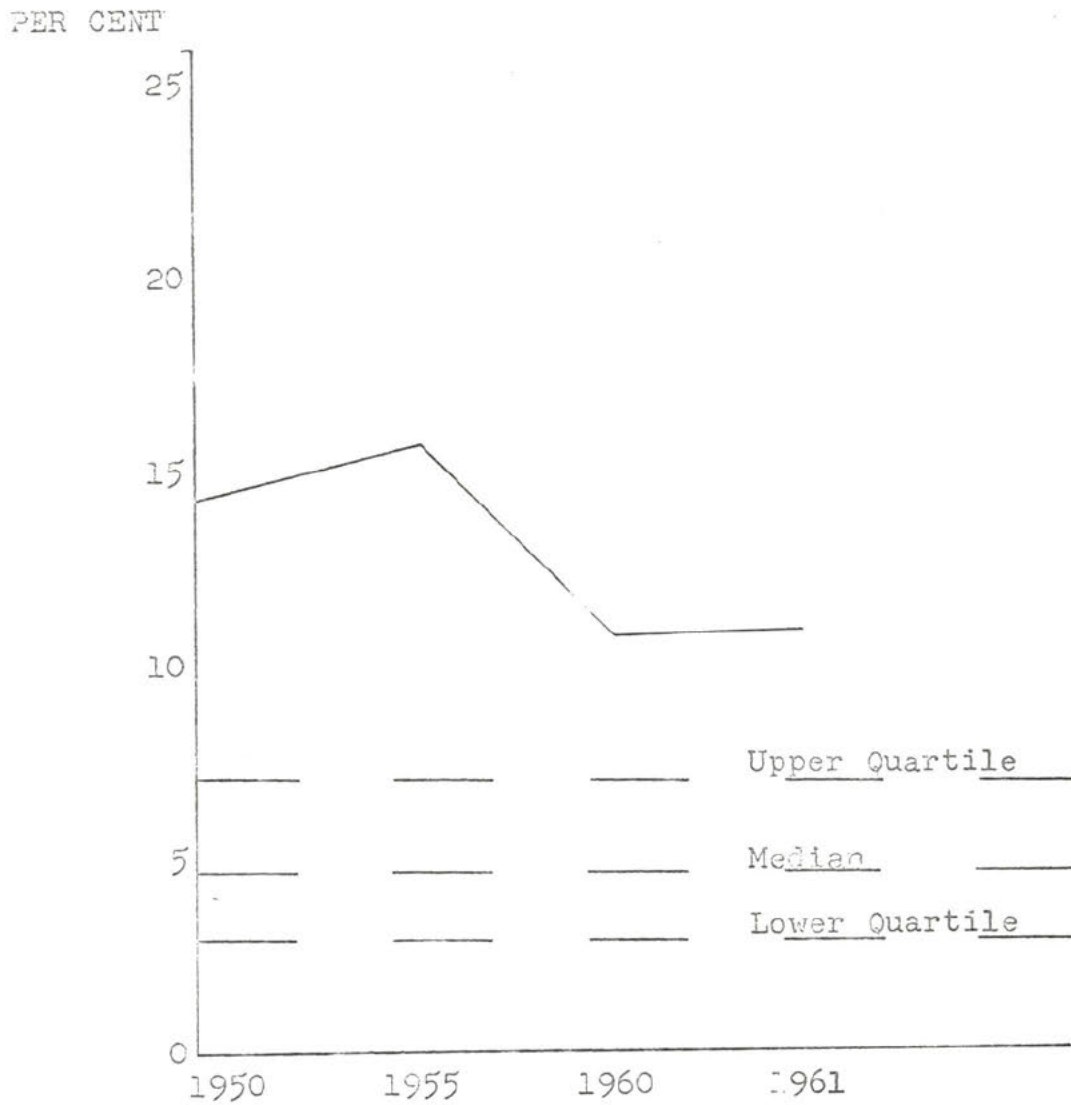
TABLE VI
NET PROFIT TO NET SALES (%)

Quartile	Upper	Median	Lower	
Petroleum Industry	9.52	7.14	4.53	
Companies:	1950	1955	1960	1961
Mobile	10.48	12.21	5.66	6.33
Texaco	13.35	15.02	13.15	14.13
Standard	13.01	11.30	7.92	8.29
Gulf	9.73	11.50	10.27	10.42

with specific ratios of the three chemical firms included in this study are presented in Table V, page 49. The data of duPont revealed a high ratio of net profits to net sales in comparison to the industry's typical percentages of 6.91, 4.54, and 3.04. In 1950, the company's ratio was 14.42%, a figure well above the upper quartile figure of 6.91%. This ratio rose to 15.30% in 1955 giving indication of strong position, but need of caution to prevent the reaching of the point of full capacity without full knowledge of the firm's status. The ratio declined sharply to 11.62% in 1960 and 11.87% in 1961, but remained in a strong position well above the typical upper quartile figure. Figure XV, page 51, gives visual presentation to these company ratios. The trend indicated again the high figures which decline sharply, then apparently level-off in 1961. The relatively high ratio figures found here give rise to the need of further research into the causes and nature of this condition.

Dow Chemical Company's net profit on net sales ratio gives a particular interesting contrast to that of duPont. Table V, page 49, shows that the company's ratio in 1950 stood at 13.12%, well above the industry's upper quartile. The ratio dropped rapidly to 9.57% in 1955, slightly to 8.69%, and sharply again to 5.51% in 1961. To illustrate the significance of these figures, the company must sell

FIGURE XV
NET PROFIT TO NET SALES (%)
DU PONT



about \$8 in goods to realize \$1 net profit in 1950 and about \$17 in goods to realize the same \$1 profit in 1961. Figure XVI, page 53, shows the figures in graphic form. The definitely declining trend is illustrated, giving added weight to the unfavorable direction of ratio movement. In 1950, the ratio was at 13.12%, representing a relatively strong status. The year 1961 found the ratio at 5.51%, barely above the median figure of 4.54%. The trend indicated a continued decline if corrective action is not soon undertaken. More extensive investigation would reveal the causes, whether a declining sales volume or increasing fixed expenses, of such an unfavorable net profit on net sales situation.

The data of Firestone Tire and Rubber Company presented still a third type of net profit on net sales picture. The company's 1950 ratio of 4.78% was slightly above the typical median figure of 4.54%. The ratio stood at 4.94% in 1955, 5.39% in 1960, and 5.41% in 1961. As indicated by these ratios, the company had a relatively strong and stable ratio situation. Investigation might possibly indicate that an increased sales volume would bring net profits up to an even more favorable position. Figure XVII, page 54, presents the ratios in graphic form to point out the stability of trend of the ratio. As shown, the ratio had a very slight increase over the time period covered, from 4.78% in 1950 to 5.41% in 1961. While the trend is

FIGURE XVI
NET PROFIT TO NET SALES (%)
DOW CHEMICAL COMPANY

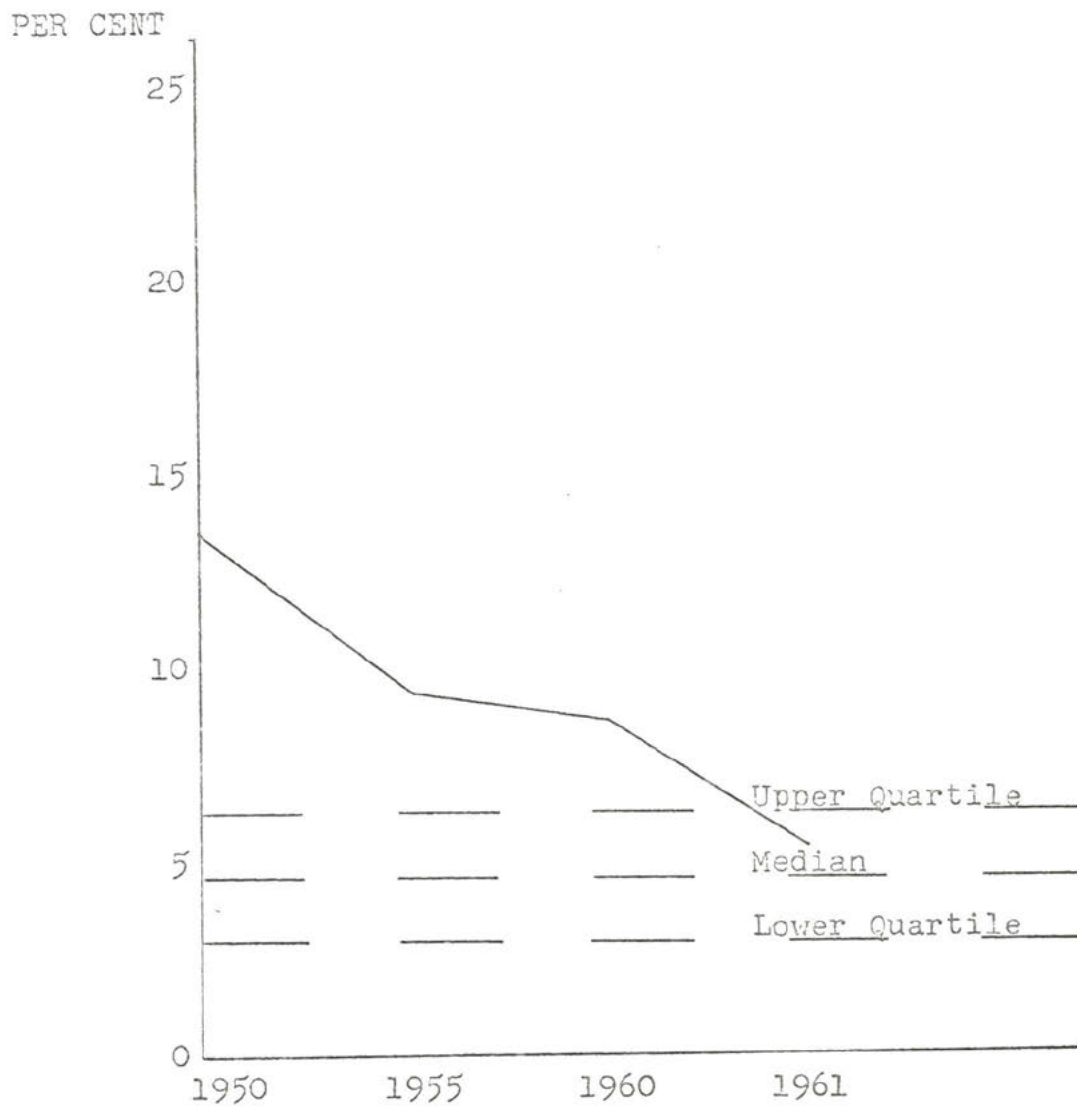
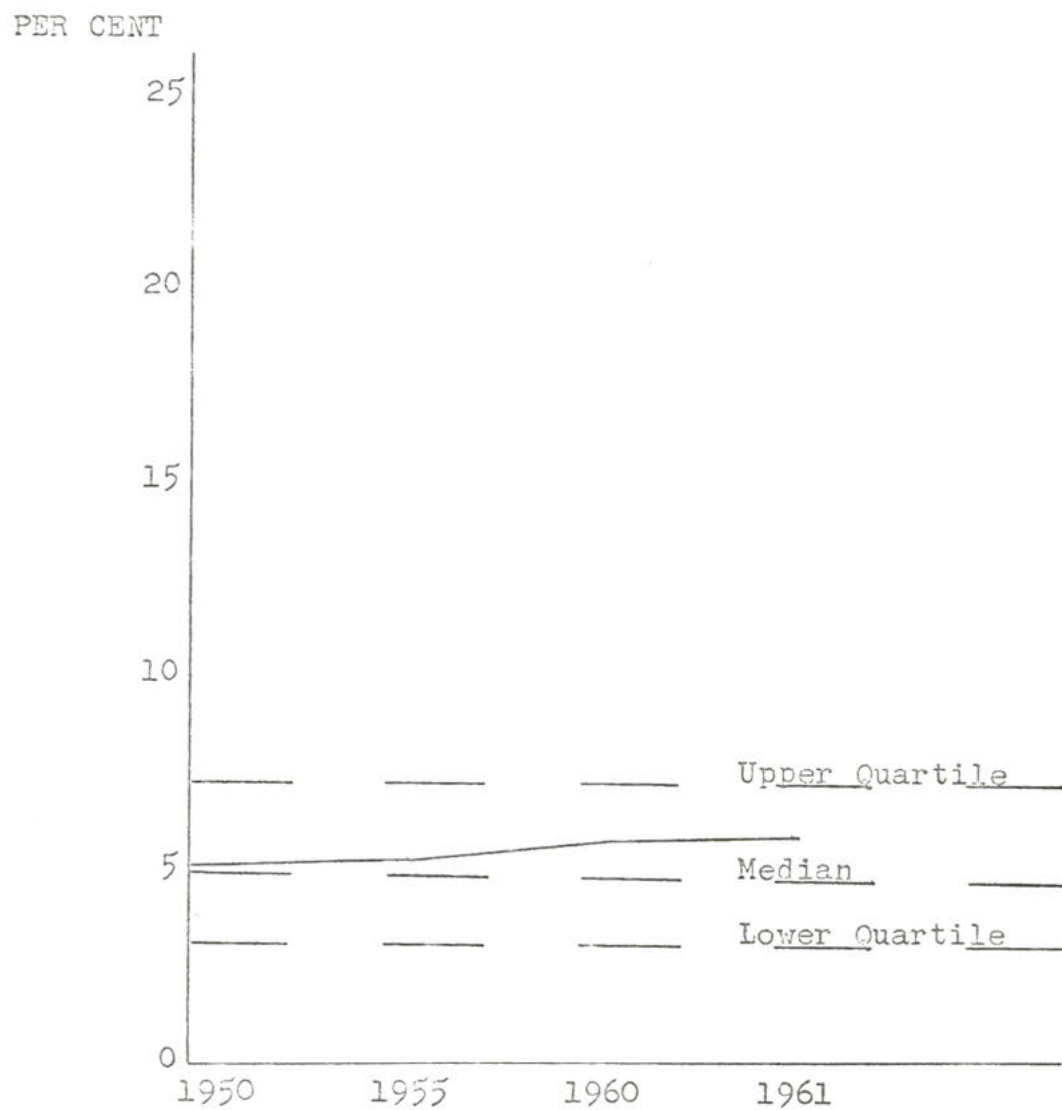


FIGURE XVII
NET PROFIT TO NET SALES (%)
FIRESTONE TIRE AND RUBBER COMPANY



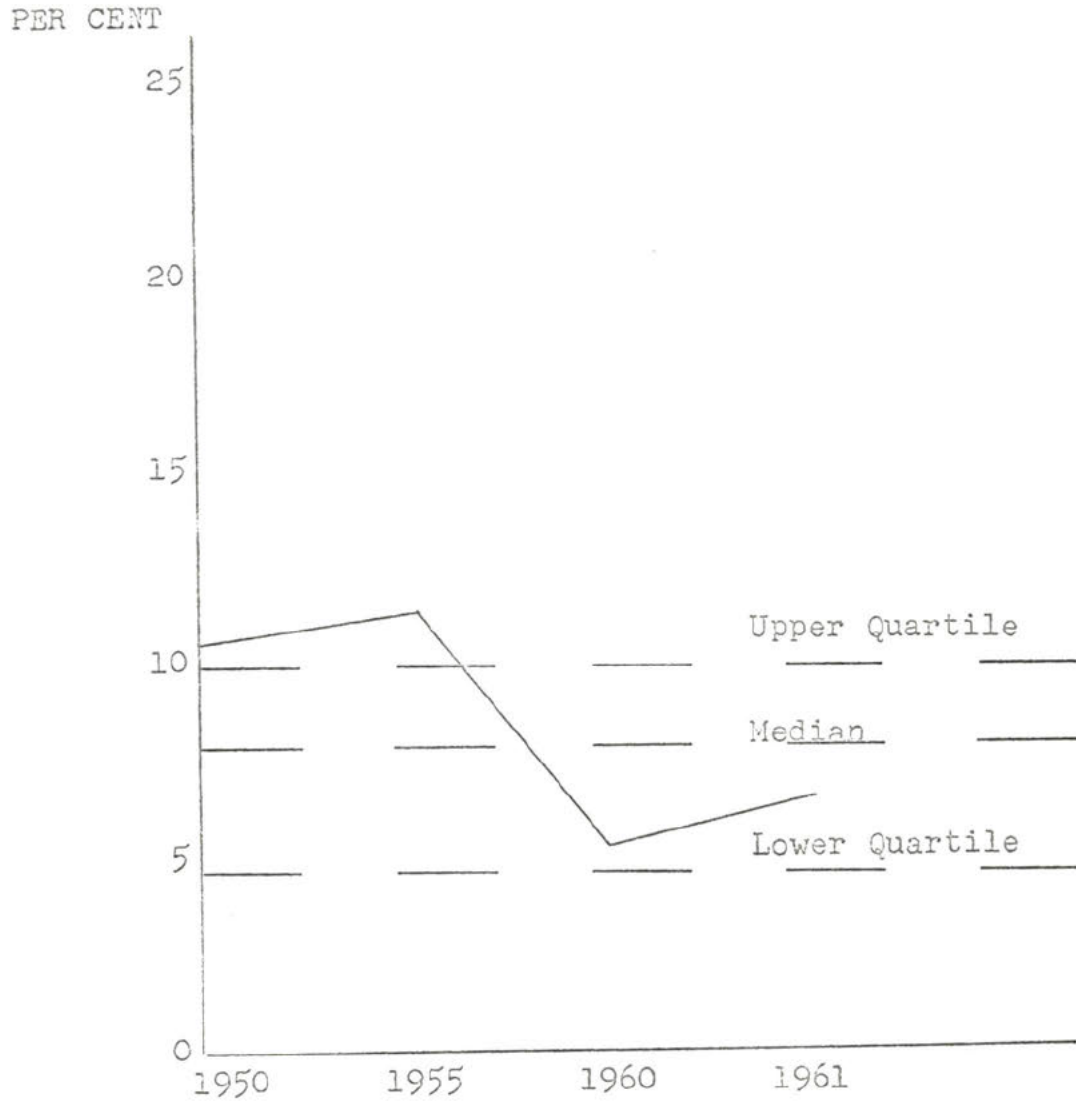
not extreme, it remained favorable and shows considerable opportunity in the company's future.

Table VI, page 49, shows the variances in typical figures among different industries. Companies engaged in the production of petroleum goods have typical net profit on net sales ratios of 9.52%, 7.14%, and 4.53%.

Socony Mobile Oil Company's financial data revealed an interesting variable net profits on net sales ratio. As indicated in Table VI, page 49, the figures were: 1950--10.48%; 1955--12.21%; 1960--5.66%; and 1961--6.33%. The ratio was well above the upper quartile figure in the years 1950 and 1955. In 1960, the ratio was 5.66% and 6.33% in 1961, both figures below the median of 7.14%. This company has experienced the problem faced by many businesses today, that of drastically falling net profits on net sales figures. Figure XVIII, page 56, shows the variance in trend of this ratio. From a high ratio of 10.48% in 1950, the ratio increased to 12.21% in 1955, declined sharply to 5.66% in 1960, and rose again to 6.33% in 1961. Although the trend recently turned upward slightly, the long-run trend had been unfavorable. A definite need is shown for managerial investigation.

A vastly different net profits on net sales picture is revealed by the computations performed on the data of

FIGURE XVIII
NET PROFIT TO NET SALES (%)
SOCONY MOBILE OIL COMPANY



Texaco, Incorporated. Figure XIX, page 58, indicates the relatively high and stable ratio of this company. The trend showed the ratio of 13.35% in 1950 increasing to 15.02% in 1955. From this extremely high figure, the ratio declined slightly to 13.15% in 1960, and again an increase to 14.13% in 1961. The ratio was well above the industry's upper quartile figure of 9.52% in all years covered by this study. Despite the apparently strong position indicated by this ratio, the company should be aware that such an extremely high ratio could lead to need of increased expenses in the future operations of the firm. Investigation should reveal the basic causes of this high level, and could possibly lead to prevention of future problems before they actually occur.

Standard Oil of New Jersey showed again a strong net profits on net sales situation. Figure XX, page 59, traces the movements of the ratio from 13.01% in 1950 through 11.30% in 1955, 7.92% in 1960, and 8.29% in 1961. The trend showed a strong ratio in 1950, well above the upper figure 9.52%. A gradual decline to 11.30% in 1955 appeared still strong, however the 1960 figure of 7.92% was about equal to the median figure of 7.14%. This decline was extreme in that the ratio fell from an "excellent" ranking into the "average" classification. In 1961, the unfavorable trend direction was halted, and it rose again to 8.29%,

FIGURE XIX
NET PROFIT TO NET SALES (%)
TEXACO, INCORPORATED

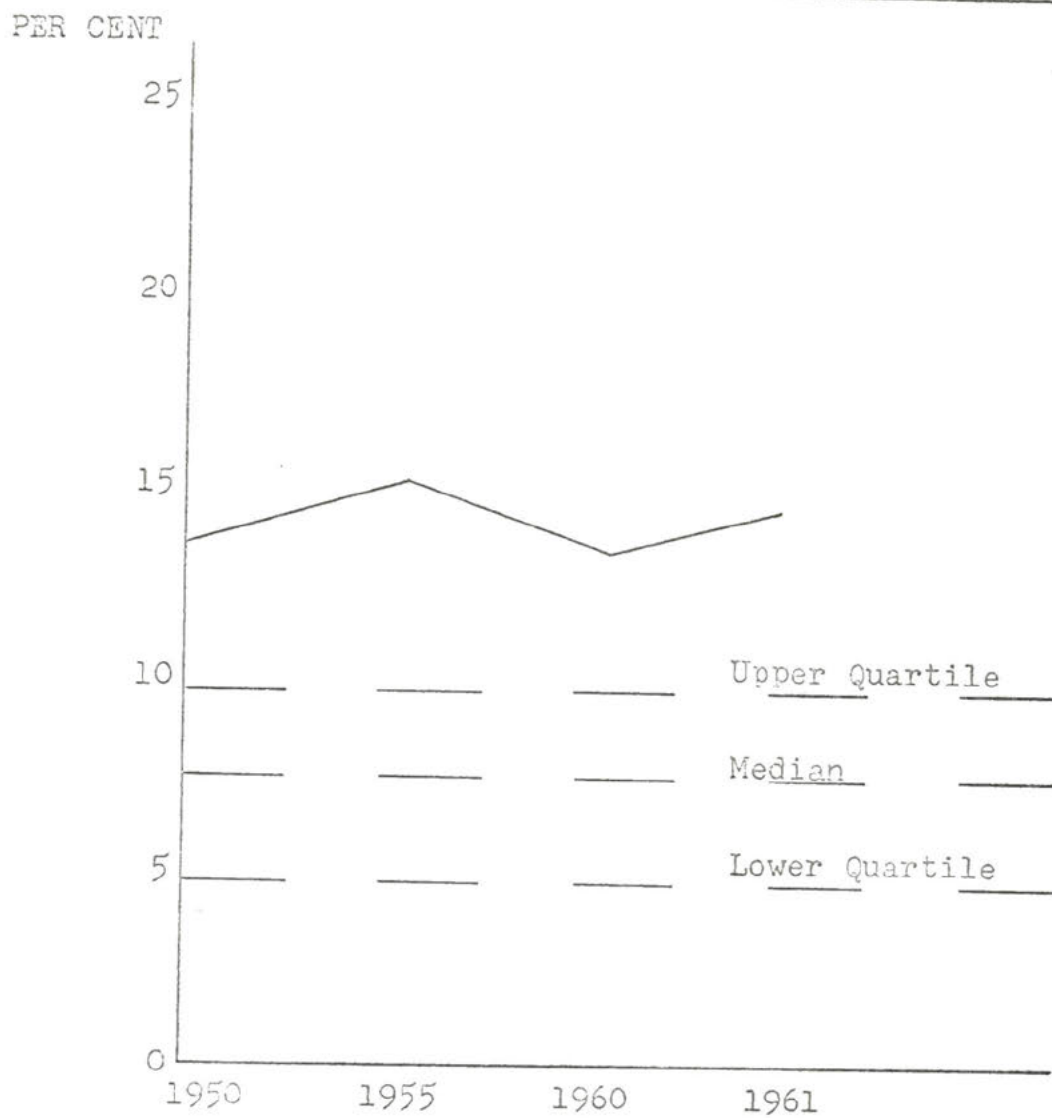
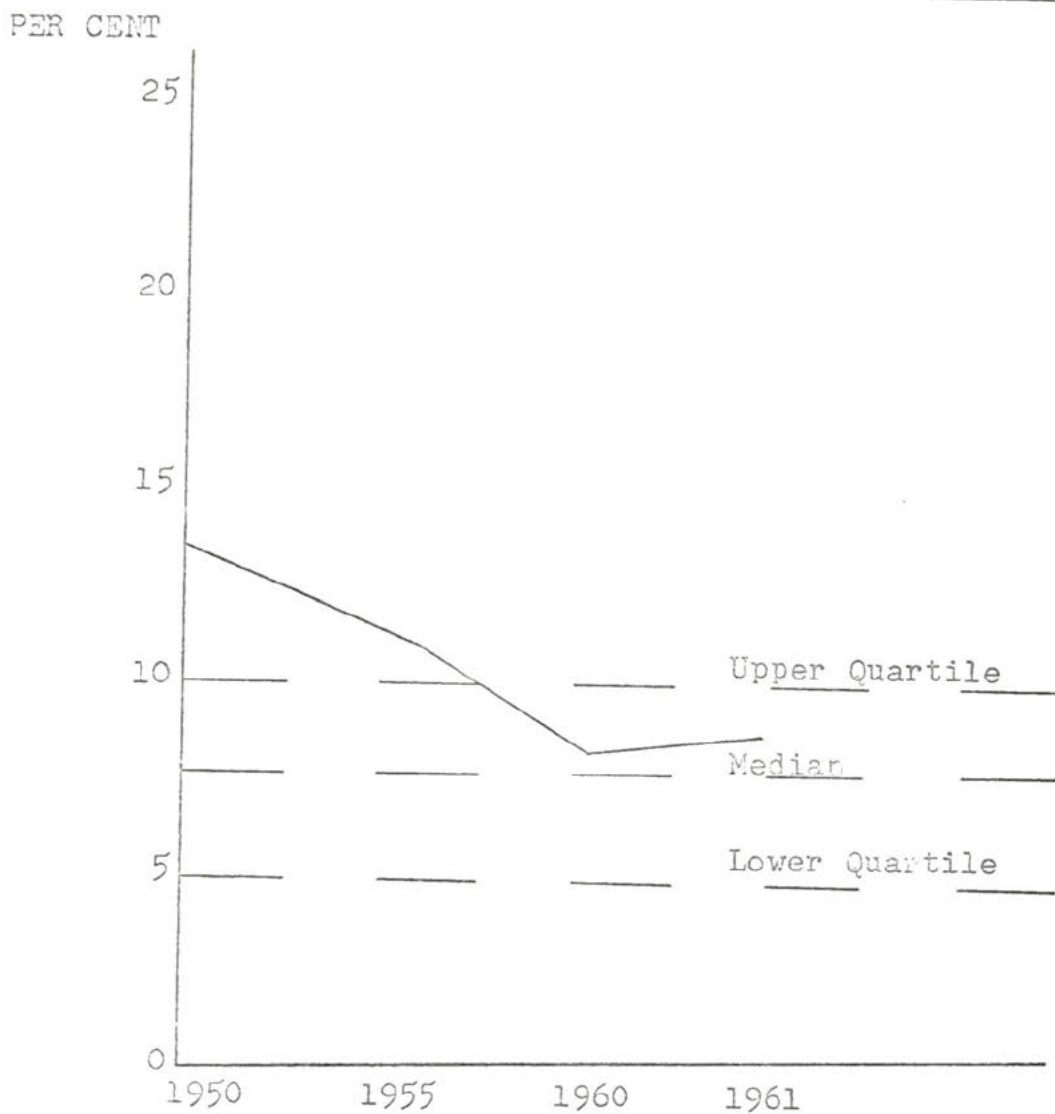


FIGURE XX
NET PROFIT TO NET SALES (%)
STANDARD OIL OF NEW JERSEY

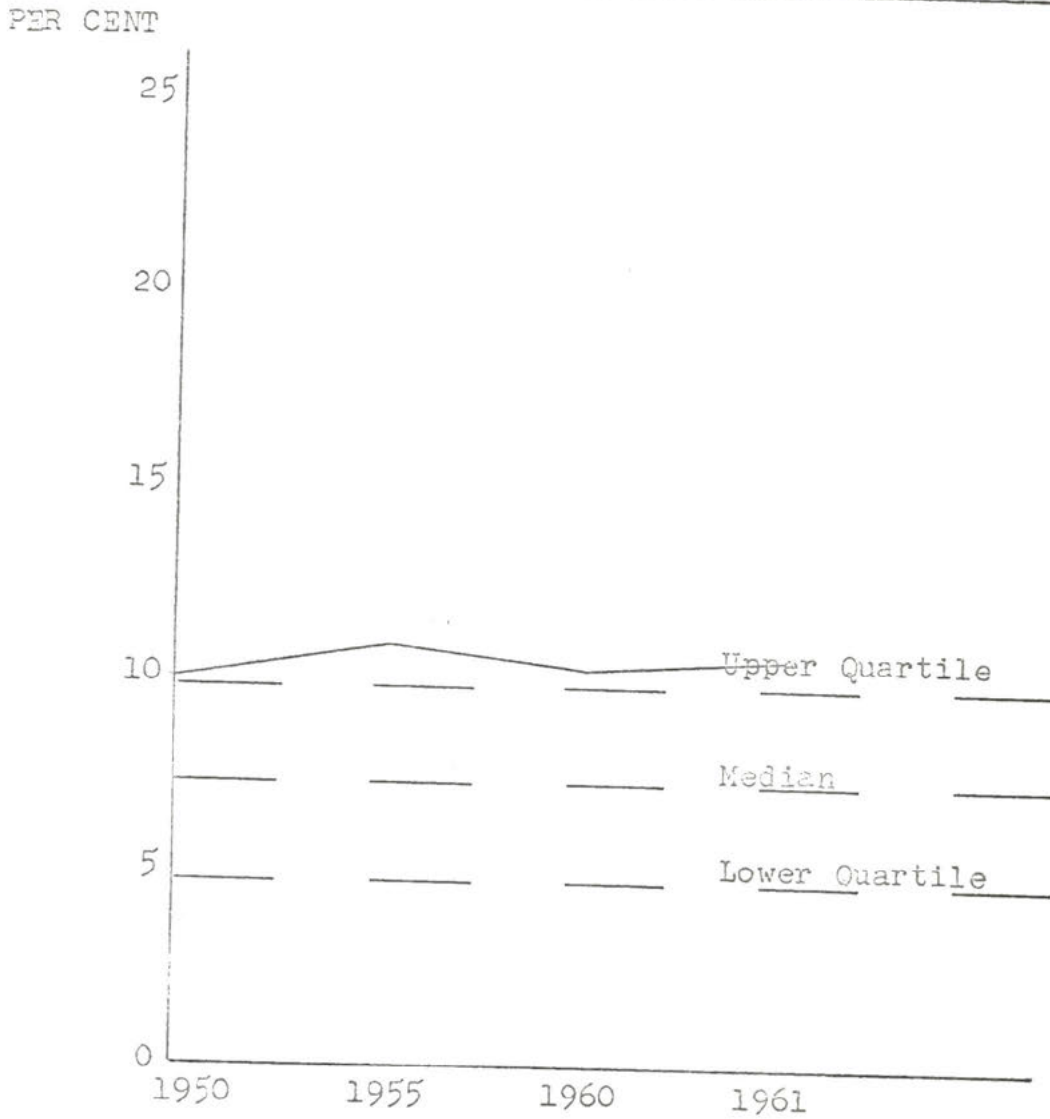


about mid-way between median and upper quartile figures. If left unchecked, the trend could have continued downward to fatal results, however the current trend is again favorable and strong.

Another example of a strong and stable ratio is shown in Figure XXI, page 61, which represents the ratio of Gulf Oil Corporation. The figures were as follows: 1950--9.73%, 1955--11.50%, 1960--10.27%, and 1961--10.42%. As evidenced by these figures and the trend line, the company has obtained a desirable net profits on net sales relationship and is attempting to control the ratio within reasonable limits.

The Net Profits on Net Sales ratio indicates the ability of the management of a business to obtain a satisfactory profit level on the operations of that business. Normally, sales volume will increase net profits because of the exceeding of the break-even point. Increased net sales above this point will provide greater profits because fixed expenses will be previously covered, and variable expenses normally will not increase in the same relation as profits. This additional sales volume is favorable until the point of full capacity is reached. At this point additional fixed expenses will be incurred to handle additional sales volume. This ratio enables the firm to operate on the sales volume concept within these limitations. A high ratio is favorable

FIGURE XXI
NET PROFIT TO NET SALES (%)
GULF OIL CORPORATION



if it does not reach extreme proportions. A low ratio indicates need for managerial investigation to determine causes of, and corrections for, such low figures.

Net Profit on Tangible Net Worth

There are two commonly used measurements of net profit for businesses, net profits on net sales and net profits on tangible net worth. Previous discussion dealt with the ratio of net profits in net sales, the complementary ratio of net profits on tangible net worth is now presented. This particular ratio measures the efficiency of management in its use of funds invested in the business. The principle motivation of business operations is to earn a profit over a continuing period of time. These business profits provide not only a return of investments to owners, but also salaries for managerial personnel and employees, improved products to consumers, help economic progress, and pay a heavy load of the financing of the various governmental structures in this country.

In order for businesses to grow and continue to provide these things for our economy, funds must be provided by investors. The profit-making power of a particular business is important to attract new investment funds. During certain economic circumstances, the firm cannot provide a continuing high level of profits. It is during this period that any additional funds needed by the business must be supplied by

the retained earnings of that particular business. Thus, the earning of profits is the most vital function of the business, not only for purpose of returning interest of investments, providing funds to meet expenses, but also to provide sufficient amounts of profits to be reinvested into the business when demanded and needed for continuity of operations.

The ratio is computed by dividing net profits by tangible net worth. The resulting ratio is expressed as percentage of tangible net worth. A high ratio is considered more favorable from the standpoint of this paper. A low ratio is unfavorable and indicates need for investigation. Table VII, page 64, presents the ratios as computed for the three chemical firms included in this study, together with the typical ratios for the chemical industry. Table VIII, page 64, presents similar information in regard to the four petroleum firms and the petroleum industry.

The net profits on tangible net worth ratio for duPont revealed a generally strong position coupled with a declining trend. Figure XXII, page 65, points out the trend which declines steadily from a 26.15% figure in 1950 to 10.69% in 1961. This trend moved from a rating of "excellent" in 1950 to an "average" classification in 1961. The 10.69% figure reached in 1961 was still close to the industry's median figure of 11.07%. However, the trend shown here was

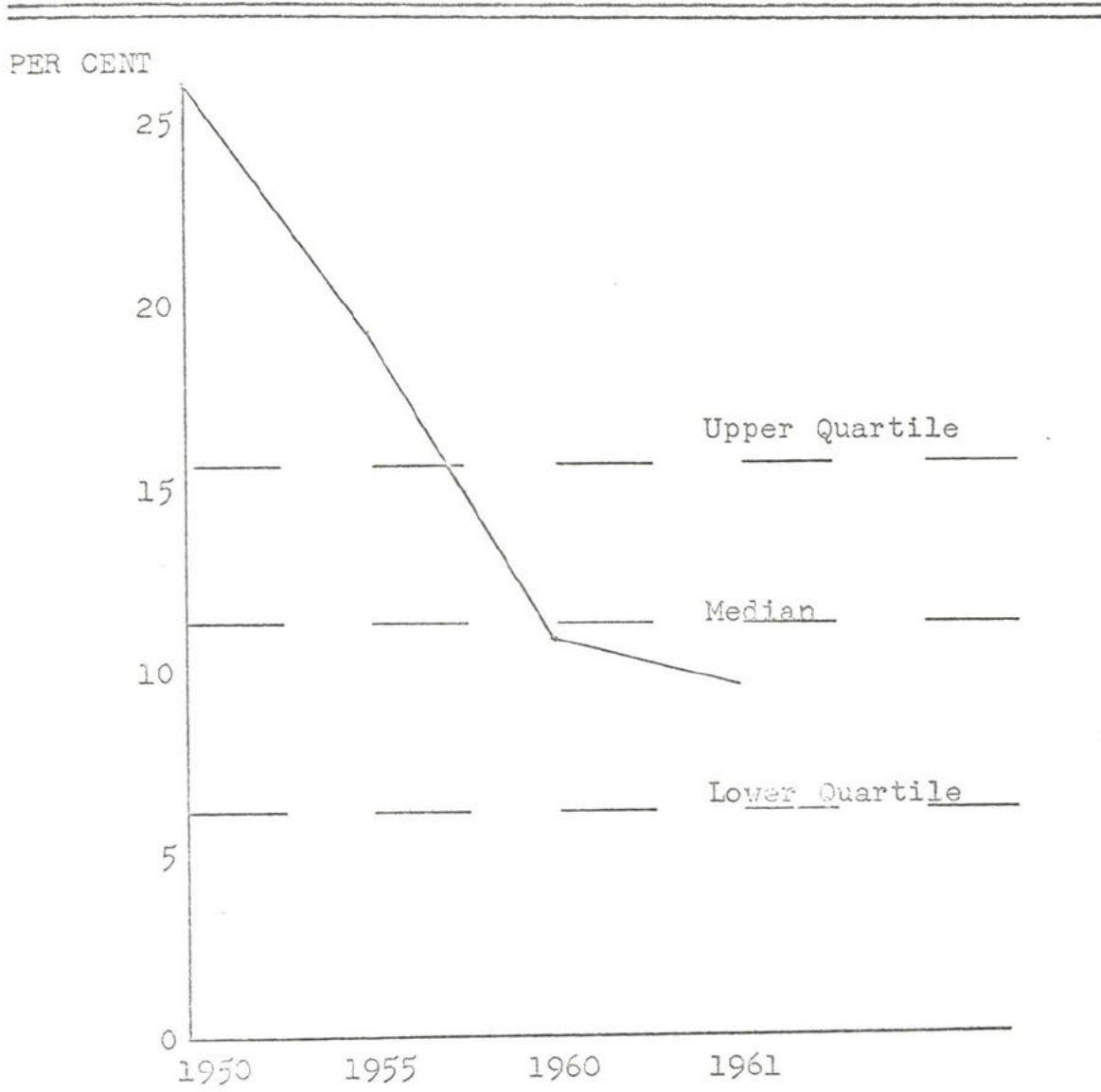
TABLE VII
NET PROFIT TO TANGIBLE NET WORTH (%)

Quartiles	Upper	Median	Lower	
Chemical Industry	15.96	11.07	5.91	
Companies:	1950	1955	1960	1961
duPont	26.15	19.97	11.03	10.69
Dow	16.76	10.44	11.77	7.06
Firestone	23.57	17.52	12.57	11.57

TABLE VIII
NET PROFIT TO TANGIBLE NET WORTH (%)

Quartiles	Upper	Median	Lower	
Petroleum Industry	11.62	8.96	6.86	
Companies:	1950	1955	1960	1961
Mobile	12.21	11.35	6.90	7.75
Texaco	14.66	15.78	14.32	14.44
Standard	15.77	15.15	10.09	10.69
Gulf	14.11	14.27	11.54	8.36

FIGURE XXII
NET PROFIT TO TANGIBLE NET WORTH (%)
DU PONT

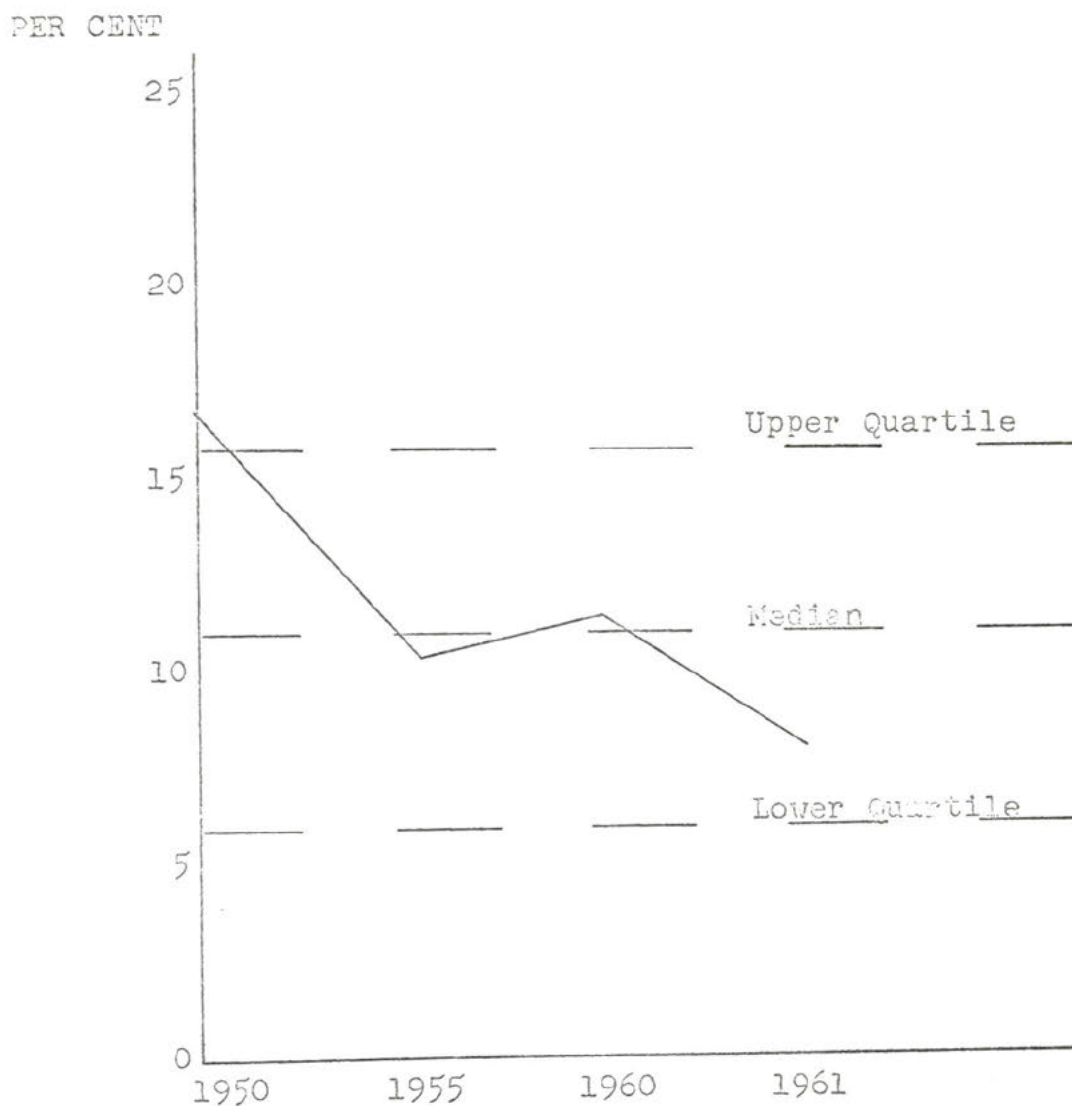


one of unfavorable direction and should be investigated before a crisis is reached at some future date. The producing of profits as reflected by the use of investment is quite important to duPont as well as all efficient business firms. An investigation might possibly reveal a large investment in fixed assets, such as in new plant locations. Such information should be noted because of its affect on this ratio.

Dow Chemical Company's ratio is similarly declining over the period of this study. In 1950, the ratio of 16.76% was over the upper quartile figure of 15.96%, but dropped sharply to 10.44% in 1955. In 1960, the ratio again rose to "safe" levels at median ratio range, but decreased in 1961 to 7.06% which was only slightly above the lower quartile figure of 5.90%. Thus between the years of 1950 and 1961, the company's ratio dropped from a ranking of "excellent" to "poor." This trend gave adequate information to warrant the probing of this situation. If corrections are not made and the ratio continues to decline, the company could possibly find itself in a position of being unable to attract sufficient investor funds at some future date. Figure XXIII, page 67, presents the yearly ratios and the trend in graphic form.

Still another example of the general declining trend of this ratio was given by the data of Firestone Tire and

FIGURE XXIII
NET PROFIT TO TANGIBLE NET WORTH (%)
DOW CHEMICAL COMPANY



Rubber Company. Figure XXIV, page 69, shows the decline in the form of a trend beginning with a 23.57% figure in 1950 and ending with the 11.57% figure in 1961. Although the trend was of a definite downward direction, the ratio was still in the median range as compared to industry typical figures. As in the two previous cases, the problems involved were not current in nature, but are of future consideration. A close watch on the company's net profit on tangible net worth situation is indicated.

The typical industry figures for firms engaged in petroleum goods are more closely limited than those of the chemical field. Table VIII, page 64, shows the three standard figures to be 11.62%, 8.96%, and 6.86%. One of the largest producers of petroleum goods in our country, Socony Mobile, gave an example of a firm whose ratio of net profits on tangible net worth was sound and stable within these industry limitations. Figure XXV, page 70, reveals the ratios of this company to be 12.21% in 1950, 11.35% in 1955, 6.90% in 1960, and 7.75% in 1961. By comparing these ratios to industry figures, the reader can determine that all ratios were within the "safe" area. The trend indicated the decline of the ratio from a high figure of 12.21% in 1950 to the median range figure of 7.75% in 1961. This unfavorable trend movement gave indication that the condition of this financial area would bear watching over the

FIGURE XXIV
NET PROFIT TO TANGIBLE NET WORTH (%)
FIRESTONE TIRE AND RUBBER COMPANY

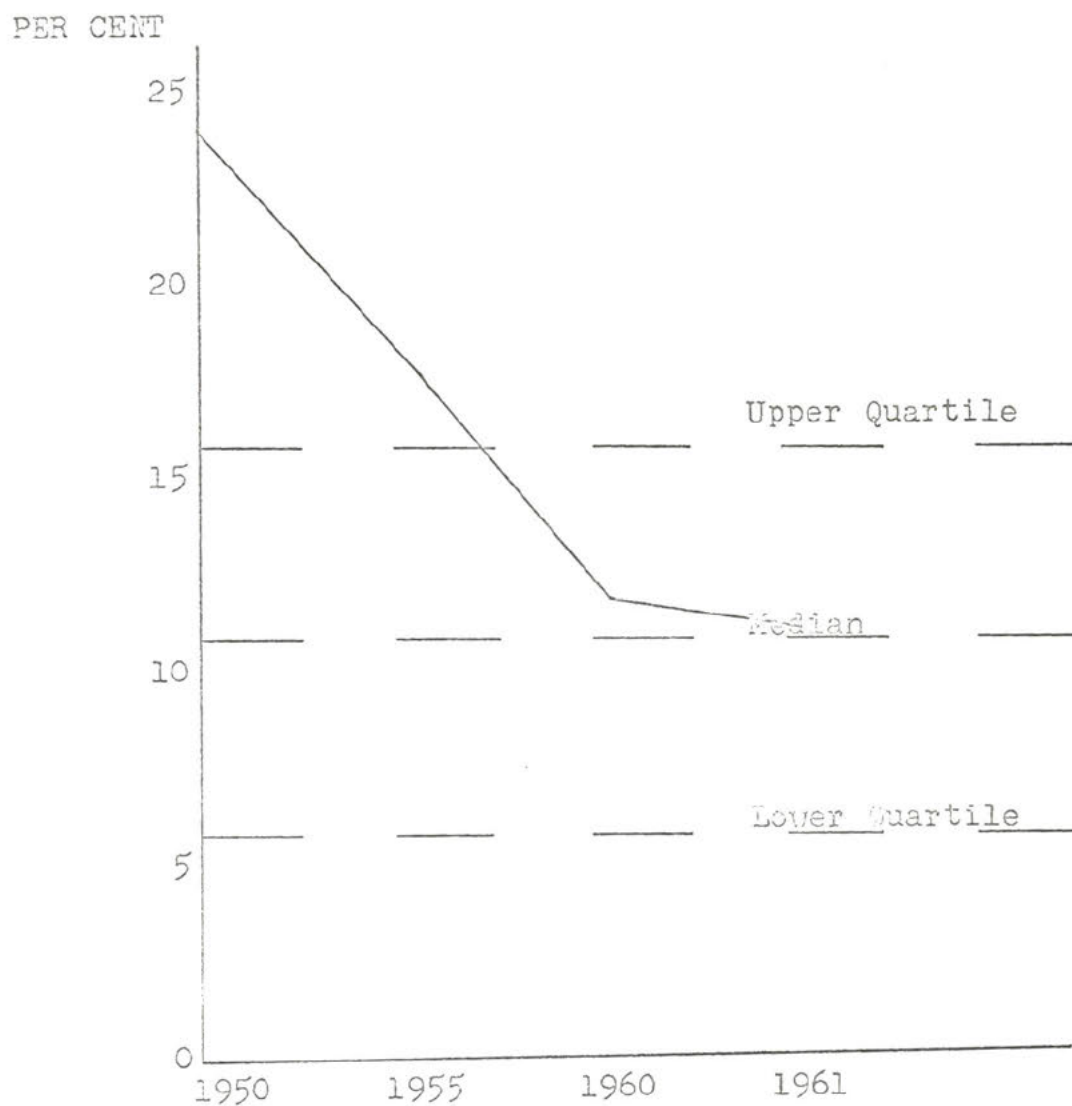
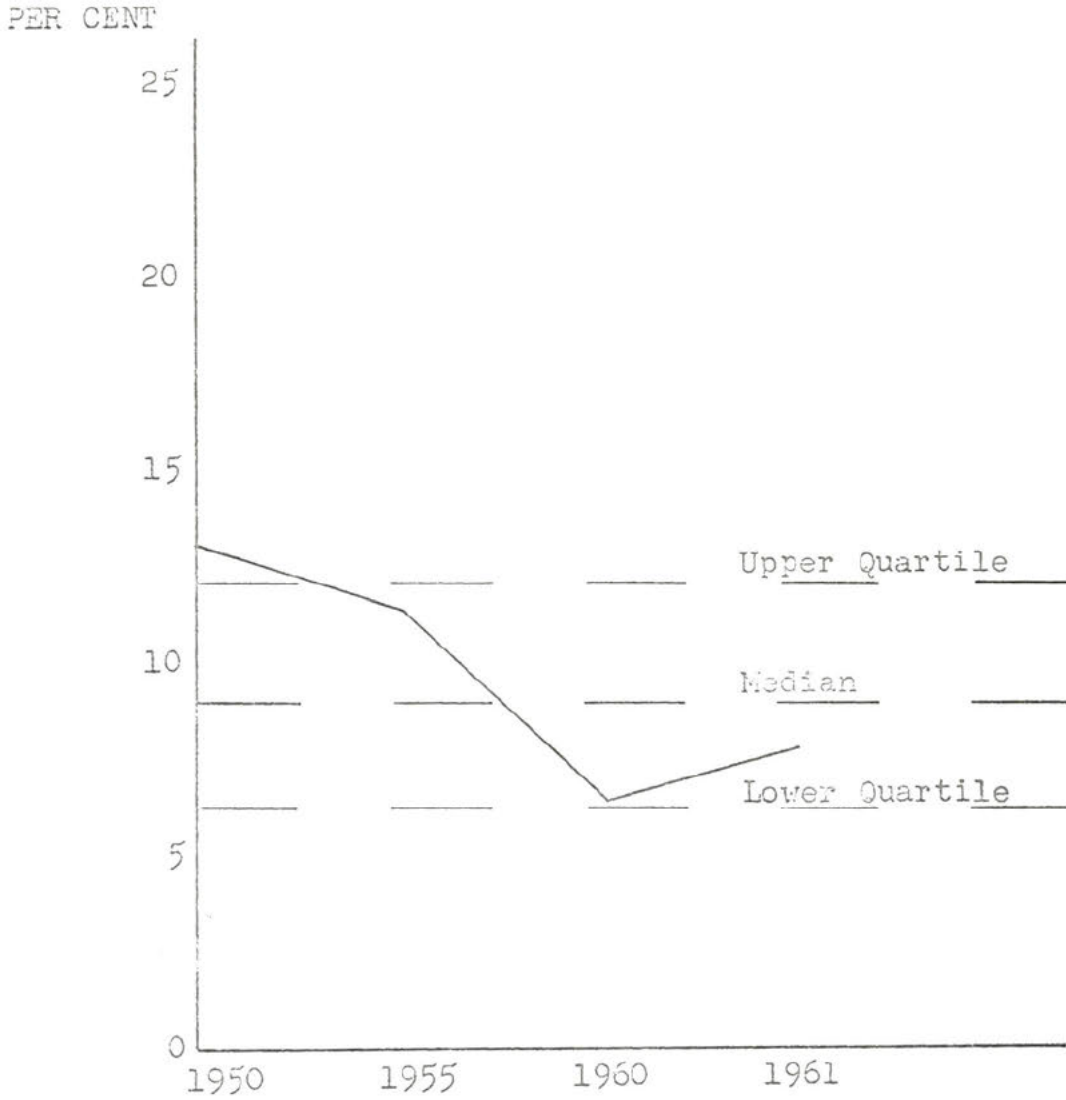


FIGURE XXV
NET PROFIT TO TANGIBLE NET WORTH (%)
SOCONY MOBILE OIL COMPANY



coming months. Any sharp decline would demand prompt corrective action.

Texaco, Incorporated, presented financial data which revealed an extremely high and stable net profit on tangible net worth ratio. Figure XXVI, page 72, shows the ratio in 1950 to be 14.66%, 1955--15.78%, 1960--14.329%, and 1961--14.449%. All of these ratios were above the industry's upper quartile of 11.62%. The significant point to be noted here was that of the stable trend indicated by these ratios. Such a stable condition indicates close company knowledge and control of this financial area.

The figures for Standard Oil Company showed a high ratio which leveled off in later years. The 1950 figure of 15.77% was well above the industry's upper quartile of 11.62%. The ratio dropped slightly to 15.15% in 1955, but declined sharply to 10.09% in 1960. This ratio was in the upper quartile range, but the sharp drop indicates need for investigation. The 1961 figure of 10.69% gave indication of leveling off for the present time. The company should keep the situation under observation to prevent any further declines. Figure XXVII, page 73, illustrates the unfavorable ratio movement.

Gulf Oil Corporation's ratio was a repetition of the higher earlier figures together with a steadily declining ratio in later years. In 1950, the ratio was 14.11%. This ratio was well in excess of the upper quartile figure of 11.62%

FIGURE XXVI
NET PROFIT TO TANGIBLE NET WORTH (%)
TEXACO, INCORPORATED

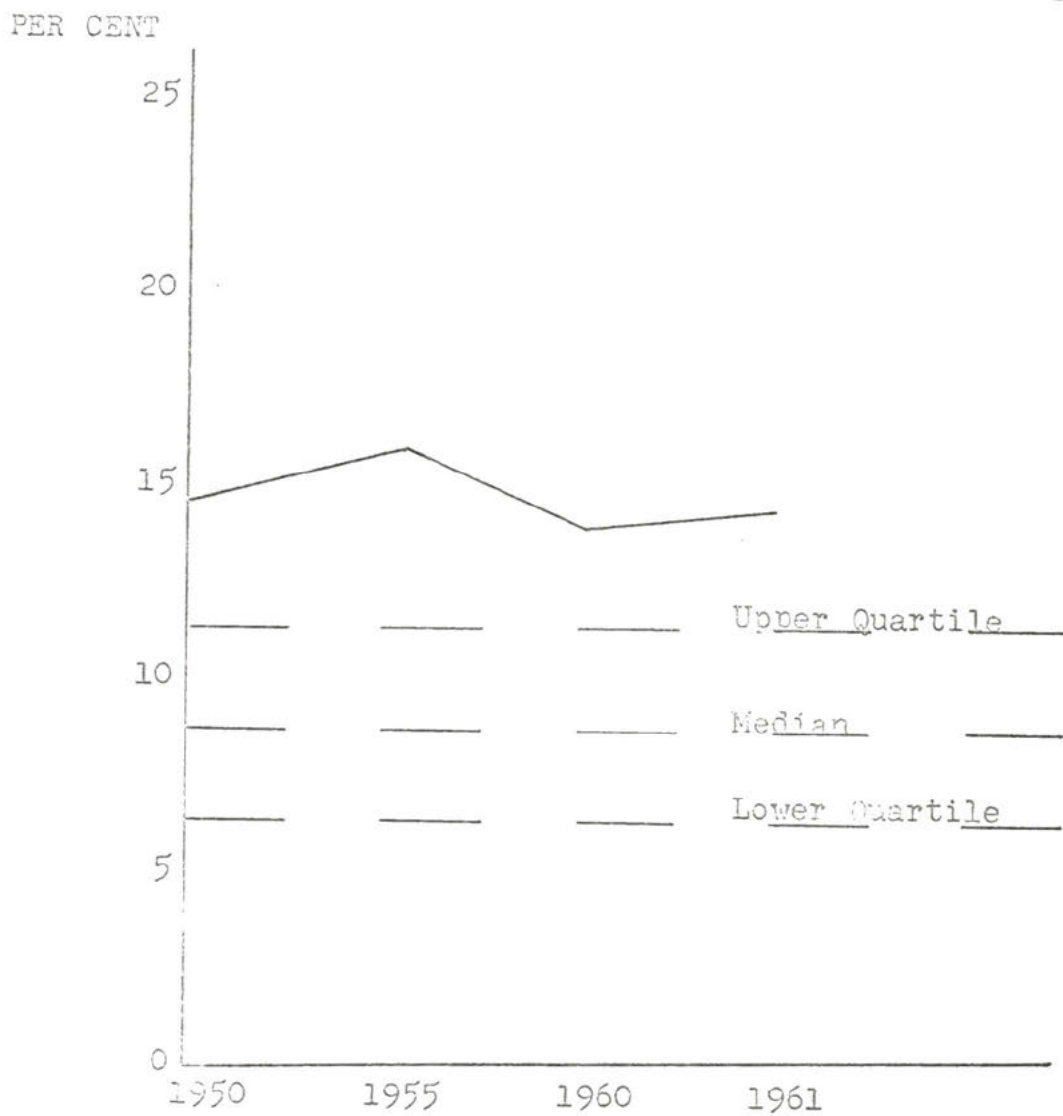
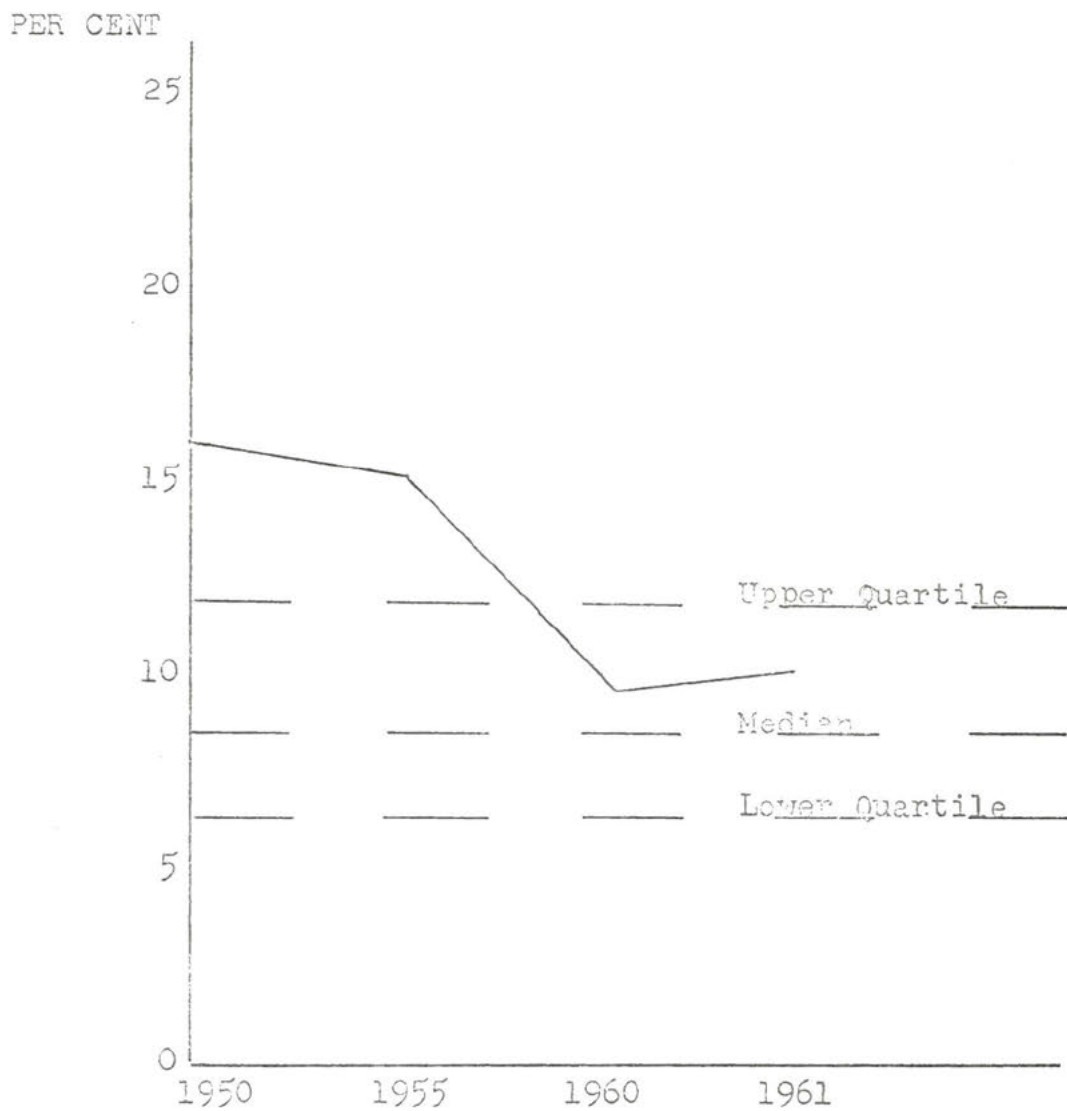


FIGURE XXVII
NET PROFIT TO TANGIBLE NET WORTH (%)
STANDARD OIL COMPANY OF NEW JERSEY



for the industry. The 1955 figure of 14.27% and 11.54% in 1960 both remained in the upper quartile of industry standards. The 8.36% ratio in 1961 fell within the median range of 8.96%. The trend gave the more significant picture of this company's ratio. Here again the typical trend in this area was that of a high ratio declining in later years. Figure XXVIII, page 75, gives management a picture of the future outlook for the company in regard to this particular relationship.

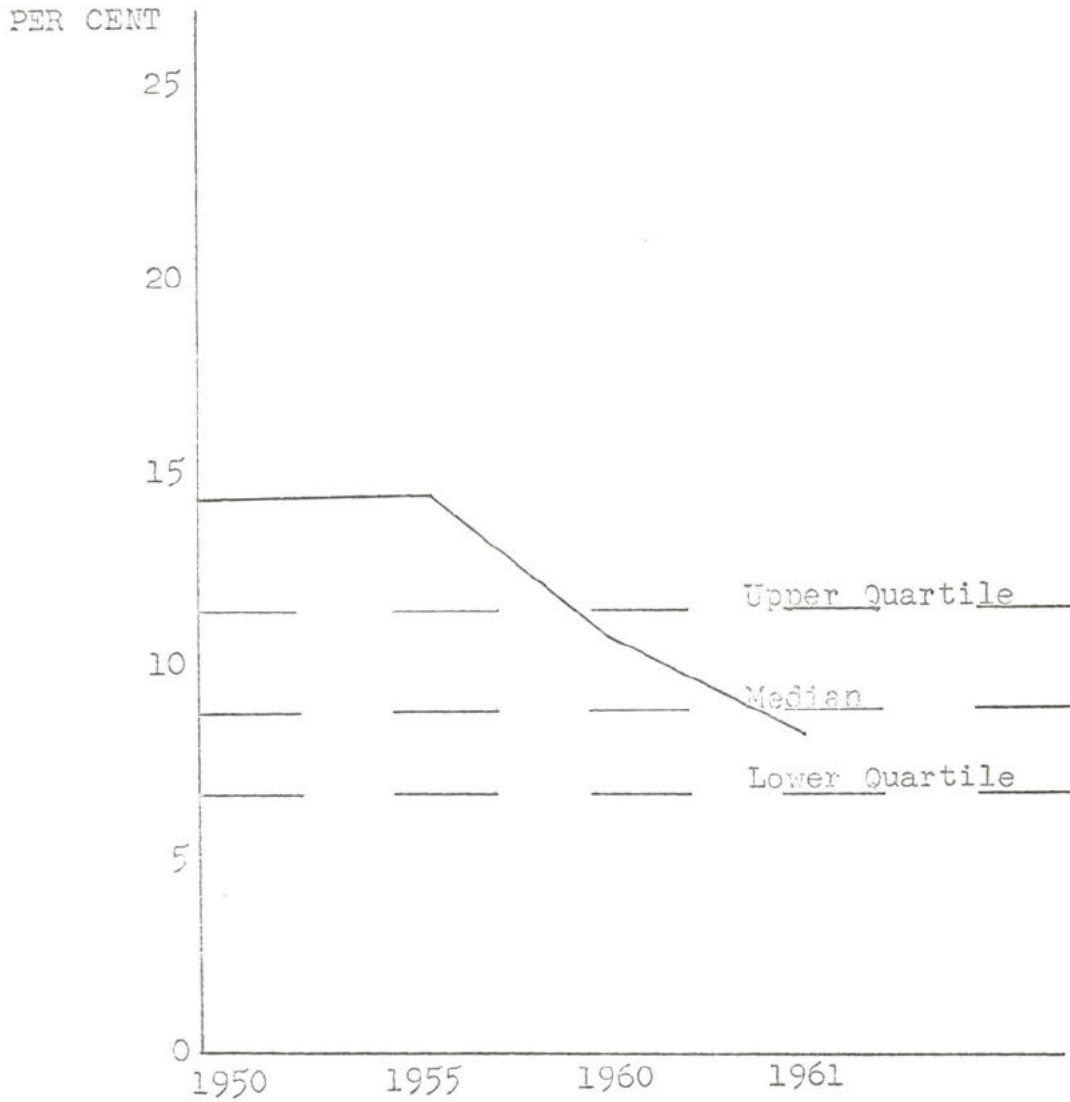
The Net Profits on Tangible Net Worth ratio measures the ability of management to earn a return of the investment of the business. Profits must be earned to attract investor's funds as well as for company operations. This ability to show profits is an extremely important area of any business operations. A high return is considered to be more desirable. Low ratios indicate a need for further study and investigation. The typical industrial trend appears to be one of high early ratios followed by declines in later years.

Net Profit on Working Capital

"Working Capital represents the margin that is available for carrying inventories and accounts receivable and for financing normal operations."³ Working capital is

³Ibid., p. 102.

FIGURE XXVIII
NET PROFIT TO TANGIBLE NET WORTH (%)
GULF OIL CORPORATION



computed by subtracting the total of current liabilities from the total of current assets. For each industry a typical ratio has been determined. Net profits are divided by working capital to arrive at the company's ratio. This ratio is expressed as a percentage of working capital. A high ratio is favorable, while a low ratio is an indication of the need of investigation into the causes of such condition. Table IX, page 77, presents the typical figures for the chemical industry, together with the yearly figures for the chemical companies included in this study. Table X, page 77, contains industry figures for companies involved in the petroleum field, and the figures for the individual companies included in this study.

The net profits on working capital ratio was computed on the financial data of duPont with the results showing a positive and sound relationship. Figure XXIX, page 78, shows the ratio to be 74.76% and 72.48% in the years 1950 and 1955 respectively. Both of these figures were well in excess of the upper quartile ratio of 40.04%. In 1960, the ratio declined to 53.36%, and rose slightly to 53.94% in 1961. Again the figures were above the upper quartile figure. These yearly figures revealed a sound ratio for the company. The trend was one sharp decline in 1960, and a leveling-off in 1961. Although the trend was downward for a brief period, the condition appeared to be under control

TABLE IX
NET PROFIT TO NET WORKING CAPITAL (%)

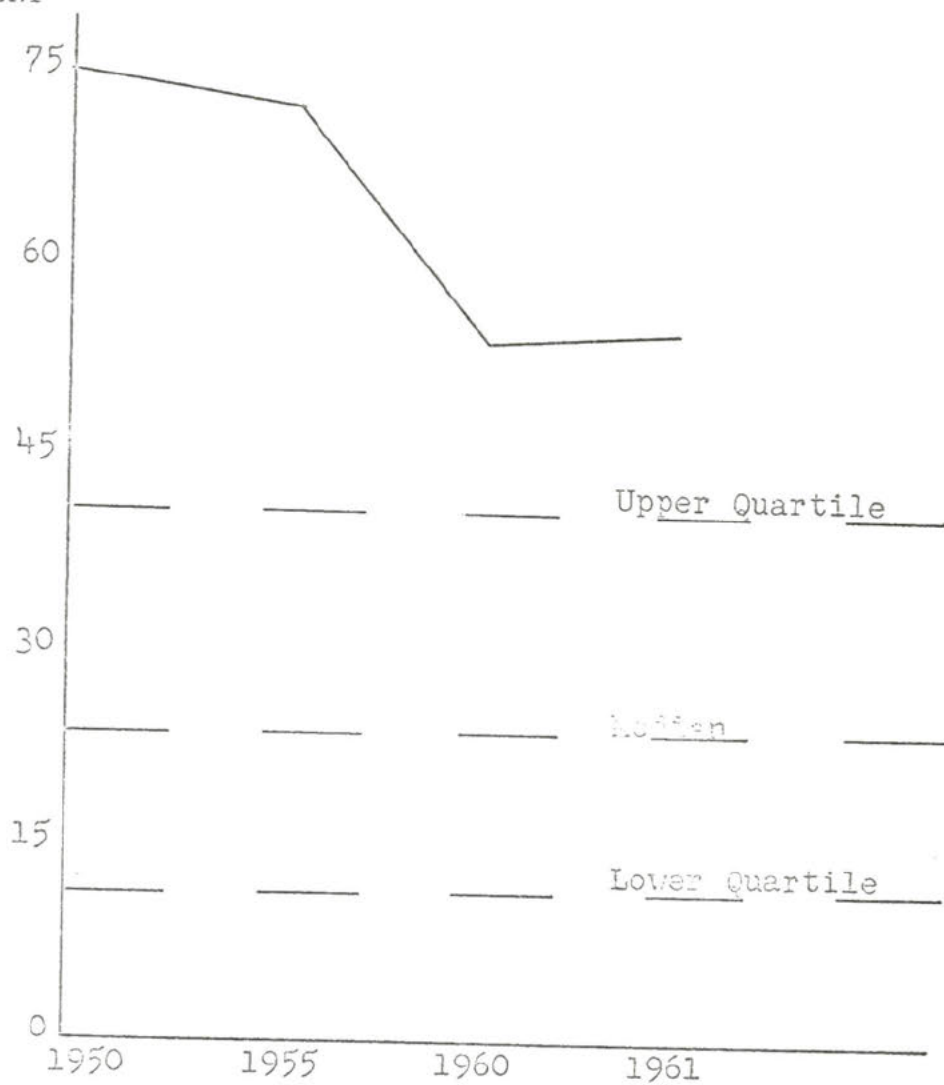
Quartiles	Upper	Median	Lower	
Chemical Industry	40.04	22.10	10.94	
Companies:	1950	1955	1960	1961
duPont	74.76	72.48	53.36	53.94
Dow	53.97	27.52	52.56	58.18
Firestone	18.54	17.86	17.06	16.67

TABLE X
NET PROFIT TO NET WORKING CAPITAL (%)

Quartiles	Upper	Median	Lower	
Petroleum Industry	51.34	37.06	19.73	
Companies:	1950	1955	1960	1961
Mobile	41.02	36.21	24.66	29.17
Texaco	46.37	48.80	57.47	56.80
Standard	38.97	43.18	42.58	42.23
Gulf	43.08	49.55	42.25	33.56

FIGURE XXIX
NET PROFIT TO NET WORKING CAPITAL (%)
DU PONT

PER CENT



and offered no real problem at that time.

The data of Dow Chemical Company offered a contrast in trends as compared to duPont. The company's ratio in 1950 was a very strong 53.97%, well above upper quartile standards. In 1955, the ratio dropped extremely fast to 27.52%. This sharp decline certainly demands investigation. The company apparently sought and found the causes of such conditions, for the 1960 figure rose again to the upper quartile range with 52.56%. This figure rose again to 58.18% in 1961. Figure XXX, page 80, shows in graphic form the comparison of the trend to typical figures.

Ratio analysis of Firestone gives a third form of net profits on working capital conditions. The company's figures are all within the median range in relation to industry standards. Figure XXXI, page 81, reveals the figures to be: 1950--18.54%, 1955--17.86%, 1960--17.06%, and 1961--16.67%. The trend was downward and unfavorable. Further investigation is needed if trend continues downward.

Table X, page 77, points out the variance in typical figures between individual industries. In the case of this ratio, petroleum industry figures were nearly 20 percentage points above the typical ratios for the chemical industry.

The net profits on working capital ratio for Socony Mobile Oil Company showed the following results: 1950--41.02%, 1951--36.21%, 1960--24.66%, 1961--29.17%. The

FIGURE XXX
NET PROFIT TO NET WORKING CAPITAL (%)
DOW CHEMICAL COMPANY

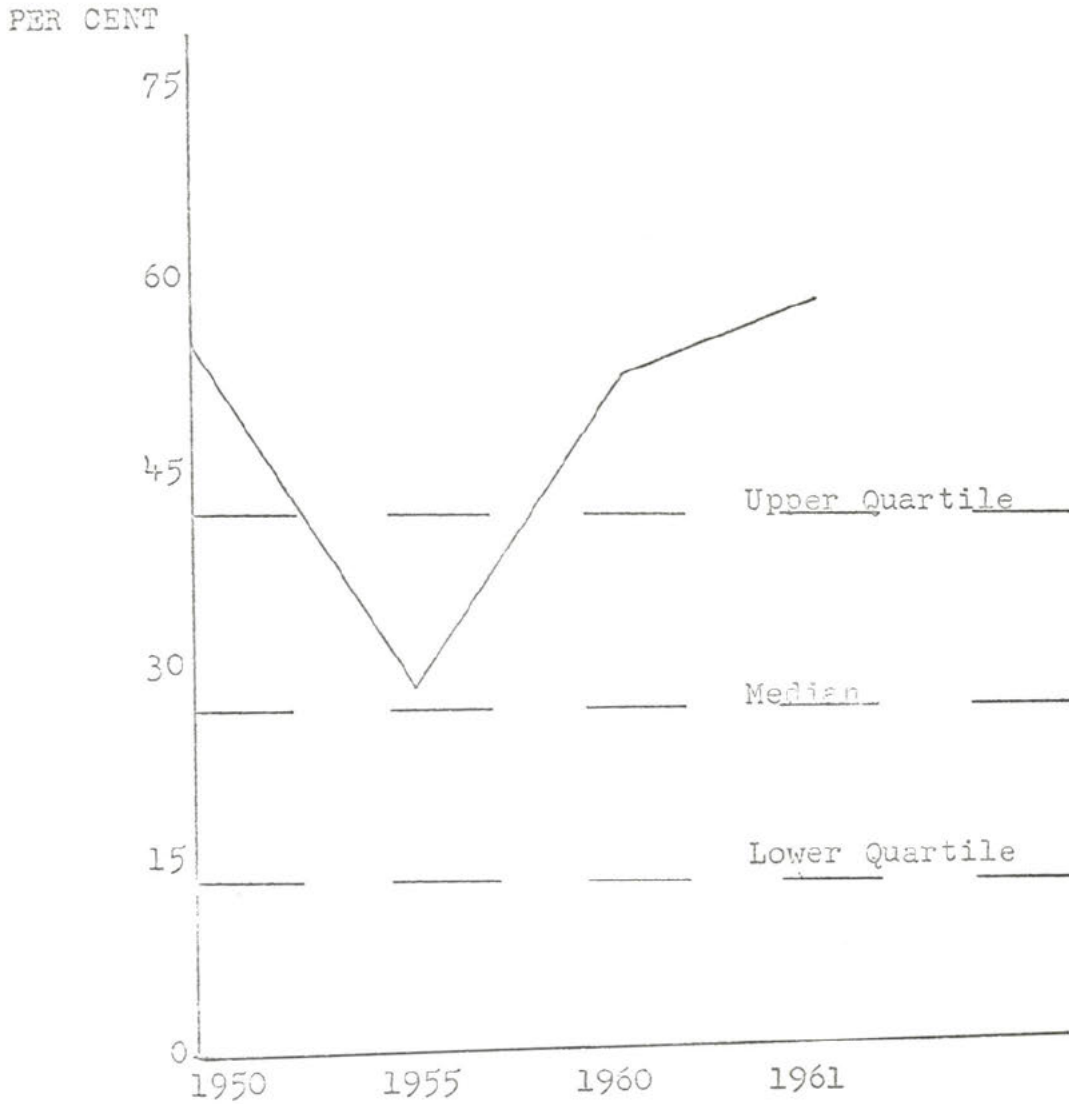
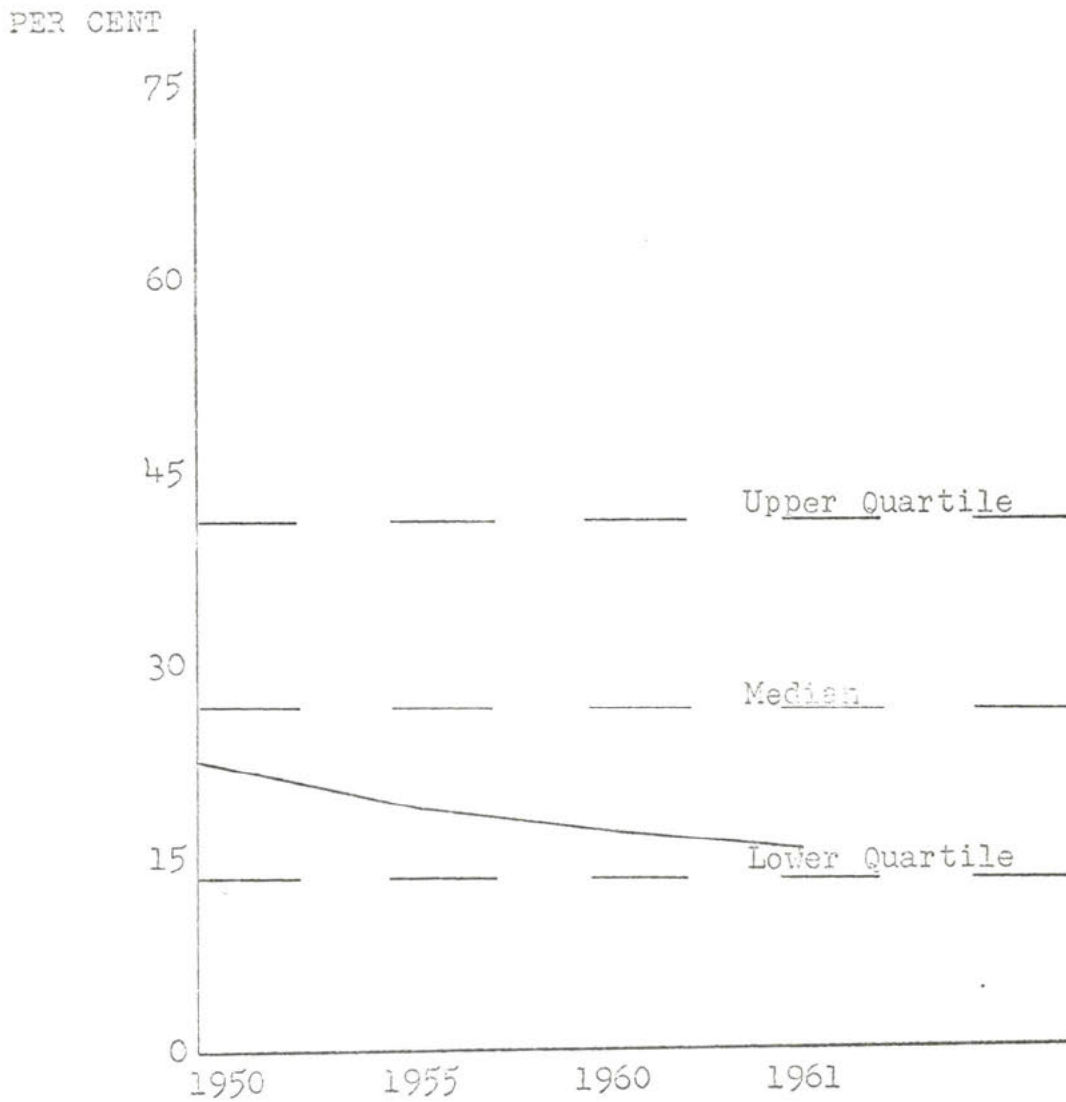


FIGURE XXXI
NET PROFIT TO NET WORKING CAPITAL (%)
FIRESTONE TIRE AND RUBBER COMPANY



figures for the years 1950 and 1955 were within the median range of 37.06%. The 1960 and 1961 ratios were between median and lower quartile figures. The trend is reflected in Figure XXXII, page 83. This trend graphically showed the decline from 41.02% through 36.21% and 24.66%, and the rise to 29.17% in 1961. The attention of management should be pointed to the period of decline which nearly carried the ratio into the area of the lower quartile in 1960. Precautions should be taken against a repetition at some future date.

A contrast in ratio behavior is reflected in Figure XXXIII, page 84, which presents the data of Texaco, Incorporated. The trend found here was generally favorable. The ratio rose from 46.37% in 1950 to 48.80% in 1955 and 57.47% in 1960, before dropping only slightly to 56.80% in 1961. All of these figures ranked as strong indications of sound profit policies within this area. The encouraging note was the steady rise of the trend until a high level was achieved.

Standard Oil Company's consolidated financial data showed a relatively strong and stable ratio. The 1950 figure of 38.97% was maintained and improved with ratios of 43.18% in 1955, 42.58% in 1960 and 42.23% in 1961. These figures rank between the median and upper quartile figures for the industry. The trend shown in Figure XXXIV, page

FIGURE XXXII
NET PROFITS TO WORKING CAPITAL (%)
SOCONY MOBILE OIL COMPANY

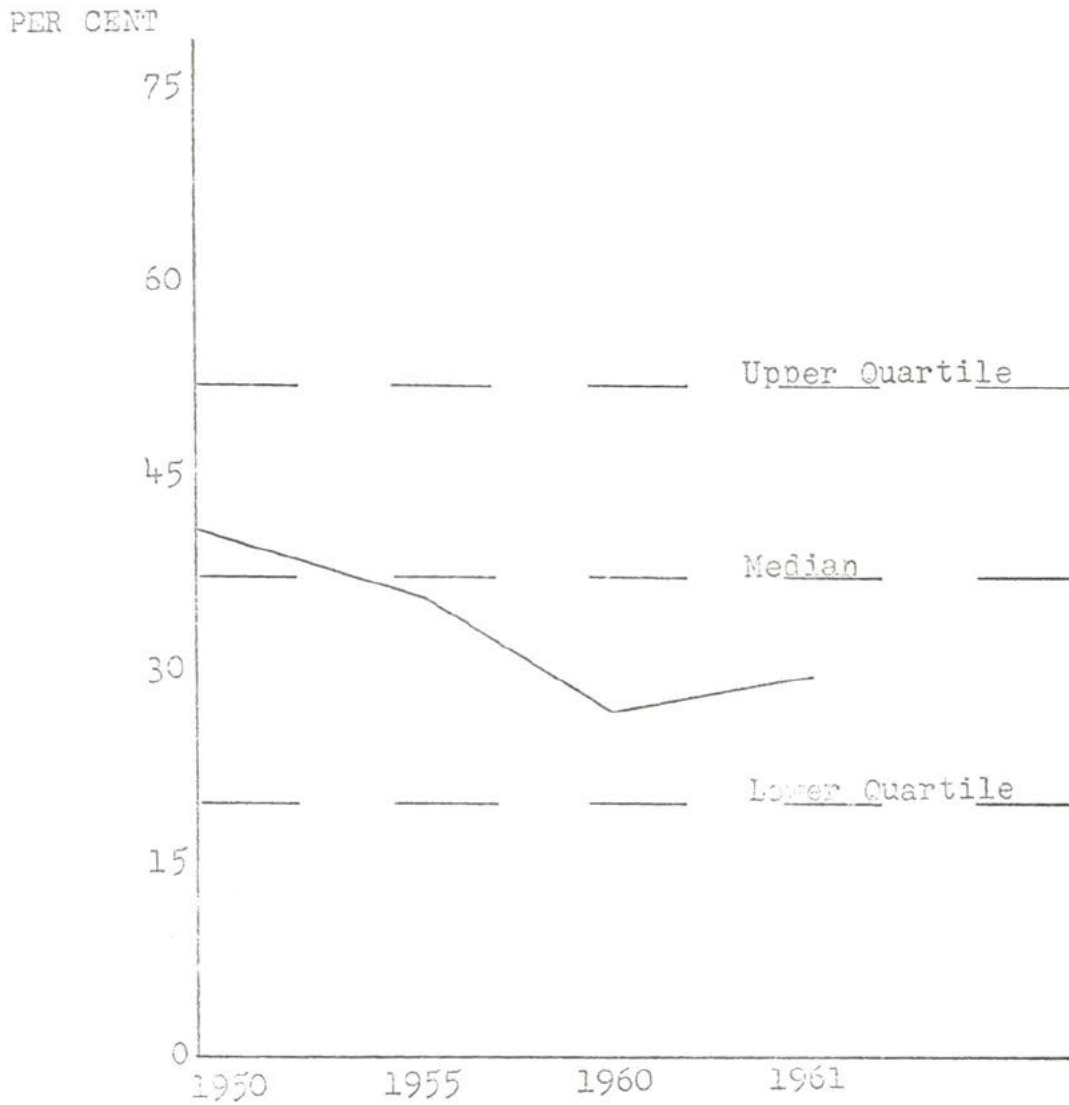
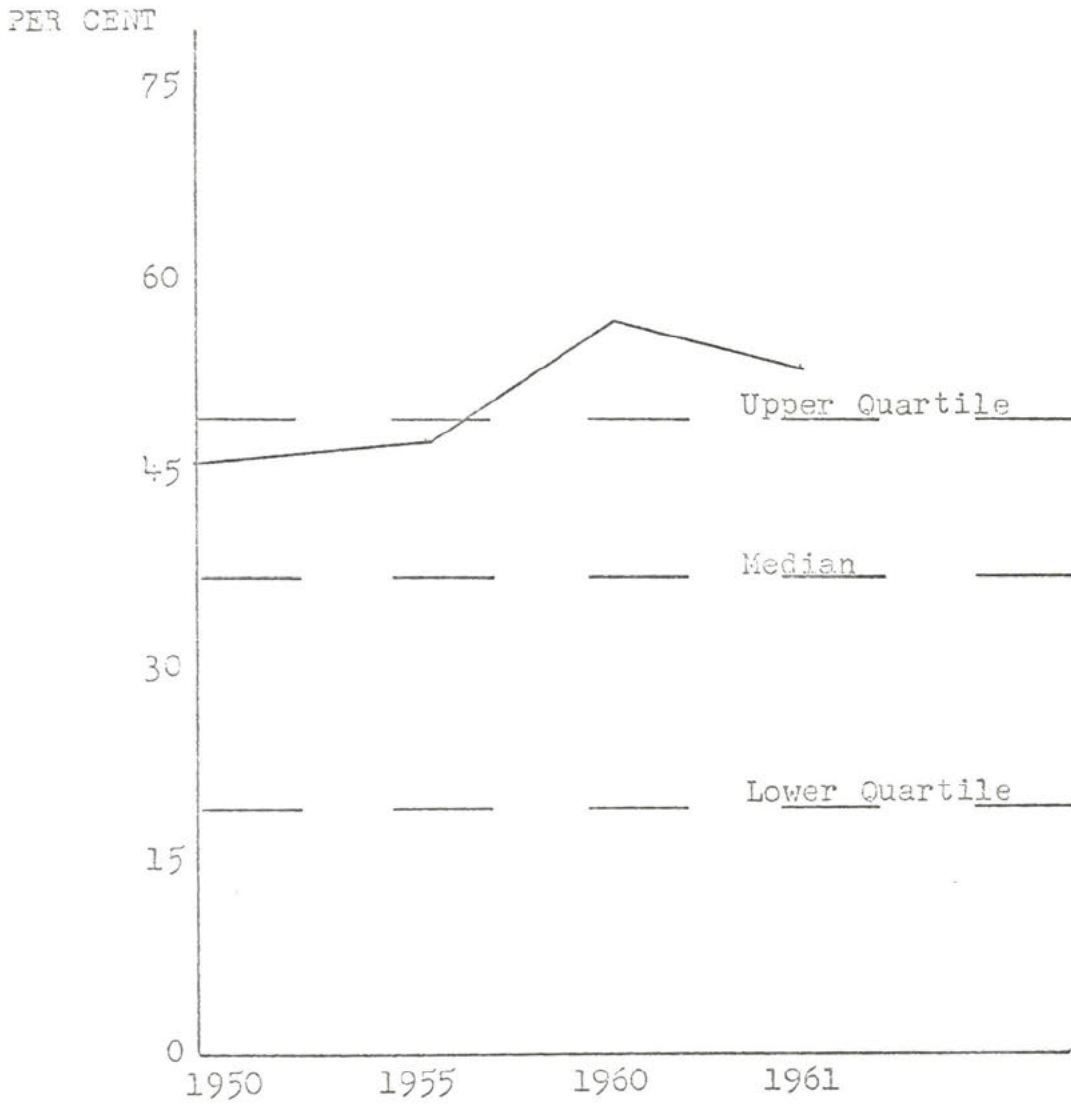


FIGURE XXXIII
NET PROFITS TO WORKING CAPITAL (%)
TEXACO, INCORPORATED



86, points out the sound and stable relationship of the company's ratio to that of typical industry figures.

Gulf Oil Corporation's data showed a ratio which was characterized by variance. In 1950 the figure was 43.08%, above the median figures, and the 49.55% ratio of 1955 was about equal to the upper quartile's figure of 51.34%. From this figure, the ratio showed a sharp decline to 42.25% in 1960 and 33.56% in 1961. Figure XXXV, page 87, illustrates this unfavorable trend direction. Although the 1961 figure of 33.56% was within the median range, the trend indicated a definite downward direction. This ratio should be kept under close observation by management in order to insure against further declines.

The ratio of net profits on working capital is another measure of the firm's ability to earn a profit from its operation's. Working capital is found by subtracting current liabilities from current assets. Net profits are divided by working capital and the resulting figure is expressed as a percentage. A high ratio is favorable because of the indications of more efficient management. A low ratio demands further investigation to determine causes of such conditions and possible corrective action.

FIGURE XXXIV
NET PROFITS TO WORKING CAPITAL (%)
STANDARD OIL OF NEW JERSEY

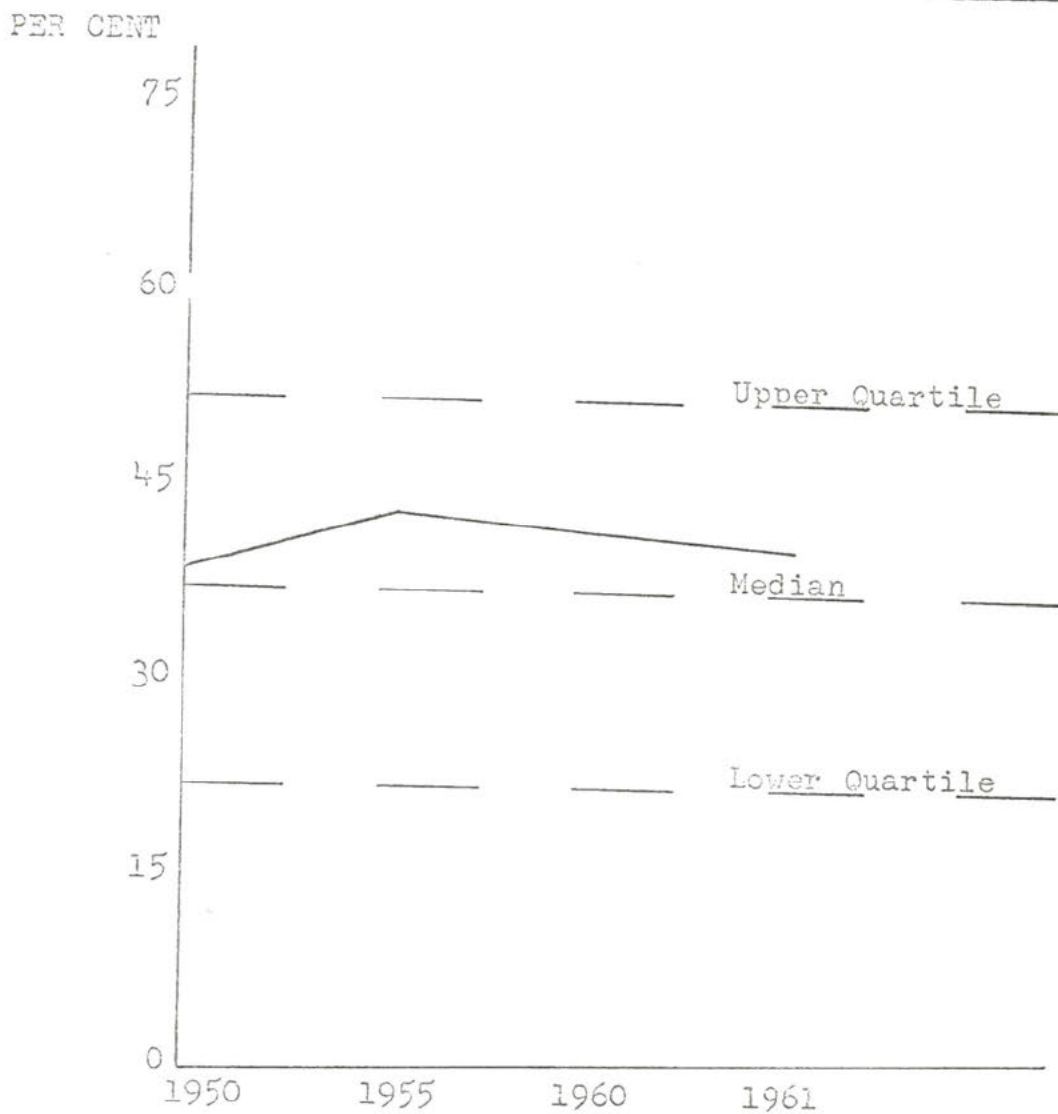
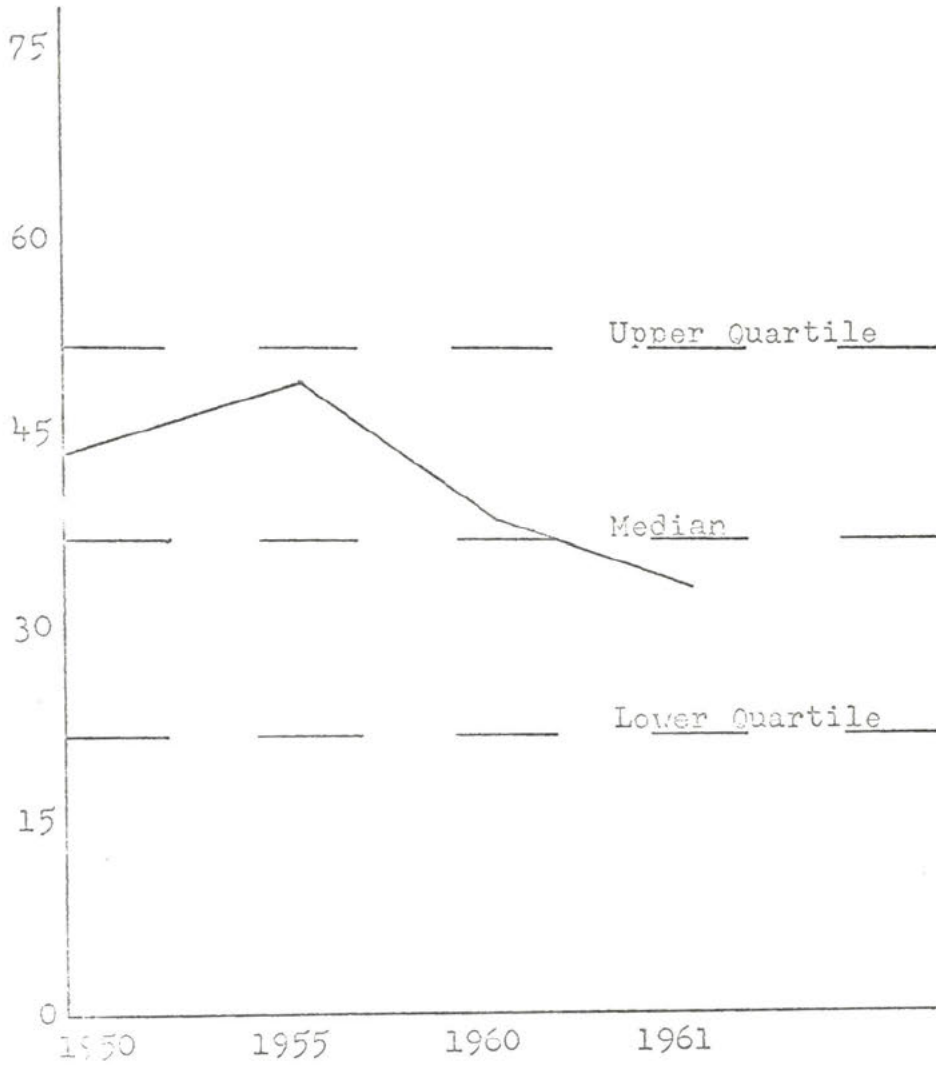


FIGURE XXXV
NET PROFITS TO WORKING CAPITAL (%)
GULF OIL CORPORATION

PER CENT



CHAPTER IV

RATIOS MEASURING SALES

Net Sales to Tangible Net Worth

The ratio of net sales to tangible net worth measures the amount of business activity in relation to the capital invested in the business. "A high ratio may indicate an excessive volume of business on a thin margin of invested capital and the consequent overuse of credit."¹ This overuse of credit is reflected by high proportions of liability accounts. As liabilities grow larger, the company becomes more likely to become a business fatality. If the overuse of credit is allowed to become extreme, the creditors of the firm would soon have nearly as much money invested in the business as the owners themselves. A high ratio may also indicate managerial ability and economic operations. Therefore, a high ratio indicates skill in management until an extremely high ratio is reached, at which point the dangerous situation of overtrading might exist. Overtrading is a problem which is sought out by creditors because of their interest in full recovery of debts. Creditors obviously do not desire to provide credit to firms who are already in an excessive debt situation. Another business problem indicated by the use of this ratio is that of an extremely low sales

¹Foulke, op. cit., p. 389.

volume in relation to tangible net worth. This situation is known as undertrading and is probably more common in the business world than is overtrading. Because creditors do not subject themselves to certain losses by investing credit in this type of situation, they do not point out this condition to businesses. Undertrading is a managerial problem. Several corrective steps are possible such as new advertising, more aggressive selling policies, or additions to merchandise lines. If such corrective actions do not solve the problem of undertrading, the company must absorb operating losses on a continual basis. "These losses finally lead to voluntary liquidation of the enterprise . . . or they may lead to sale of the business or its assets to a competitor" ²

The solution to overtrading is to invest additional funds into the business to bring tangible net worth up to a proper balance in relation to the sales volume. Most businesses are in a position of obtaining these needed funds, while others are not so fortunate. An alternative solution is the reduction of sales volume by the increasing of credit standards, and/or the increasing of prices.

The solution to undertrading is to increase sales volume through managerial actions. These actions depend on

²Ibid., p. 390.

a great number of variable factors which are common to individual fields of endeavor. One solution under certain conditions is that of reducing of capital. If the capital is too high, it may be reduced to avoid the problem of non-productive funds. Few firms, however, have this overcapitalization problem. More often, undertrading is caused by a low sales volume which cannot be improved without the revision of selling policies.

The ratio is found by dividing the total of net sales by the total of tangible net worth. The resulting figure is expressed as "times" tangible net worth. Table XI, page 91, presents the typical figures of the chemical industry together with the yearly figures of the three chemical companies included in this study. Table XII, page 91, shows the same information for the petroleum industry and the four firms of this field used for this presentation.

The net sales to tangible net worth ratio was applied to the financial data of duPont. The figures were: 1950--1.81, 1955--1.31, 1960--.94, and 1961--.90. The 1950 ratio of 1.81 was slightly over the industry's lower quartile figure of 1.58. From this relatively weak position, the ratio slipped below the minimum standard ratio to a figure of 1.31. The decline continued to .94 in 1960 and .90 in 1961. This unfavorable ratio movement is illustrated in Figure XXXVI, page 92. Starting from the relatively weak position in 1950,

TABLE XI
NET SALES TO TANGIBLE NET WORTH (TIMES)

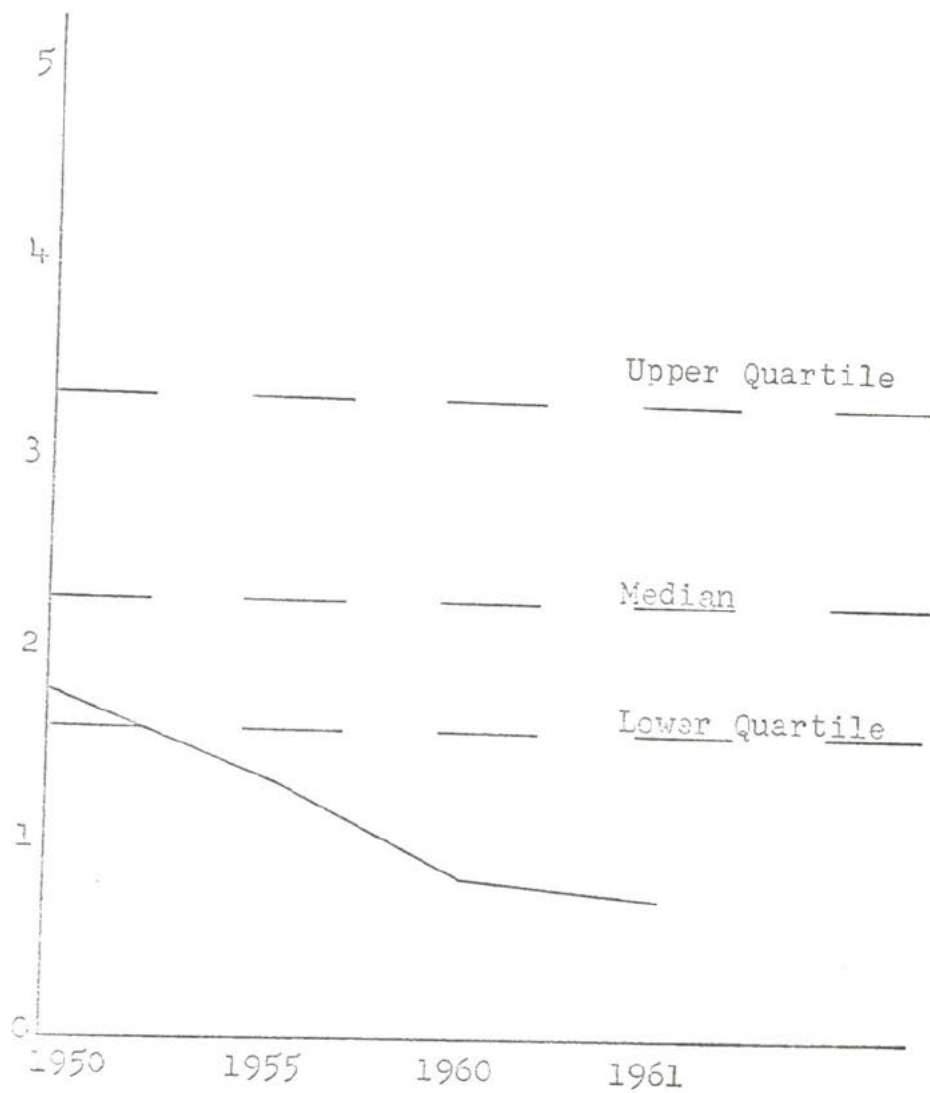
Quartiles	Upper	Median	Lower	
Chemical Industry	3.25	2.29	1.58	
Companies:	1950	1955	1960	1961
DuPont	1.81	1.31	.94	.90
Dow	1.28	1.09	1.35	1.28
Firestone	4.94	3.55	2.33	2.14

TABLE XII
NET SALES TO TANGIBLE NET WORTH (TIMES)

Quartiles	Upper	Median	Lower	
Petroleum Industry	1.77	1.17	1.04	
Companies:	1950	1955	1960	1961
Mobile	1.17	.93	1.22	1.23
Texaco	1.10	1.05	1.09	1.02
Standard	1.21	1.34	1.27	1.30
Gulf	1.45	1.24	1.12	.80

FIGURE XXXVI
NET SALES TO TANGIBLE NET WORTH (TIMES)
DU PONT

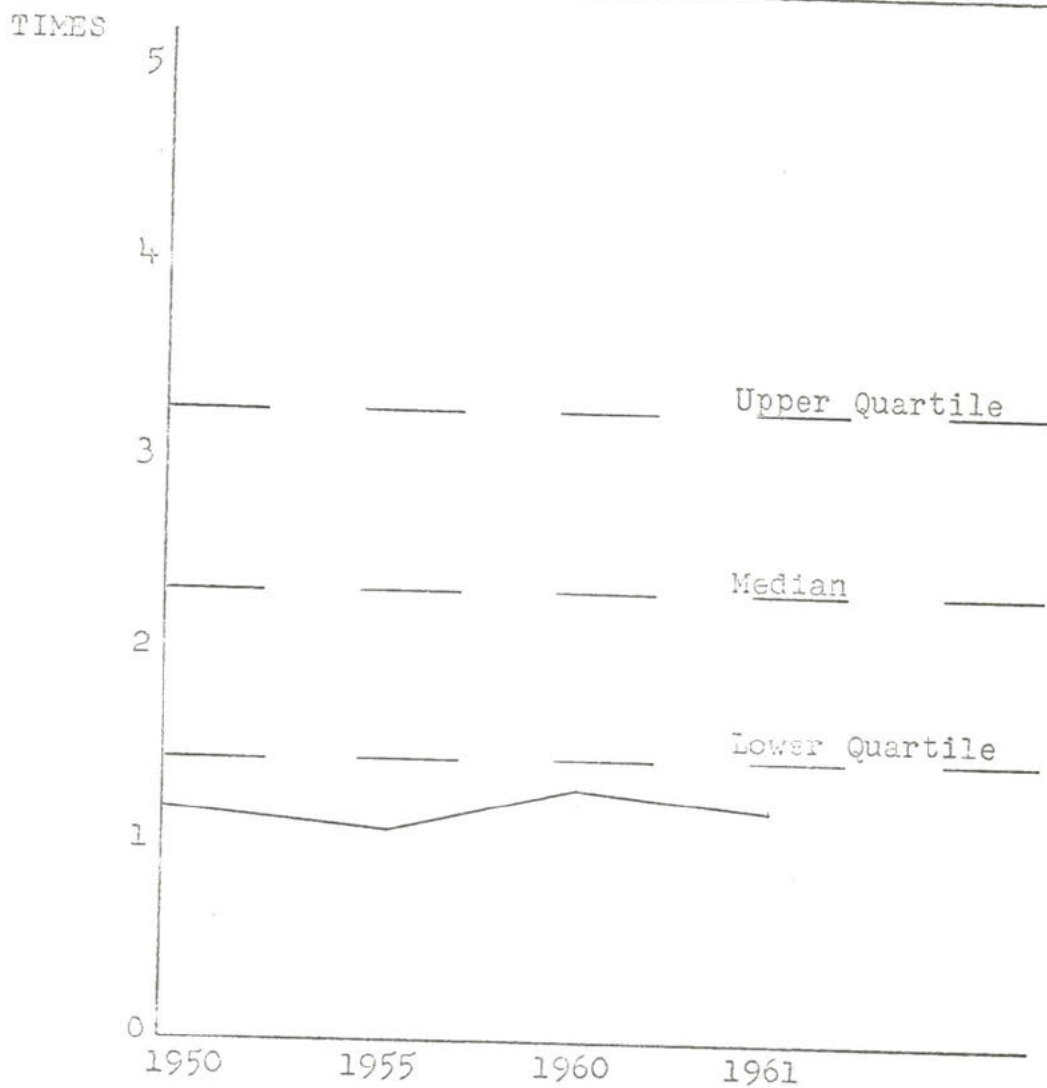
TIMES



the ratio declined steadily to a dangerously low figure of .90 in 1961. These extremely low net sales to tangible net worth ratios indicated that undertrading existed in this company. This condition of undertrading means that the company had an excess of capital for its volume of sales. The further investigation of this situation might reveal that the company could invest part of the idle funds into a profitable operation. More commonly, the investigation will reveal that the real solution is to achieve a higher sales volume. The management of the firm is charged with the responsibility of bringing the sales volume in balance with tangible net worth.

Dow Chemical Company's financial data revealed a relatively low and stable ratio. Figure XXXVII, page 94, shows in graphic form the yearly figures and trend of this ratio. In 1950, the ratio was 1.28, and dropped to 1.09 in 1955. From this relatively low figure, the ratio rose to 1.35 in 1960 and dropped again in 1961 to 1.28. All of these ratios represented a relatively low net sales to tangible net worth position. The industry's lower quartile figure of 1.58 showed by comparison that this company is well under the "safe" level of sales volume. This low net sales to tangible net worth relationship indicated undertrading by the company. Investigation should be conducted to determine if capital being idled could be invested in more profitable functions.

FIGURE XXXVII
NET SALES TO TANGIBLE NET WORTH (TIMES)
DOW CHEMICAL COMPANY

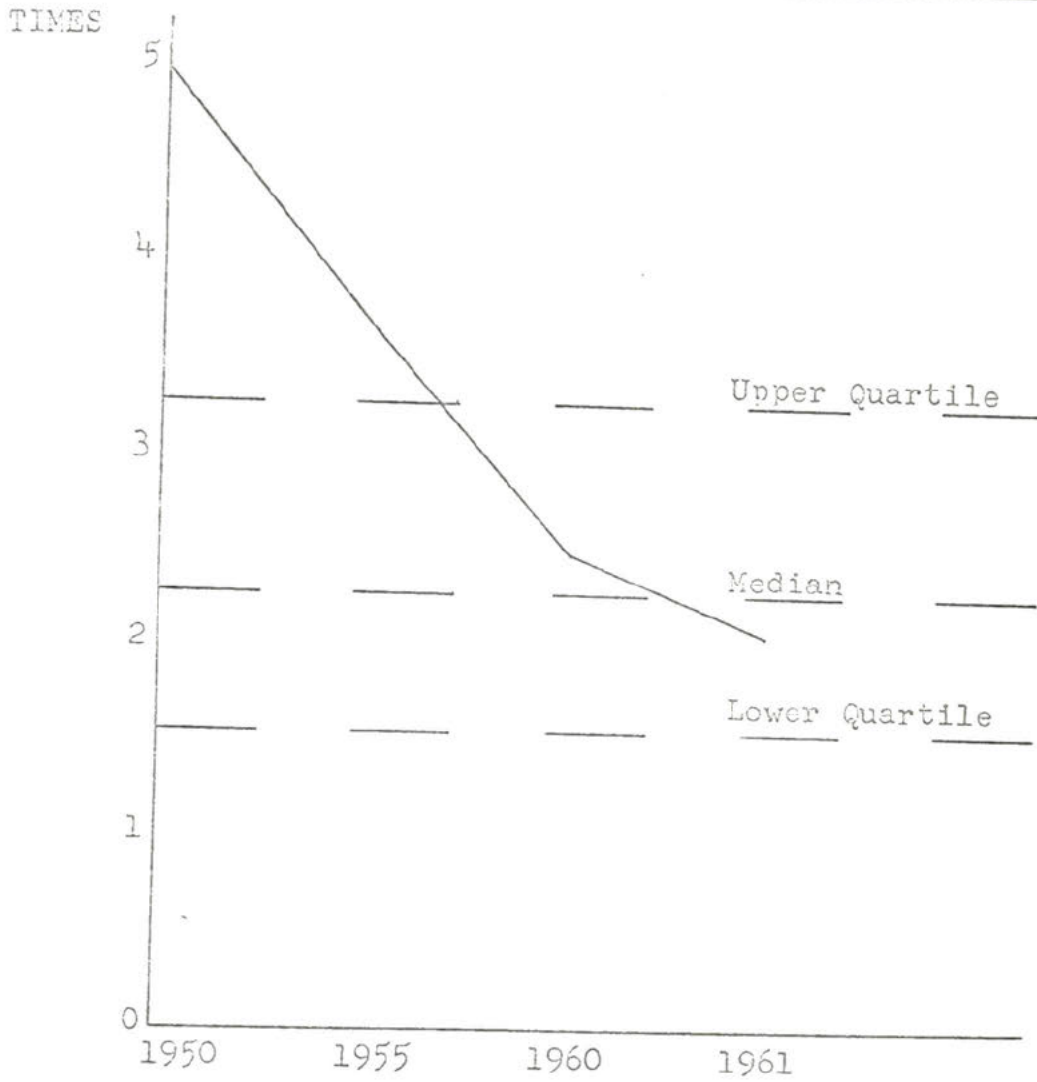


The trend indicated showed a wide variation of rises and falls throughout the period covered by this study. Causes of such variance should be determined for future observation. The management of the firm could possibly be aware of this low ratio, but justify the situation under the concept of conservatism. "Managements of corporations in the top brackets operate with a relatively larger investment in relation to volume of business."³ If profits are at satisfactory levels in relation to other factors, undertrading does not present a serious threat to the business in future operations. Few firms, however, are satisfied with today's profit levels.

Figure XXXVIII, page 96, shows the net sales to tangible net worth ratio of Firestone Tire and Rubber Company. These figures showed an interesting relationship between these two important financial areas. In 1950, the ratio was 4.94, relatively high as compared to the upper quartile figure of 3.25. The ratio began a steady decline to 3.55 in 1955, 2.33 in 1960, and 2.14 in 1961. The figures of 3.55 and 2.33 represent relatively strong and favorable ratios for the company. The trend indicated both favorable and unfavorable conditions. The high figure of 4.94 in 1950 could possibly have indicated a high degree of managerial skill in operations.

³Ibid., p. 389.

FIGURE XXXVIII
NET SALES TO TANGIBLE NET WORTH (TIMES)
FIRESTONE TIRE AND RUBBER COMPANY



More often however, a high ratio is an indication of overtrading. This ratio was not far out of line in comparison to industry figures, but the situation definitely demands further study to prevent future problems. The trend indicated that the ratio was reduced to 3.55 in 1955, representing a more sound relationship. From this position however, the ratio dropped to the 1961 figure of 2.14. While this figure was still within the median range, the direction of the ratio movement was sharply downward and should be checked before the ratio reaches the undesirable "low" position.

The typical industry ratios for the petroleum industry together with the figures for the four companies included in this study are presented in Table XII, page 91. Socony Mobile Oil Company's data revealed the common situation found in the petroleum industry, that of extensive undertrading. Figure XXXIX, page 98, illustrates the yearly ratios and trend as computed from this data. The figures were as follows: 1950--1.17, 1955--.93, 1960--1.22, and 1961--1.23. The 1950 ratio of 1.17 was exactly equal to the median figure for the industry. The drop to .93 in 1955 was, however, below the lower quartile's 1.04. This weak relationship was corrected, and the ratio rose to sound condition in 1960 and 1961. The trend indicated here shows the favorable position of the ratios. The company should endeavor to maintain this figure to ensure future security of investment turnover.

FIGURE XXXIX
NET SALES TO TANGIBLE NET WORTH (TIMES)
SOCONY MOBILE OIL COMPANY

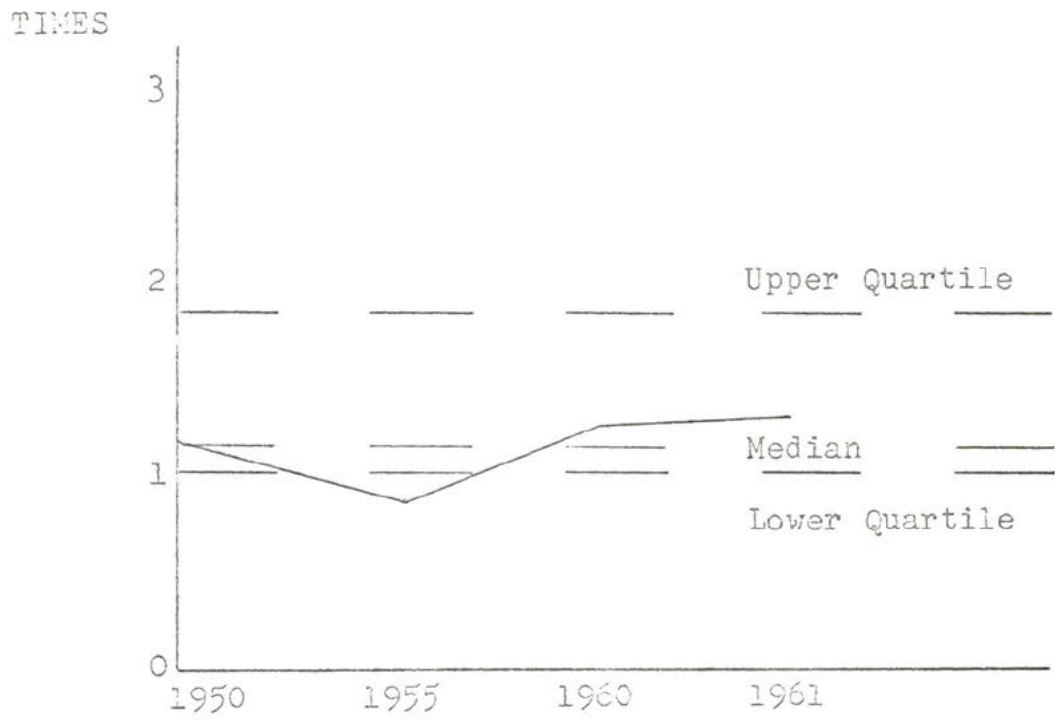


Figure XXXX, page 100, graphically presents the data of Texaco, Incorporated. The 1950 ratio of 1.10 was well above the lower quartile figure of 1.04, however, this figure fell to 1.05 in 1955. An improvement in the trend was shown by a rise to 1.09 in 1960. This condition was short-lived however, as the ratio returned to 1.02 in 1961. This variable ratio movement indicated a need for stabilization due to the already thin position of this ratio.

Information provided by Standard Oil of New Jersey showed a sound and stable net sales to tangible net worth relationship. The specific yearly company ratios were as follows: 1950--1.21, 1955--1.34, 1960--1.27, and 1961--1.30. Compared to industry standards, these figures were all well above the median range, indicating sound managerial practices and ability. Coupled with these strong yearly figures was the favorable trend movement. While the trend fluctuated slightly, the trend was generally stable. Figure XXXXI, page 101, illustrates this trend in comparison to the industry standards.

Gulf Oil Company's data showed an extreme contrast to that of Standard Oil Company. This company's net sales to tangible net worth relationship was sound enough in 1950, being well above the industry's median figure. This position changed sharply as the ratio declined from 1950's 1.45 to 1.24 in 1955, 1.12 in 1960, and finally to .80 in 1961. The .80 ratio was well below the lower quartile figure of 1.04,

FIGURE XXXX
NET SALES TO TANGIBLE NET WORTH (TIMES)
TEXACO, INCORPORATED

TIMES

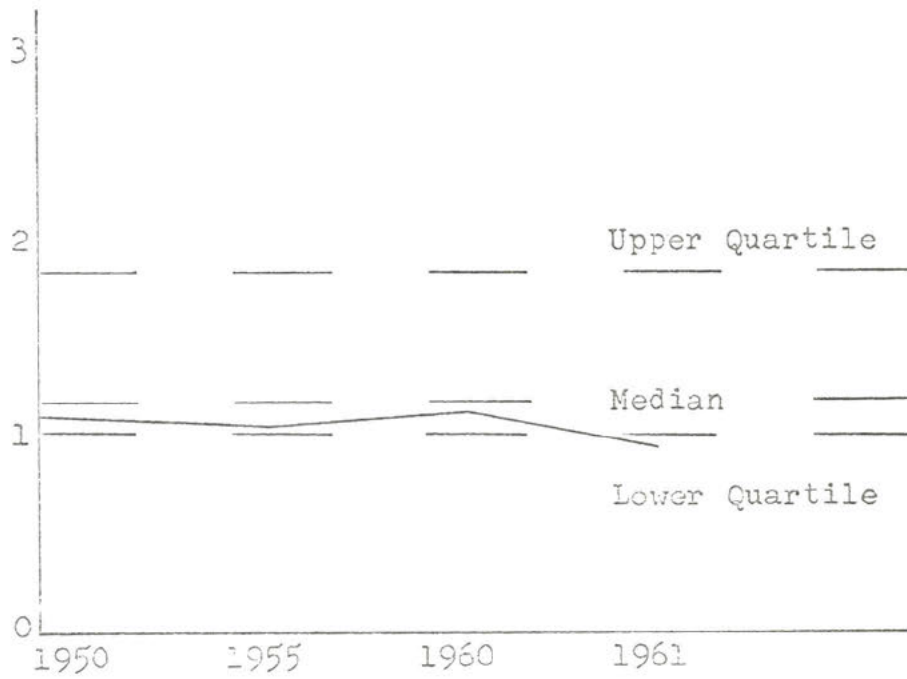
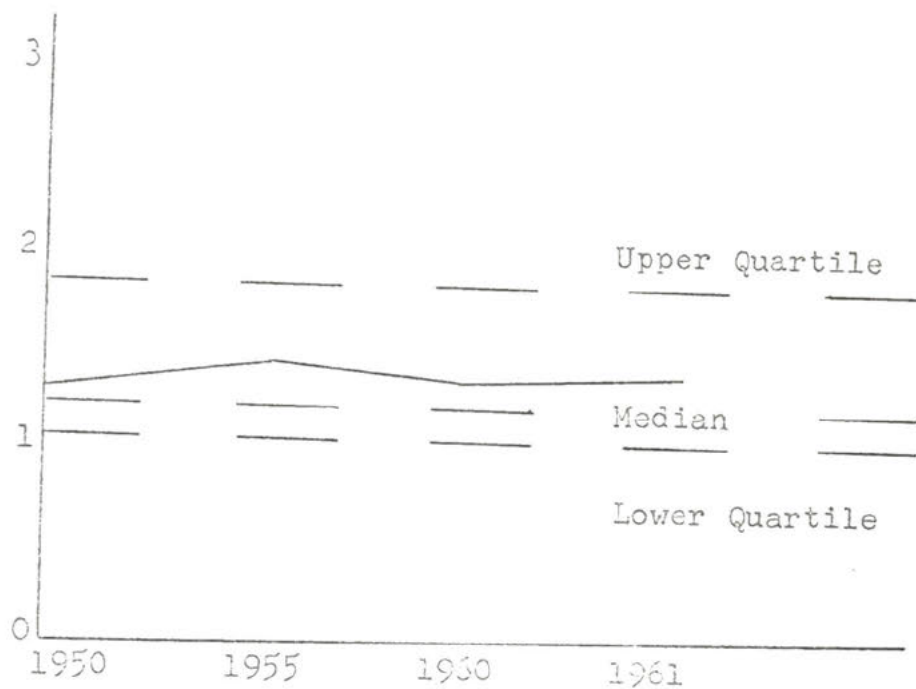


FIGURE XXXXI
NET SALES TO TANGIBLE NET WORTH (TIMES)
STANDARD OIL OF NEW JERSEY

TIMES



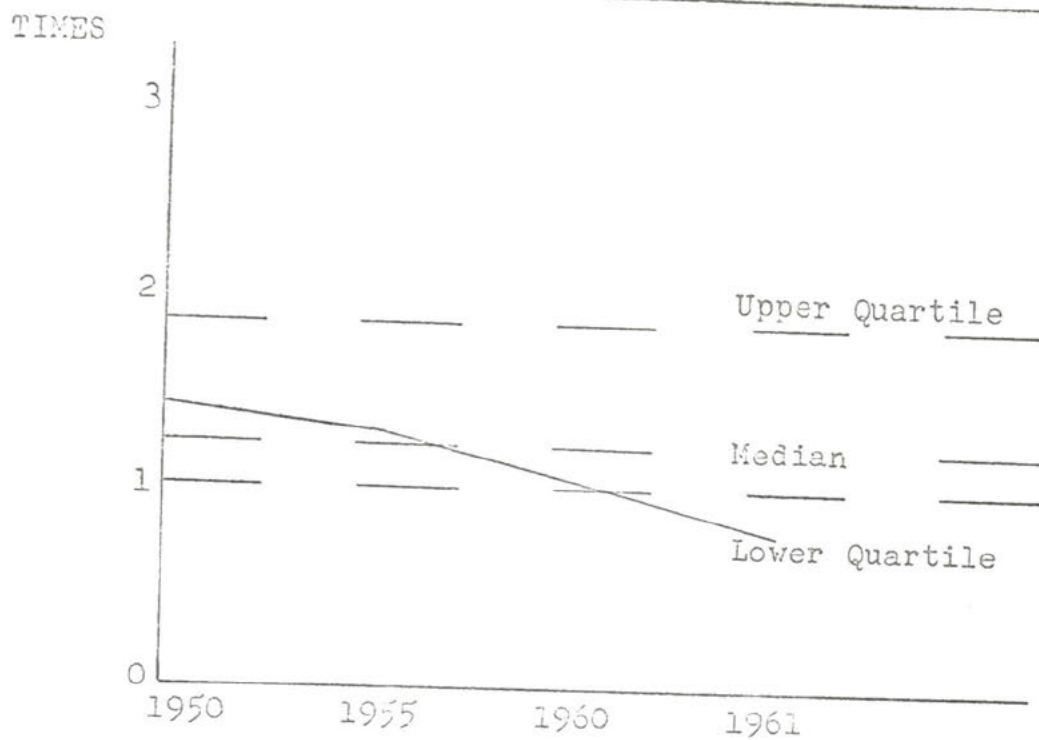
indicating the condition of undertrading by the business. More significant than yearly figures was the trend direction. Over the time period covered by this study, the ratio fell from 1.45 to a dangerous .80. This unfavorable trend movement is shown graphically on Figure XXXXII, page 103. The company has allowed this ratio to drop extremely low, and apparently the decline will continue unless checked as soon as possible. This low ratio usually indicates a low sales volume which, in most cases, leads to unsatisfactory profit figures in the near future of the firm.

The ratio of net sales to tangible net worth measures the amount of business activity in regard to the size of capital invested. A high ratio indicates a high degree of managerial skill and efficiency, until a certain maximum point is reached. When this extremely high ratio level is reached, the condition of overtrading, having an excessive sales volume in relation to capital, is indicated. An extremely low ratio gives indication of the all too frequent condition of undertrading, having too small of a sales volume in regard to capital.

Net Sales to Net Working Capital

Because the law of increasing returns operates above the break-even point, the management of every business desires a high sales volume. This concept of increased sales volume appears to be a universal goal of business. Management

FIGURE XXXXII
NET SALES TO TANGIBLE NET WORTH (TIMES)
GULF OIL CORPORATION



must be guided in its sales volume drive by sound business policies that will enable the firm to achieve its goal without endangering the financial health of the company. Previous discussion dealt with the balance of sales volume in regard to tangible net worth. A complementary ratio measures the relationship of net sales to net working capital.

"Another fundamental is that working capital of an enterprise should be in proper proportion to its sales."⁴ As sales volume increases, more funds are required to be tied up in accounts receivable and inventory. As these funds are limited, the company must borrow money for current operations, or invest more capital. The most common source of these funds is that of short-term loans. In this situation, a decrease in sales volume would prevent the company from meeting payment of current liabilities. "No greater mistake can be made than to attempt to do all the business that comes one's way. Frequently it is more desirable from the financial point of view to turn aside that portion of the business which promises to be only temporary, or which can be taken only by incurring risks of an unusual sort, the most important of which are heavy inventory and heavy debt."⁵

A high net sales to net working capital ratio may

⁴Westerdahl, op. cit., p. 39.

⁵Foulke, op. cit., p. 435.

be the result of overtrading, or may indicate the need for the investment of additional funds to offset an unbalanced investment in fixed assets. A low ratio figure indicates undertrading, or may be the result of an excess of funds in the business. This ratio is often used in conjunction with the ratio of net sales to tangible net worth in order to measure the volume of sales. Although a high sales volume is often desirable up to a particular level, an excessive sales volume is often fatal to a business. "You can go broke just as quickly by selling too much as by selling too little."⁶

The ratio is determined by dividing total net sales by total net working capital. The resulting figure is expressed as "times" net working capital. Table XIII, page 106, presents the typical ratios of the chemical industry together with the yearly ratios of the chemical companies used in this study. Table XIV, page 106, reveals the petroleum industry's standard ratios and the ratios for the companies of that field included in this presentation.

The net sales to net working capital ratio was computed on the basis of the financial data of E. I. duPont, Incorporated. The yearly figures were: 1950--3.15, 1955--

⁶Westerdahl, op. cit., p. 39.

TABLE XIII
NET SALES TO NET WORKING CAPITAL (TIMES)

Quartiles	Upper	Median	Lower	
Chemical Industry	7.36	4.26	2.72	
Companies	1950	1955	1960	1961
duPont	3.15	3.20	3.00	2.82
Dow	3.51	2.32	5.03	7.59
Firestone	3.88	2.97	4.36	4.61

TABLE XIV
NET SALES TO NET WORKING CAPITAL (TIMES)

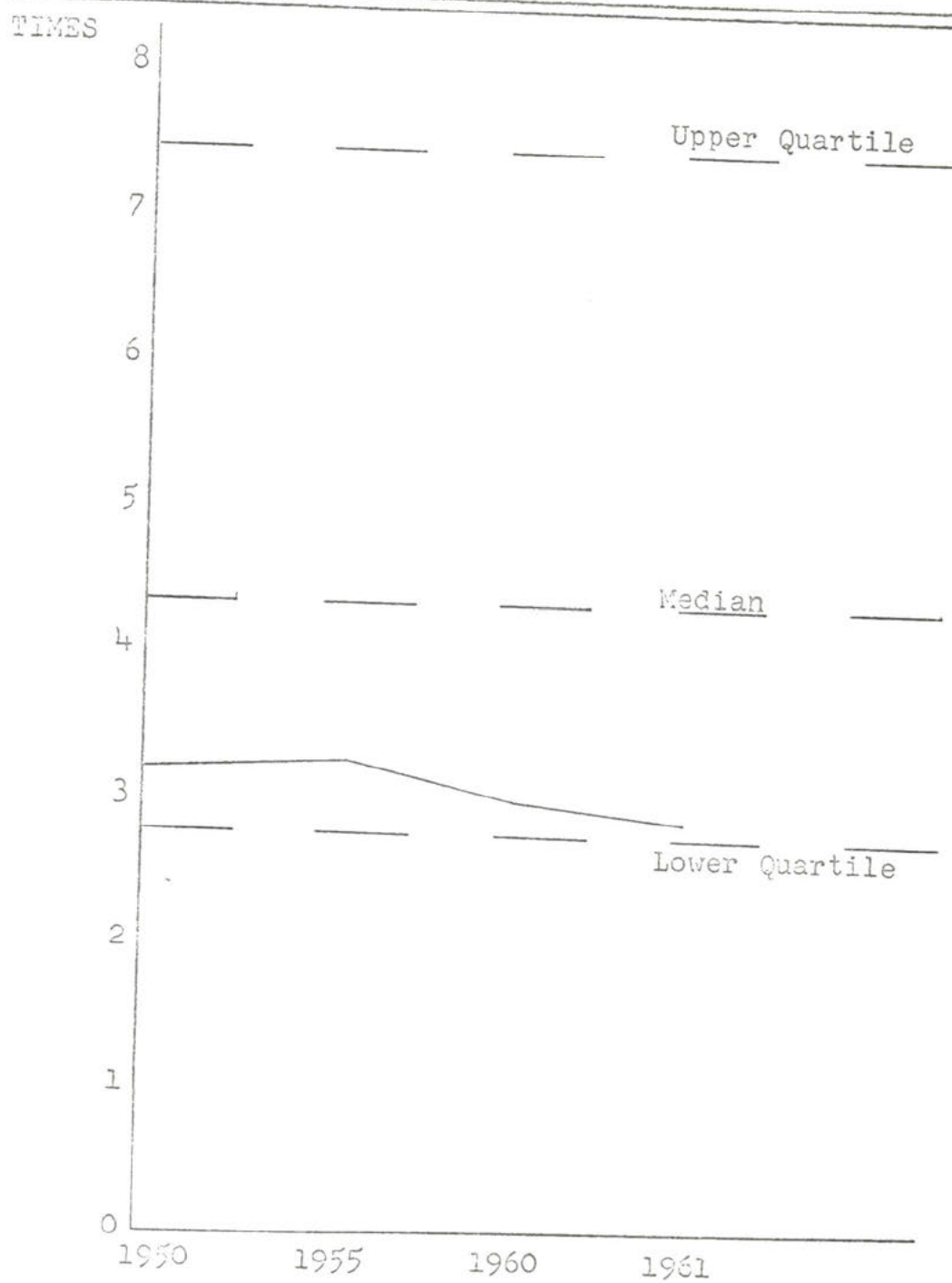
Quartiles	Upper	Median	Lower	
Petroleum Industry	7.24	5.50	3.89	
Companies:	1950	1955	1960	1961
Mobile	3.92	2.97	4.36	4.61
Texaco	3.48	3.25	4.37	4.02
Standard	2.99	3.82	5.37	5.10
Gulf	4.43	4.31	4.11	3.22

3.20, 1960--3.00, 1961--2.82. As compared to the industry's lower quartile figure of 3.89, the yearly ratios were all relatively low. These extremely low ratios indicated undertrading, or the possibility of an excess of invested capital. These figures also reflected the concept of conservatism in operations which is quite common in this area of business. If the present sales volume, although at a low figure, resulted in a satisfactory profit level, the company's attention should be directed toward the size of its investment. Idle funds create little productivity. Perhaps a more efficient use of capital would result in more overall profits to the firm. The more common condition is that sales volume does not produce the most satisfactory profit level possible. In this circumstance, the solution would be a program designed to increase the volume of sales. Figure XXXXIII, page 108, presents the company's ratios in graphic form. The trend indicated by these figures was unfavorable in nature. The 1950 ratio of 3.15 was well below the lower quartile figure of 3.89, and decreased to an extremely low figure of 2.82 in 1961. The significance of the company's low ratios was supported by this downward trend. A thorough investigation is necessitated to determine corrective action which might be employed by management.

The financial data of Dow Chemical Company revealed a vastly different net sales to net working capital. The

FIGURE XXXXIII
NET SALES TO WORKING CAPITAL (TIMES)

DU PONT



1950 ratio of 3.51 is slightly below the lower quartile figure of 3.89. Figure XXXXIV, page 110, illustrates the movement of the ratio downward to 2.32 in 1955, followed by a steadily increase to 5.03 in 1960 and 7.59 in 1961. The 5.03 figure in 1960 placed the ratio within the industry's median range of 5.50. In 1961, the ratio of 7.59 was well above the upper quartile figure of 7.24. This high ratio indicated a sound and efficient use of investment funds by the management of the business. While such a high ratio had favorable characteristics, the management of the firm must continually guard against overtrading. This firm was not yet in this excessive sales volume situation, and shows a very favorable position at this time. The need of caution is revealed by the rapidly increasing trend.

A relatively low and stable ratio is illustrated by Figure XXXXV, page 111, which represents data computed from financial data of Firestone Tire and Rubber Company. These figures were: 1950--3.88; 1951--3.62; 1960--3.17; 1961--3.08. The ratio was under the lower quartile figure of 3.89 in each of the years covered by this study. This low ratio was an indication of undertrading or overcapitalization. An intensive investigation would reveal the specific condition existing in this company. The trend of the ratio shows a relatively stable movement.

FIGURE XXXIV
NET SALES TO WORKING CAPITAL (TIMES)
DOW CHEMICAL COMPANY

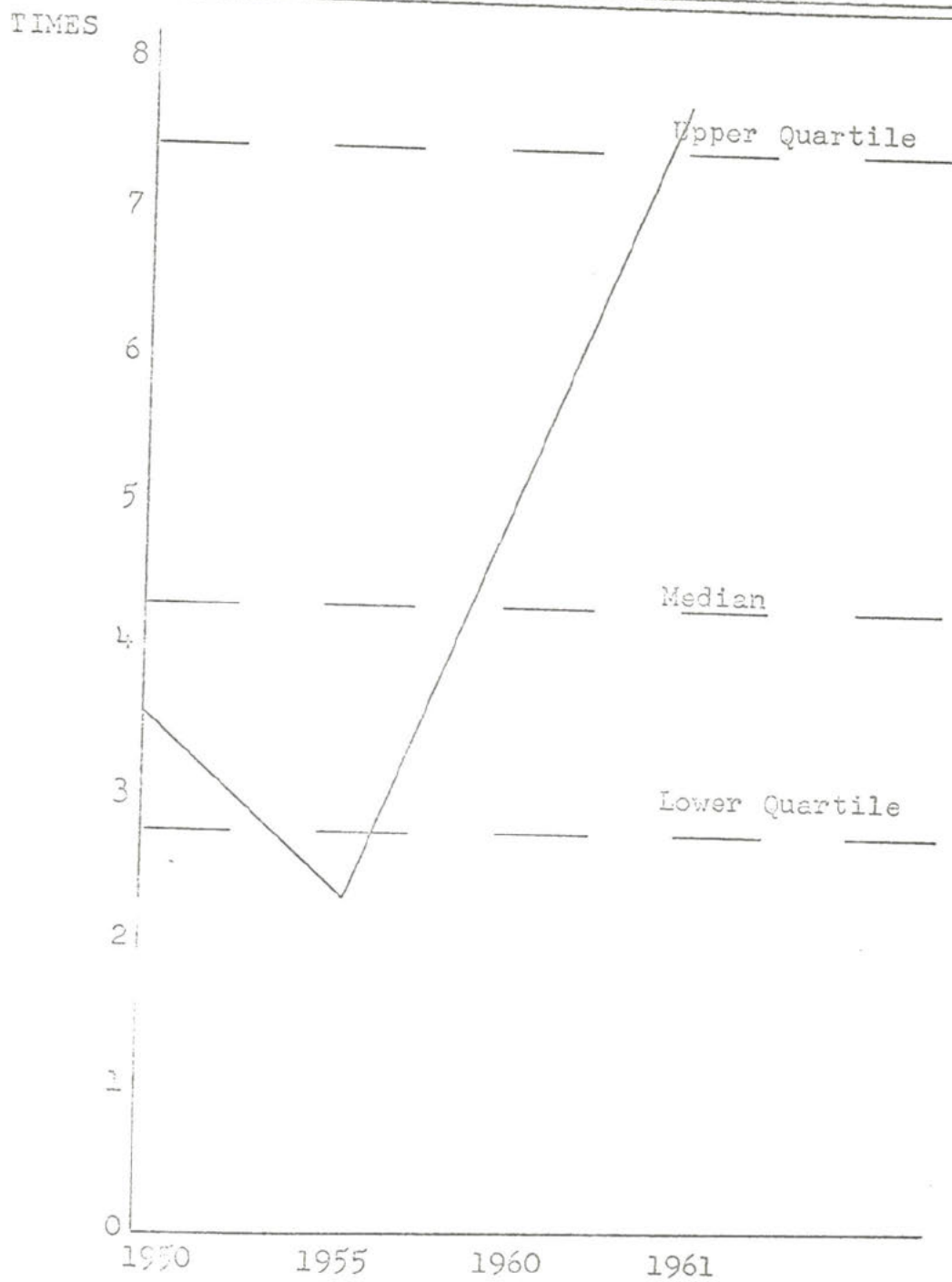
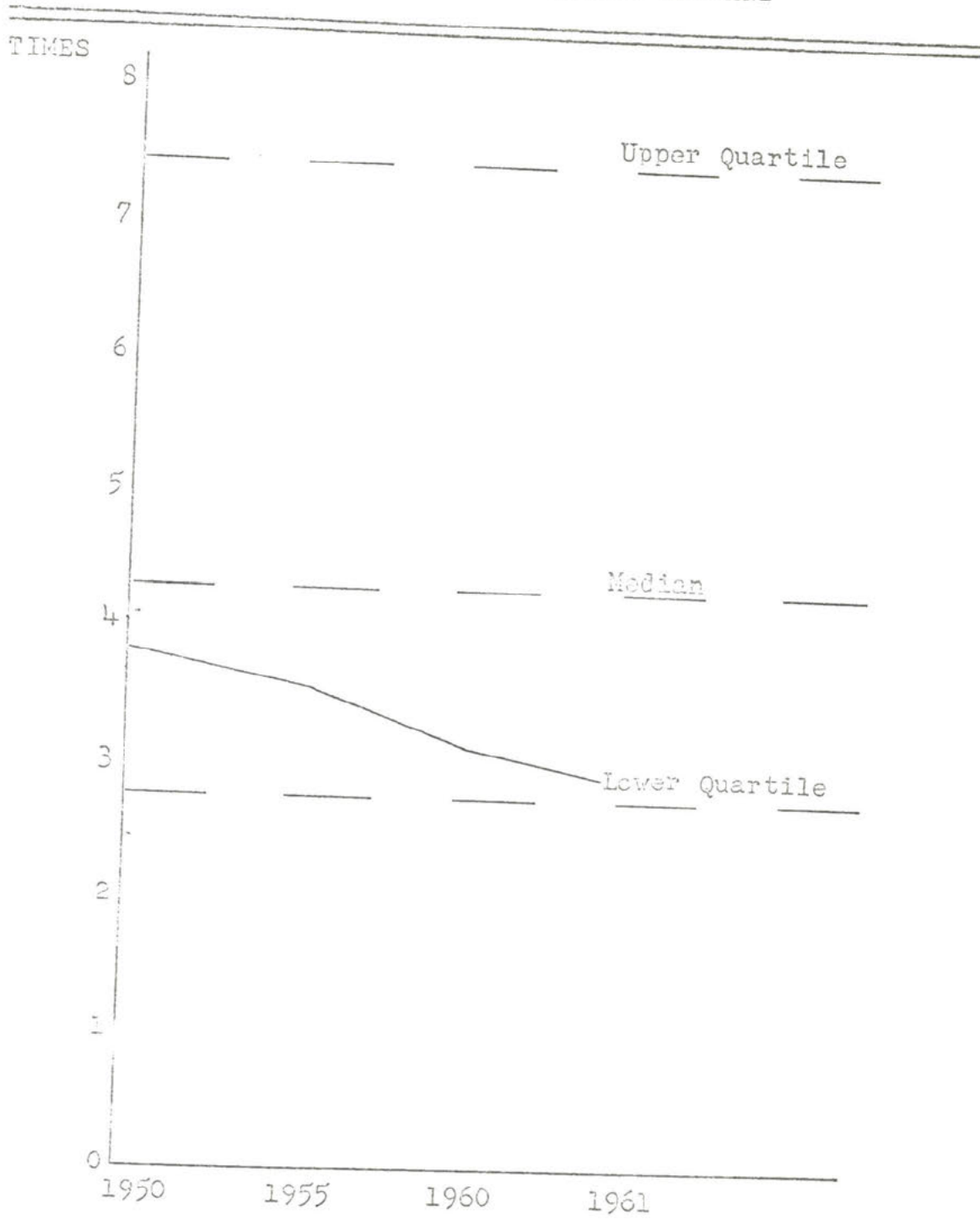


FIGURE XXXXV
NET SALES TO WORKING CAPITAL (TIMES)
FIRESTONE TIRE AND RUBBER COMPANY



The financial data of Socony Mobile Oil Company revealed the net sales to net working capital relationship for a major producer of petroleum goods. Table XIV, page 106, presents the yearly ratios of Mobile and other similar companies included in this study, and the typical petroleum industry standard ratios. Mobile's ratios are shown graphically on Figure XXXXVI, page 113. It shows the 1950 ratio to have been 3.92, dropping to 3.25 in 1955. In 1960, the figure rose to 4.36, and to 4.61 in 1961. The 1950 figure of 3.92 was slightly above the lower quartile figure of 3.89. The ratio declined sharply to 2.97 in 1955, representing an extremely low figure. In 1960, the ratio rose sharply to 4.36 and to 4.61 in 1961, both figures being between the lower quartile of 3.89 and the median figure of 5.50. The trend was generally favorable although the ratio dropped in 1955. The rise in 1960 and 1961 indicated a fairly sound and favorable net sales to net working capital relationship.

The ratio of Texaco, Incorporated, showed a satisfactory, but varying, ratio. The fluctuation is shown graphically on Figure XXXXVII, page 114. The figures were: 1950--3.48; 1955--3.25; 1960--4.37; 1961--4.02. All of these figures are close to the lower quartile figure of 3.89. The yearly ratios were low, but not exceedingly low as of

FIGURE XXXXVI
NET SALES TO NET WORKING CAPITAL
SOCONY MOBILE OIL COMPANY

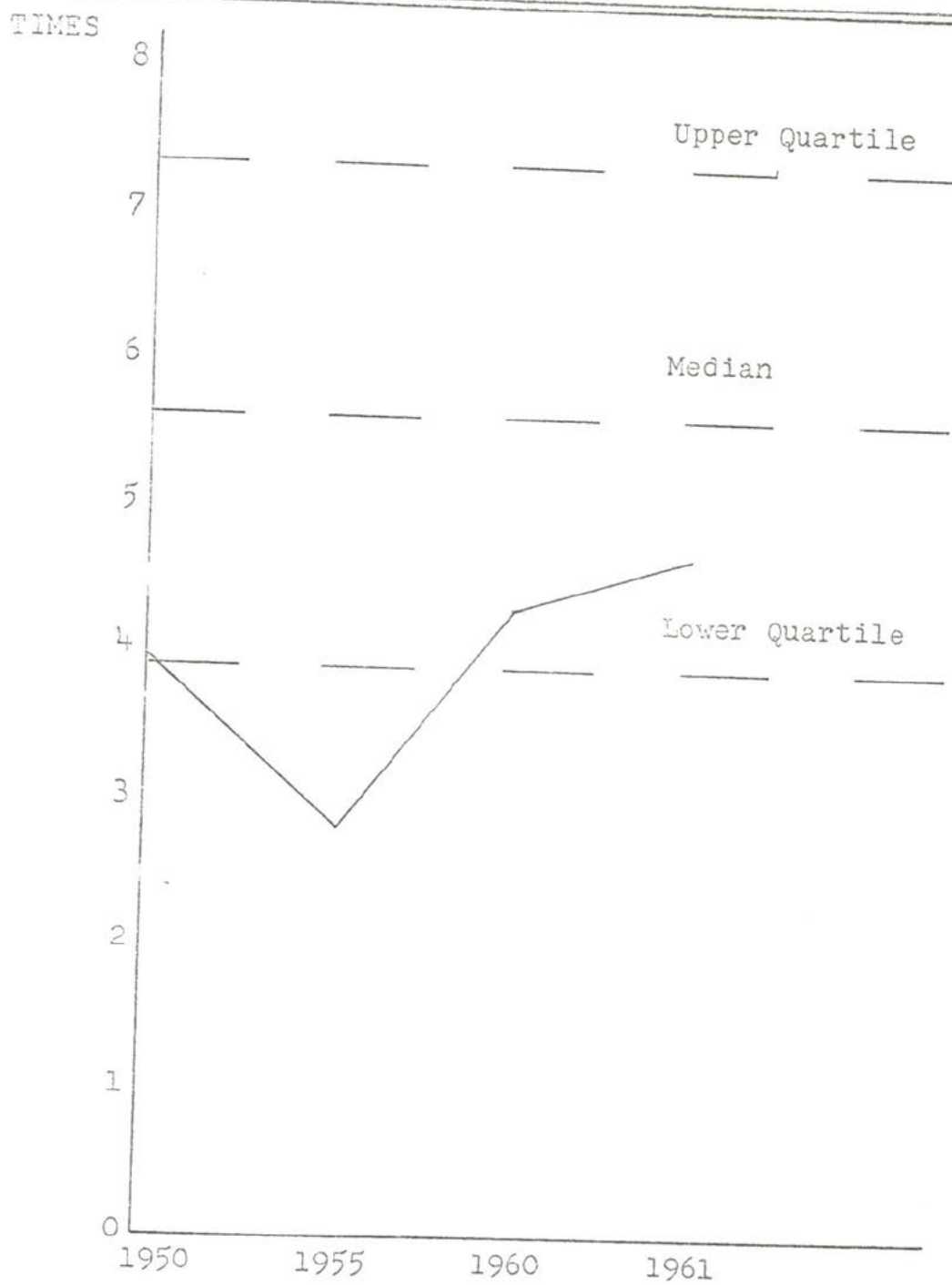
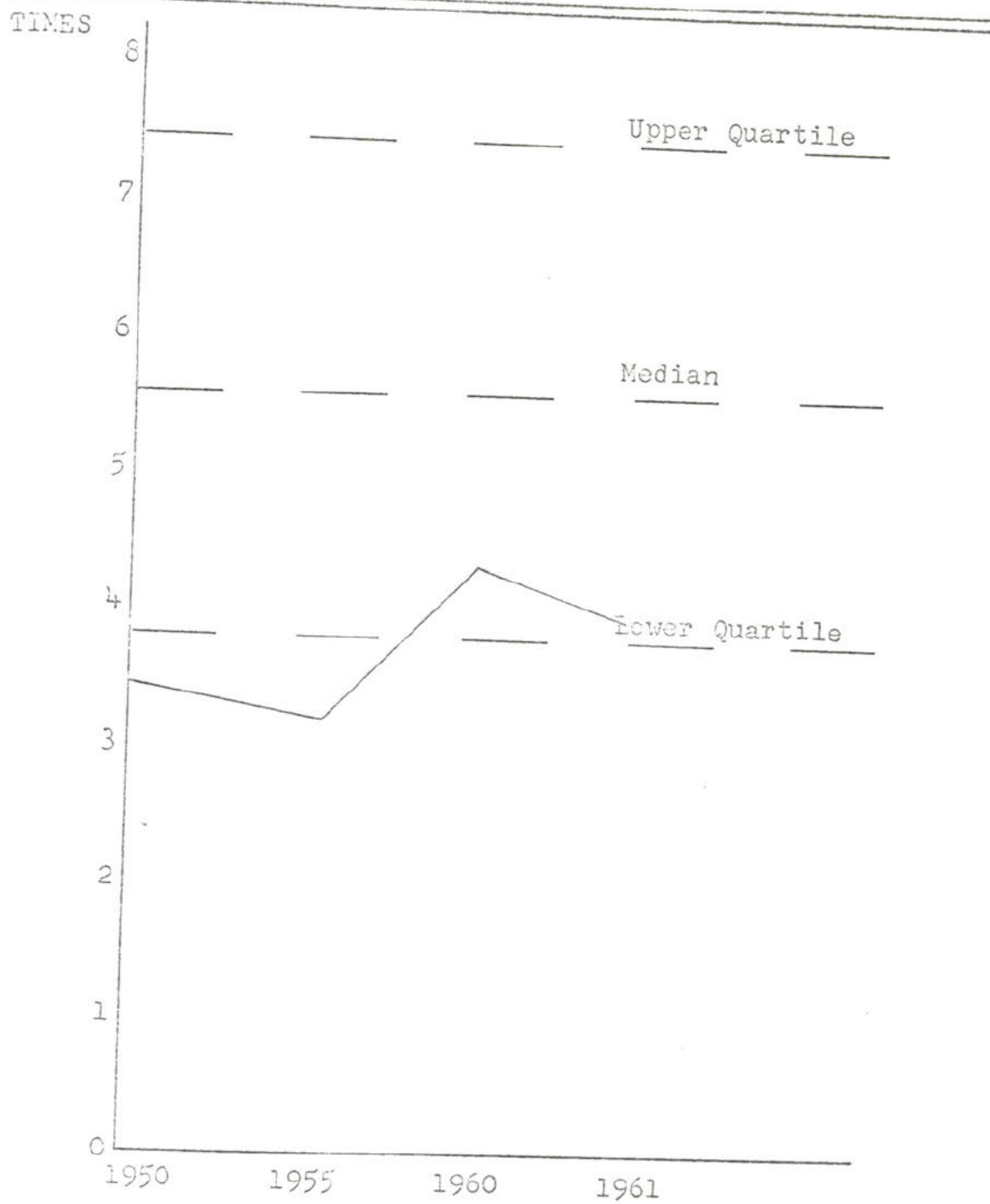


FIGURE XXXXVII
NET SALES TO NET WORKING CAPITAL (TIMES)
TEXACO, INCORPORATED



that time. The trend of the ratio clearly indicated the variance of yearly figures. These variances indicated that the sales volume might be examined for possible steps to create a more stable trend. While the fluctuation was not yet extreme, such a condition could appear in the future.

Standard Oil Company's data showed a steadily increasing ratio trend. From an extremely low ratio of 2.99 in 1950, the figure rose to 3.82 in 1955, 5.37 in 1960, and fell slightly to 5.10 in 1961. This trend is compared to the typical industry standards on Figure XXXXVIII, page 116. The comparison revealed that from an extremely "poor" position, the ratio had been improved to 5.10 in 1961 which is only slightly below the median figure of 5.50. The low ratio of earlier years indicated the common condition of undertrading; this situation was corrected and the ratio presently stands at a relatively "safe" position.

A contrast to Standard's trend of improvement was a steadily decreasing ratio representing data of Gulf Oil Corporation. The yearly figures in this case declined from a relatively healthy 4.43 in 1950 to 4.31 in 1955, 4.11 in 1960, and 3.22 in 1961. This unfavorable trend is illustrated on Figure XXXXIX, page 117. The 1961 figure of 3.22 was slightly under the lower quartile figure of 3.89. The significance of the use of ratios in financial

FIGURE XXXXVIII
NET SALES TO NET WORKING CAPITAL (TIMES)
STANDARD OIL OF NEW JERSEY

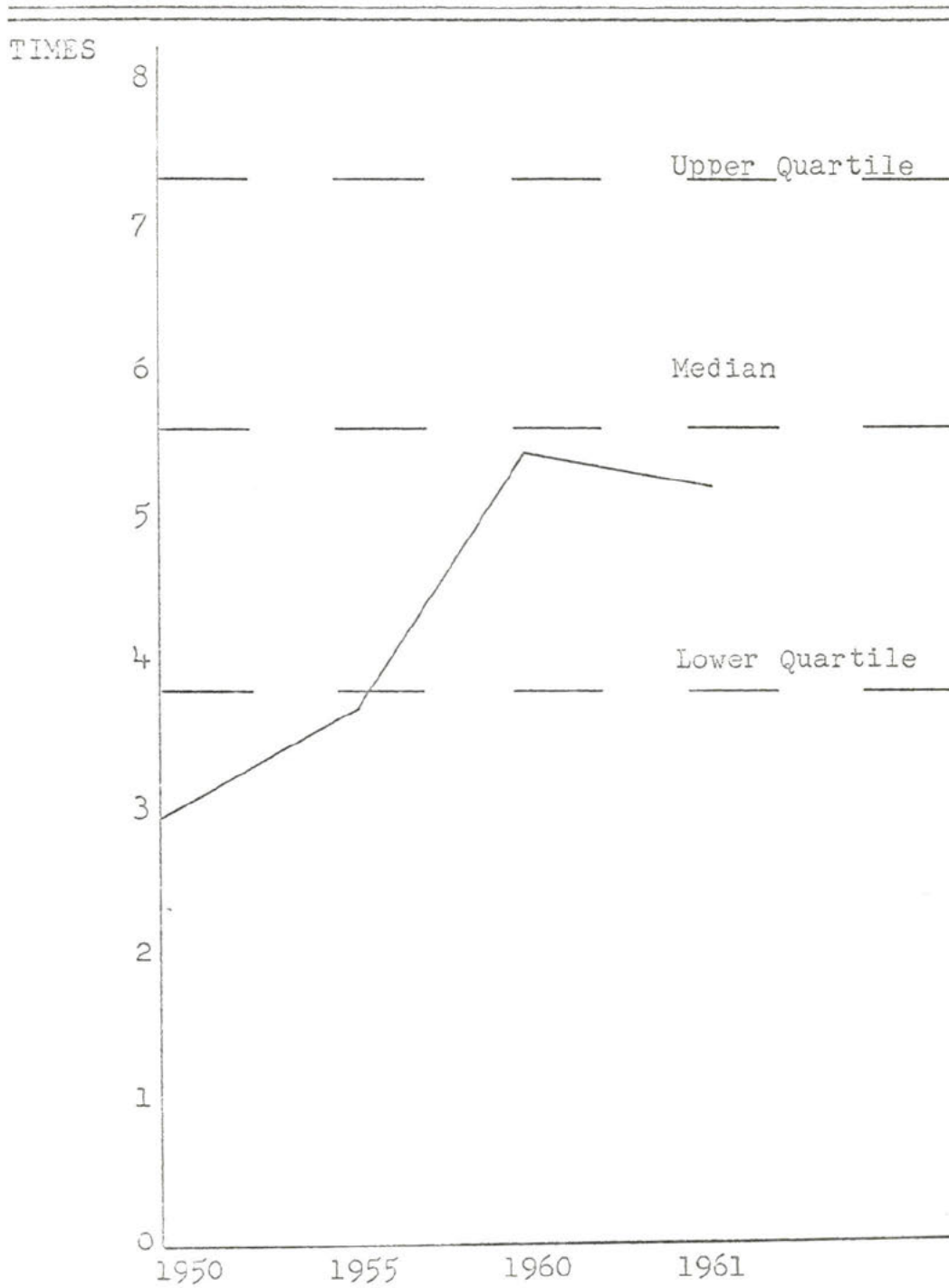
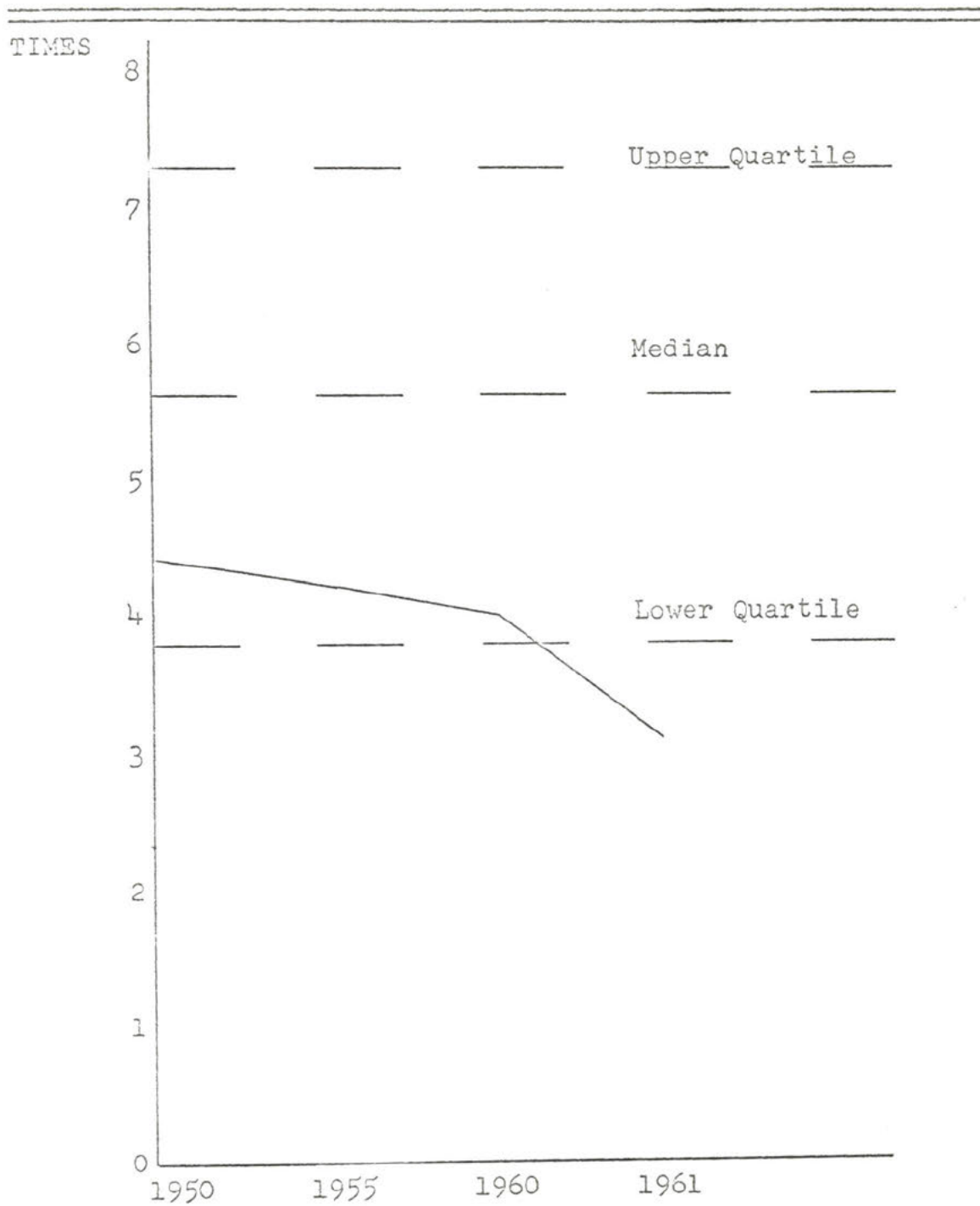


FIGURE XXXIX
NET SALES TO NET WORKING CAPITAL (TIMES)
GULF OIL CORPORATION



analysis was again brought to light by application in this case. The yearly ratio figures all showed a condition which is not yet extremely bad. However, the trend indicated illustrates the direction of ratio movement is unfavorable, and definitely demands attention before a serious problem does arise in the future.

The ratio of net sales to net working capital measures the volume of sales in regard to working capital. For each industry there is a certain "safe" range in regard to this relationship. A ratio in excess of the industry standard indicates the condition of overtrading. A low net sales to net working capital ratio indicates the common problem of undertrading, or the not too common situation of overcapitalization. Undertrading is the lack of proper sales volume in regard to working capital. The solution to undertrading is the increasing of sales volume. Of course this solution is not always possible, but efficient management is usually capable of improving the situation to some extent.

Net Sales to Inventory

"The Net Sales to Inventory figure is often referred to as Stock Turnover and it provides a clue as to whether sales are being lost because stock is too skimpy or because

inventory is top-heavy, obsolete, or stagnant."⁷ The size and balance of inventory is of great importance to every business firm. The funds invested in inventory usually represent a large amount for the business. The funds cannot be recovered until the goods included are actually sold. For each volume of sales, there exists a typical size of inventory to provide the most profitable results. One point that should be remembered is that the relationship between net sales and inventory may be increased by reducing the selling price of the inventories. This method is unacceptable because the low price would usually result in low profits or possibly losses to the firm.

When the ratio is high, it is evidence of the generally high quality of the inventory and of the ability of the management to move its merchandise quickly. Conversely, when the ratio is low, the inclusion of slow-moving, possibly obsolete or shopworn items of questionable value may be suspected, and some doubt may be raised regarding the efficiency and merchandising ability of the management.⁸

For the purposes of this study, the inventory of each company has been valued at cost or market, whichever is lower. All companies have computed the cost of inventory

⁷Moffat, op. cit., p. 102.

⁸Foulke, op. cit., p. 328.

on the Last-In First-Out basis with the exception of Texaco, Incorporated, which used the First-In First-Out method. The many different methods available for the costing of inventory creates the problem of similarity of data. Because of the limitations of this study, the exact inventory figures are not necessary. The purpose is to present the ratio, discuss its use, and present graphically the results of the ratio.

The ratio is computed by dividing net sales by inventory. The results are expressed "times" inventory. For complete validity and significance, this ratio must be used in conjunction with several other ratios such as the current ratio, net profits to working capital, net sales to tangible net worth, and others. While this ratio gives indication of strength and weakness in the relationship of sales and inventory, its use in connection with other ratios gives more meaning to the analysis. Because of the purpose of this study, discussion was made of only the results of this ratio. The interested reader can easily make a full analysis of any particular company by combining the use of the ratios presented elsewhere throughout this paper.

Data of the three chemical companies included in this study together with the typical ratios for the industry

are presented on Table XV, page 122. Similar information pertaining to the petroleum industry and the companies used for this study is found on Table XVI, page 122.

The net sales to inventory was computed on the basis of financial information of E. I. duPont, Incorporated. This computation showed the yearly ratios to be 8.3 in 1950, 8.6 in 1955, 6.7 in 1960, and 7.1 in 1961. The figures of 8.3 and 8.6 in 1950 and 1955 respectively, were relatively strong, being between the median of 7.1 and the upper quartile of 9.7. The 1960 figure of 6.7 was slightly below the median figure of 7.1. Figure L, page 123, presents these ratios in graphic form for easy comparison to industry standards. These figures indicated that the company was in satisfactory position in regard to its net sales to inventory relationship. The decline from 8.6 in 1955 to 6.7 in 1960 might suggest more complete analysis to determine the causes of sharp trend behavior. Currently, the company is enjoying a satisfactory net sales to inventory ratio.

Dow Chemical's ratio showed a somewhat weaker position. From a 1950 figure of 6.5, the ratio dropped sharply to 4.5 in 1955. This decline brought the ratio below the lower quartile figure of 4.9. Such a low figure tends to indicate that the inventory is either too large, or that it contains obsolete items which are not being sold. Investigation

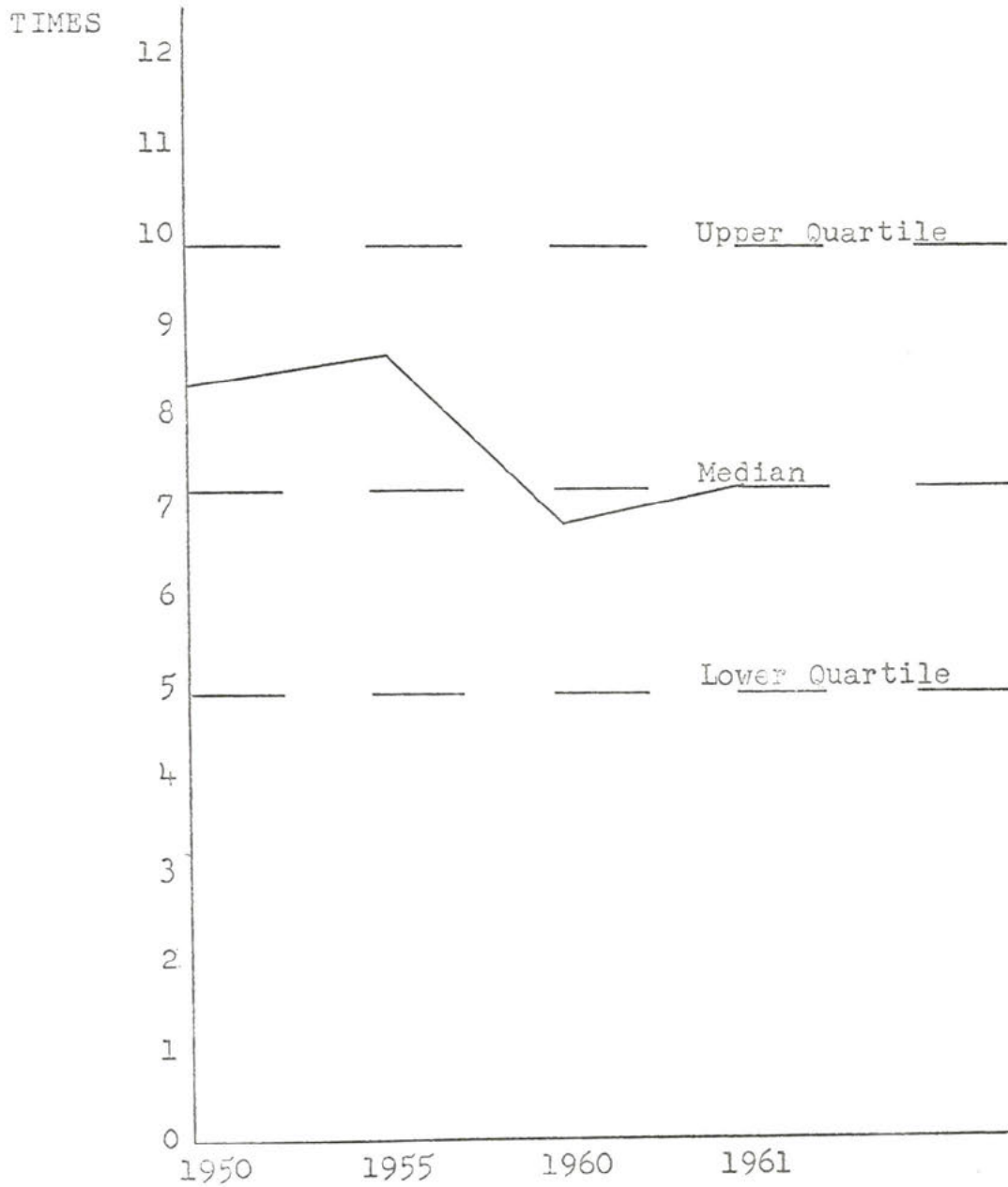
TABLE XV
NET SALES TO INVENTORY (TIMES)

Quartiles	Upper	Median	Lower	
Chemical Industry	9.7	7.1	4.9	
Companies:	1950	1955	1960	1961
duPont	8.3	8.6	6.7	7.1
Dow	6.5	4.5	5.1	4.9
Firestone	6.0	5.2	4.2	4.1

TABLE XVI
NET SALES TO INVENTORY (TIMES)

Quartiles	Upper	Median	Lower	
Petroleum Industry	10.0	9.0	7.0	
Companies	1950	1955	1960	1961
Mobile	6.1	4.3	7.6	7.6
Texaco	7.4	7.1	7.3	9.1
Standard	7.7	8.3	9.8	10.1
Gulf	9.4	12.8	12.3	11.6

FIGURE L
NET SALES TO INVENTORY (TIMES)
DU PONT



into inventory policies and make-up would reveal the trouble area. In 1960, the ratio rose to 5.1 and varied slightly to 4.9 in 1961. These two ratios are close to the lower quartile figure of 4.9. The trend of this company's ratio was one of alternating increases and decreases, with only a minor degree of fluctuation. This trend is illustrated on Figure LI, page 125, for easy comparison.

Figure LII, page 126, graphically presents the net sales to inventory ratios of Firestone Tire and Rubber Company. The yearly ratios were as follows: 1950--6.0; 1955--5.2; 1960--4.3; and 1961--4.1. The figures of 6.0 and 5.2 in the years 1950 and 1955 respectively, were between the median of 7.1 and the lower quartile of 4.9. The 1960 and 1961 figures of 4.3 and 4.1 are both well under the lower quartile figure. The situation indicated in the 1960-1961 period is that of extremely low sales volume in regard to the industry average. This condition was a reflection of an excess of inventory in relation to the sales volume of this company. A close look into the inventories might reveal the presence of goods which are in some way worthless, obsolete, or unsalable for some reason. The elimination of these items might return the proper balance to this relationship. Another possibility is that of proper inventory, but simply low sales volume. Management's task under this assumption is to undertake more aggressive selling

FIGURE LI
NET SALES TO INVENTORY (TIMES)
DOW CHEMICAL COMPANY

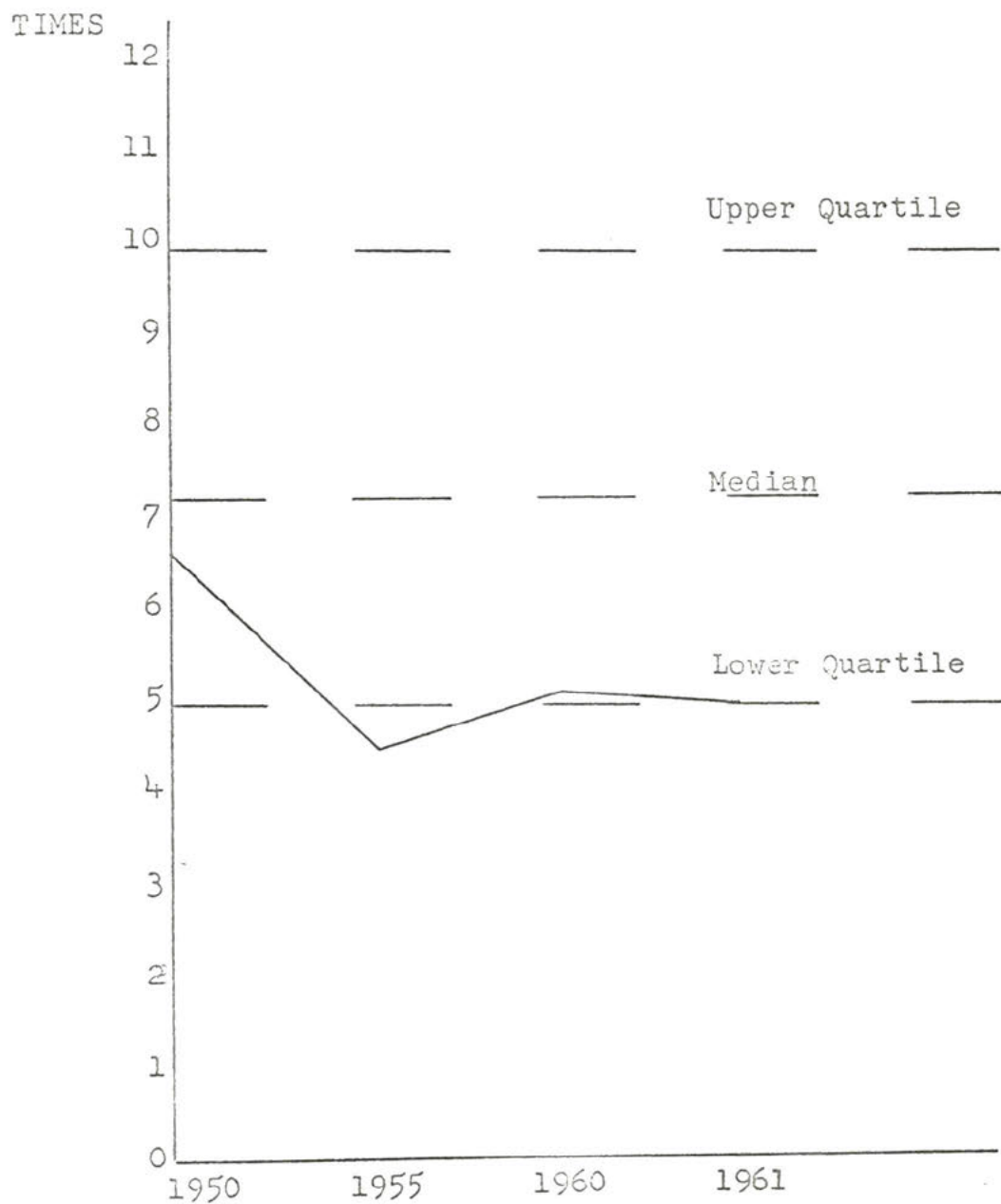
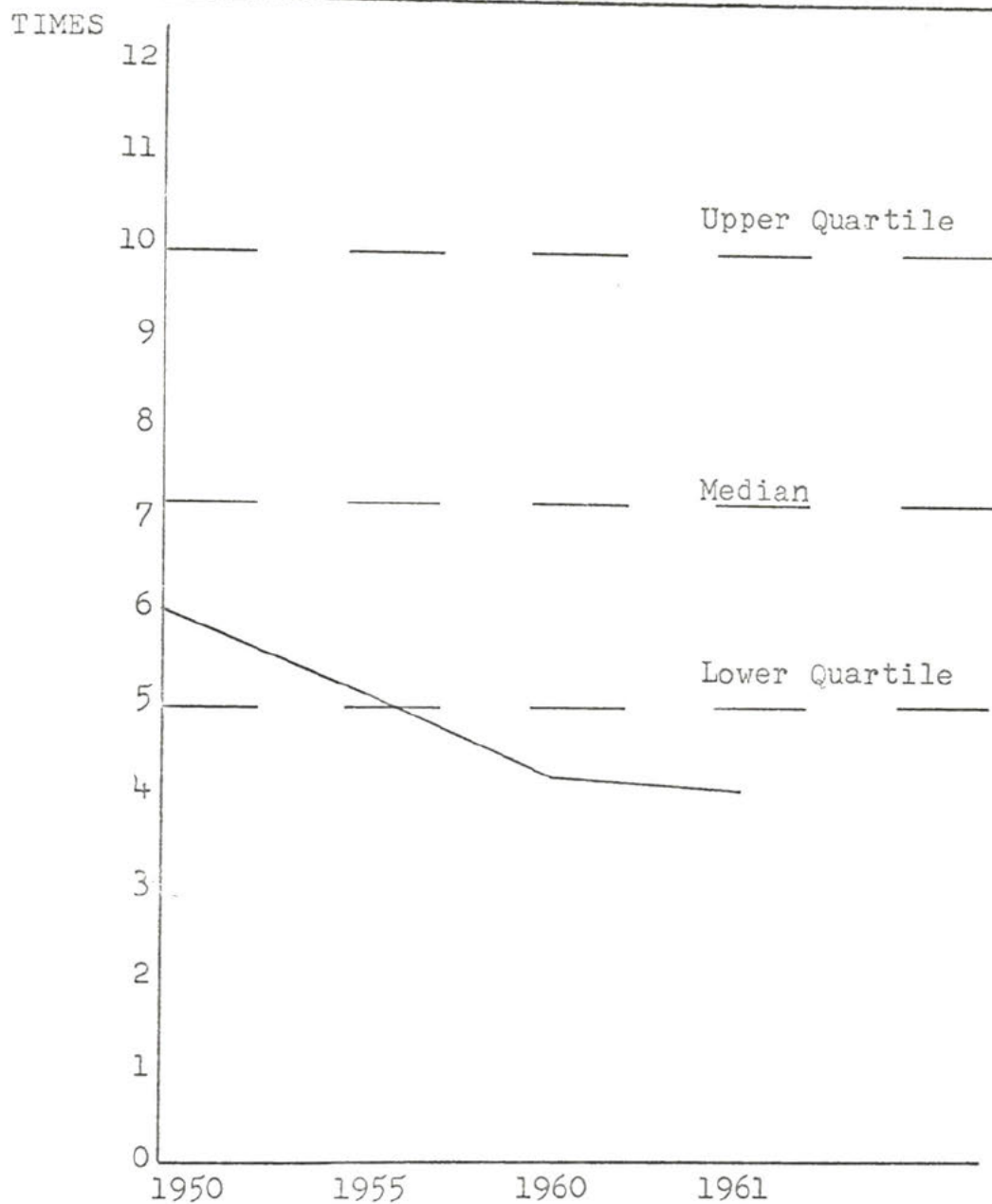


FIGURE LII
NET SALES TO INVENTORY (TIMES)
FIRESTONE TIRE AND RUBBER COMPANY

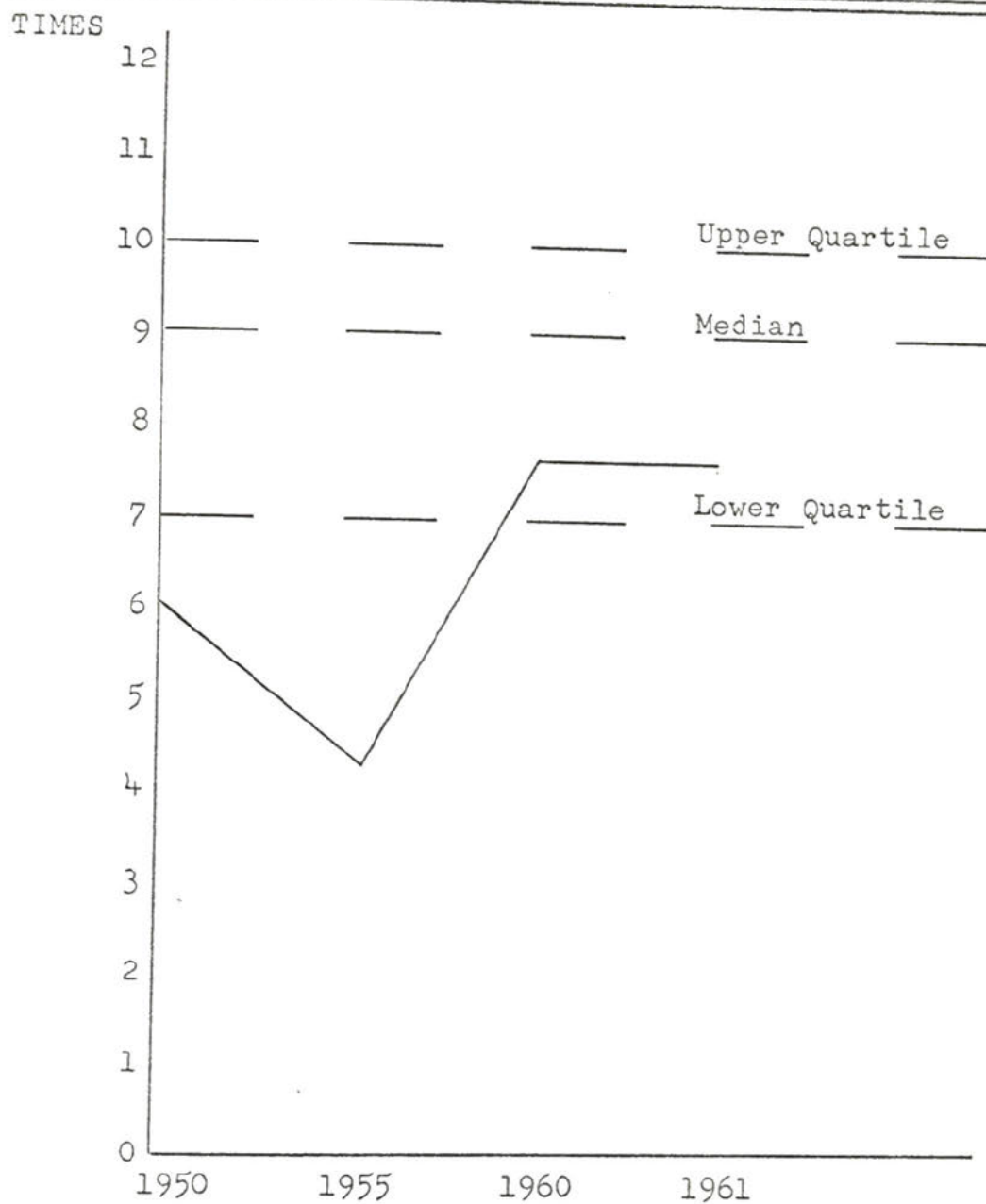


policies to increase sales to their proper level. The trend indicated here is one of steady decline over the period covered by this study. The direction of the trend is downward, an unfavorable movement for this relationship.

Table XVI, page 122, presents the ratios of the petroleum companies included, together with the standard ratios of the industry. Socony Mobile Oil Company's data provided the yearly ratios as follows: 1950--6.1; 1955--4.3; 1960--7.6; and 1961--7.6. Figure LIII, page 128, shows the trend of the ratio. This trend was definitely favorable in direction, rising from 6.1 to 7.6 during this period. The figures of 6.1 and 4.3 for 1950 and 1955 respectively, were both under the lower quartile of 7.0. The figure of 7.6 for both 1960 and 1961 was slightly above the lower quartile figure. Whenever the ratio falls below the lower quartile, there is evidence of poor inventory balance. The company improved this relationship in later years, and now seems to be doing a more efficient job of keeping this relationship under control.

Texaco, Incorporated, provides a net sales to inventory picture which is relatively "safe" and satisfactory. In 1950, the ratio of 7.4 was slightly above the lower quartile figure of 7.0, as was the 1955 figure of 7.1. Both of these figures were sound, although not up to the industry's median. The ratio increased to a 7.3 figure in 1960, and to a median

FIGURE LIII
NET SALES TO INVENTORY (TIMES)
SOCONY MOBILE OIL COMPANY



range 9.1 in 1961. The trend, as illustrated on Figure LIV, page 130, was favorable generally. The rise to 9.1 in 1961 gives indication that the company took some improvement actions. The ratio is currently at a very favorable median level, and attempts should be made to maintain this position.

Standard Oil's data revealed a case of ratio improvement. Figure LV, page 131, traces the movement of the ratio from a figure of 7.7 in 1950, 8.3 in 1955, 9.8 in 1960, to an extremely sound ratio of 10.1 in 1961. The ratio movement was definitely favorable, rising from the lower quartile figure to 10.1. This high ratio was desirable at this time, however, the ratio must now be closely watched to ensure against the possibility of excess volume at a later date.

An example of a relatively high and sound net sales to inventory relationship was shown by the financial data of Gulf Oil Corporation. Figure LVI, page 132, contains the ratio figures of 9.4 in 1950, 12.8 in 1955, 12.3 in 1960, and 11.6 in 1961. All of these figures represented extremely sound managerial skill and ability in regard to inventory control and sales volume levels.

The ratio of net sales to inventory measures the volume of sales against the size of inventory. A high ratio indicates a high degree of managerial ability and efficiency. A low ratio gives evidence of low sales volume, or that the inventory contains items which are

FIGURE LIV
NET SALES TO INVENTORY (TIMES)
TEXACO, INCORPORATED

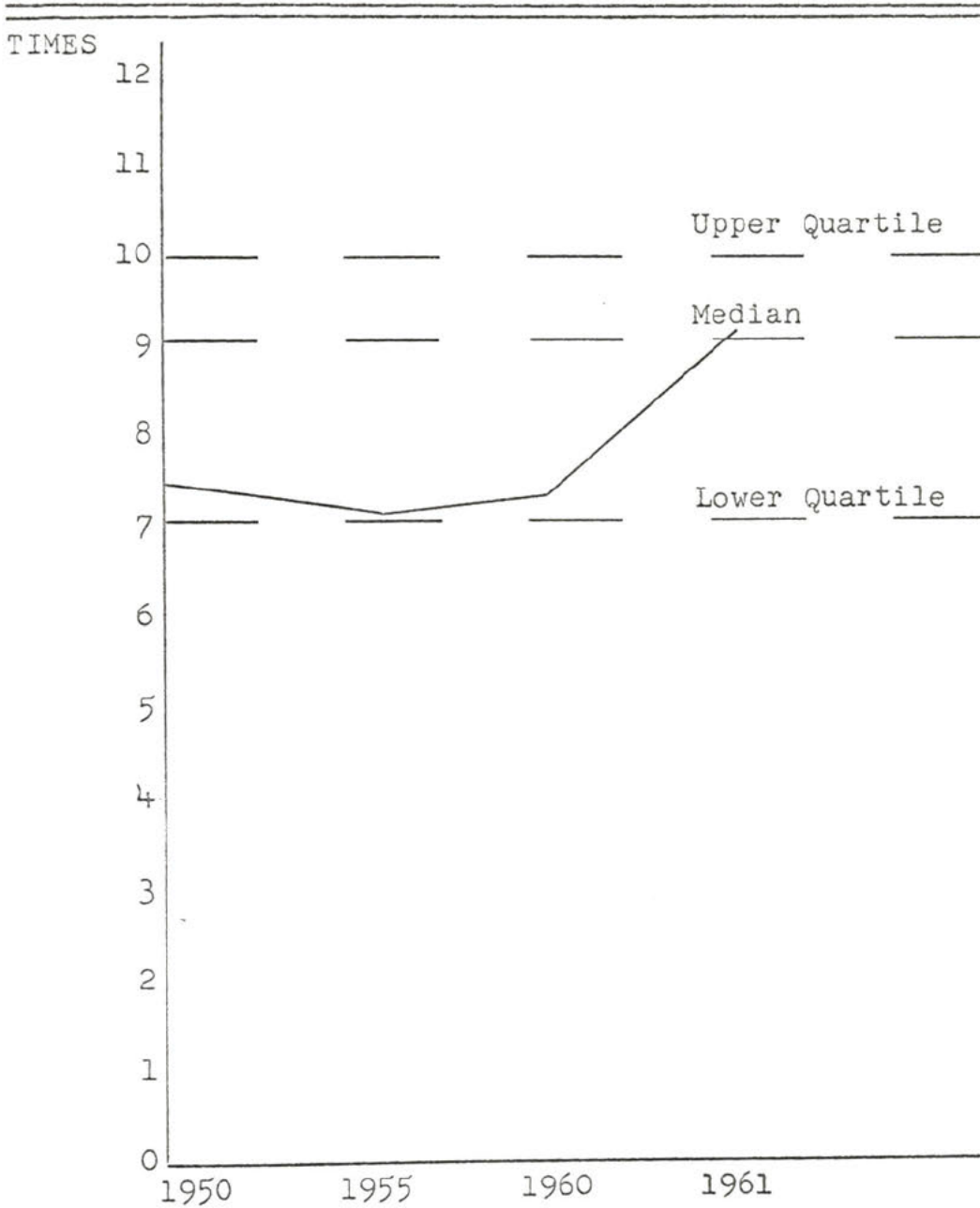


FIGURE LV
NET SALES TO INVENTORY (TIMES)
STANDARD OIL OF NEW JERSEY

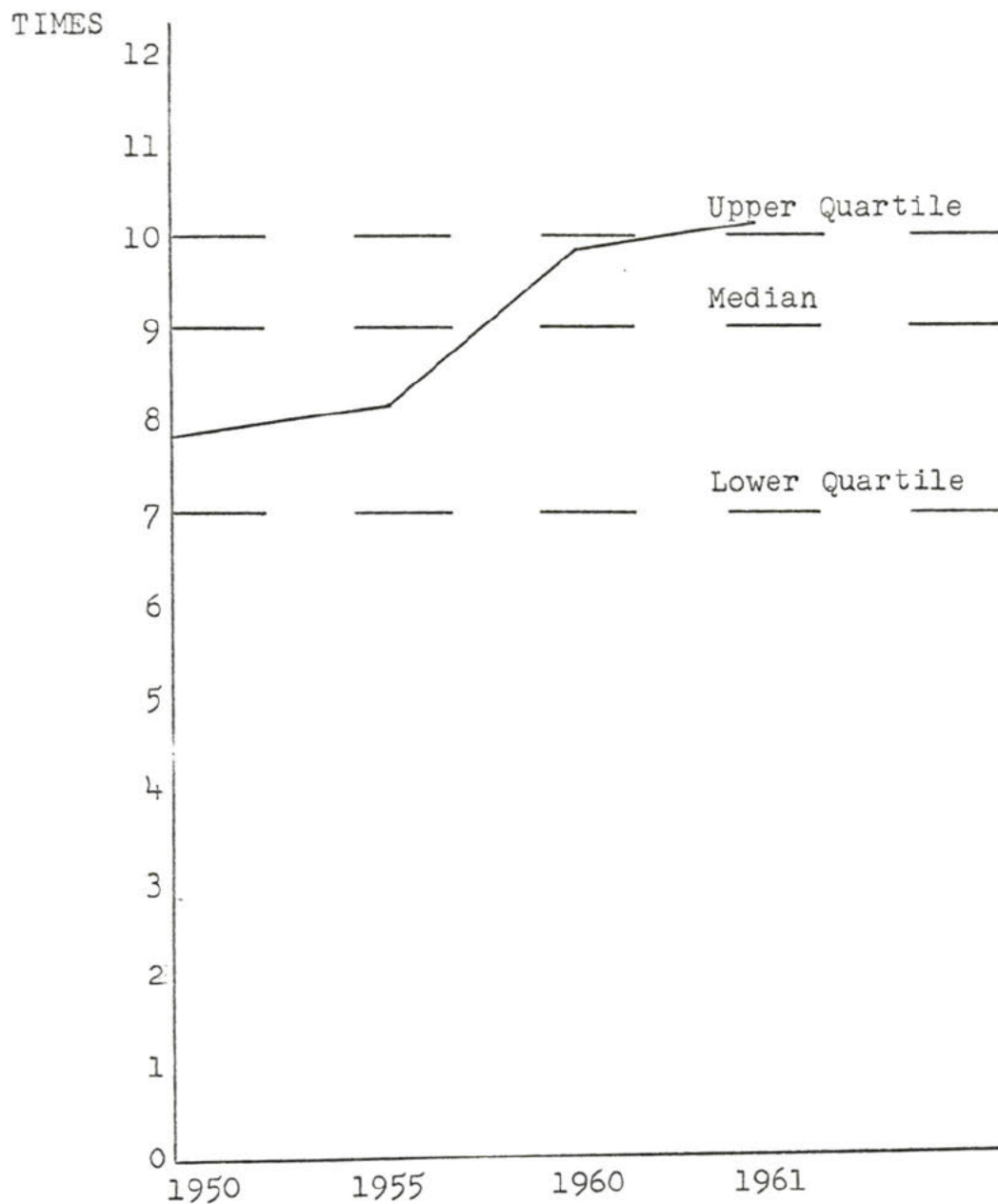
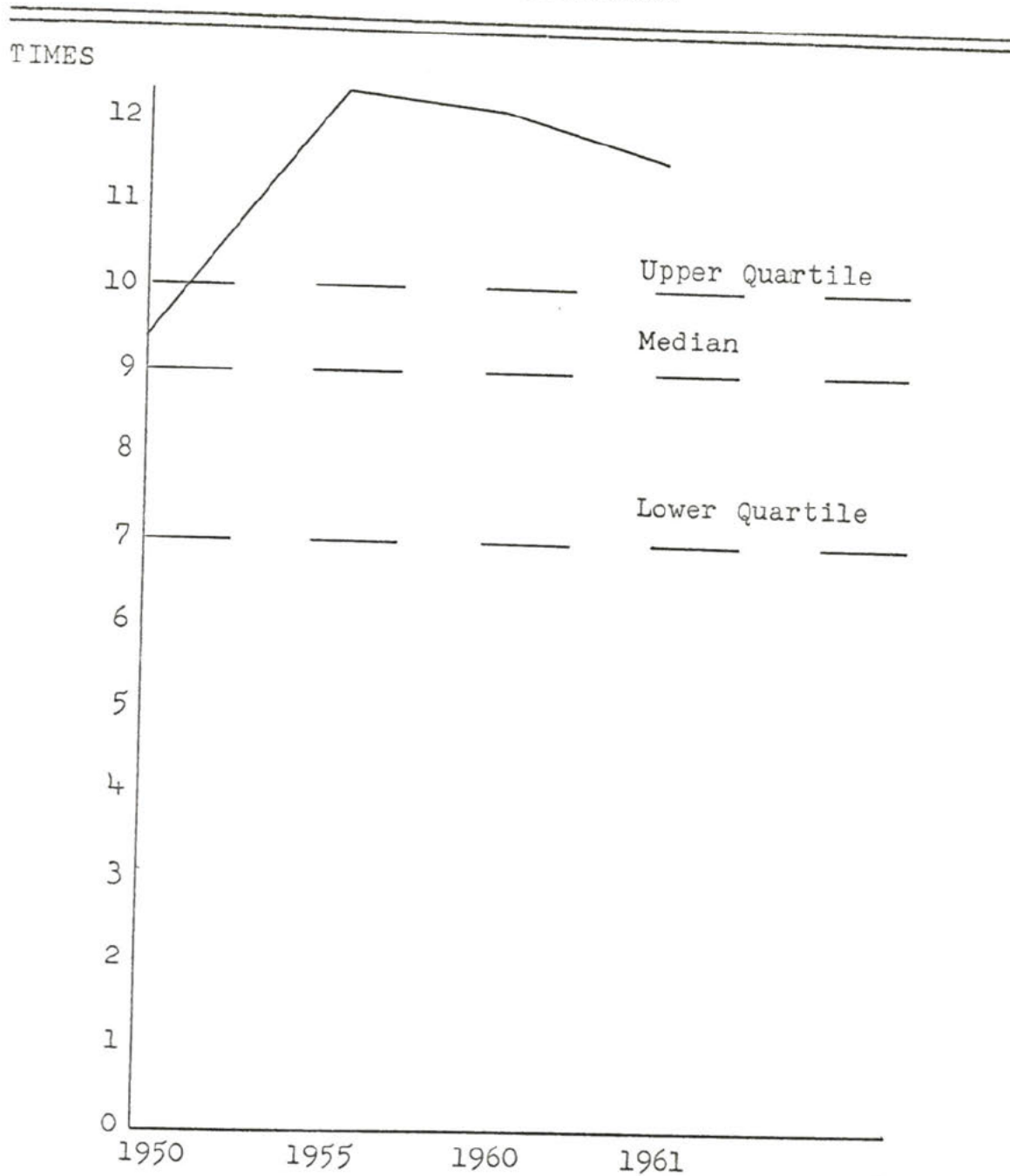


FIGURE LVI
NET SALES TO INVENTORY (TIMES)
GULF OIL CORPORATION



not being sold rapidly and are causing the inventory to remain too large in relation to the volume of sales for the firm.

CHAPTER V

RATIOS MEASURING LIABILITIES

Current Debt to Tangible Net Worth

The ratio of current debt to tangible net worth measures the investments of creditors in the firm against the funds permanently invested by the owners. The owner's investment, or tangible net worth, is used to make payment of creditor liabilities. Therefore, the larger the current debt becomes, the less security is available to creditors. "In a very practical manner, as liabilities increase above a certain level, the management has more and more difficulty in meeting its financial obligations on scheduled time."¹ Of course, the situation finally arrives whereby creditors refuse further extension of terms and force liquidation of the business. Many businesses go out of business yearly due to the unsound use of capital. Much of this capital is used to satisfy debts incurred through the overuse of credit. This heavy use of credit is reflected in the size of current liabilities. A low ratio is a favorable condition because of its indication of small current debt in relation to tangible net worth. A high ratio reveals a condition whereby a large

¹Foulke, op. cit., p. 207.

amount of capital is required to satisfy creditor obligations. Solutions to the problem of a high ratio depend on the individual companies and their condition at that time. A common solution is the investment of additional funds to bring tangible net worth into balance. The most desirable solution would be the decreasing of current liabilities, which of course, is usually not possible.

The ratio is determined by dividing current debts by tangible net worth. The results are expressed as a per cent of tangible net worth. Table XVII, page 136, presents the typical ratios of the chemical industry, and also the yearly ratios of the individual companies used in this study. Table XVIII, page 136, gives similar information for companies of the petroleum industry included in this study, and the typical ratios of the industry as a whole.

The current debt to tangible net worth ratio of E. I. duPont presented some interesting comparisons. The yearly ratios were as follows: 1950--16.2; 1955--9.7; 1960--6.4; and 1961--5.7. All of these ratios were well under the upper quartile figure of 19.6. The significance of these figures was simply that this company had only about 6 per cent of its tangible net worth in current debts. This figure was extremely sound, and pointed out the fact that the company makes little use of outside credit. The ability

TABLE XVII
CURRENT DEBT TO TANGIBLE NET WORTH (%)

Quartiles	Upper	Median	Lower	
Chemical Industry	19.6	29.3	54.2	
Companies:	1950	1955	1960	1961
duPont	16.2	9.7	6.4	5.7
Dow	25.4	37.7	27.3	37.3
Firestone	50.0	39.8	33.5	33.1

TABLE XVIII
CURRENT DEBT TO TANGIBLE NET WORTH (%)

Quartiles	Upper	Median	Lower	
Petroleum Industry	16.1	19.9	27.4	
Companies:	1950	1955	1960	1961
Mobile	19.9	21.1	20.3	21.8
Texaco	10.7	11.5	17.9	16.9
Standard	19.1	25.0	23.7	23.9
Gulf	27.8	24.7	17.5	12.2

to obtain additional funds, either from creditors or investors, is based largely on the amount of debt outstanding at the time. Quite obviously, this company would have little trouble in obtaining funds when needed. The comparison of the company's ratios with the standard ratios of the industry is presented in graphic form on Figure LVII, page 138.

Dow Chemical Company's current debt to tangible net worth ratio showed the following: 1950--25.4; 1955--37.7; 1960--27.3; 1961--37.3. Figure LVIII, page 139, presents the comparison of these figures with the standard industry ratios in graphic form. The 1950 ratio of 25.4 was between the median of 29.3 and the upper quartile of 19.6. This position represented a relatively sound condition of current liabilities in comparison to the industry as a whole. In 1955, the ratio rose to a sub-median figure of 37.7. This ratio showed that the current debts of the company were about one-third of tangible net worth. A thorough study of current debts should be made to determine the causes of the 12% increase during the 1950-1955 period. The ratio returned to a more desirable 27.3 in 1960, however another rise in 1960 placed the figure at 37.3. This fluctuation of ratio level indicated the common occurrence of long-term debts maturing within the current year. As these debts became current, the ratio would reflect the condition by showing a high figure. As the debt is paid, the ratio would return to

FIGURE LVII
CURRENT DEBT TO TANGIBLE NET WORTH (%)
DU PONT

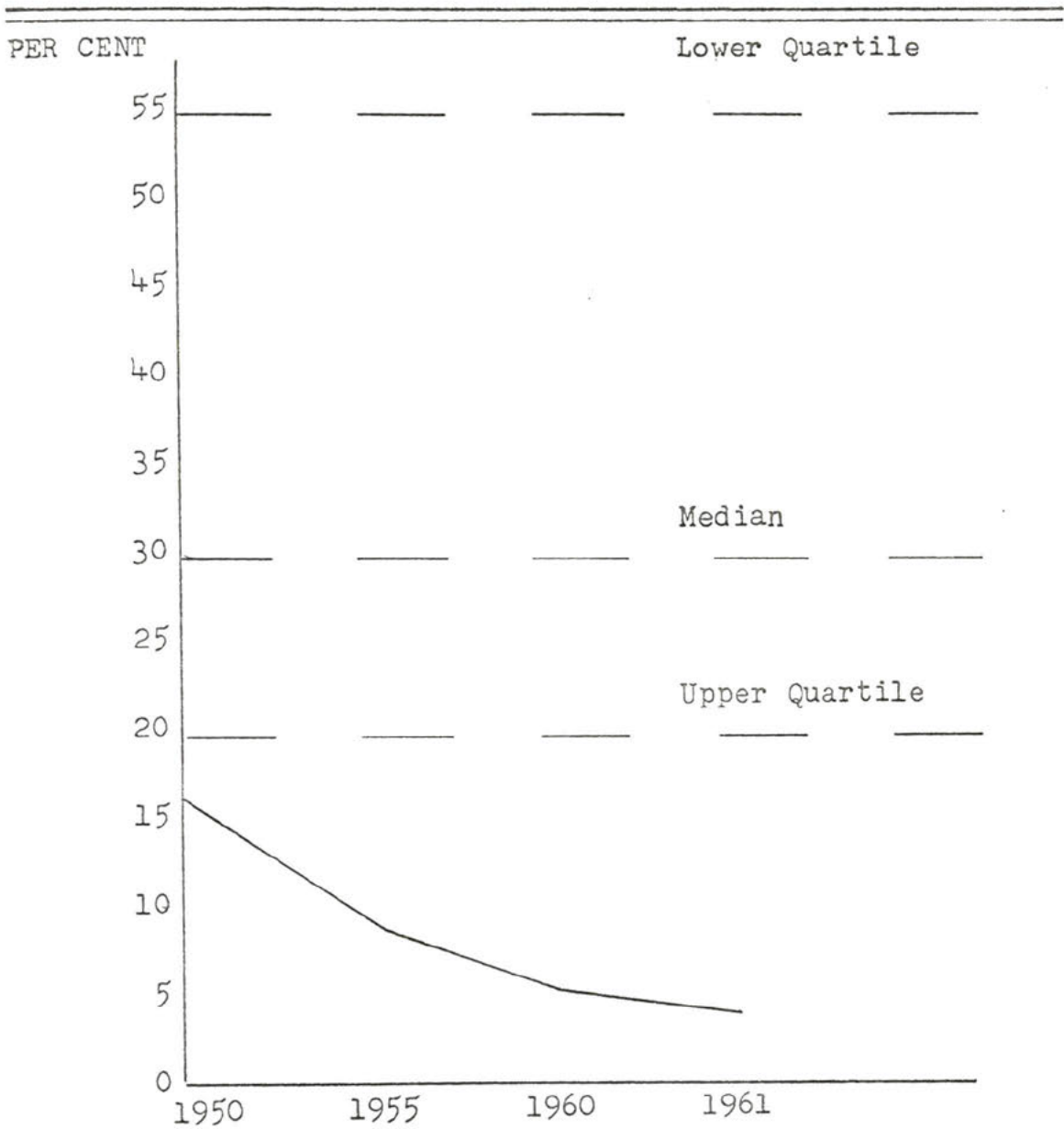
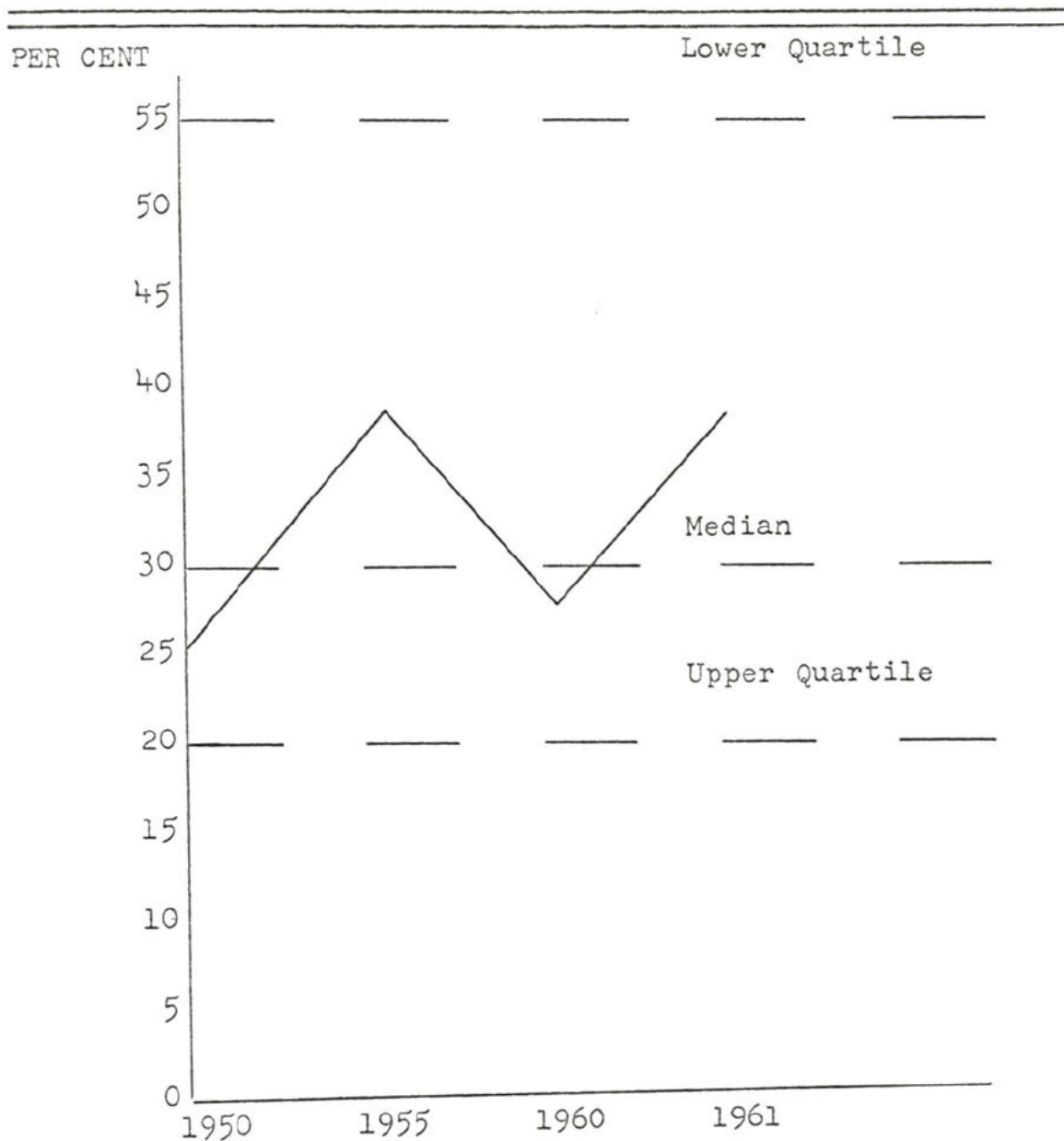


FIGURE LVIII
CURRENT DEBT TO TANGIBLE NET WORTH (%)
DOW CHEMICAL COMPANY

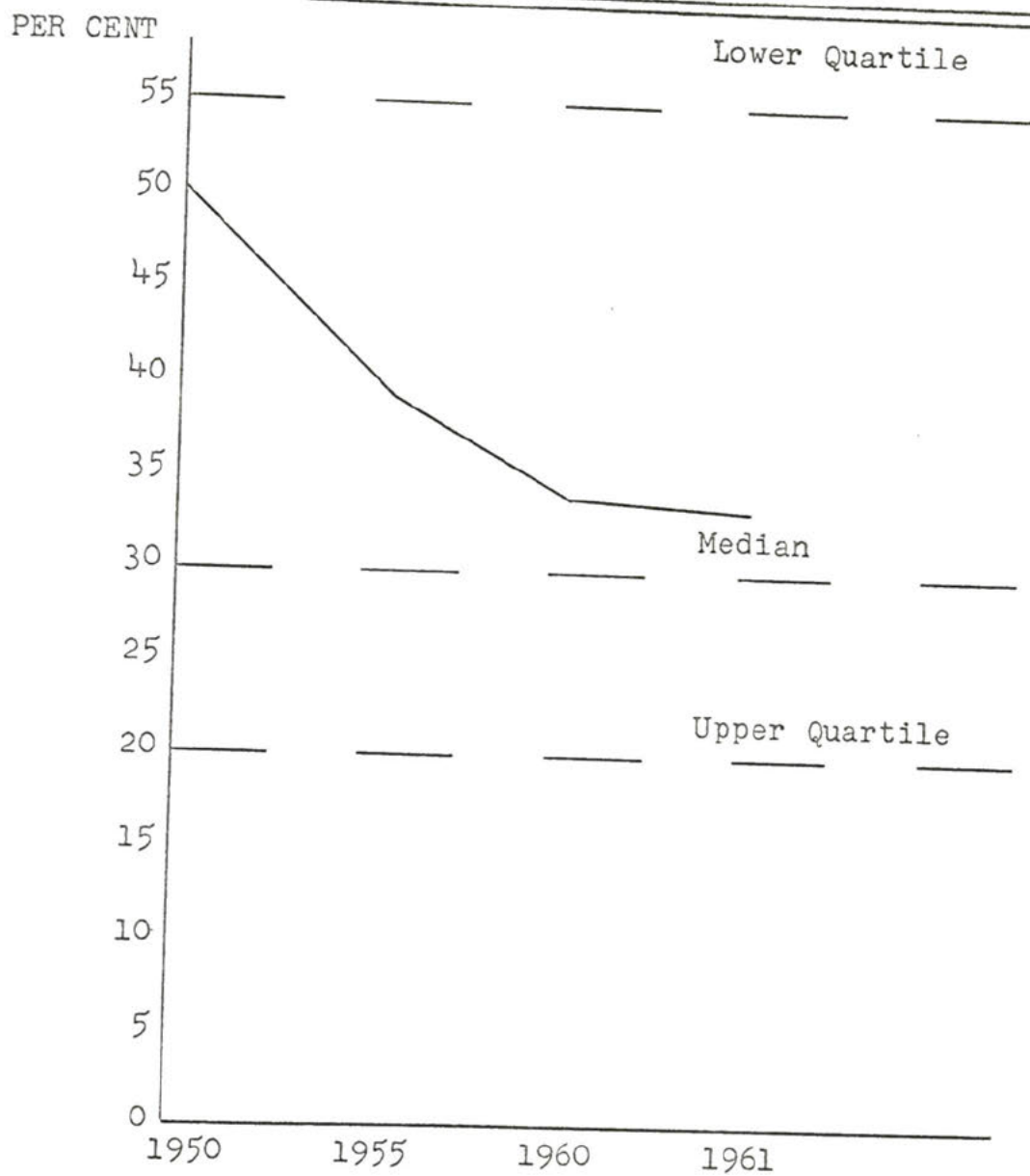


the normal level for the company. A complete study of the company's long-term debts would reveal the data concerning the maturity dates of the various debts.

The data of Firestone Tire and Rubber Company revealed an example of ratio improvement. The 1950 ratio showed a figure of 50.0, which is only slightly above the industry's lower quartile figure of 54.2. At this time, outside creditors had funds invested in the company equal to one half of the funds invested by owners of the firm. From this unfavorable condition, the ratio declined to 39.8 in 1955, 33.5 in 1960, and 33.1 in 1961. This ratio improvement brought the figure within the more desirable median range ratio of 29.3. This example of steady improvement was shown pictorially on Figure LIX, page 141. The 1950 figure of 50% reflected the condition of excessive current liabilities. There were many possible reasons for this unfavorable position of the ratio. Additional company information is necessary to determine the exact cause of the high figure. Whatever the cause, the company corrected the condition, and the corrective action is reflected in the improvement of later years.

Table XVIII, page 136, gives the reader a condensed summary of the current debt to tangible net worth ratios of the several petroleum companies included in this study. The ratios of Socony Mobile indicated a relatively strong and stable current debt to tangible net worth relationship. The yearly figures were as follows: 1950--19.9; 1955--21.1;

FIGURE LIX
CURRENT DEBT TO TANGIBLE NET WORTH (%)
FIRESTONE TIRE AND RUBBER COMPANY



1960--20.3; and 1961--21.7. All of these figures compared very closely to the industry median of 19.9. This condition reflected the sound ability and judgment of the company's management in regard to the use of credit. The trend was relatively stable, and gave evidence of close control by the firm. Figure LX, page 143, graphically presents this ratio condition, and gives visual comparison to the industry's typical figures.

Texaco, Incorporated's financial data illustrated an extremely fine current debt to tangible net worth relationship. Figure LXI, page 144, graphically presents the ratios in comparison with industry standards. The 1950 figure of 10.7 was below the industry's upper quartile figure of 16.1. The ratio rose to 11.5 in 1955, but remained in relatively excellent position. In 1960, the ratio increased to 17.9, which was between the upper quartile figure of 16.1 and the median of 19.9. The low ratio figures shown here were a reflection of the ability of the firm's management to conduct the operations of the business without excessive use of outside credit. If future extension of credit is needed, the company will probably have little trouble in obtaining the extension.

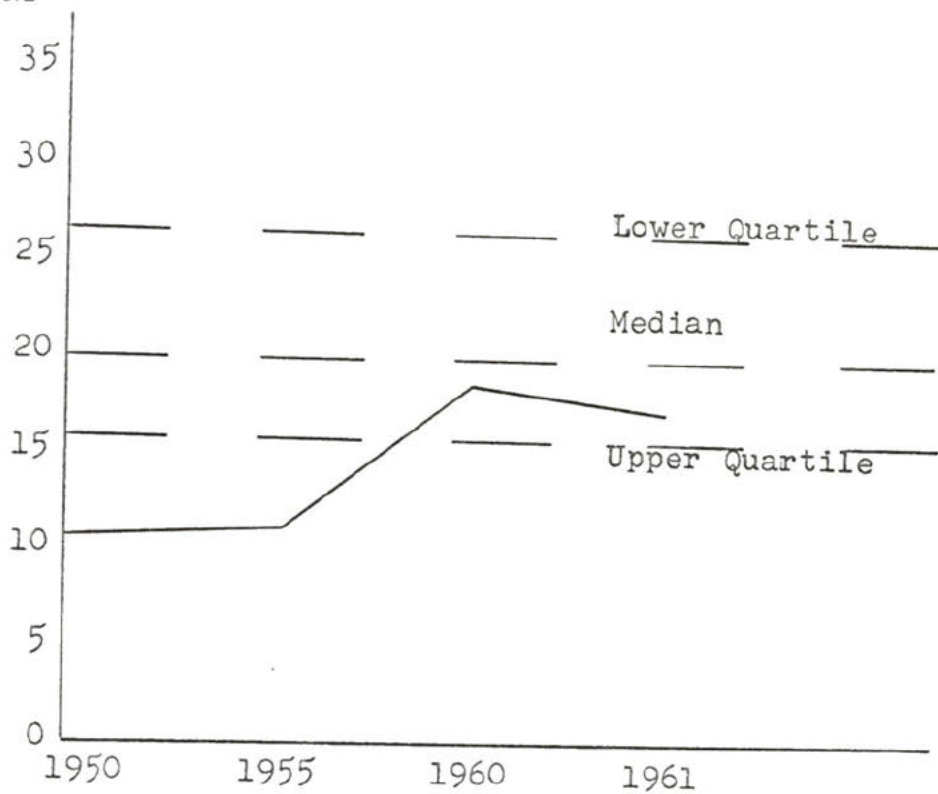
Standard Oil of New Jersey had a median range ratio position in the years covered by this study. The yearly figures of 19.1, 25.0, 23.7, and 23.9 were all relatively

FIGURE LX
CURRENT DEBT TO TANGIBLE NET WORTH (%)
SOCONY MOBILE OIL COMPANY



FIGURE LXI
CURRENT DEBT TO TANGIBLE NET WORTH (%)
TEXACO, INCORPORATED

PER CENT



sound in comparison to the industry's median of 19.9. Although these figures were not as exceptional in relation to the ratios of other companies, the median range was about average for all companies in the petroleum industry. The trend showed fluctuation to a small degree in the yearly figures. Figure LXII, page 146, illustrates this trend and points out the narrow range of movement. This fluctuation indicated the normal condition of varying current debts. If however, the variance became extreme in future operations, an investigation would be required to stabilize its movements.

An example of a high ratio which had been improved through the years was given by the current debt to tangible net worth ratio of Gulf Oil Corporation. In 1950, the ratio was 27.8, which was above the industry's lower quartile figure of 27.4. At this time, evidence was given that the company was operating at a competitive disadvantage through the use of excessive outside credit. The improvement in the ratio was shown by the 24.7 figure in 1955. Although this figure was high in relation to industry standards, the trend was favorable. A vast improvement was shown by the 1960 figure of 17.5. This ratio was between the median of 19.9 and the upper quartile of 16.1. The ratio in 1961 reached 12.2, which was well below the industry's upper level of 16.1. The trend is shown on Figure LXIII, page 147.

FIGURE LXII
CURRENT DEBT TO TANGIBLE NET WORTH (%)
STANDARD OIL OF NEW JERSEY

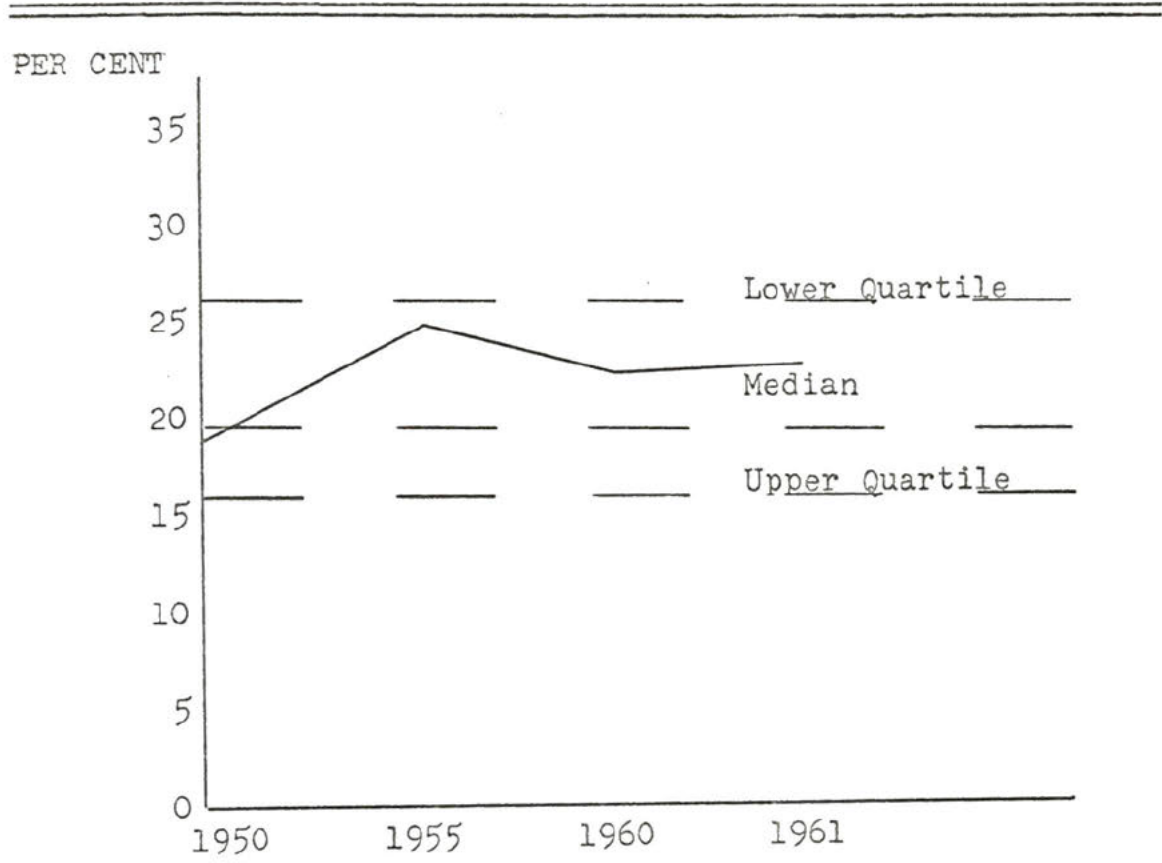
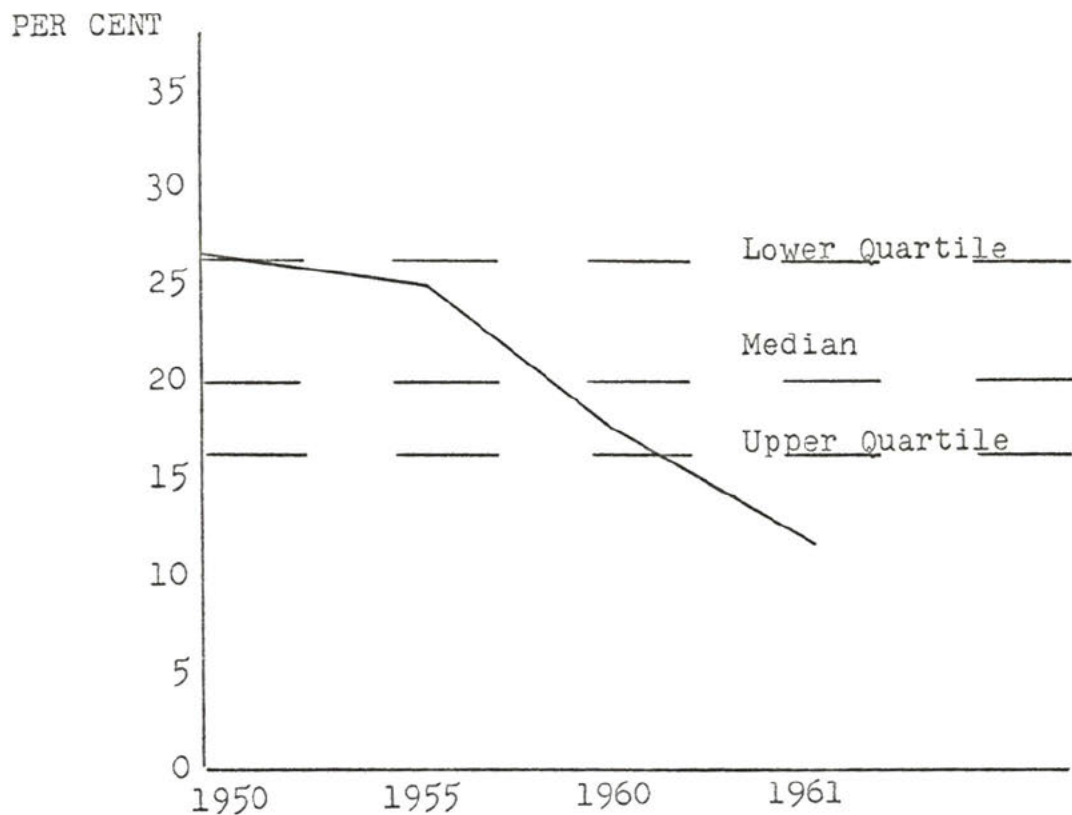


FIGURE LXIII
CURRENT DEBT TO TANGIBLE NET WORTH (%)
GULF OIL CORPORATION



This company was definitely in a favorable position in regard to their current liabilities. This was not the case in earlier years when liabilities were excessively high. As the trend indicated, conditions were greatly improved throughout the following years. The ratio was in excellent position at the end of 1961.

The ratio of current debt to tangible net worth measures the size of current liabilities of a company in relation to its tangible net worth. The high ratio indicates a high current debt condition. This condition usually results from the excessive use of outside credit. As the ratio increases, the more funds of creditors are being used in the firm's operations. Excessive use of creditors' funds will lead to forced liquidation in a period where revenue fails to reach a satisfactory level. A low ratio is an indication of the skill and ability of management in operating the business without resorting to excessive use of outside funds.

Funded Debt to Net Working Capital

Funded debts include all liabilities which mature more than one year after the date of the balance sheet. Funded debts are also called "deferred" and "long-term" liabilities. "Most funded obligations of large business enterprises are known as corporation bonds."² Corporation bonds are legal

²Ibid., p. 257.

Table XIX, page 151, presents the funded debt to net working capital ratios of the chemical companies included in this study. Standard ratios of the chemical industry as a whole are also found on this table to provide a basis for comparison. Petroleum companies covered in this presentation are shown in Table XX, page 151, together with typical petroleum industry figures.

The funded debt to net working capital ratio of duPont showed the following yearly figures: 1950--147.3; 1955--153.9; 1960--184.6; and 1961--185.0. In comparison to the industry's lower quartile figure of 98.2, all of these yearly ratios were excessively high. These ratio figures mean that long-term liabilities were over one and one-half times the size of net working capital. Because of the extremely large size of the liabilities, the company would have considerable trouble in meeting payment of these debts as they matured. These securities will not mature at the same time of course, but even a relatively small portion coming due at a given date would place a strain on the working capital of the company. The condition of a high ratio of funded debt to net working capital was evidence of an excessive investment in fixed assets. This high investment in fixed assets was supported by the company's fixed asset to tangible net worth ratio previously presented. This ratio showed a ratio of 94.8% in 1961, which was

TABLE XIX
FUNDED DEBT TO NET WORKING CAPITAL (%)

Quartiles	Upper	Median	Lower	
Chemical Industry	31.9	54.4	98.2	
Companies:	1950	1955	1960	1961
duPont	147.3	153.9	184.6	185.0
Dow	176.6	163.8	101.3	132.7
Firestone	30.9	35.7	20.2	19.8

TABLE XX
FUNDED DEBT TO NET WORKING CAPITAL (%)

Quartiles	Upper	Median	Lower	
Petroleum Industry	38.5	78.7	204.8	
Companies:	1950	1955	1960	1961
Mobile	51.3	43.1	23.3	23.6
Texaco	46.6	38.8	49.3	44.1
Standard	42.1	33.9	49.9	45.5
Gulf	56.9	27.7	37.9	70.4

well above the industry's lower quartile of 76.3%. Figure LXIV, page 153, shows the steadily increasing ratio of the firm. All factors indicated a need for investigation into the situation without delay. Continued increase in fixed assets will lead to higher depreciation charges and higher costs due to long-term borrowing.

The financial data of Dow Chemical Company revealed the same high ratio as did duPont, with the exception of trend movement. The yearly figures were as follows: 1950--176.6; 1955--163.8; 1960--101.3; and 1961--132.7. In comparison to the industry's lower quartile figure of 98.2%, all of these ratios were excessively high. The indication given by these ratios was that the company had an excessive investment in fixed assets. This high asset condition was reflected by the high funded debt of the company. High depreciation charges, small working capital, and heavy interest cost are the results of such conditions. Figure LXV, page 154, shows the trend of the ratio together with the industry ratios. This graphic presentation points out the favorable decline which took place between 1950-1960, and the sharp increase in the following year, 1961. Here again, the management of the firm can be presented with sound information in regard to the danger of allowing this condition to exist. Further investigation is needed to determine the company's policy in regard to the size of

FIGURE LXIV
FUNDED DEBT TO NET WORKING CAPITAL (%)
DU PONT

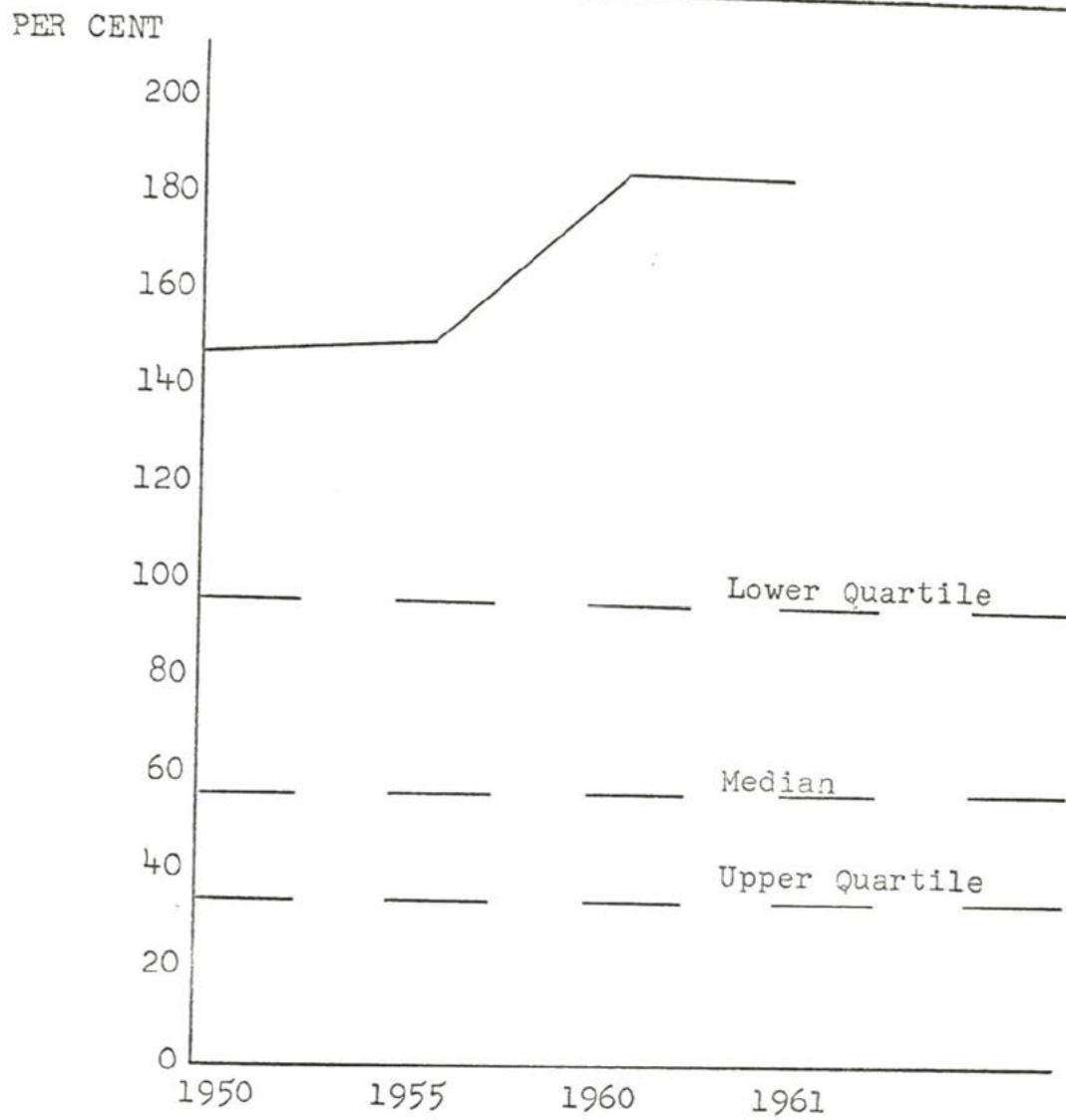
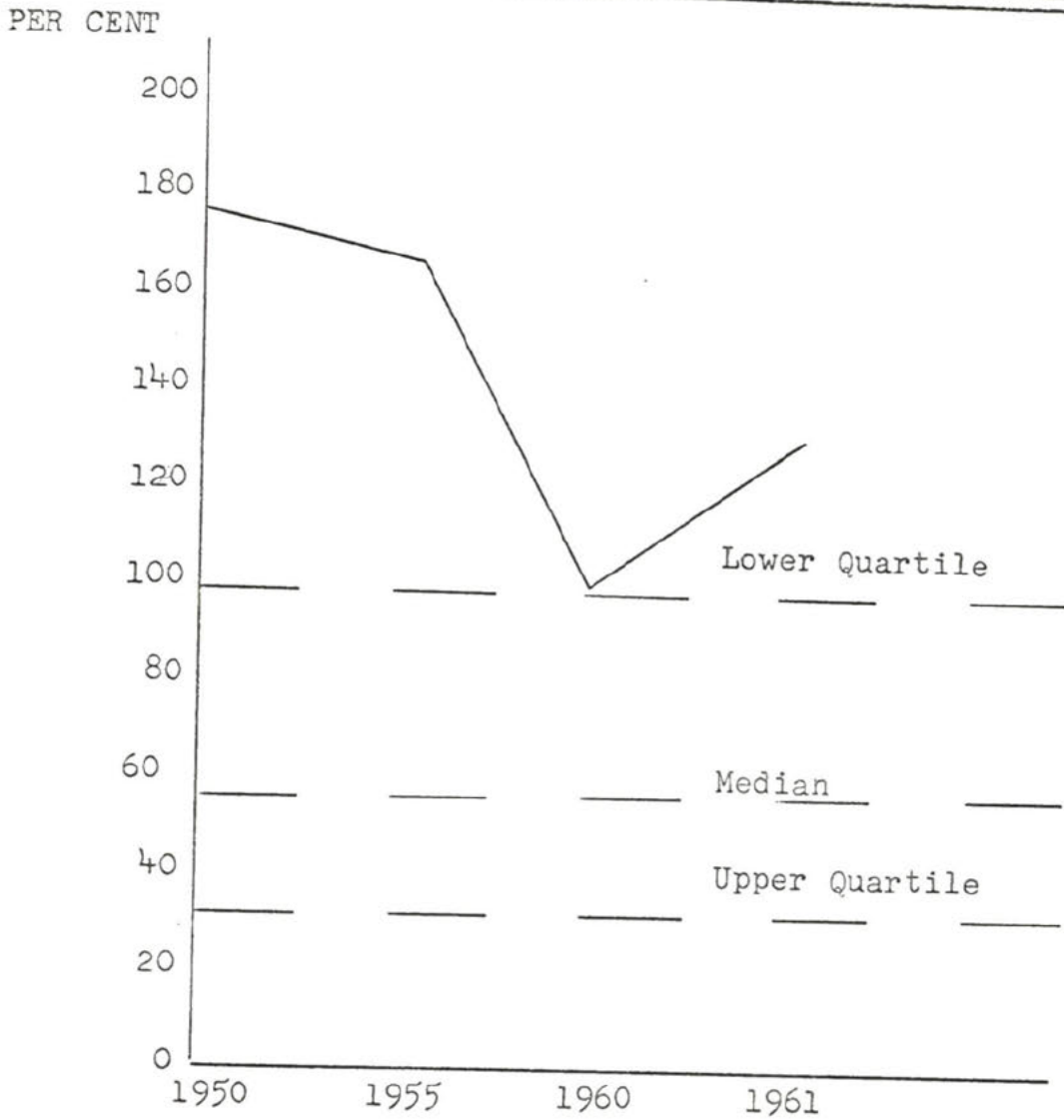


FIGURE LXV
FUNDED DEBT TO NET WORKING CAPITAL (%)
DOW CHEMICAL COMPANY

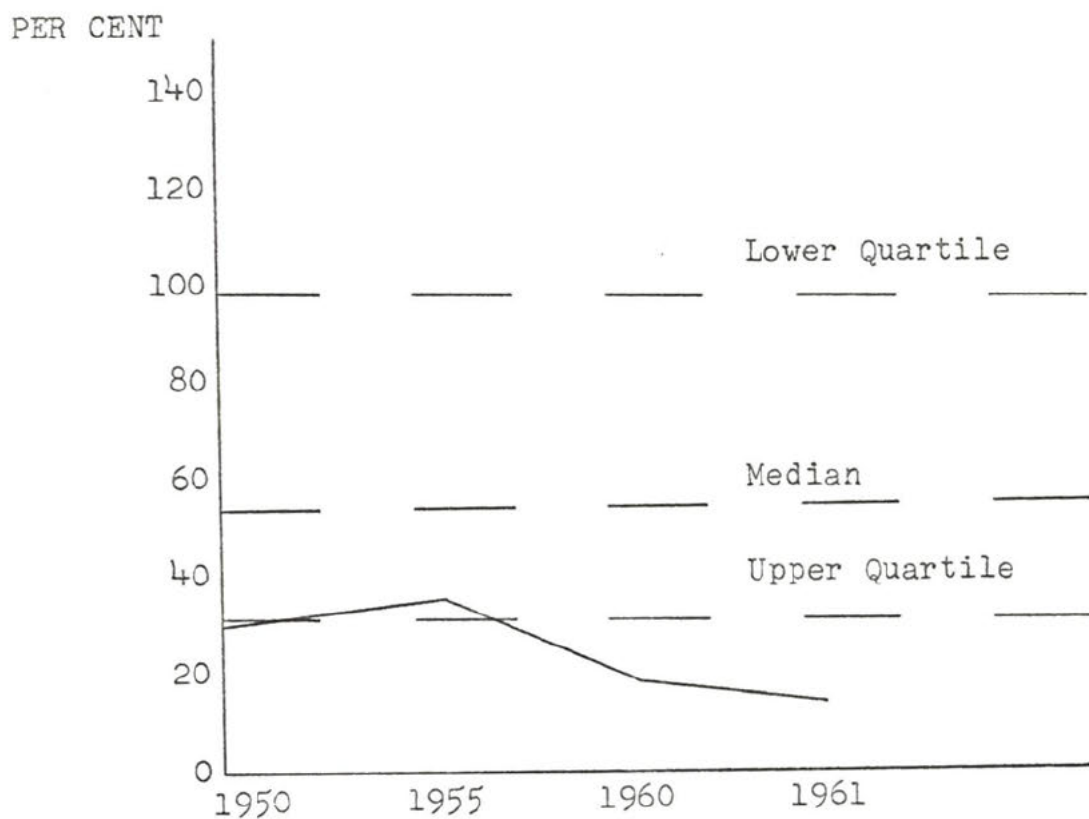


fixed assets, and their policies regarding long-term borrowing.

A more sound funded debt to net working capital relationship was shown by the data of Firestone Tire and Rubber Company. In 1950, the ratio was 30.9%, which was below the industry's upper quartile figure of 31.9%. This excellent condition gave evidence of proper balance of fixed assets in the company's overall operations. The ratio rose to 35.7% in 1955, representing a position between the median of 54.4% and the upper quartile of 31.9%. The ratio declined again to 20.2% in 1960, and 19.8% in 1961. Both of these figures were well below the upper quartile figure for the industry as a whole. The working capital of the company is more than sufficient to meet the demands of funded debts as they mature. The company is in a situation of competitive advantage because of low interest charges, low depreciation write-offs, and adequate working capital. Figure LXVI, page 156, graphically presents the ratios in relation to industry standards.

Table XX, page 151, shows the typical funded debt to net working capital ratios of the petroleum industry, and the ratio for the petroleum companies included in this presentation. Notice should be made of the extremely wide range of the industry's standards: Lower quartile--204.8%; Median--78.7%; Upper quartile--38.5%.

FIGURE LXVI
FUNDED DEBT TO NET WORKING CAPITAL (%)
FIRESTONE TIRE AND RUBBER COMPANY

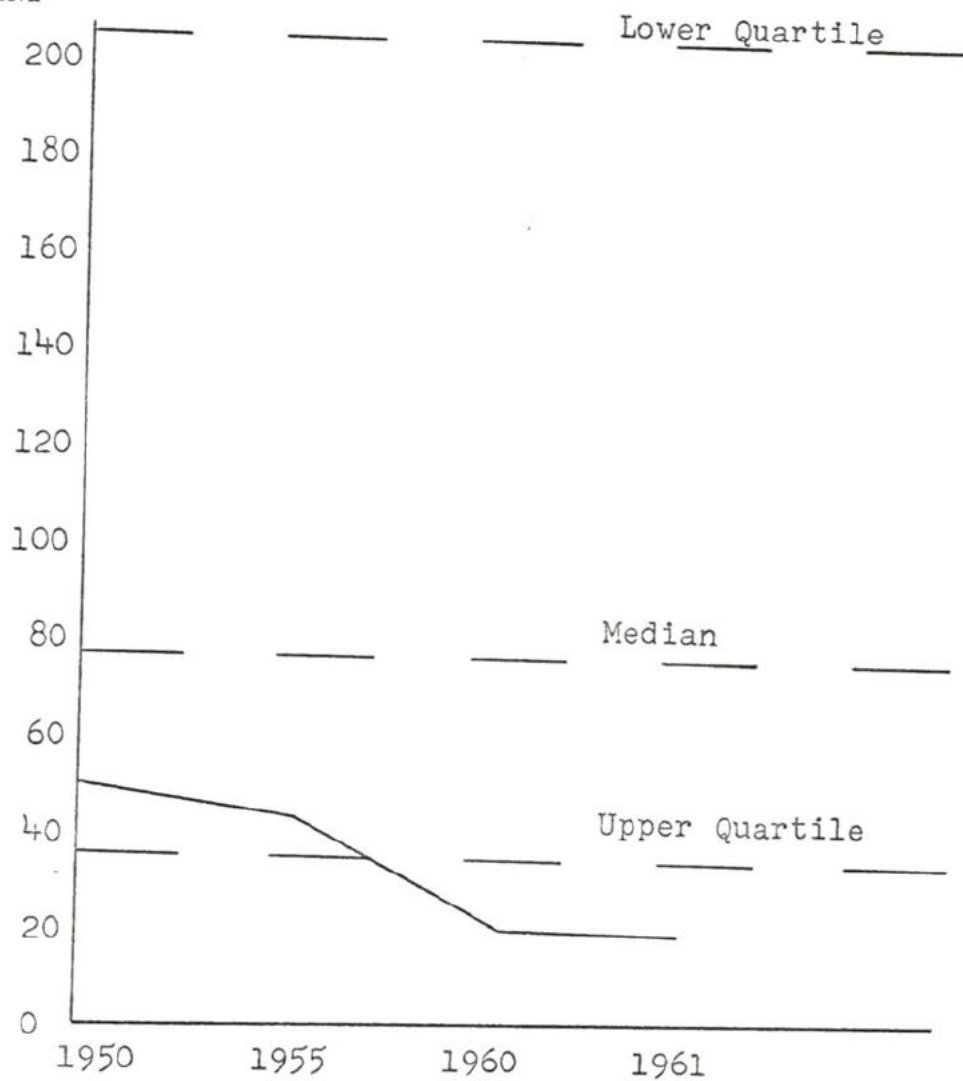


Socony Mobile Oil Company showed a funded debt to net working capital relationship which was strong in both yearly figures and in trend movement. In comparison to the typical median figures of 78.7%, the 1950 and 1955 figures of 51.3% and 43.1%, respectively, were in good condition. These figures indicated a proper balance in the long-term liabilities of the company in regard to net working capital. The ratio declined to a very favorable 23.3% in 1960 and 23.6% in 1961. These two figures were well below the industry's upper quartile figure of 38.5%. This low ratio reflected the fact that the company had not overinvested in fixed assets. This point was supported by the company's 1961 fixed asset to tangible net worth ratio of 71.9%, which was below the industry's upper quartile figure of 73.5%. This company was not burdened with excessive interest payments, depreciation charges, or lack of working capital. The favorable trend of the ratio is illustrated on Figure LXVII, page 158.

The financial data of Texaco, Incorporated, revealed a healthy and stable funded debt to net working capital ratio. The yearly figures were as follows: 1950--46.6%; 1955--38.8%; 1960--49.3%; and 1961--44.1%. In comparison to the industry's median of 78.7%, all of these ratios fell well within the "average" range. Although the ratios were not exceedingly high, they were all quite sound. The figures

FIGURE LXVII
FUNDED DEBT TO NET WORKING CAPITAL (%)
SOCONY MOBILE OIL COMPANY

PER CENT



indicated a sound managerial policy in regard to long-term borrowing. This was a reflection of ability and skill in earning a profit without depending on excessive outside funds. The relatively stable trend is presented graphically on Figure LXVIII, page 160. The yearly ratios together with this stable trend gave significance to the managerial planning and ability of this company.

An example of a low ratio and fluctuation of trend was given by the Standard Oil Company of New Jersey. The ratios were as follows: 1950--42.1%; 1955--33.9%; 1960--49.9%; and 1961--45.5%. There again, the ratios of all years included in this study were relatively strong in comparison with industry figures. The interesting point in this case was that of ratio fluctuation. As indicated above, the ratio fell from a 1950 figure of 42.1% to 33.9% in 1955. The particular trend movement was quite favorable in that the ratio moved below the upper quartile figure of 38.5%. The ratio moved to 49.9% in 1960, remaining strong, but above the 1955 figure. Another decline appeared in 1961, with the figure of 45.5% in that year. Figure LXIX, page 161, presents this trend movement in graphic form. While this ratio movement was not extreme, and further study would clarify the causes of such fluctuation.

Gulf Oil Corporation's funded debt to net working capital relationship was quite similar to that of Standard

FIGURE LXVIII
FUNDED DEBT TO NET WORKING CAPITAL (%)
TEXACO, INCORPORATED

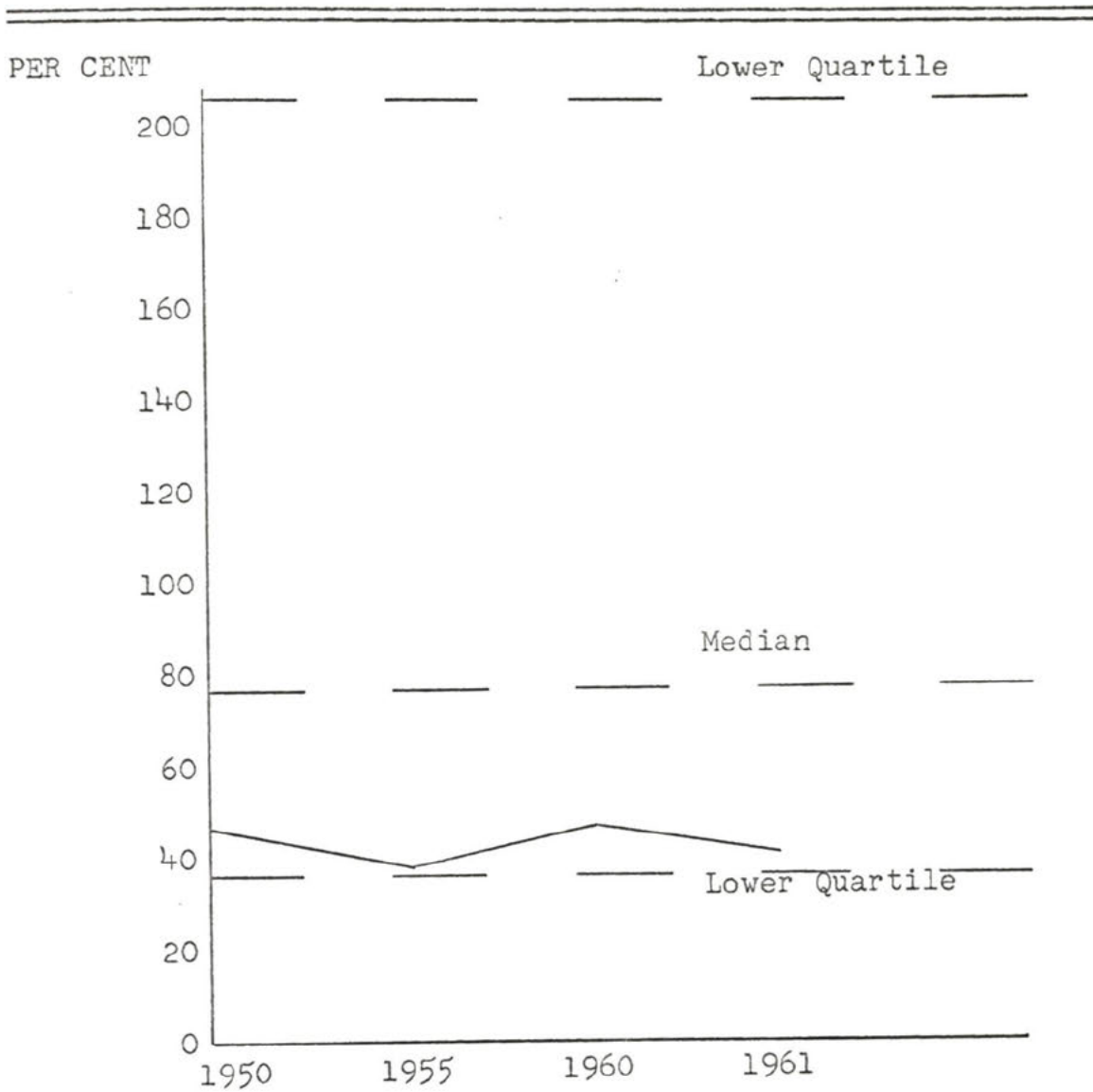
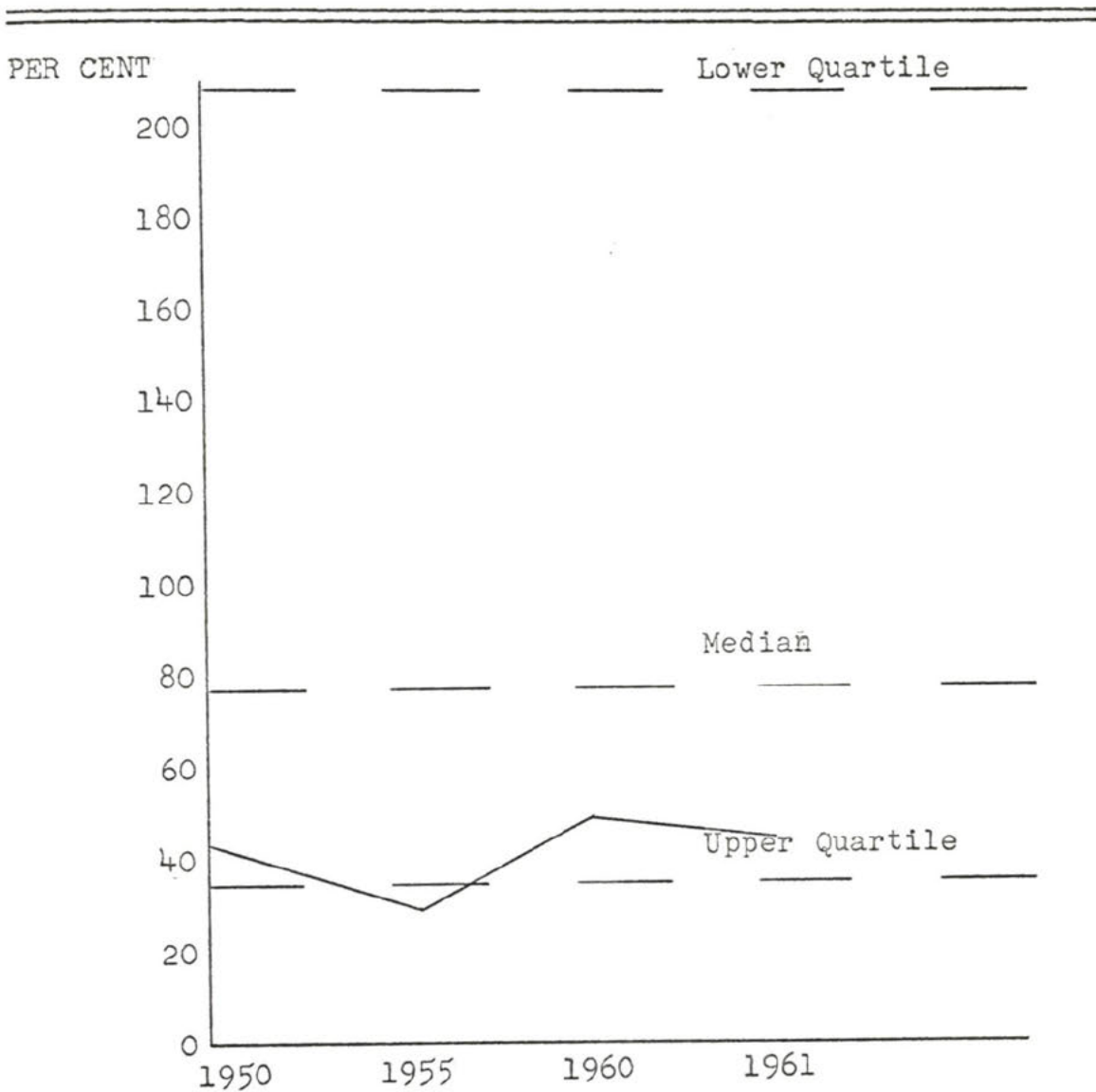


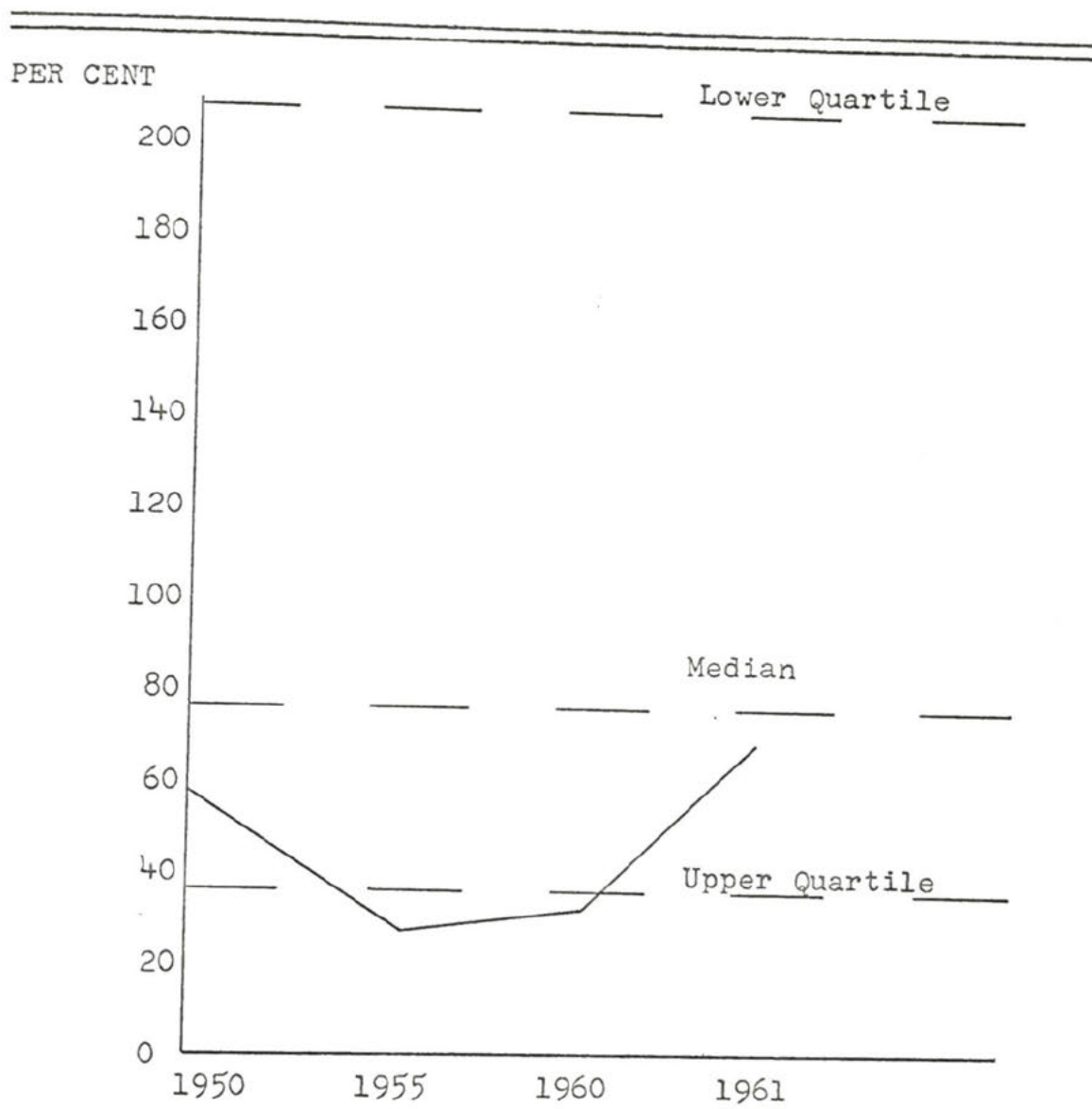
FIGURE LXIX
FUNDED DEBT TO NET WORKING CAPITAL (%)
STANDARD OIL OF NEW JERSEY



Oil Company. All ratios of the company were well within the median-upper quartile. The trend revealed by these figures was quite significant. From a relatively healthy position of 56.9% in 1950, the ratio declined to an upper quartile range of 27.7%. In the following years, the ratio began a sharp rise, reaching 37.9% in 1960 and 70.4% in 1961. The trend indicated an increasing use of funded debt in the business. The firm was still in good condition in this area, but caution should be exercised to avoid future ratio increases. Figure LXX, page 163, compares the yearly figures and trend with the industry's standard ratios.

The funded debt to net working capital ratio measures the ability of the business to meet long-term liabilities as they mature. Payment of such long-term liabilities is usually made from working capital. An excess of debt or an extremely small working capital will result in forced liquidation of the firm's assets. A high ratio is also evidence of excessive investment in fixed assets. These fixed assets are usually purchased through use of funds provided by long-term borrowing. Excessive use of borrowing leads to the competitive disadvantages of high interest expenses, large depreciation charges, and low working capital. A low ratio indicates a high degree of managerial skill in operating the business without excessive use of borrowed

FIGURE LXX
FUNDED DEBT TO NET WORKING CAPITAL (%)
GULF OIL CORPORATION



funds.

Total Debt to Tangible Net Worth

The ratio of total debt to tangible net worth measures the total funds invested by the business. The general rule is that total debt should not in any case be above the total tangible net worth. A series of three standard ratios for each industry has been computed in Foulke's Statement Analysis. A ratio in excess of these typical ratios is an indication of excessive use of credit by the company. Such excessive credit use can easily cause the termination of the firm. High interest charges resulting from heavy borrowing can place the firm in an unfavorable competitive position in regard to companies who do not rely on such heavy credit practices. Most significant is the reflection of poor managerial skill and judgment which results in such high ratios.

Solutions to the problem of a high total debt to tangible net worth ratio are varied according to individual operations. Most commonly, the investing of additional funds, retaining of profits, and restraining of credit use where possible are all offered as solutions.

On the other hand, a low total debt to tangible net worth relationship gives evidence of financial independence

in operations. Companies whose managements operate without excessive use of credit are in a situation of competitive advantage because of lack of interest charges, freedom of action, and ability to attract new capital when needed.

The ratio is found by dividing total debt by tangible net worth. The results are expressed as a percentage of tangible net worth. Table XXI, page 166, presents the yearly ratios of the chemical companies included in this study, together with the typical ratios of the chemical industry. Table XXII, page 166, shows similar information for the petroleum companies used, and for the industry as a whole.

The financial data supplied by duPont illustrated the application of this ratio. In 1950, the total debt to tangible net worth ratio was 101.1%. This ratio showed that total debts of the firm were greater than the funds invested in the business. This condition was soon corrected, and the ratio declined to 72.4% in 1955. This figure was slightly above the median figure of 65.2%. Although the ratio is still relatively high, it showed vast improvement over the previous figure of 101.1%. The ratio continued the trend of improvement by declining to 64.8% in 1960, and to 64.7% in 1961. The latter two ratios were between the median figure of 65.2% and the upper quartile of 49.8%.

TABLE XXI
TOTAL DEBT TO TANGIBLE NET WORTH (%)

Quartiles	Upper	Median	Lower	
Chemical Industry	49.8	65.2	109.7	
Companies:	1950	1955	1960	1961
duPont	101.1	72.4	64.8	64.7
Dow	89.6	114.9	54.1	59.8
Firestone	88.6	75.2	48.5	46.8

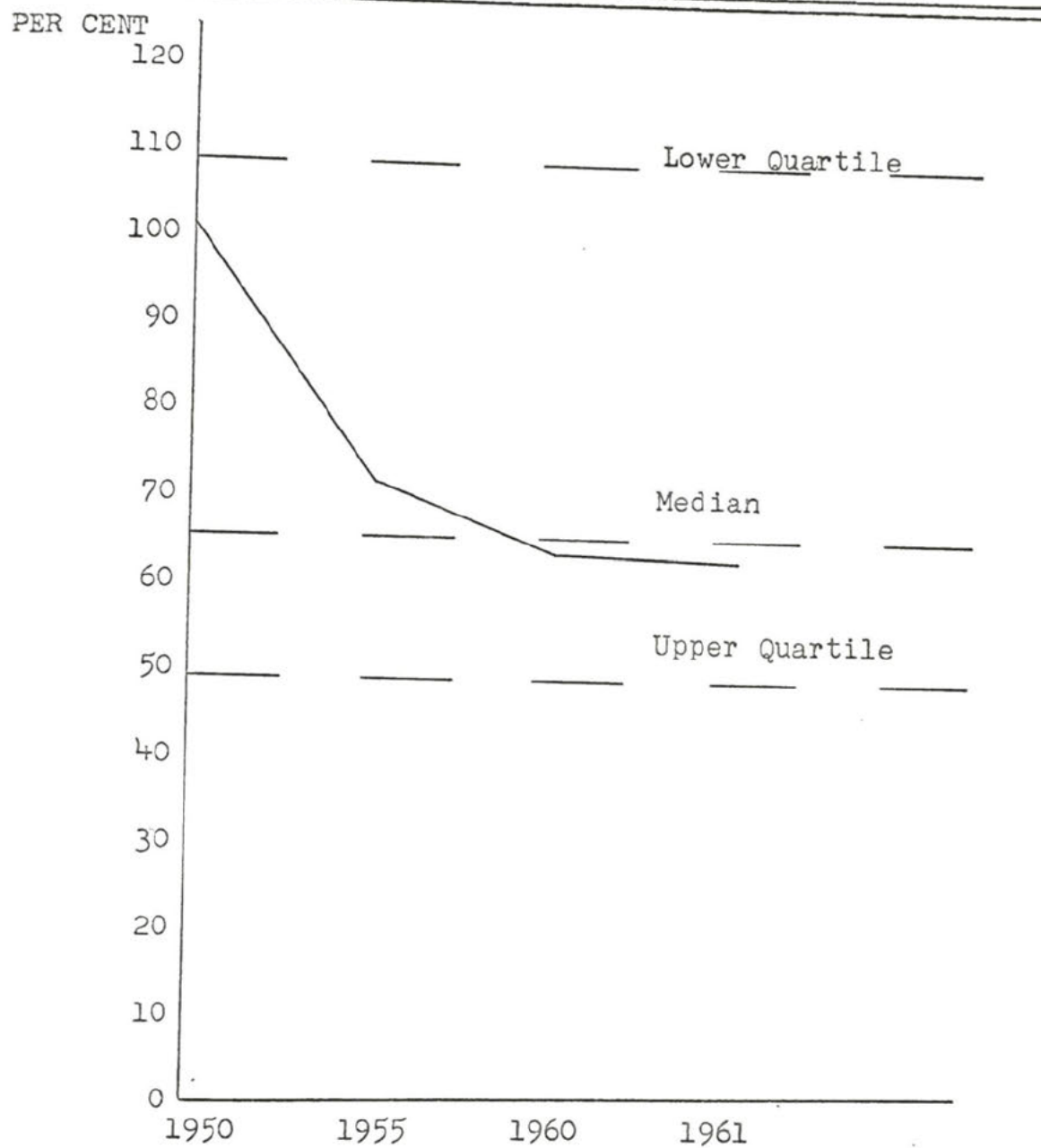
TABLE XXII
TOTAL DEBT TO TANGIBLE NET WORTH (%)

Quartiles	Upper	Median	Lower	
Petroleum Industry	29.6	50.2	76.1	
Companies:	1950	1955	1960	1961
Mobile	45.8	36.8	32.6	33.2
Texaco	25.5	24.0	30.2	28.2
Standard	36.2	32.00	35.5	35.4
Gulf	52.3	41.4	34.4	23.7

Although this position left ample space for further improvement, the company had definitely pulled itself from the extremely unhealthy position of earlier years. Reference to the ratio of funded debt to working capital supported the concept of excessive liabilities. This ratio had previously shown the funded debts to be extremely large in relation to industry standards. Figure LXXI, page 168, illustrates this improvement by graphically comparing the ratios to industry standards.

The financial data of Dow Chemical Company revealed the following yearly ratios: 1950--89.6%; 1955--114.9%; 1960--54.1%; and 1961--59.8%. The 1950 figure of 89.6% was above the median figure of 65.2%, indicating that the total debt of the company was in relatively proper balance in regard to tangible net worth. In 1955, the figure reached an extremely high figure of 114.9%. At this point, the company experienced the condition of having more funds owed to creditors than the business had invested by its owners. A vast change in this condition was evidenced by the sharp decline to 54.1% in 1960. The need of further investigation was definitely pointed out by this ratio movement. This figure represented an "average" range position in relation to industry's median figure of 65.2%. The ratio showed signs of increasing once more with the 1961 figure of 59.8%. Although the ratio was currently in the

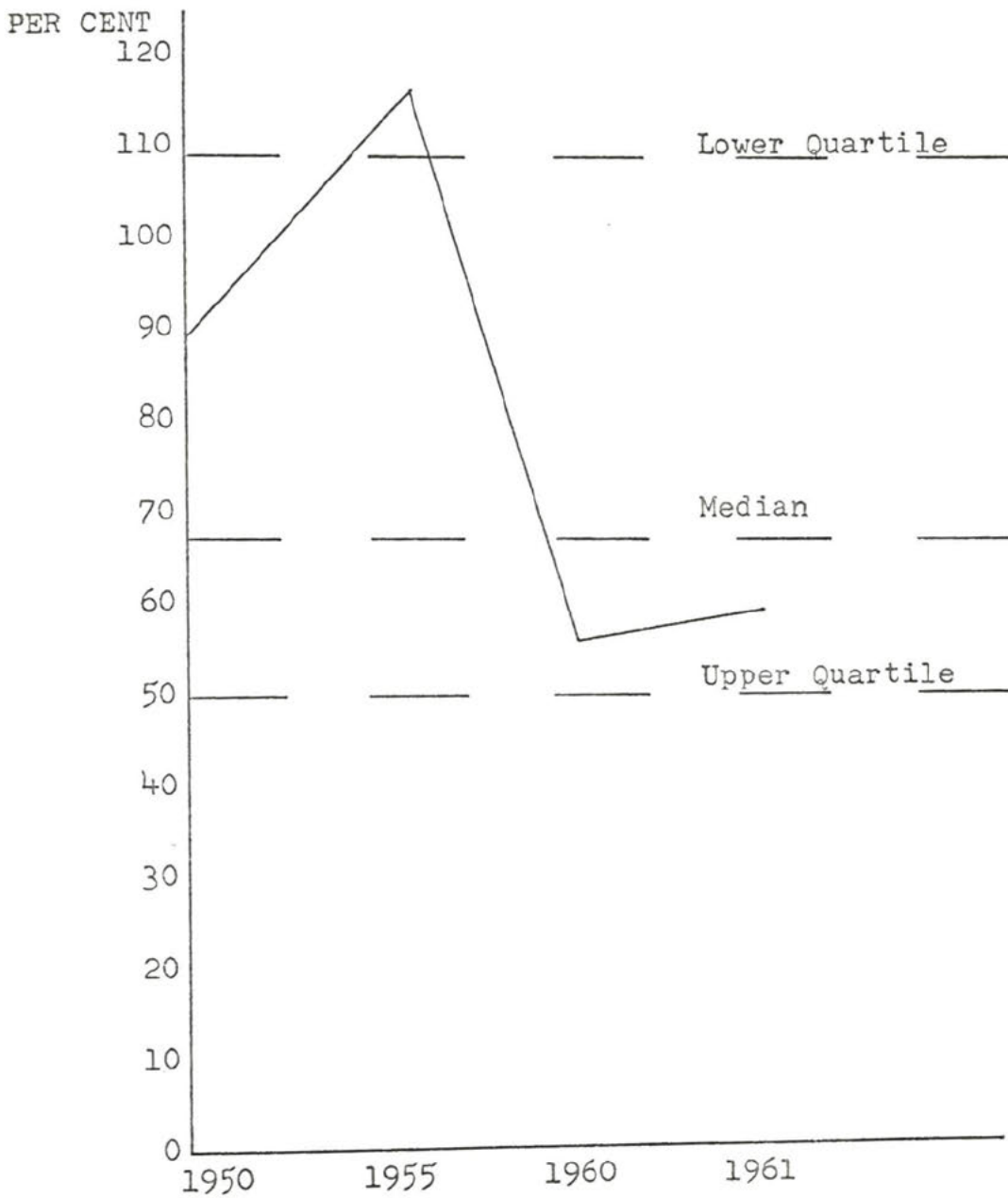
FIGURE LXXI
TOTAL DEBT TO TANGIBLE NET WORTH (%)
DU PONT



median range, the indication of a rising trend was sufficient warning to the company. Having only recently experienced the unfavorable condition of the ratio being over 100%, the management of the firm should lose little time in conducting a complete and thorough investigation to prevent a return to such a condition. Figure LXXII, page 170, illustrates the ratio in graphic form. Management could easily see the trend movement by referring to this type of presentation.

The steady improvement of the total debt to tangible net worth ratio was shown through the use of information supplied by the Firestone Tire and Rubber Company. In 1950, the company's ratio was 88.6%, well above the industry's median of 67.2%. The ratio fell slightly within the same range with a 75.2% figure in 1955. A definite improvement was shown in 1960 when the ratio reached 48.5%, below the upper quartile figure of 49.8%. In 1961, the ratio continued its downward trend with a figure of 46.8%. This company was enjoying a relatively sound ratio, coupled with a favorable trend movement. These factors indicated a high degree of managerial skill in operations without excessive use of credit. The company can presently meet liabilities as they become due without placing excessive strain on business funds. Figure LXXIII, page 172, illustrates the

FIGURE LXXII
TOTAL DEBT TO TANGIBLE NET WORTH (%)
DOW CHEMICAL COMPANY



ratios of the company, and gives the industry's standard figures for comparison.

Table XXII, page 166, gives the company yearly ratios for the four petroleum firms involved in this study, together with the industry's typical figures. The ratio was applied to the financial data of Socony Mobile Oil Company with the following results: 1950--45.8%; 1955--36.8%; 1960--32.6%; and 1961--33.2%. In comparison to industry standards, all of these ratios were between the median of 50.2% and the upper quartile of 29.6%. The company was apparently in a relatively good position in regard to this area. Figure LXXIV, page 173, showed these yearly figures together with the industry standards.

An example of an extremely strong total debt to tangible net worth relationship was given by Texaco, Incorporated. The yearly ratios were as follows: 1950--25.5%; 1955--24.0%; 1960--30.2%; and 1961--38.3%. In comparison to the industry's upper quartile figure of 29.6%, all of these ratios rank as "excellent." This company had total debts equal to only about one-fourth of its tangible net worth. This condition reflected the ability of the management to operate the business without the overuse of credit. Under such favorable conditions, the company can easily meet its financial obligations as they become due

FIGURE LXXIII
TOTAL DEBT TO TANGIBLE NET WORTH (%)
FIRESTONE TIRE AND RUBBER COMPANY

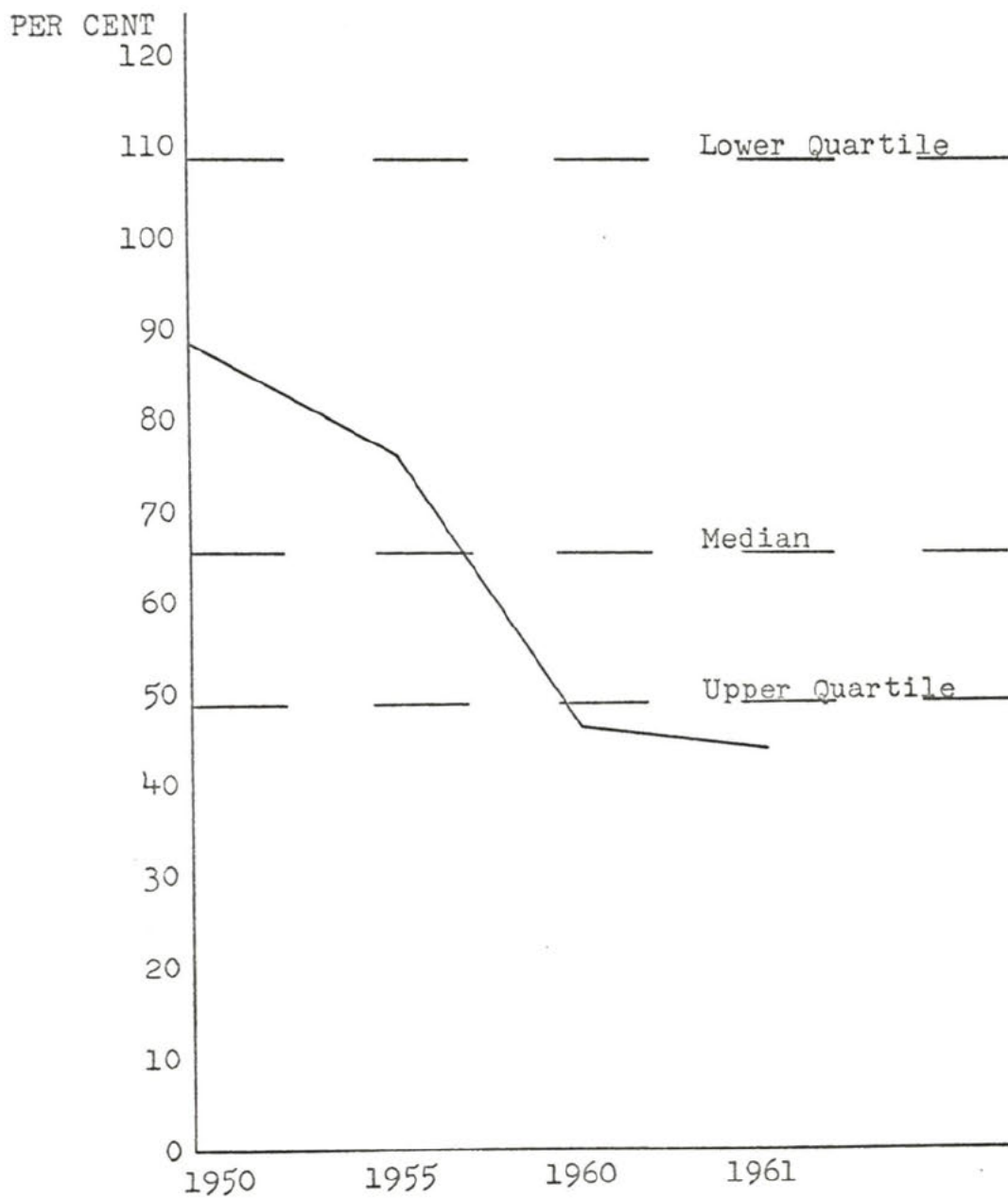
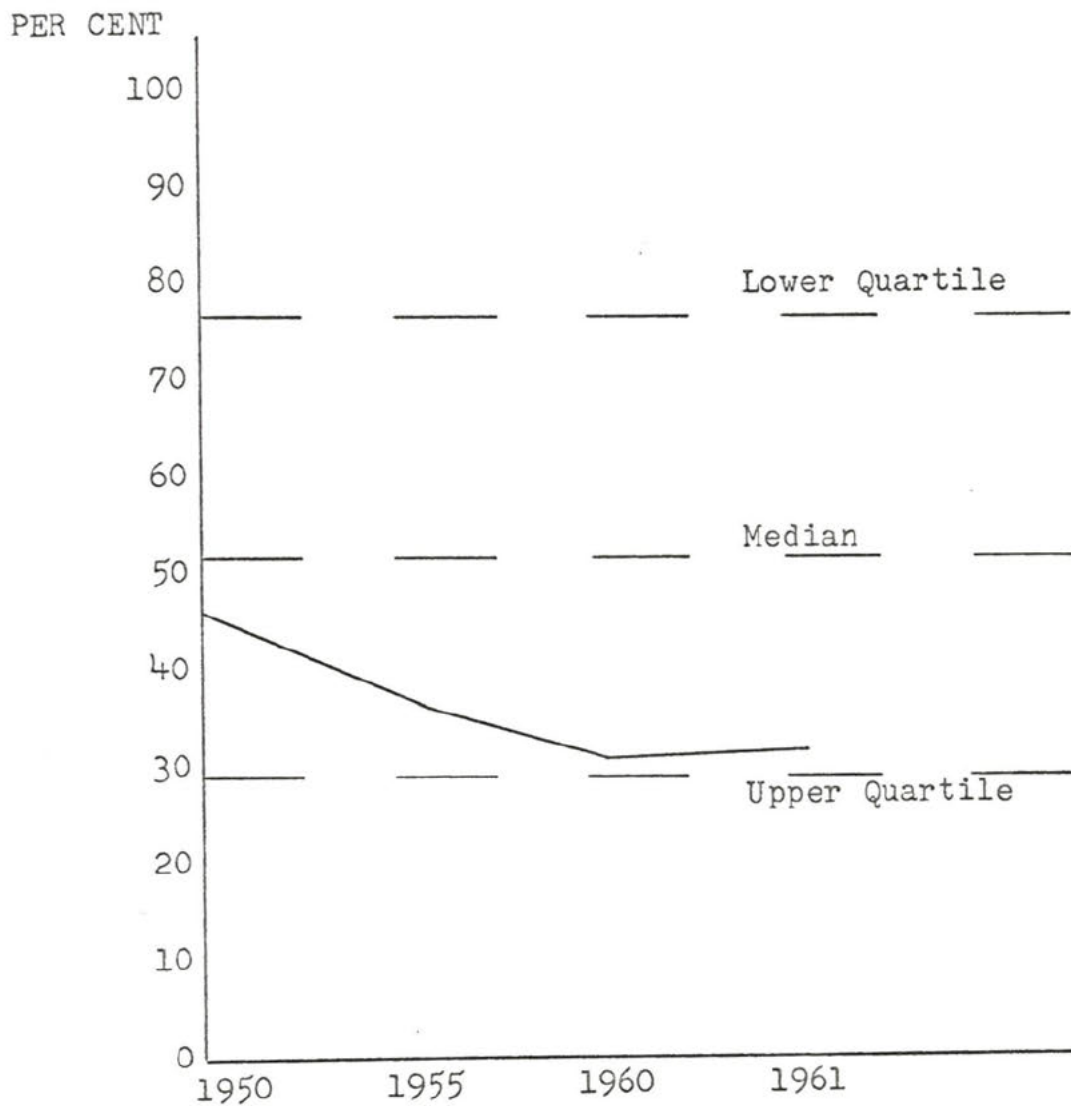


FIGURE LXXIV
TOTAL DEBT TO TANGIBLE NET WORTH (%)
SOCONY MOBILE OIL COMPANY



without placing excessive strain on working capital. Figure LXXV, page 175, shows the trend of the ratio in comparison to industry standards.

Standard Oil's total debt to tangible net worth ratio showed relative strength and stability. The 1950 figure of 36.2% was between the industry's median of 50.2% and the upper quartile figure of 29.6%. The ratio declined slightly to 32.0% in 1955, and rose to 35.5% and 35.4% in 1960 and 1961 respectively. All of these ratios are strong, indicating that the company was doing a relatively good job of conducting operations without relying on outside credit. Figure LXXVI, page 176, illustrates the stable trend presented by these yearly figures.

A steadily improving total debt to tangible net worth relationship was shown by the financial data of Gulf Oil Corporation. In 1950, the ratio was 52.3%, which compared favorably with the industry's median of 50.2%. At that time, the company had outstanding debts equal to one-half of its tangible net worth. From this figure, the ratio began a steady decline, reaching 41.4% in 1955, 34.4% in 1960, and 23.7% in 1961. The 1961 figure of 23.7% was well below the upper quartile figure of 29.6%. Although the ratios of the latter years were quite impressive, the real significance of these figures was found in their trend.

FIGURE LXXV
TOTAL DEBT TO TANGIBLE NET WORTH (%)
TEXACO, INCORPORATED

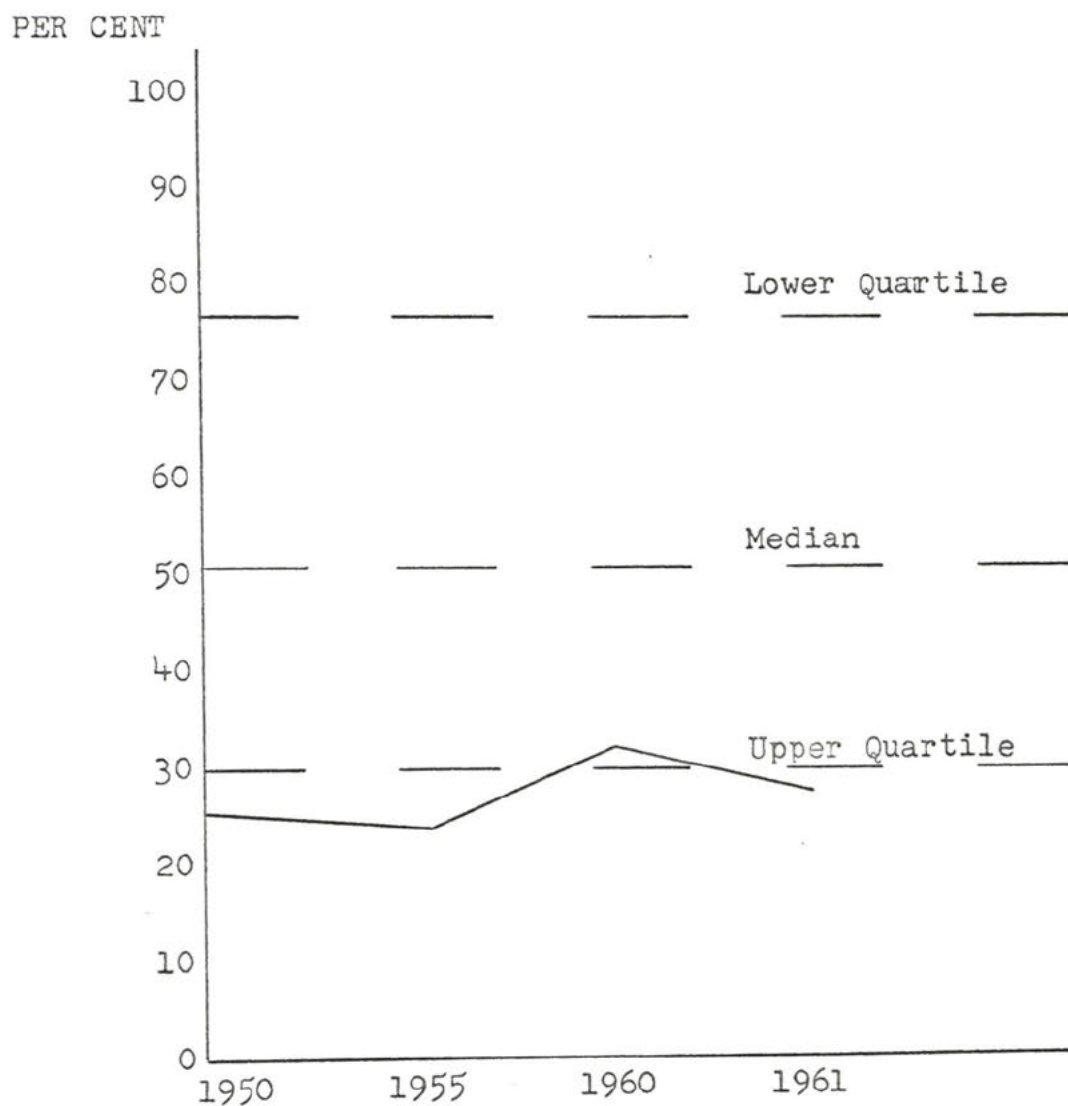
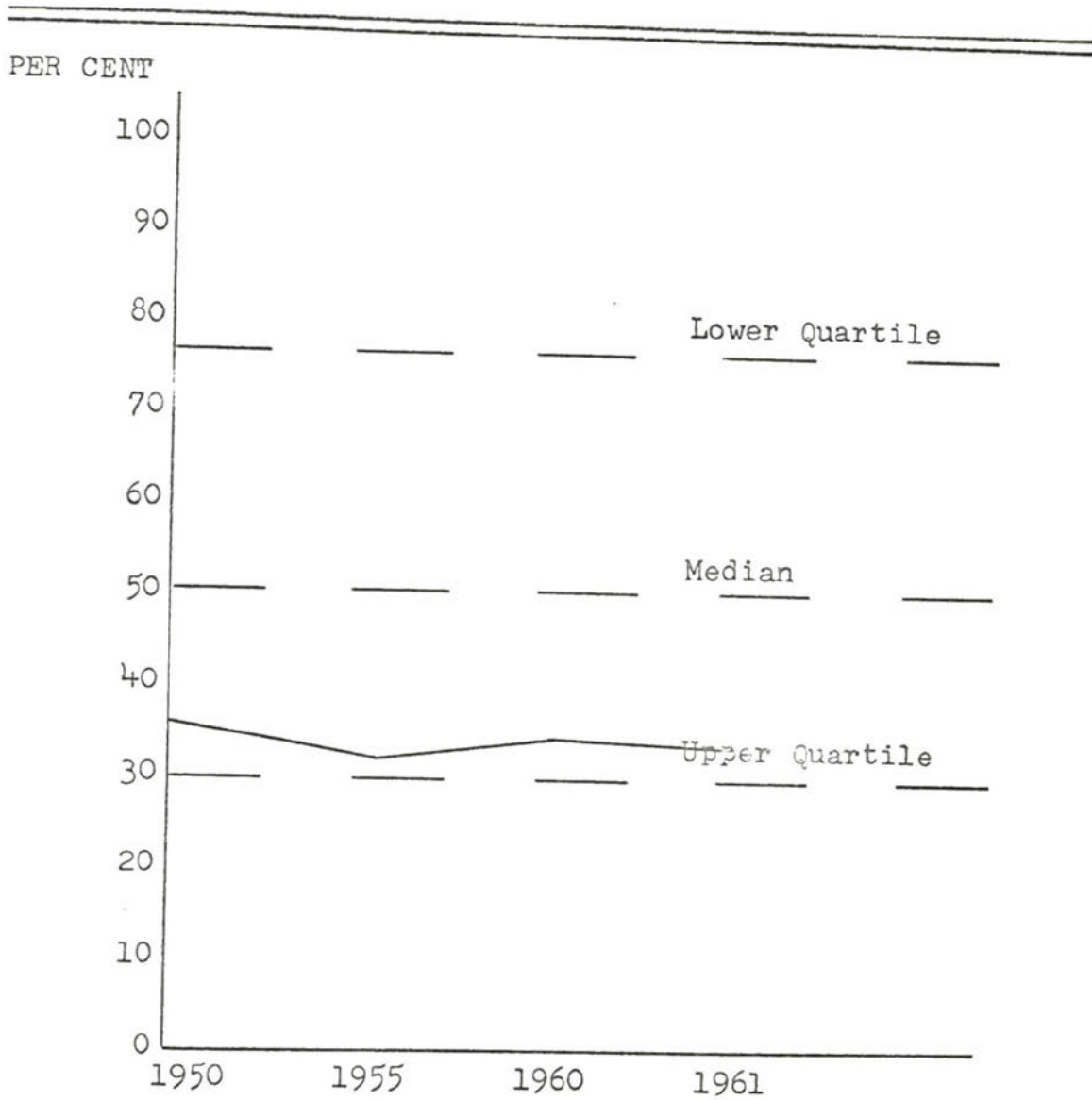


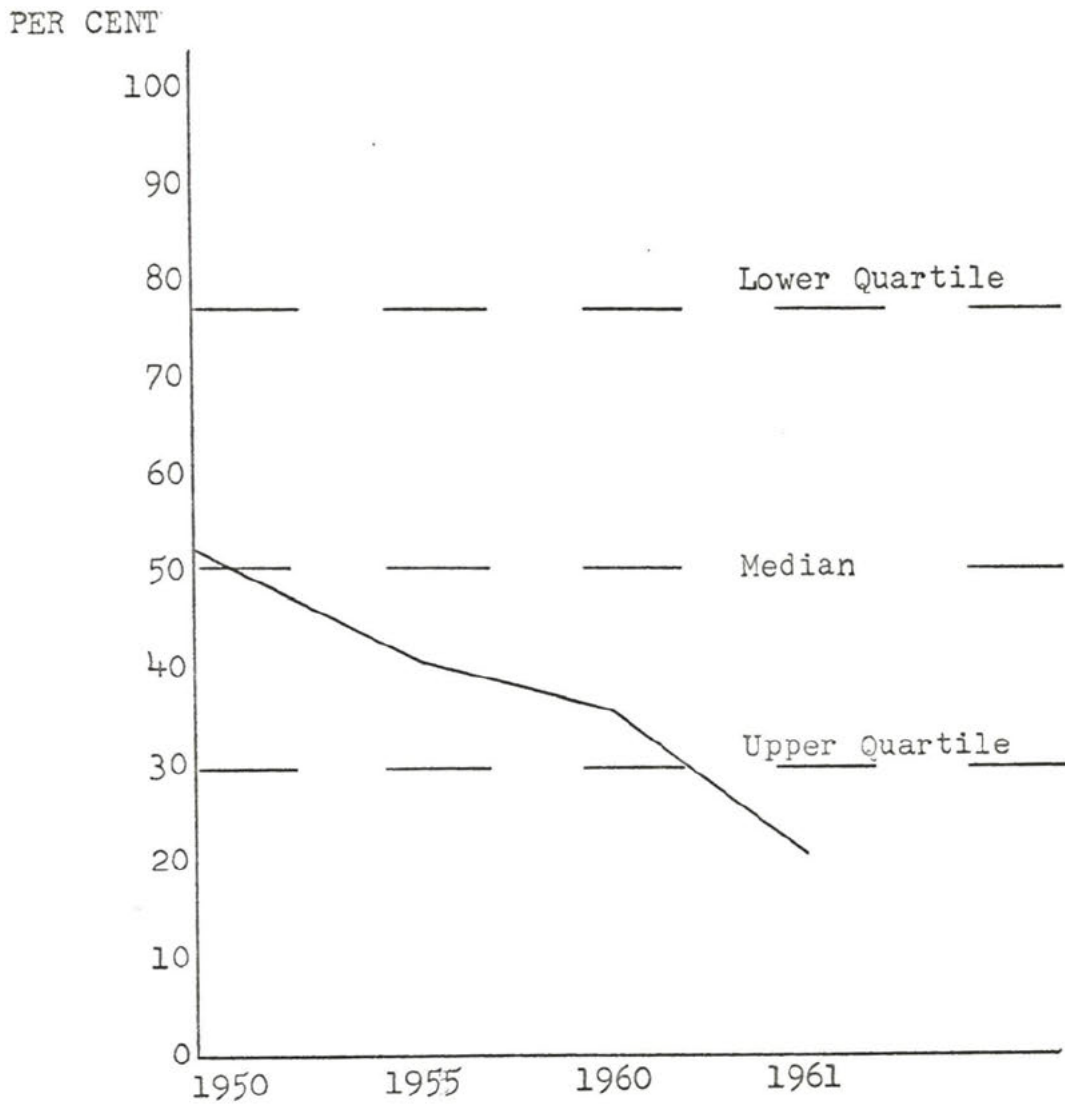
FIGURE LXXVI
TOTAL DEBT TO TANGIBLE NET WORTH (%)
STANDARD OIL OF NEW JERSEY



As shown on Figure LXXVII, page 178, the ratio had improved steadily over the time period used for this study. Such yearly improvement indicated a sound managerial policy in regard to the use of credit.

The total debt to tangible net worth ratio measures the total of investor's funds against the total of owner's funds in the business. A high ratio indicates poor managerial policy and judgment in the use of outside credit. Excessive use of credit results in heavy interest charges, and places the company's financial status in jeopardy. A low ratio reflects managements ability to operate the business without resorting to heavy outside credit.

FIGURE LXXVII
TOTAL DEBT TO TANGIBLE NET WORTH (%)
GULF OIL CORPORATION



CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

It was the purpose of this study to present several selected financial ratios, describing the function of each and illustrating each ratio's position in comparison to industry standards. These ratios were presented through the use of actual financial information obtained from each of the seven companies selected for this study.

Eleven financial ratios were selected for presentation. These ratios were as follows: current assets to current liabilities; fixed assets to tangible net worth; net profit on net sales; net profit on tangible net worth; net profit on net working capital; net sales to tangible net worth; net sales to net working capital; net sales to inventory; current debt to tangible net worth; funded debt to working capital; and total debt to tangible net worth.

The seven companies selected were representative of two basic industries of our country: chemical producers and petroleum producers. Companies representing the chemical industry were: E. E. duPont de Nemours & Company; Dow Chemical Company; and Firestone Tire and Rubber Company. From the petroleum industry, the following companies were selected: Socony Mobile Oil Company; Texaco, Incorporated;

Standard Oil of New Jersey; and Gulf Oil Corporation.

The study used data for the years 1950, 1955, 1960, and 1961. These dates were selected to give the reader a basis for evaluating the trend of each ratio. There were no special reasons for selecting these years, any similar group would yield equally valid results.

The ratios were presented by applying each ratio to the actual financial data of the individual companies selected for the study. The results were compared to typical industry ratios, and the conclusions derived were expressed. Tables were used to show standard and individual company ratios for each ratio. Each ratio was illustrated in graphic form for clear and quick evaluation.

Conclusions

This study has revealed several factors which are presented here in the following order:

1. The accountant of a business should be responsible for acquainting management with present or future problems in regard to the financial structure of the firm.
2. In presenting such information to management, the accountant should be enforced with concrete facts in contrast to only his personal opinion.
3. The most effective method of presenting evidence of financial weaknesses is through the use of ratios.
4. Ratios which compare company financial positions

to typical figures of the industry as a whole reflect specific areas which may require further investigation and corrective action on the part of management.

5. Management can more readily determine any variance between company and industry ratios from illustrations presented in graphic form.

6. Although yearly ratios are vital, ratio trends may provide more significant information.

7. Each ratio has its own use and function. Individual ratios should be used in conjunction with other ratios to arrive at a complete study of the business.

8. The major function of each ratio included in this study is listed below:

- a. Current assets to current liabilities-- determines the ability of the business to pay current debts with current assets.
- b. Fixed assets to tangible net worth--measures the amount of tangible net worth that is invested in fixed assets. An excessive amount indicates heavy depreciation charges, and either low working capital or high funded debt.
- c. Net profit to net sales--indicates the ability of the firm to obtain profits on its sales volume. After the break-even point is passed, profits will increase as sales volume increases until the full-capacity point is reached.

- d. Net profit to tangible net worth--measures the ability of management to earn a return on funds invested in the business.
- e. Net profit to net working capital--shows the company's policies and abilities to earn profits based on its working capital. If the ratio is below industry standards, the profit margin may be low, or working capital may be in excess of the company's needs.
- f. Net sales to tangible net worth--indicates the activity of the investment in the business. A high ratio shows managerial skill in operations until an excessive rate is reached. This excessive ratio indicates overtrading and the overuse of credit.
- g. Net sales to net working capital--used in conjunction with net sales to tangible net worth to indicate overtrading or undertrading. Usually reveals a heavy investment in fixed assets.
- h. Net sales to inventory--shows the relationship of net sales and inventory. An excessive inventory in regard to the sales volume usually reveals that the inventory contains many items which are unsalable for various reasons.
- i. Current debt to tangible net worth--measures

the use of creditor funds in the normal operations of the business. The overuse of credit is a reflection of overtrading and poor managerial ability in operations.

j. Funded debt to net working capital--shows the size of long-term debts in regard to net working capital. Excessive fund debt leads to heavy interest charges and large depreciation charges due to high fixed asset investments usually found in such conditions.

k. Total debt to tangible net worth--measures the amount of creditor funds used in the business against funds provided by owners of the business. This ratio should never exceed 100%. A high ratio indicates excessive dependence on outside credit and high interest charges resulting therefrom.

9. Financial ratios function merely as guides to management by pointing out specific problems in the firm's financial structure and policy. Ratios are not intended to be substitutions for good and sound managerial judgments. Their use makes known financial areas that should be investigated; they do not make corrections or changes in policy. It remains the function of management to act upon the information provided by ratios.

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