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SUBSIDIARY OF A PUBLIC UTILITY HOLDING COMPANY

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Electric utilities and telephone companies are natural monopolies.<sup>1</sup> Therefore, they have the potential to charge excessive prices for their services and, hence, to exploit the public. To prevent any such abuses, these companies have been subjected to regulation almost since their inception. As a rule, public utility regulation relates to both service standards and prices: (1) minimum standards for service are prescribed, and the utilities must provide service at the stated levels to all customers who desire service, and (2) the prices they may charge for this service are designed by regulatory authorities to enable the companies to earn the cost of the capital required to provide this service.

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<sup>1</sup>The telephone industry has always been subjected to competition for certain of its services, and the extent of competition has increased sharply in recent years. Still, telephone companies do have a monopoly position in certain markets, especially the market for local telephone service.

It has long been recognized that a holding company which owns both regulated utility operations and manufacturing/supply subsidiaries which provide products or services to the utility could, theoretically, thwart the regulatory process. For example, Pacific Power & Light, TECO Energy, and other holding companies which own both electric utilities and non-regulated coal mining/transportation subsidiaries could, in theory, earn excessive returns by having their utility subsidiaries buy coal at excessive prices from their coal subsidiaries. The regulated utility would appear to be earning only reasonable returns, but of course the owners of the utility would be earning excessive returns. Similarly, telephone holding companies such as AT&T and GT&E could have their manufacturing subsidiaries charge prices to their operating telephone companies that would cause the manufacturing subsidiaries to earn very excessive returns on their capital. The operating telephone companies might then appear to be earning reasonable rates of return, but the parent companies might be earning excessive profits overall because of the high returns on their manufacturing operations.

Recognizing this potential problem, regulators have for many years scrutinized unregulated subsidiaries' rates of return. If the subsidiaries were found to have earned excessive profits, then regulators would

reduce the rate bases of the operating companies by the amount of these excessive profits, thus constraining the entire holding company enterprise to a reasonable rate of return.

The practical question facing regulators is this: What is a fair rate of return for the unregulated subsidiaries? This is the issue we address in this paper. Although we are interested in the broadest aspects of the question, we concentrate our analysis on AT&T/Western Electric for four reasons. First, Western is by far the largest subsidiary/supplier in the utility industry. Second, more data are available on Western, and they go back further, than is true of other subsidiaries. Third, the issue of Western's profits and rate of return is an active one today in a number of actual rate cases. And, fourth, the basic methodology as applied to Western could be used, with minor modifications, in other situations involving regulated and unregulated subsidiaries alike.

#### Subsidiary versus Consolidated Approach

Two basic, and fundamentally different, approaches could be taken to the issue of a proper rate of return for a non-utility subsidiary: (1) Use the consolidated approach, under which one treats the entire holding company operation as a single enterprise and allows the same rate of return to all subsidiaries. (2) Use the subsidiary approach, under

which one regards each subsidiary as a separate entity and allows each to earn a rate of return that is appropriate for it, given its own risk characteristics.

The consolidated approach has the major advantage of being relatively simple and easy to apply. However, this approach is conceptually unsound for a number of reasons:

1. Operations such as manufacturing, mining, and transportation are quite different from regular utility operations. In general, the business risk associated with utilities is relatively small, which permits them to employ more debt, which in turn increases the utilities' financial risk. Because of these differences in business and financial risks, one would expect to find different degrees of overall risk, hence differences in the cost of capital, in the utility and non-utility segments of a holding company system.
2. If the risks vary for the different units of a holding company system, then economic efficiency requires that the different units earn different rates of return in order to recognize their different costs of capital. Otherwise, there would be a tendency for too much capital (from a social standpoint) to flow into the lower risk operations and too little into the higher risk operations.

3. It is now generally recognized that competition produces better results for society than does regulation, provided a workable degree of competition exists or can be developed. Therefore, the current trend in all regulated industries (airlines, railroads, trucking, telecommunications, gas, and electric) is toward deregulation. However, competition can only work if utility holding company systems are structured so as to permit differential, competitively-determined rates of return on the different segments of the enterprise. This fact strongly favors the use of differentiated, risk-adjusted rates of return for different segments of holding company systems. Indeed, to use a consolidated cost of capital approach for utility regulation would seriously impede, if not effectively kill, the movement toward increased competition.
4. Finally, from a purely pragmatic standpoint, historical precedent in most jurisdictions has been to recognize differential rates of return for manufacturing/supply subsidiaries, and a movement away from this position toward the consolidated view would create some thorny yet completely unnecessary problems.

ESTIMATING A FAIR RATE OF RETURN FOR WESTERN ELECTRIC

From the late 1800's, when most utility systems were organized, until the 1960's, the fair rate of return was estimated almost exclusively by the "comparable earnings" method. Under this approach, one proceeds as follows: (1) Determine a set of companies deemed to have investment risks which are comparable to those of the utility in question. (2) Calculate the rate of return on average book equity for each of these comparable companies. (3) Determine the average rate of return on the sample of comparable companies. (4) Set service rates for the utility in question such that it will earn, under normal operating conditions, a rate of return equal to the average return earned by the comparable companies.

The comparable earnings approach has two major advantages. First, it would seem to be inherently fair, as its application would provide investors in a utility enterprise with the same rate of return that they would have earned had they put their capital into other enterprises of comparable risk. Second, the procedure has been used throughout the utility industry's history, and there is merit, in any legal or quasi-legal proceeding, to maintaining established practices unless there are compelling reasons to break with earlier precedents.

On the other hand, the comparable earnings approach does have drawbacks. First, it is difficult to select a set of companies whose risks can be demonstrated to be truly comparable to those of the utility in question. Second, even if comparability were established, the average book rate of return for the comparable companies could be higher or lower than the rate of return the comparable companies currently require in order to attract capital. To illustrate, one might conclude that other electric utilities are most comparable to a given utility, but if all utilities are earning returns that are below the supply price of capital, then it would be unreasonable to hold down the earnings of the company in question to the level of the average utility company--this is the familiar "circular reasoning" argument. By the same token, the comparable companies could, over time, have book returns on investment that exceed their supply price of capital--in this case, one could logically argue that the use of the comparable earnings approach would result in utility service rates that are higher than required to attract capital and to compensate the utilities' investors.

In spite of these problems, the comparable earnings method cannot be completely rejected as an approach to estimating the fair rate of return for a regulated utility.

As already mentioned, there is historical precedent for its use, and it continues to be used in many jurisdictions. In addition, the comparable earnings method has equity considerations built into it. For example, even if a group of comparable risk companies happened to be earning more than their costs of capital, it could be considered "equitable" for the utility to earn a comparable return since this is the return which an investor would have earned had his funds been invested in the unregulated sector. Also, the utilities must compete with unregulated companies for capital in the market. If all product and capital markets were competitive and efficient, all firms would be earning their costs of capital and the comparable earnings approach would insure that the utility would also earn exactly its cost of capital. However, the ideal level of competition clearly does not exist in all sectors of the economy, and, therefore, it is possible that the comparable earnings approach would result in a recommended rate of return which is fair on equity considerations, yet higher than the utility's minimum cost of capital.

Since the 1960's commissions have increasingly chosen to regulate utilities so as to simulate perfect competition. Under such regulation, the cost of capital is defined to be the fair rate of return on invested capital. This has

led to the use of the "cost of capital" approaches to the fair rate of return. Here we seek to determine the current supply price of equity as established in the capital markets, and then to set utility rates that will enable the company to earn the market-determined cost of equity on its book equity capital. The two most commonly used methods for estimating the market value cost of equity are (1) the DCF approach and (2) the risk premium approach. Most utility rate cases today include evidence on comparable earnings plus one or both of the cost of capital approaches. Therefore, in this study we will estimate the fair rate of return for Western Electric using both the comparable earnings and the cost of capital approaches.

Comparable Earnings Approach. The traditional approach to judging the fairness of Western's profits and rate of return has been the comparable earnings method. In virtually all state and federal rate cases involving AT&T's subsidiaries, Western Electric presents testimony which (1) establishes risk comparability by comparing Western's risk as measured by sales and/or earnings volatility with those of a group of large manufacturing companies, then (2) compares Western's rate of return on total invested capital and/or equity to returns earned by a set of comparable companies. A

potential criticism of Western's approach is that the methods used to establish risk comparability reflect only variability, whereas financial theory indicates that the covariance of returns on a given enterprise with returns on other investments also has an important bearing on the risk of the enterprise. In this study we will use measures of variability and covariability to establish risk comparability.

Cost of Capital Approach. To apply the cost of capital method, especially the DCF approach, to publicly traded companies, it is not necessary to establish comparability--one simply recognizes that market forces take account of risk differences when security prices are established, so, to estimate the cost of capital for the company in question, it is necessary only to add its expected dividend yield to its expected growth rate. However, for a subsidiary such as Western, which has no publicly owned stock, the DCF method cannot be applied directly--we must apply this approach indirectly, by estimating the DCF cost of capital for a set of comparable-risk companies and then assigning this cost to the subsidiary. Thus, in the type of situation that exists with Western Electric, the cost of capital approach is quite similar to the traditional comparable earnings approach, the difference being that Western's earnings would be measured against the average estimated cost of equity of the comparable companies rather than their average rate of return on book equity.

We see, then, that to apply either the traditional comparable earnings approach or the cost of capital approach to a subsidiary such as Western it is necessary to establish a group of comparable-risk companies for use in the analysis.

Western is a manufacturing company, and it seems reasonable to use as the comparable companies a set of large, unregulated manufacturers. Fortune Magazine publishes such a list. For convenience, and also to increase comparability, we compare Western with the 50 largest publicly owned manufacturing firms on the Fortune list; these we call the "Fortune 50" companies.<sup>1</sup> The set of included companies is shown in Appendix Table A-1.

Even though we have good a priori reasons for thinking that Western's business risk would be similar to that of other large manufacturers such as General Electric, IBM, General Motors, du Pont, U. S. Steel, and the like, it is clear that either its product line or its affiliation with AT&T, or both, could cause its risk to be materially different from that of other manufacturers. Therefore, it is necessary to run certain tests which measure relative risk.

When structuring tests of relative risk, it is important to recognize that the riskiness inherent in any firm consists of two components: (1) systematic or market-determined risk, which reflects the fact that the economy varies over

<sup>1</sup>Fortune actually lists all major industrial companies. To obtain the set of manufacturing firms, we excluded the oil and mining group, which have very different characteristics. Lockheed and LTV were excluded because in recent years they had zero projected dividends, which makes the DCF estimate of their equity cost meaningless.

time and causes the returns of individual firms to move up and down, and (2) unsystematic or company-specific risk, which reflects events unique to the firm and its industry. These two components, when added together, make up the firm's total risk.

An investor who holds the stock of a firm in a single-stock portfolio is exposed to the firm's total risk, measured as the variance of the firm's rate of return. On the other hand, if an investor holds a well-diversified portfolio, the unsystematic, company-specific risk will be diversified away, leaving the investor exposed only to the systematic risk of each stock in the portfolio. The firm's systematic risk is measured by the covariance of its rate of return with that of "the market," generally measured by a reasonably large sample of firms. Since studies reported in the finance literature suggest that both systematic and unsystematic risk are important to investors, hence affect firms' costs of capital, we consider both types of risk in our analysis.<sup>1</sup>

Total Risk Comparability: Variability of Returns

The variance-type or total risk of an enterprise depends primarily on three elements: (1) the inherent uncertainty

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<sup>1</sup> See Pages 20 and 21 for further details and references.

in demand for its products, which can be measured by sales variability over time; (2) its degree of operating leverage as measured by its ratio of fixed to total costs; and (3) its use of financial leverage. The first two factors affect the firm's business risk, while the third reflects the extent to which business risk is concentrated on the equity investors.

Sales Volatility. Since most companies are growing, both because of product market growth and because of inflation, a meaningful index of sales stability must be based on the predictability of the sales growth rate. Accordingly, we (1) calculated for each of the Fortune 50 companies the annual percentage change in sales for each year; (2) determined each company's mean growth rate, the standard deviation of this growth rate, and its coefficient of variation; and (3) ranked the companies by their sales growth rate volatility, using the coefficient of variation as the index of volatility. Table 1 summarizes the results of this study over the period 1962-1980; the full set of data are given in Appendix Table A-2. The data show that Western's sales volatility is, on average, slightly less than but generally comparable to the sales volatility of other large manufacturing companies.

Operating Leverage. A company could have relatively volatile sales, yet still not be very risky if most of its costs are variable, hence decline when sales drop.

TABLE 1

SALES VOLATILITY:

FORTUNE 50 MANUFACTURING COMPANIES VERSUS WESTERN ELECTRIC  
(1962 - 1980)

		<u>Volatility Index</u> <u>(Coefficient of Variation x 100)</u>
Fortune 50:	Low	32.69
	Median	75.21
	High	189.16
Western Electric (Bell Business)		69.12

Conversely, if a relatively large percentage of its costs are fixed, hence continue even if sales decline, then a company's profit volatility can be high even though its sales are relatively stable. This situation is reflected in a firm's operating leverage, defined as the ratio of fixed costs to total costs.

Although the concept of operating leverage is extremely useful in finance and economics, it can only be applied in a judgmental manner--companies do not report costs broken down into fixed and variable components, so it is impossible to measure the degree of operating leverage for comparative purposes. However, data do exist which can at least give us an idea about Western's operating leverage vis-a-vis that of the Fortune 50 companies. As shown in Table 2, Western's depreciation, taxes, wages & materials, and net income as a percentage of sales are all similar to those of other manufacturers, but quite different from those of the telephone companies. Therefore, Table 2 indicates that Western's operating leverage is in line with that of other large manufacturers, but quite different from that of Bell's telephone subsidiaries.

Business Risk. Although its sales volatility and degree of operating leverage are the primary determinants of a firm's business risk, the best single measure of

TABLE 2

DISTRIBUTION OF GROSS REVENUES, FORTUNE 50, WESTERN ELECTRIC  
AND BELL OPERATING COMPANIES, 1980 (DOLLARS IN MILLIONS)

	<u>Western Electric</u>		<u>Fortune 50</u>		<u>Bell Operating Companies *</u>	
Gross revenues	\$12,032	100.0%	\$486,972	100.0%	\$50,971	100.0%
Depreciation	323	2.7	21,492	4.4	7,039	13.9
Other expenses	<u>10,232</u>	<u>85.0</u>	<u>429,763</u>	<u>88.3</u>	<u>26,951</u>	<u>53.0</u>
Operating income	\$ 1,477	12.3%	\$ 35,717	7.3%	\$16,801	33.1%
Interest expense	159	1.3	8,244	1.7	3,768	7.4
Taxes	<u>625</u>	<u>5.2</u>	<u>13,140</u>	<u>2.7</u>	<u>7,646</u>	<u>15.1</u>
Net income	<u>\$ 693</u>	<u>5.8%</u>	<u>\$ 14,333</u>	<u>2.9%</u>	<u>\$ 5,387</u>	<u>10.6%</u>

\*AT&T consolidated figures minus Western Electric.

Source: For Western Electric and Bell Operating Companies: Western Electric and AT&T annual report, 1980; for Fortune 50: Compustat Tape.

business risk itself for most companies is the volatility, over time, of its return on investment (ROI).<sup>1</sup> Table 3 summarizes our ROI analysis, while more details are given in Appendix Table A-3. These data show that Western has slightly more business risk than the average of the Fortune 50 companies, but that, in general, it is comparable to these other manufacturers.

Total Risk. As noted earlier, financial leverage reallocates a firm's business risk among investors--the greater the use of financial leverage, the greater the concentration of business risk on the equity investors, hence the greater the equity investors' total risk. Western's use of debt is in line with that of other large manufacturers. Therefore, we would expect Western's total equity risk as measured by its coefficient of variation of return on equity (ROE) to be close to that of the median Fortune 50 company. Table 4 (and Appendix Table A-4) indicates that this is indeed the case.

Summary on Relative Total Risk. Our analysis thus far indicates that Western Electric has both business and financial risk, hence total investment risk, which is

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<sup>1</sup>Past ROI volatility is a good measure of business risk unless we have reason to believe that a company's future operating environment will be substantially different from its past environment. In this case, historic ROI volatility may understate or overstate future business risk.

TABLE 3

ROI VOLATILITY:  
FORTUNE 50 MANUFACTURING COMPANIES VERSUS WESTERN ELECTRIC  
(1962 - 1980)

		<u>Volatility Index</u> <u>(Coefficient of Variation x 100)</u>
Fortune 50:	Low	4.98
	Median	21.97
	High	336.17
Western Electric (Bell Business)		30.03

TABLE 4

ROE VOLATILITY:  
FORTUNE 50 MANUFACTURING COMPANIES VERSUS WESTERN ELECTRIC  
(1962 - 1980)

		<u>Volatility Index</u> <u>(Coefficient of Variation x 100)</u>
Fortune 50:	Low	5.64
	Median	23.66
	High	100.82
Western Electric (Bell Business)		35.42

Note: This analysis excludes Chrysler Corporation, which had a negative mean ROE, hence a non-meaningful coefficient of variation.

comparable to that of the average Fortune 50 Company. This being the case, it would seem to be appropriate to use the Fortune 50 as a comparable sample, either for the traditional comparable earnings test or for purposes of establishing a DCF return for Western. However, before finalizing our conclusions with regard to risk, it is necessary to examine Western's systematic, or "beta" risk. This is done in the next section.

Market Risk Comparability: Covariance of Returns

As noted earlier, financial analysts today recognize two distinctly different types of risk--company specific risk and market-related or covariance-type risk. It has been shown that company specific risk can be eliminated by holding a diversified portfolio of investment securities. However, market risk cannot be eliminated. Since investors can eliminate company-specific risk, its presence in a company such as Western, or one of the Fortune 50, may not be particularly important. This distinction between types of risk, and the effects of each, is covered in depth in virtually all corporate finance and investments textbooks today, generally under the heading of the Capital Asset Pricing Model (CAPM) or Portfolio Theory.<sup>1</sup> Under

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<sup>1</sup>For example, see E. F. Brigham, Financial Management, 3rd Edition (1982), Chapters 5, 12, and 15.

the CAPM, the "relevant riskiness" of any security is measured by its beta coefficient, which is an index of the security's risk in relation to other securities. A beta of 1.0 indicates average risk; a beta which is less than 1.0 signifies lower than average risk; and a beta greater than 1.0 signifies above average risk.

Both academicians and practitioners argue about the exact correctness of the CAPM, about how to measure betas, and about other elements of the theory, but there is general agreement that the general concept of the CAPM is correct.<sup>1</sup> Therefore, it is appropriate to consider, as best we can, Western's riskiness in a CAPM framework.

Relative risk in a CAPM framework is reflected by a company's beta coefficient, which is calculated as the slope coefficient in a regression of the market returns of the company in question on the market returns of an index of investment securities such as the NYSE Index. This procedure cannot be used for a subsidiary such as Western Electric which has no publicly traded stock. However, it is possible to estimate "accounting betas" for both Western and the Fortune 50 and to use these accounting betas as the basis for an analysis of comparable systematic risk.

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<sup>1</sup>The arguments revolve around measurement problems. The CAPM is so logical that people who understand it do not argue against it in principle. However, all the variables needed to implement it for purposes of determining risk and consequently required rates of return are expectations of investors, and no one knows how to measure the expectations of all investors with precision. This creates problems and arguments over attempts to apply the CAPM

An accounting beta is defined as the covariance between a given company's accounting rate of return and the rate of return on an index of companies. Operationally, the accounting beta is obtained by running a time series least squares regression between the company's accounting rate of return and the accounting returns of the market index. This type of analysis was reported in 1970 in a study by Beaver, Kettler, and Scholes [2]. These authors found that a significant relationship exists between market and accounting betas, making it meaningful to proxy market betas with accounting betas. They also found significant relationships between market betas and such accounting variables as earnings variability, dividend payout, growth in earnings, and financial leverage.

Further work in the area of accounting betas as proxies for market betas has been done by Beaver and Manegold [3], Ball and Brown [1], and Rosenberg and McKibben [5]. Based on these works, it is clear that a positive relationship exists between accounting and market betas and, therefore, we can use accounting betas as proxies for market betas for purposes of determining market risk comparability.<sup>1</sup>

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<sup>1</sup>Gordon and Halpern [4] actually used the CAPM approach, with accounting betas, to estimate the cost of capital for divisions of diversified firms. However, their procedure requires the assumption that the CAPM can be utilized to estimate the cost of capital, a result which has been seriously questioned in recent years. Indeed, even Gordon no longer uses the CAPM to estimate the rate of return for utilities. Our approach--using the CAPM concept, to help establish risk comparability--does not rely on the assumption that the CAPM is exactly accurate and operationally valid.

In our analysis, we estimated two different sets of accounting betas for Western Electric and for each of the Fortune 50 companies:

1. Accounting betas based on return on investment (ROI) data. These betas measure relative systematic business risk.
2. Accounting betas based on return on equity (ROE) data. These betas extend the analysis to reflect financial leverage, and they measure relative systematic equity risk.

Operationally, we proceeded as follows:

1. The accounting beta coefficient is measured as  $b_i$  in this equation:

$$R_{it} = a_i + b_i R_{Mt} + e_{it} \quad (1)$$

Here

$R_{it}$  = the ROI or ROE for Firm  $i$  in Period  $t$ , based on either average investment or equity;

$R_{Mt}$  = the average ROI or ROE earned on the market index companies during Period  $t$ , using the S&P 500 companies as the market index;<sup>1</sup>

$a_i$  = the constant (or intercept) term;

$e_{it}$  = the error term for Firm  $i$  in Period  $t$ .

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<sup>1</sup>To avoid problems of comparability, we used only those companies in the S&P 500 Index which have fiscal years ending in November, December, or January, and for which data were available on the Compustat Tapes over the period 1961 - 1980. This set included 330 companies.

Data were obtained from the Compustat Tapes over the period 1961 - 1980, and the regression was run over the period 1962 - 1980 (1961 data were needed to obtain the average investment and equity needed to calculate ROI and ROE for 1962).

The results of this analysis are shown in Tables 5 and 6. These data show that Western Electric is in the upper risk quartile--it has more market risk than the average of the Fortune 50 companies.<sup>1</sup> Thus, our systematic, market risk analysis confirms the conclusions reached in the total risk analysis, namely, that Western Electric is at least as risky as the Fortune 50 group of companies.

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<sup>1</sup>Western's total risk is slightly higher than that of the average Fortune 50 Company, but its systematic market risk is much higher than average. The reason for this situation probably has to do with Western's position as a capital goods producer. The returns of a capital goods producer should, logically, fluctuate more directly with general economic conditions than would be true of the average manufacturer, which would produce at least some goods and services for direct consumer use.

TABLE 5

COMPARISON OF SYSTEMATIC BUSINESS RISK: WESTERN  
ELECTRIC AND THE FORTUNE 50 COMPANIES

Number of Fortune 50 companies with ROI betas greater than  
Western Electric's = 10.

Number of Fortune 50 companies with ROI betas less than  
Western Electric's = 40.

TABLE 6

COMPARISON OF SYSTEMATIC EQUITY RISK:  
WESTERN ELECTRIC VERSUS THE FORTUNE 50 COMPANIES

Number of Fortune 50 companies with ROE betas greater than  
Western Electric's = 11.

Number of Fortune 50 companies with ROE betas less than  
Western Electric's = 39.

FAIR RATE OF RETURN: COMPARABLE EARNINGS

The preceding analysis has established that Western Electric is at least as risky as the average of the Fortune 50 companies. Therefore, under the comparable earnings standard, Western's ROI and ROE should, on average, be at least as high as the average of the Fortune 50 companies.

Western's ROI, together with the Fortune 50 average, is shown in Table 7 and plotted in Figure 1. Over the period 1962 - 1980, Western's earned ROI exceeded that of the Fortune 50 in only 4 years. Western's average ROI for this period was 2.3 percentage points below the Fortune 50 average. On a 5 year moving average basis, Western's ROI has never exceeded that of the Fortune 50 group.

Western's ROE and the average ROE for the Fortune 50 group is shown in Table 8 and plotted in Figure 2. Western's average ROE for this period was 3.3 percentage points below that for the Fortune-50 group, and on an annual basis, Western's ROE exceeded the Fortune 50 average ROE in only 4 out of the 19 years. On a 5 year moving average basis, Western's ROE exceeded the Fortune 50 in only one year and then by only 0.3 percentage points.

These dates show that by the comparable earnings standard, Western's returns have not been excessive. Indeed, by this standard, Western's returns have been decidedly low.

TABLE 7

ROI FOR WESTERN ELECTRIC (BELL BUSINESS) AND THE FORTUNE 50  
(1962 - 1980)

<u>Year</u>	<u>Western Electric</u>		<u>Fortune 50</u>	
	<u>Annual ROI</u>	<u>5-year Lagged Moving Average</u>	<u>Annual ROI</u>	<u>5-year Lagged Moving Average</u>
1962	9.2%		11.7%	
1963	9.2		12.3	
1964	10.2		13.4	
1965	9.6		14.5	
1966	8.1	9.3%	12.9	13.0%
1967	7.7	9.0	10.9	12.8
1968	9.4	9.0	12.1	12.8
1969	10.4	9.0	11.3	12.3
1970	10.4	9.2	9.5	11.3
1971	9.0	9.4	11.0	11.0
1972	9.1	9.7	12.2	11.2
1973	9.7	9.7	13.6	11.5
1974	9.3	9.5	12.5	11.8
1975	4.3	8.3	11.7	12.2
1976	6.7	7.8	13.9	12.8
1977	13.6	8.7	13.9	13.1
1978	15.6	9.9	14.6	13.3
1979	16.8	11.4	13.8	13.6
1980	<u>14.5</u>	13.4	<u>11.4</u>	13.5
Mean	<u>10.2%</u>		<u>12.5%</u>	

FIGURE 1

5-YEAR LAGGED MOVING AVERAGE ROI FOR  
WESTERN ELECTRIC (BELL BUSINESS) AND FORTUNE 50  
(1966 - 1980)

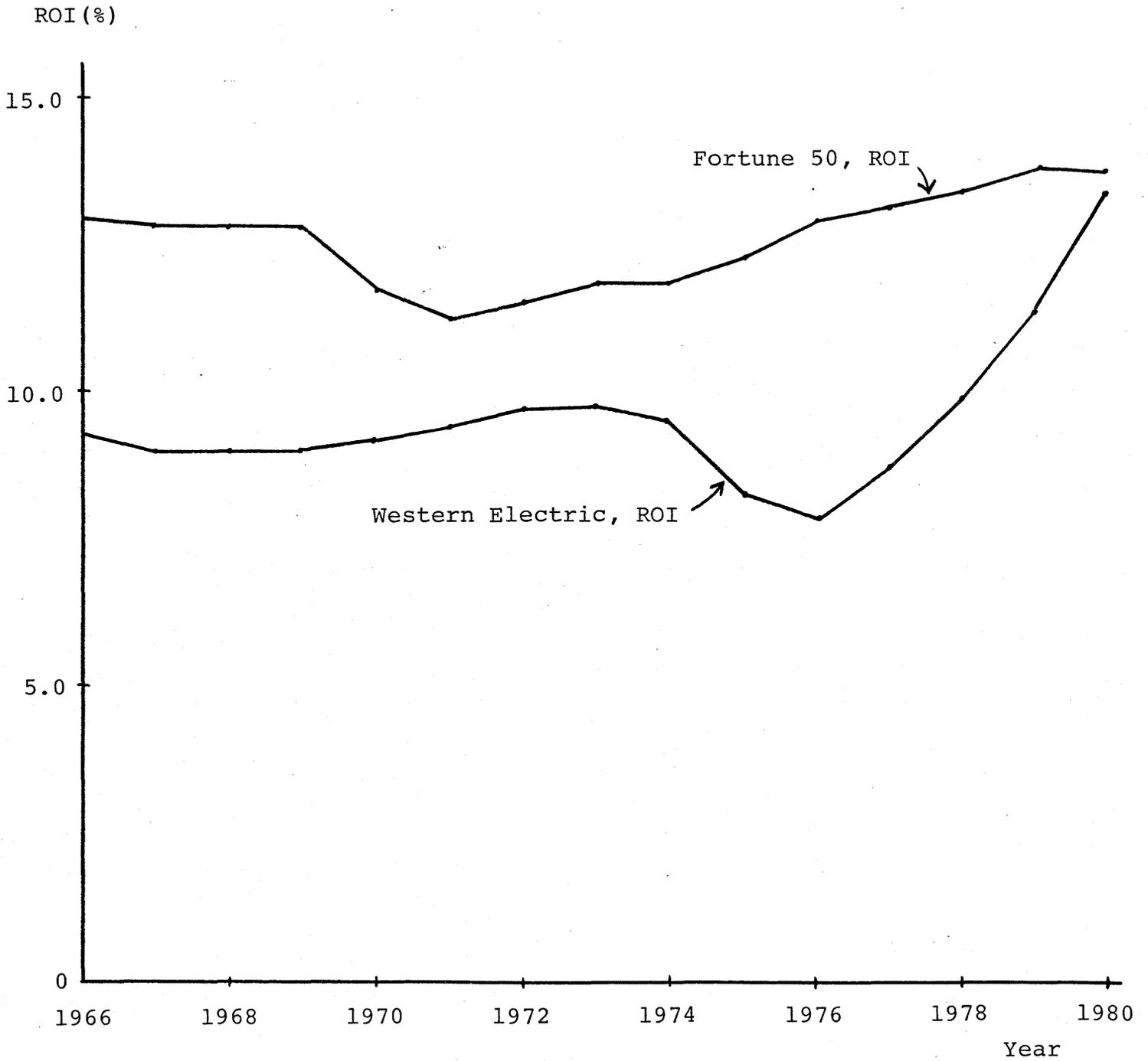


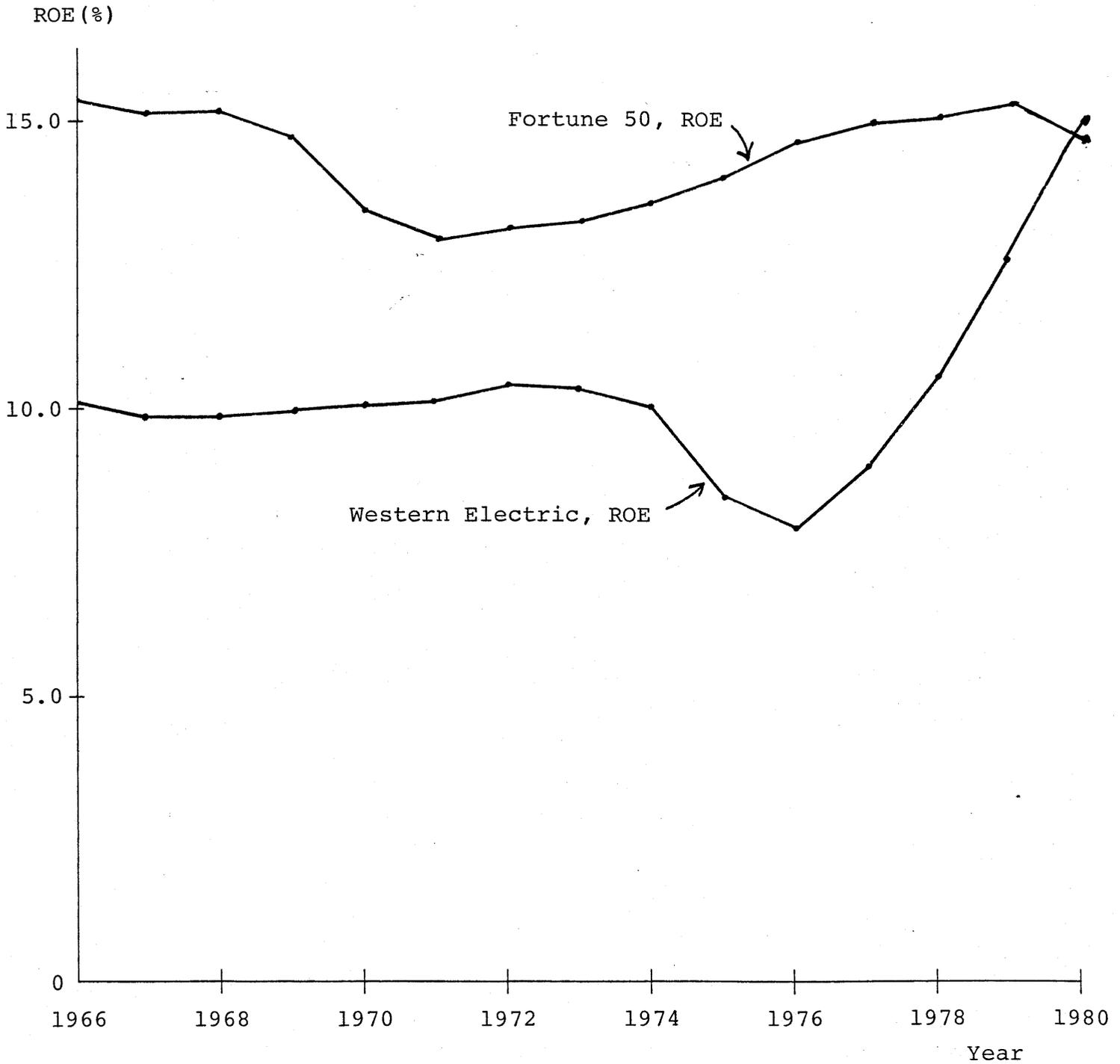
TABLE 8

ROE FOR WESTERN ELECTRIC (BELL BUSINESS) AND THE FORTUNE 50  
(1962 - 1980)

<u>Year</u>	<u>Western Electric</u>		<u>Fortune 50</u>	
	<u>Annual ROE</u>	<u>5-year Lagged Moving Average</u>	<u>Annual ROE</u>	<u>5-year Lagged Moving Average</u>
1962	10.0%		13.7%	
1963	10.1		14.4	
1964	11.0		15.6	
1965	10.4		17.0	
1966	8.9	10.1%	15.6	15.3%
1967	8.4	9.8	13.0	15.1
1968	10.4	9.8	14.5	15.1
1969	11.2	9.9	13.3	14.7
1970	11.3	10.0	10.6	13.4
1971	9.4	10.1	12.9	12.9
1972	9.5	10.4	14.5	13.2
1973	10.3	10.3	16.0	13.5
1974	9.5	10.0	13.8	13.6
1975	3.2	8.4	12.6	14.0
1976	6.5	7.8	15.9	14.6
1977	15.2	8.9	15.8	14.8
1978	18.1	10.5	16.6	14.9
1979	19.6	12.5	15.1	15.2
1980	<u>16.5</u>	15.2	<u>10.9</u>	14.9
Mean	<u>11.0%</u>		<u>14.3%</u>	

FIGURE 2

5-YEAR LAGGED MOVING AVERAGE ROE FOR  
WESTERN ELECTRIC (BELL BUSINESS) AND FORTUNE 50  
(1966 - 1980)



FAIR RATE OF RETURN: COST OF CAPITAL

Although many people would argue that the comparable earnings approach is the correct one, others would argue that a regulated utility's earnings should be based on its cost of capital. In the specific case of Western Electric, the latter group would argue (1) that the Fortune 50 companies have, over the period studied, earned more than their cost of capital as evidenced by the fact that their market/book ratios have generally exceeded 1.0, so (2) Western Electric and other manufacturing subsidiaries of telephone holding companies should be allowed to earn less than the rate earned by the Fortune 50. Specifically, if one adopts this position, then Western's earned rate of return should be compared to the cost of capital of the Fortune 50 companies, not to their earned ROE's.

Since Western Electric is at least as risky as the Fortune 50 group of companies, its fair rate of return should be at least as high as the cost of equity to this group. Therefore, it would be appropriate to estimate the cost of equity for the Fortune group and use it as a minimum standard for Western Electric's ROE. Accordingly, we estimated the cost of equity of the Fortune 50 index, using a DCF model based on security analysts' growth forecasts, for the period 1973-1980.<sup>1</sup> Data on the Fortune 50 were not available prior to 1973, but we did have data on the Dow Jones Industrial Index companies going back

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<sup>1</sup>The model, and our procedures, are described in E. F. Brigham and D. K. Shome, "The Risk Premium Approach to Estimating its Cost of Common Equity Capital," (Proceedings, Iowa State University Regulatory Conference, Ames, Iowa, 1980).

to 1965. This permitted us to extend the cost of capital analysis back to 1965, using the following techniques:

1. We compared the cost of equity estimates for the Fortune 50 and the Dow Jones Industrial companies over the period 1973-1980. (See Table 9 and Figure 3.) On average, the Fortune 50's cost of equity exceeded that of the Dow Jones Industrials by 0.25 percentage points over this period.
2. By adding 0.25 percentage points to the estimated cost of equity for the Dow Jones companies for each year during 1965-1972, we obtained an estimate of the Fortune 50's cost of equity over this earlier period. (See Table 9 and Figure 3.)

Given estimates of Western's cost of capital as based on the set of comparable companies, we can assess the reasonableness of its returns over the period 1965-1980 by comparing its earned ROE with its estimated cost of equity. This comparison is shown in Table 10 (for annual data) and in Table 11 (for 5-year moving averages). The 5-year moving average data are also plotted in Figure 4. Based on these data, we can make the following points:

1. In 12 of the 15 years examined, Western's earned ROE was less than its estimated cost of equity.
2. On average, over the entire period, Western's cost of equity exceeded its earned ROE by 1.96 percentage points.

TABLE 9

COST OF EQUITY FOR FORTUNE 50  
AND DOW-JONES INDUSTRIALS

<u>Year-End</u>	<u>Cost of Equity</u>		
	<u>Dow Jones Industrials</u>	<u>Fortune 50</u>	
1965	9.56%	9.81%	
1966	11.57	11.82	
1967	10.56	10.81	
1968	10.96	11.21	
1969	12.22	12.47	
1970	11.23	11.48	
1971	11.09	11.34	
1972	11.47	11.72	<u>Difference</u>
1973	12.38	12.92	0.54
1974	14.83	15.04	0.21
1975	13.32	13.50	0.18
1976	13.63	13.87	0.24
1977	14.75	14.96	0.21
1978	15.50	15.59	0.09
1979	16.53	17.12	0.59
1980	17.14	17.08	-0.06
		<u>Average</u>	<u>0.25</u>

Note: Prior to 1973, the Fortune 50 cost of equity was estimated by adding 0.25 percentage points to the Dow Jones cost.

FIGURE 3

COST OF EQUITY FOR THE DOW-JONES INDUSTRIALS AND THE FORTUNE 50

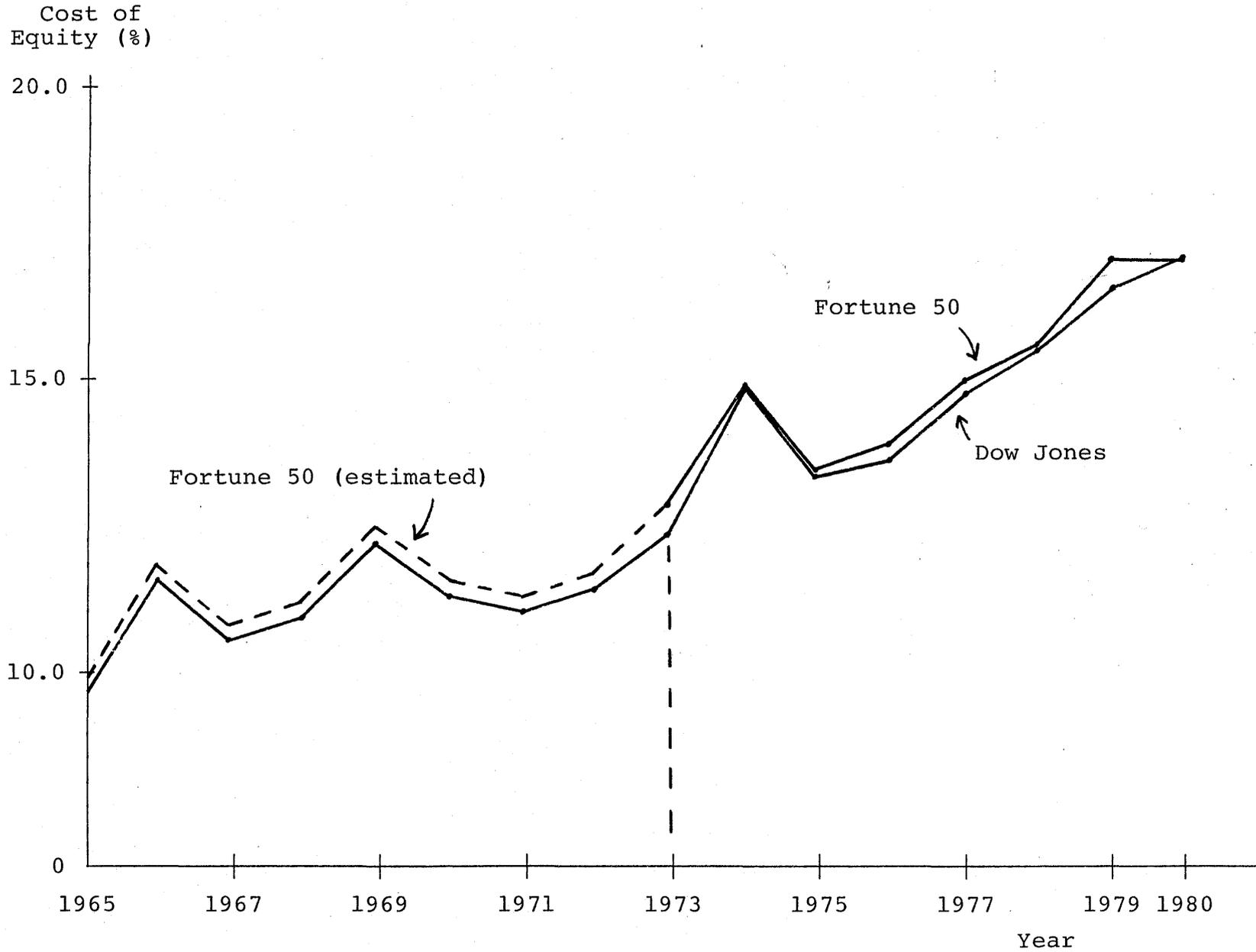


TABLE 10

COMPARISON OF WESTERN ELECTRIC'S ROE AND  
ITS ESTIMATED COST OF EQUITY, ANNUAL DATA, 1966 - 1980

<u>Year</u>	<u>Cost of Equity (Average Beginning and End of Year)</u>	<u>Return on Average Equity Western Electric (Bell Business)</u>	<u>Difference</u>
1966	10.82%	8.9%	-1.92%
1967	11.32	8.4	-2.92
1968	11.01	10.4	-0.61
1969	11.84	11.2	-0.64
1970	11.98	11.3	-0.68
1971	11.41	9.4	-2.01
1972	11.53	9.5	-2.03
1973	12.32	10.3	-2.02
1974	13.98	9.5	-4.48
1975	14.27	3.2	-11.07
1976	13.69	6.5	-7.19
1977	14.42	15.2	+0.78
1978	15.28	18.1	+2.82
1979	16.36	19.6	+3.24
1980	17.10	16.5	<u>-0.60</u>
		Average difference:	<u><u>-1.96</u></u>

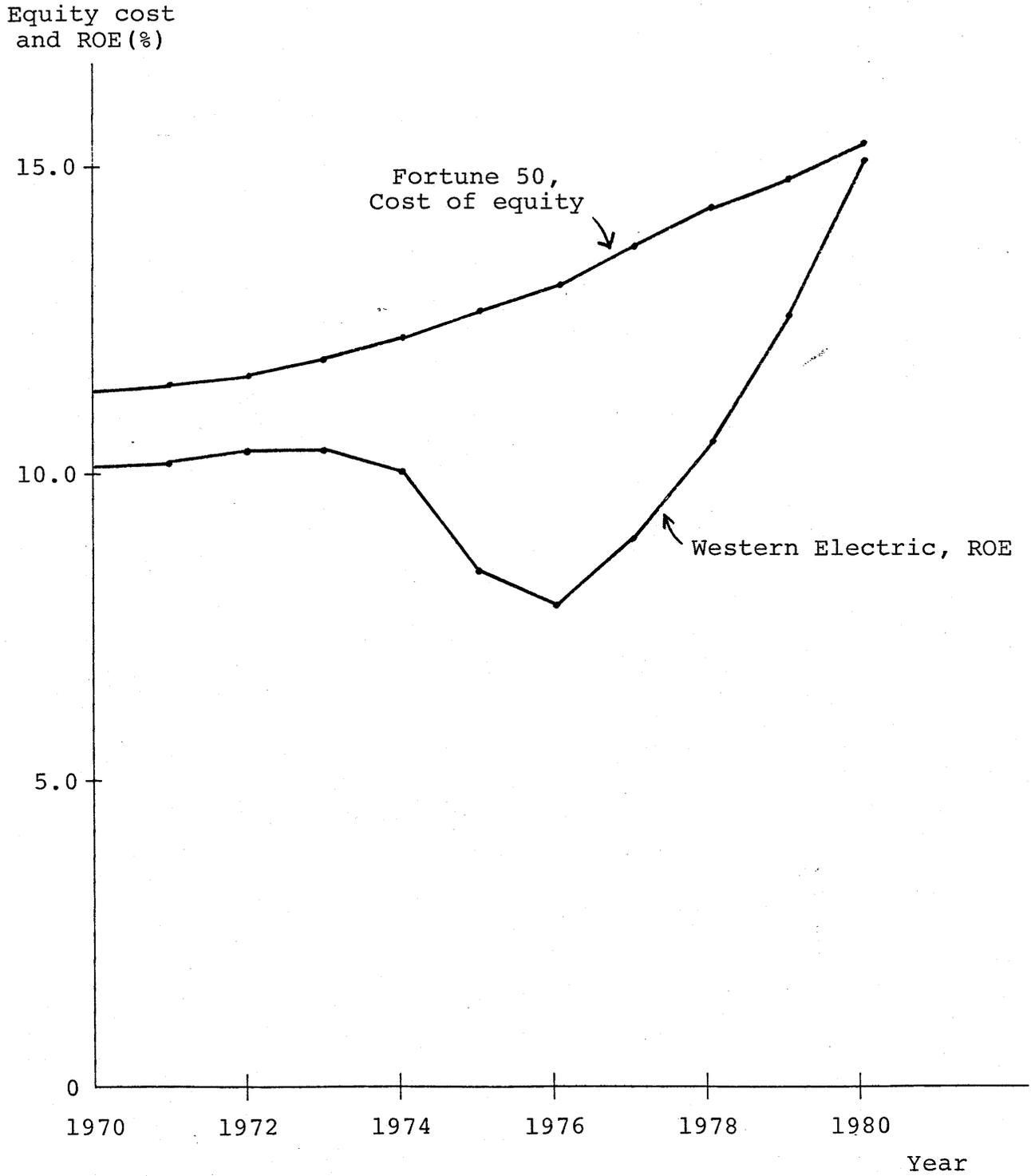
TABLE 11

COMPARISON OF WESTERN ELECTRIC'S ROE  
AND ITS ESTIMATED COST OF EQUITY,  
5-YEAR MOVING AVERAGE  
1970 - 1980

<u>Year</u>	<u>Cost of Equity</u>	<u>Return on Equity</u> <u>Western Electric</u> <u>(Bell Business)</u>
1970	11.39%	10.04%
1971	11.51	10.14
1972	11.55	10.36
1973	11.82	10.34
1974	12.24	10.00
1975	12.70	8.38
1976	13.16	7.80
1977	13.74	8.94
1978	14.33	10.50
1979	14.80	12.52
1980	15.37	15.18

FIGURE 4

FORTUNE 50 COST OF EQUITY VERSUS WESTERN ELECTRIC'S  
RETURN ON EQUITY (5-YEAR MOVING AVERAGE)



3. On a 5-year moving average basis, Western's earned ROE never exceeded its cost of equity for this period 1965-1980.

In Table 12 we show a more detailed comparison between Western Electric's ROE and the cost of equity for the Fortune 50 firms for the year 1980. The comparison shows that:

1. The simple average of the equity costs for the Fortune 50 companies is 17.4% compared to Western's earned ROE of 16.5%.<sup>1</sup>
2. The median cost of equity for the group is 17.2%.
3. The standard deviation of the cost of equity for the Fortune 50 companies is 2.2%. Thus Western's ROE is  $\frac{17.4 - 16.5}{2.2} = 0.4$  standard deviations below the mean cost of equity for the Fortune 50 companies.
4. Western's ROE is greater than the cost of equity of 18 out of the Fortune 50 companies and less than the cost of equity of 32 out of the Fortune 50 companies.

Based on these comparisons, using the comparable earnings criteria and the cost of capital criteria, we can conclude that Western's profits have not been excessive. Even allowing for a substantial margin of error in our estimates, the study suggests that Western's profits on its sales to the Bell telephone companies and to their customers have been fair.

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<sup>1</sup>Note that in Table 10 the comparison is between the value-weighted cost of equity (17.1% in 1980) for the Fortune 50 companies and Western's earned ROE (16.5% in 1980).

COST OF EQUITY, FORTUNE 50, AND ROE, WESTERN ELECTRIC (BELL BUSINESS), 1980

	<u>Cost of equity, <math>k_i</math> (Average of beginning and end of period)</u>
1. Allied Corporation	15.31%
2. Aluminum Company of America	16.07
3. Armco, Inc.	15.32
4. Beatrice Foods Company	18.36
5. Bethlehem Steel Corporation	18.88
6. Boeing Company	24.51
7. Caterpillar Tractor Company	17.70
8. Chrysler Corporation	NMF
9. Coca-Cola Company	17.38
10. Colgate-Palmolive Company	18.04
11. Consolidated Foods Corporation	19.00
12. Continental Group	16.69
13. Dart and Kraft Industries, Inc.	17.70
14. Deere & Company	18.11
15. Dow Chemical Company	17.79
16. Du Pont (E. I.) De Nemours	16.09
17. Eastman Kodak Company	16.89
18. Esmark, Inc.	16.33
19. Firestone Tire & Rubber Company	15.05
20. Ford Motor Company	20.08
21. General Electric Company	16.37
22. General Foods Company	17.57
23. General Motors Corporation	20.17
24. Georgia Pacific Corporation	17.05
25. Goodyear Tire & Rubber Company	19.88
26. Grace (W. R.) & Company	14.06
27. Gulf & Western Industries, Inc.	17.29
28. Honeywell, Inc.	12.65
29. IBM Corporation	15.56
30. International Harvester Company	22.16
31. International Paper Company	14.83
32. ITT Corporation	15.59
33. Johnson & Johnson	15.38
34. McDonnell Douglas Corporation	17.84
35. Minnesota Mining & Manufacturing Company	16.92
36. Monsanto Company	16.02
37. Pepsico, Inc.	19.25
38. Philip Morris, Inc.	21.36
39. Proctor & Gamble Company	16.42
40. Ralston Purina Company	15.58
41. Raytheon Company	17.14
42. RCA Corporation	19.76
43. Reynolds (R. J.) Industries	16.78
44. Rockwell International Corporation	14.71
45. TRW, Inc.	18.39
46. Union Carbide Corporation	17.02
47. United Technologies Corporation	17.89
48. U. S. Steel Corporation	20.06
49. Westinghouse Electric Corporation	17.31
50. Xerox Corporation	15.78
Western Electric, ROE	16.5%
Fortune 50: Mean $k$	17.4
Median $k$	17.2
Standard Deviation, $\sigma$	2.2

SUMMARY AND CONCLUSIONS

The purposes of this study have been (1) to set forth a methodology for evaluating the reasonableness of the profits earned by the manufacturing/supply subsidiary of a public utility holding company system to the systems' regulated operating subsidiaries and (2) to use the procedure to examine the profit situation for Western Electric since 1965.

Two theories exist regarding an appropriate profit level for a subsidiary such as Western Electric. Under the first--the comparable earnings approach--Western should earn a rate of return on its book investment which is, on average over time, about equal to the rate of return earned by a group of comparable risk but unregulated industrial firms. Under the second--the cost of capital approach--Western should earn a rate of return which approximates the cost of capital of a comparable-risk set of industrial companies. The first standard is based primarily on fairness--investors in the regulated company should be permitted to earn returns that are similar, ex post, to the return which they would have earned had they committed their capital to an equally risky unregulated enterprise. The second standard focuses on capital attraction--the regulated company must raise capital if it is to meet its service obligations, so if regulators determine the supply price of capital (the cost of capital) and permit the regulated enterprise to earn that rate of return, then the company will be able to raise capital and thereby discharge its public duties.

Under either regulatory theory, it is necessary to establish a comparison set of unregulated companies whose investment risk is comparable to that of the subsidiary of the regulated enterprise. Traditionally, Western Electric has analyzed risk in terms of total enterprise risk as measured by the variance or coefficient of variation of sales growth, ROI, and ROE for the 50 largest manufacturing companies in the Fortune 50 group. The variables used clearly do (in our judgement) have an effect on risk as it is perceived by investors, but some if not most investors are also concerned about covariance, or "beta" risk. Accordingly, we calculated accounting betas (which may be used as proxies for market betas) for Western Electric and the comparison group of companies.

Our comparative risk analysis, using both the variance and covariance approaches, indicates that Western Electric is at least as risky as the average Fortune 50 company. Therefore, Western's profit rate would be "fair" under the comparable earnings standard if its ROE did not exceed, over time, that of the Fortune 50 group. Under the cost of capital standard, Western's earned ROE should, over time, be equal to or slightly above the average cost of capital of the Fortune 50 group.

Western's actual earned ROE has, over time, averaged well below that of the Fortune 50 group. Further, its ROE has also tended to fall below the Fortune 50 group's cost of

equity capital, though the gap has been narrower. Based on these data, we can conclude that Western has not been earning excessive returns, and that Western's prices have not been unfair to the Bell System's telephone customers.

The general methodology as set forth here could be applied to the subsidiaries or major divisions of any holding company system, regulated or not. Further, the methodology is likely to have increased applicability to utility system manufacturer/supply subsidiaries in the years ahead in the light of the trend toward deregulation in the telecommunications industry and the continuing efforts of the electric/gas industries to diversify.

TABLE A-1  
LIST OF FORTUNE 50 COMPANIES

1. Allied Corporation
2. Aluminum Company of America
3. Armco, Inc.
4. Beatrice Foods Company
5. Bethlehem Steel Corporation
6. Boeing Company
7. Caterpillar Tractor Company
8. Chrysler Corporation
9. Coca-Cola Company
10. Colgate-Palmolive Company
11. Consolidated Foods Corporation
12. Continental Group
13. Dart and Kraft Industries, Inc.
14. Deere & Company
15. Dow Chemical Company
16. Du Pont (E. I.) De Nemours
17. Eastman Kodak Company
18. Esmark, Inc.
19. Firestone Tire & Rubber Company
20. Ford Motor Company
21. General Electric Company
22. General Foods Company
23. General Motors Corporation
24. Georgia Pacific Corporation
25. Goodyear Tire & Rubber Company
26. Grace (W. R.) & Company
27. Gulf & Western Industries, Inc.
28. Honeywell, Inc.
29. IBM Corporation
30. International Harvester Company
31. International Paper Company
32. ITT Corporation
33. Johnson & Johnson
34. McDonnell Douglas Corporation
35. Minnesota Mining &  
Manufacturing Company
36. Monsanto Company
37. Pepsico, Inc.
38. Philip Morris, Inc.
39. Proctor & Gamble Company
40. Ralston Purina Company
41. Raytheon Company
42. RCA Corporation
43. Reynolds (R. J.) Industries
44. Rockwell International Corporation
45. TRW, Inc.
46. Union Carbide Corporation
47. United Technologies Corporation
48. U. S. Steel Corporation
49. Westinghouse Electric Corporation
50. Xerox Corporation

TABLE A-2  
SALES VOLATILITY  
FORTUNE-50 AND WESTERN ELECTRIC (BELL BUSINESS), 1962-1980

Company Name	Mean of % Sales Change, $\mu$	Std Dev of % Sales Chge., $\sigma$	Volatility Index ( $\sigma/\mu$ ) x 100
1. Allied Corporation	11.52%	10.13%	87.95
2. Aluminum Company of America	10.52	11.61	110.35
3. Armco, Inc.	10.62	9.38	88.26
4. Beatrice Foods Company	16.00	6.72	42.00
5. Bethlehem Steel Corporation	6.99	10.76	153.88
6. Boeing Company	10.66	19.07	178.94
7. Caterpillar Tractor Company	14.14	8.58	60.69
8. Chrysler Corporation	9.44	17.85	189.16
9. Coca-Cola Company	13.64	6.59	48.32
10. Colgate-Palmolive Company	12.17	8.23	67.64
11. Consolidated Foods Corporation	13.53	9.41	69.58
12. Continental Group	8.35	6.64	79.55
13. Dart and Kraft Industries, Inc.	9.53	10.38	108.87
14. Deere & Company	13.74	10.20	74.21
15. Dow Chemical Company	14.64	13.99	95.51
16. Du Pont (E. I.) De Nemours	10.28	7.78	75.74
17. Eastman Kodak Company	13.05	8.11	62.17
18. Esmark, Inc.	5.13	8.07	157.40
19. Firestone Tire & Rubber Company	7.87	5.89	74.80
20. Ford Motor Company	10.15	12.94	127.46
21. General Electric Company	9.68	6.65	68.65
22. General Foods Company	9.57	5.65	59.05
23. General Motors Corporation	10.17	17.05	167.66
24. Georgia Pacific Corporation	17.95	11.66	64.92
25. Goodyear Tire & Rubber Company	9.71	4.44	45.68
26. Grace (W. R.) & Company	14.07	9.97	70.86
27. Gulf & Western Industries, Inc.	34.31	34.90	101.70
28. Honeywell, Inc.	13.65	10.84	79.41
29. IBM Corporation	16.00	11.77	73.57
30. International Harvester Company	8.00	10.58	132.35
31. International Paper Company	8.85	7.11	80.40
32. ITT Corporation	17.52	11.14	63.56
33. Johnson & Johnson	15.56	10.00	64.26
34. McDonnell Douglas Corporation	21.20	42.33	199.62
35. Minnesota Mining & Manufacturing Company	12.96	4.24	32.69
36. Monsanto Company	11.06	7.70	69.59
37. Pepsico, Inc.	21.65	20.27	93.62
38. Philip Morris, Inc.	17.71	7.24	40.92
39. Proctor & Gamble Company	10.93	6.13	67.64
40. Ralston Purina Company	12.12	8.07	56.11
41. Raytheon Company	13.32	17.01	127.69
42. RCA Corporation	9.23	6.06	65.60
43. Reynolds (R. J.) Industries	13.38	12.41	92.76
44. Rockwell International Corporation	10.15	13.79	135.78
45. TRW, Inc.	14.54	11.00	76.62
46. Union Carbide Corporation	10.50	7.80	74.30
47. United Technologies Corporation	14.70	16.68	113.49
48. U. S. Steel Corporation	7.77	10.96	141.00
49. Westinghouse Electric Corporation	8.31	5.64	67.90
50. Xerox Corporation	31.01	20.65	66.60
Western Electric	10.03	6.93	69.12
Fortune 50 Range:			32.69 to 189.16
Median:			75.21

TABLE A-3  
ROI VOLATILITY  
FORTUNE 50 AND WESTERN ELECTRIC (BELL BUSINESS), 1962-1980

Company Name	Mean % ROI	Std Dev of % ROI	Volatility Index
	$\mu$	$\sigma$	$(\sigma/\mu) \times 100$
1. Allied Corporation	9.29%	2.19%	23.54
2. Aluminum Company of America	8.54	3.20	37.50
3. Armco, Inc.	8.60	2.45	28.49
4. Beatrice Foods Company	14.46	1.68	11.40
5. Bethlehem Steel Corporation	6.79	4.58	67.39
6. Boeing Company	11.76	7.62	64.80
7. Caterpillar Tractor Company	15.67	3.26	20.78
8. Chrysler Corporation	3.84	12.90	336.17
9. Coca-Cola Company	21.78	2.14	9.83
10. Colgate-Palmolive Company	12.56	2.46	19.61
11. Consolidated Foods Corporation	11.91	1.32	11.06
12. Continental Group	10.71	1.72	16.06
13. Dart and Kraft Industries, Inc.	11.99	1.97	16.41
14. Deere & Company	11.90	3.06	25.68
15. Dow Chemical Company	12.70	3.61	28.44
16. Du Pont (E. I.) De Nemours	14.31	3.31	23.28
17. Eastman Kodak Company	19.90	3.22	16.18
18. Esmark, Inc.	7.38	2.50	33.84
19. Firestone Tire & Rubber Company	8.32	3.34	40.14
20. Ford Motor Company	10.77	5.89	54.64
21. General Electric Company	14.58	2.48	17.02
22. General Foods Company	14.22	1.77	12.47
23. General Motors Corporation	17.00	6.68	39.31
24. Georgia Pacific Corporation	10.63	2.56	24.05
25. Goodyear Tire & Rubber Company	9.98	0.95	9.55
26. Grace (W. R.) & Company	9.47	2.41	25.46
27. Gulf & Western Industries, Inc.	10.51	2.74	26.12
28. Honeywell, Inc.	10.78	2.17	20.14
29. IBM Corporation	18.24	2.17	11.91
30. International Harvester Company	7.83	3.35	42.80
31. International Paper Company	9.73	2.21	22.71
32. ITT Corporation	10.61	1.46	15.48
33. Johnson & Johnson	15.75	2.68	16.99
34. McDonnell Douglas Corporation	14.84	5.04	33.95
35. Minnesota Mining & Manufacturing Company	19.06	2.14	11.23
36. Monsanto Company	10.16	2.79	27.49
37. Pepsico, Inc.	16.16	2.48	15.38
38. Philip Morris, Inc.	12.02	2.51	20.85
39. Proctor & Gamble Company	15.62	1.61	7.44
40. Ralston Purina Company	11.89	1.43	11.99
41. Raytheon Company	13.39	5.21	38.91
42. RCA Corporation	11.47	2.31	20.12
43. Reynolds (R. J.) Industries	15.13	0.75	4.98
44. Rockwell International Corporation	11.44	2.43	21.25
45. TRW, Inc.	12.51	2.23	17.82
46. Union Carbide Corporation	11.14	2.53	22.69
47. United Technologies Corporation	9.70	4.11	42.36
48. U. S. Steel Corporation	6.16	3.06	49.61
49. Westinghouse Electric Corporation	9.34	2.67	28.62
50. Xerox Corporation	18.39	1.82	9.89
Western Electric	10.15	3.05	30.03
Fortune 50 Range:			4.98 to 336.17
Median:			21.97

TABLE A-4  
ROE VOLATILITY

FORTUNE-50 AND WESTERN ELECTRIC (BELL BUSINESS), 1962-1980

Company Name	Mean % ROE	Std Dev of % ROE	Volatility Index
	$\mu$	$\sigma$	$(\sigma/\mu) \times 100$
1. Allied Corporation	10.93%	3.25%	29.71
2. Aluminum Company of America	10.34	4.45	43.02
3. Armco, Inc.	9.43	3.16	33.49
4. Beatrice Foods Company	15.85	2.00	12.63
5. Bethlehem Steel Corporation	6.72	6.55	97.48
6. Boeing Company	12.46	8.78	70.44
7. Caterpillar Tractor Company	19.01	4.00	21.02
8. Chrysler Corporation	-7.91	5.60	-702.80
9. Coca-Cola Company	22.05	2.15	9.77
10. Colgate-Palmolive Company	13.74	2.57	18.71
11. Consolidated Foods Corporation	12.84	1.72	13.43
12. Continental Group	12.27	2.04	16.64
13. Dart and Kraft Industries, Inc.	13.30	2.06	15.49
14. Deere & Company	12.84	4.10	31.93
15. Dow Chemical Company	17.19	5.93	34.49
16. Du Pont (E. I.) De Nemours	15.68	3.87	24.67
17. Eastman Kodak Company	20.29	3.29	16.23
18. Esmark, Inc.	8.18	3.27	39.96
19. Firestone Tire & Rubber Company	8.11	6.48	79.86
20. Ford Motor Company	10.88	8.08	74.26
21. General Electric Company	16.67	2.60	15.60
22. General Foods Company	16.09	1.55	9.62
23. General Motors Corporation	17.70	7.78	43.96
24. Georgia Pacific Corporation	15.56	3.11	19.99
25. Goodyear Tire & Rubber Company	10.92	2.00	18.30
26. Grace (W. R.) & Company	11.21	3.39	30.22
27. Gulf & Western Industries, Inc.	15.51	4.91	31.69
28. Honeywell, Inc.	12.19	2.57	21.10
29. IBM Corporation	19.77	1.83	9.25
30. International Harvester Company	7.17	7.23	100.82
31. International Paper Company	11.08	3.56	32.14
32. ITT Corporation	13.60	3.02	22.23
33. Johnson & Johnson	16.06	2.80	17.42
34. McDonnell Douglas Corporation	15.89	6.22	39.16
35. Minnesota Mining & Manufacturing Company	20.10	2.09	10.39
36. Monsanto Company	11.76	3.83	32.57
37. Pepsico, Inc.	19.63	2.11	10.73
38. Philip Morris, Inc.	18.02	3.62	20.09
39. Proctor & Gamble Company	17.16	1.32	7.69
40. Ralston Purina Company	14.42	2.17	15.09
41. Raytheon Company	14.78	5.23	35.40
42. RCA Corporation	15.09	3.41	22.59
43. Reynolds (R. J.) Industries	18.19	1.03	5.64
44. Rockwell International Corporation	12.51	3.64	29.08
45. TRW, Inc.	14.26	3.04	21.30
46. Union Carbide Corporation	13.57	3.54	26.06
47. United Technologies Corporation	11.58	5.90	50.99
48. U. S. Steel Corporation	6.24	4.48	71.70
49. Westinghouse Electric Corporation	10.38	2.85	27.45
50. Xerox Corporation	23.45	5.31	22.65
Western Electric	11.03	3.91	35.42
Fortune 50 Range:			5.64 to 100.82
Median:			23.66

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