How Fast Should Your Company Grow?

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The phrase "fast growth" conjures up a picture of a high-technology company serving markets that have seemingly inexhaustible appetites for its products. Panting investors and rising stock prices are generally part of the image. A typical example of such a high-growth company is Tandy Corporation, owner of the Radio Shack chain and manufacturer of the TRS-80 microcomputer. At the other end of the growth spectrum are companies whose markets shrink due to declining demand and/or foreign competition and whose stock prices fall. These companies are typified by National Steel Corporation. (National Steel recently formed a holding company and adopted a new corporate name, National Intergroup, Inc.) *Exhibit I* shows the performances of Tandy and National Steel.

Obviously, some companies lack the financial resources to fully exploit available product-market growth opportunities. Others don't have opportunities adequate to match their financial capacity. Financial resources and product-market opportunity help determine how fast a company *can* grow, but given those two ingredients, how fast *should* a company grow? Is growth always so important?

Shareholders think growth desirable if it adds to the value of their common stock. Economists believe that addition of value to corporate common stock indicates the most efficient allocation of resources. Producers and consumers benefit under the direction of Adam Smith's invisible hand.

But the cases of Tandy and National Steel raise interesting questions: Under what circumstances does growth add value for a company's shareholders? To answer, you first must examine the interaction among inflation, capital costs, profitability, growth, and the market value of a company's common stock.

(National Steel has proven well aware of the implications of its situation. In the 1981 annual report to stockholders, the company announced that its "existing lines of business will be managed to provide a competitive return on their invested capital. Those businesses will be expanded that have good prospects for contributing to National's financial mission. Conversely, those businesses that cannot demonstrate either cash-generating capabilities or solid growth prospects will be reduced or divested." The implementation of this strategy as reflected in the imaginative form of the divestiture of the Weirton Division, a facility that accounted for one-third of steel production in 1981 and 1982, should be a major assist to National's efforts to return the company to adequate levels of profitability.)

The illustration of interrelationships in *Exhibit II* helps explain the peculiar behavior of stock market prices over the past two decades. The road map can guide us in solving the growth-rate puzzle. *Exhibit*

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Exhibit I **Relative price performance of Tandy Corporation and National Steel Corporation common stocks and the Dow Jones industrial average**

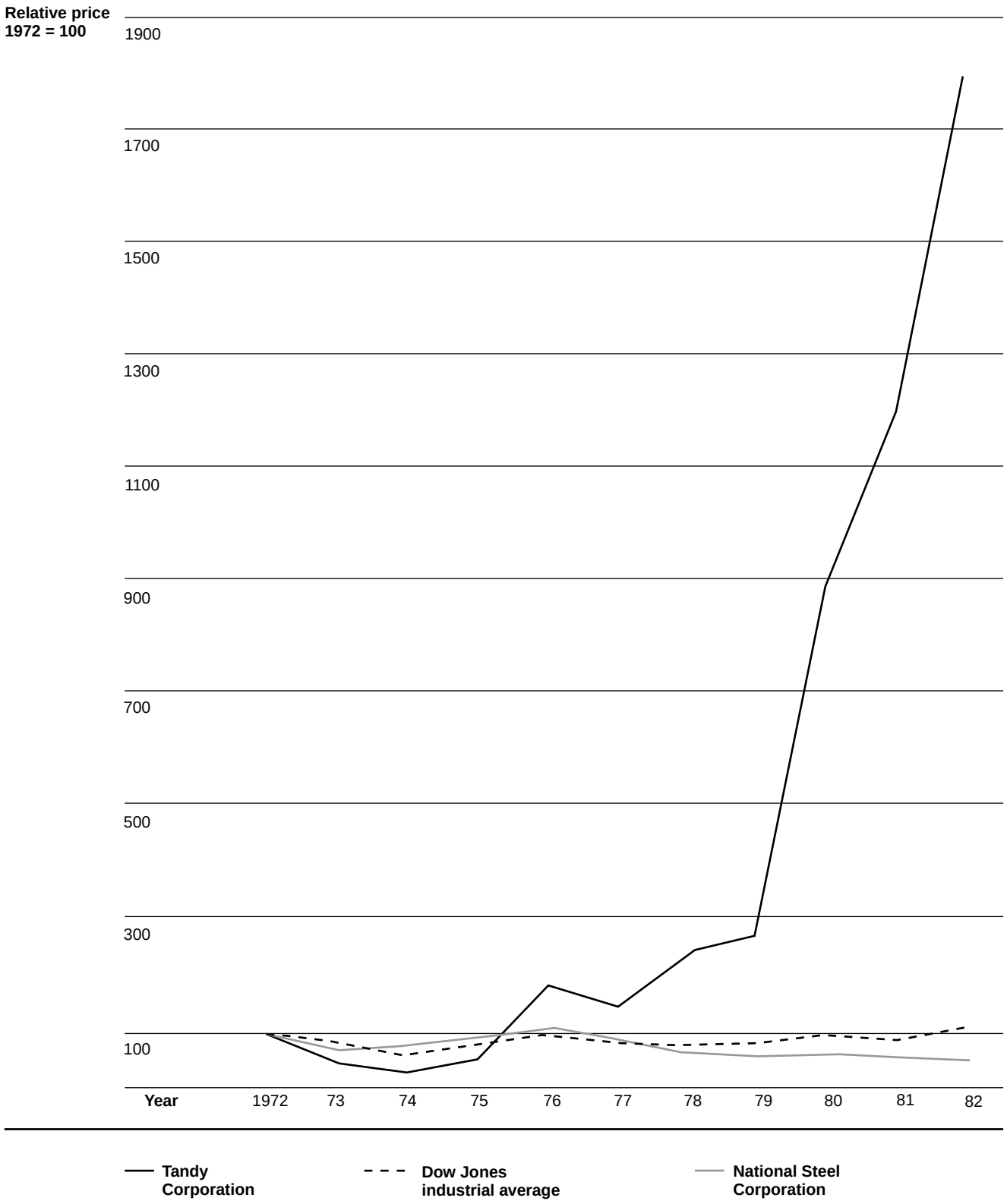
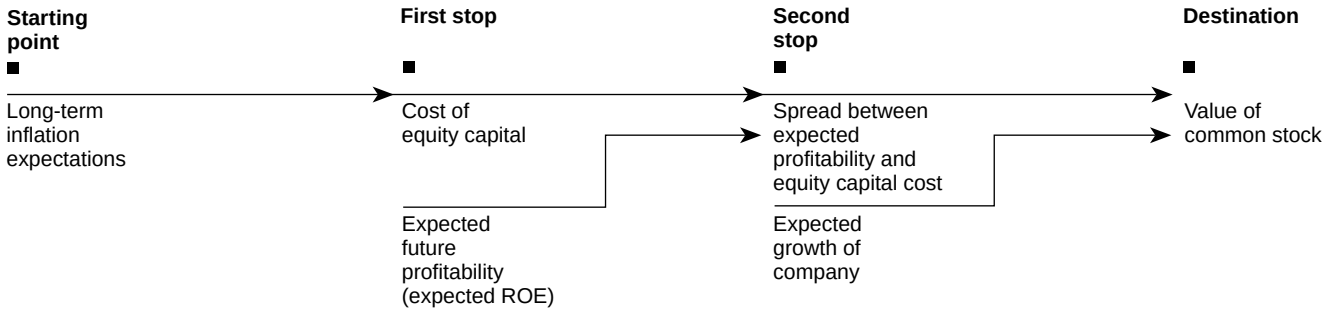


Exhibit II A profitability road map



III shows how both earnings and book value per share for the Dow Jones industrial stocks more than doubled from 1965 to 1981—while the market value actually declined. The price-earnings ratio and the ratio of market to book value fell more than 60%. By contrast, earnings per share for the Dow Jones industrials collapsed in 1982 at the same time their market value rose almost 20%.

Observing this stock price schizophrenia, many executives first comment that the stock market is crazy, that investors move in response to the phases of the moon. Being rational, however, on further reflection the same executives come up with straightforward answers anchored in economics: if, during a period of rising inflation, the increase in business profitability doesn't offset the impact of inflation on capital costs, then common stock values must decline. Similarly, when inflation is expected to decline, stock prices rise unless future business profitability (return on equity, or ROE) is expected to decline as rapidly as inflation.

Expecting inflation

As the road map shows, the impact of inflation is important. Let's assume that the expected inflation rate is only 1%, for example, and investors demand a 9% real return on a stock investment. A company that expects to earn a 10% ROE on an equity base of $100 should find its equity capital valued in the market at $100. Because equity returns and equity costs are exactly equal, the market value represents 100% of book value. If long-term inflation expectations rise from 1% to 11% and the company's anticipated ROE stays at 10%, how can investors achieve adequate returns? Only by driving down the equity value to $50, or 50% of book value, as shown in *Exhibit IV.*

Seen in this light, the Dow Jones performance between 1965 and 1981 is not crazy. Inflation expectations increased dramatically between those years. This is reflected in the escalation in the annual rate

Exhibit III Financial statistics of the 30 Dow Jones industrial stocks 1965–1982

	Column 1	2	3	4	5	6	7	8
Year	Earnings per share	Book value	Market value	Price-earnings ratio	Market to book value ratio	Return on equity	Annual inflation rate	Ten-year Treasury bond rate*
1965	$ 53.67	$453	$ 969	18.1	2.1	11.8	1.7%	4.3%
1970	$ 51.02	$573	$ 839	16.4	1.5	8.9	5.9%	7.2%
1975	$ 75.66	$784	$ 852	11.3	1.1	9.7	9.1%	7.4%
1980	$121.86	$929	$ 964	7.9	1.0	13.1	13.5%	11.8%
1981	$113.71	$976	$ 875	7.7	.9	11.5	8.9%	16.4%
1982	$ 9.15	$882	$1,047	114.4	1.2	.3	3.8%	13.6%

*Average rate for the year. At December 31, 1982, the Treasury bond rate was 11%.

Exhibit IV The price impact of changed inflation expectations

Item		Long-term inflation expectations 1%	11%
A	Real return requirement for equity capital	9%	9%
B	Cost of equity capital (item A + inflation expectation)	10%	20%
C	Profits	$ 10	$ 10
D	Book value of equity	$ 100	$ 100
E	Company's ROE (item C/item D)	10%	10%
F	Market value of equity (item C/item B)	$ 100	$ 50
G	Market value to book value (item F/item D)	1.0	.5
H	ROE of equity owner (item C/ item F)	10%	20%
I	Real ROE to equity owner (item H − inflation)	9%	9%

Exhibit V Rates of growth, profitability, and market to book value ratios for four hypothetical companies

Company	ROE	Rate of growth in nominal sales	Earnings retention ratio	Market to book value ratio
My Cup Runneth Over, Inc.	.25	.10	.40	1.29
Much Ado About Nothing Company	.20	.10	.50	1.00
Thing Are Not Always What They Seem Corporation	.15	.10	.67	.71
Exit, Pursued By A Bear & Associates	.10	.10	1.00	.42

of inflation actually experienced as well as in the yields of long-term Treasury bonds (see *Exhibit III*). To maintain real returns at 9%, nominal return requirements for equity capital had to double between 1965 and 1981. Because the book value of the Dow Jones stocks also doubled, their market value should have been—and was—about the same in that period.

In 1982, the picture changed. Extraordinary write-offs at a few of the 30 Dow Jones industrials forced a profit collapse. Observers looked to full recovery of ROE in the near future. At the same time, inflation was expected to drop. The combination of these two factors would push up common stock prices sharply, reversing the result shown in *Exhibit IV.*

Inflation directly affects the cost of equity capital. Investors act to protect the purchasing power of their assets by pricing securities at levels that will cover inflation and produce a real return consistent with the risk assumed in owning a share of common stock.

The second stop on our road map consists of two components: a forecast of future inflation and a return requirement for accepting a specific level of risk. The mean annual real rates of return (before personal income taxes) investors earned on various kinds of financial assets over the 51–year period 1926–1976 are as follows: U.S. Treasury bills, 0%; long-term government bonds, 1.1%; long-term corporate bonds, 1.8%; and common stock, 9.2%.[1] With long-term Treasury bonds yielding a nominal return of 11%, this suggests that investors harbor long-term inflation expectations of close to 10% (11% minus 1.1%). Taking this into account, the cost of equity capital for common stock of average risk ought to be roughly 19% or 20% (equal to an expected inflation rate of 10% plus a risk premium of 9%).

Growth & profitability

Let's examine four hypothetical companies growing just fast enough to stay even with inflation. In nominal terms they grow annually at 10%, but they do not grow at all in real terms. Their profitability differs considerably, from an expected ROE of 25% to one of only 10% (see *Exhibit V*). Each has a whimsical name that reflects its particular kind of investment opportunity.

My cup runneth over, inc.

Let's assume we invest $100 in a business that offers a 25% ROE (see *Exhibit VI*). Our profit yield

1 Roger G. Ibbotson and Rex A. Sinquefield, "Stocks, Bonds, Bills, and Inflation: the Past (1926–1976) and Future (1977–2000)," 2d ed. (Charlottesville, Virginia: Financial Analysts Research Foundation, 1979).

Exhibit VI Economically rational market value of two hypothetical companies' equity

My Cup Runneth Over, Inc.

The company faces investment opportunities with 25% returns on equity in amounts sufficient to produce a 10% per year sustainable growth rate in sales for ten years. The company has a 20% cost of equity capital.

	Column 1	2	3	4	5	6	7	8
Start of year	Book value of shareholder's investment	ROE achieved	Profit after tax	Earnings retention rate	Earnings retained	Cash return to shareholders from dividends and/or sale of stock at book value	Present value factor at 20% discount rate	Present value of column 6
1	$100.00	25%	$25.00	40%*	$10.00	$ 15.00	.833	$ 12.50
2	$110.00	25%	$27.50	40%*	$11.00	$ 16.50	.694	$ 11.46
3	$121.00	25%	$30.25	40%*	$12.10	$ 18.15	.579	$ 10.50
4	$133.10	25%	$33.28	40%*	$13.31	$ 19.97	.482	$ 9.63
5	$146.41	25%	$36.30	40%*	$14.64	$ 21.96	.402	$ 8.83
6	$161.05	25%	$40.26	40%*	$16.11	$ 24.15	.335	$ 8.09
7	$177.16	25%	$44.29	40%*	$17.72	$ 26.57	.279	$ 7.42
8	$194.87	25%	$48.72	40%*	$19.49	$ 29.23	.232	$ 6.80
9	$214.36	25%	$53.59	40%*	$21.44	$ 32.15	.194	$ 6.23
10	$235.79	25%	$58.95	40%*	$23.58	$35.37	.162	$ 5.71
11	$259.37					$259.37‡	.162	$41.88
	Economic value / Book value	= 1.29					Total present value	$129.05

*A 10% sustainable rate of growth in net worth (and sales) would require a 40% retention rate if the company earns an ROE of 25%.
‡It is assumed that the stock will be sold at book value at the end of year ten, when future ROEs will equal the company's assumed cost of equity of 20%.

Exit, Pursued By A Bear & Associates

The company faces investment opportunities with 10% returns on equity in amounts sufficient to produce a 10% per year sustainable growth rate in sales for ten years. The company has a 20% cost of equity capital.

1	$100.00	10%	$10.00	100%†	$10.00	$ 0	.833	$ 0
2	$110.00	10%	$11.00	100%†	$11.00	$ 0	.694	$ 0
3	$121.00	10%	$12.10	100%†	$12.10	$ 0	.579	$ 0
4	$133.10	10%	$13.31	100%†	$13.31	$ 0	.482	$ 0
5	$146.41	10%	$14.64	100%†	$14.64	$ 0	.402	$ 0
6	$161.05	10%	$16.11	100%†	$16.11	$ 0	.335	$ 0
7	$177.16	10%	$17.72	100%†	$17.72	$ 0	.279	$ 0
8	$194.87	10%	$19.49	100%†	$19.49	$ 0	.232	$ 0
9	$214.36	10%	$21.44	100%†	$21.44	$ 0	.194	$ 0
10	$235.79	10%	$23.58	100%†	$23.58	$ 0	.162	$ 0
11	$259.37					$259.37‡	.162	$ 41.89
	Economic value / Book value	= .42					Total present value	$ 41.89

†A 10% sustainable rate of growth in sales would require a 100% retention rate if the company earns an ROE of 10%.

is thus $25. If there is no opportunity for real growth, we would have to reinvest $10 to support a 10% nominal growth during times of 10% inflation. (Although there is considerable controversy about the impact of inflation on real sustainable rates of growth, a company's real sustainable rate of growth can be approximated by simply subtracting the rate of inflation from the nominal sustainable growth rate.)[2] That allows $15 in dividends.

We continue this process for ten years at which point returns no longer exceed the equity capital cost of 20%. We liquidate and return the accumulated book value (grown to $259.37 at the end of ten years) to the investors. When we calculate the present value of the annual dividends and final liquidation payment, the result is $129.05, or $29.05 more than the initial $100 investment.

Because the company earns a rate of return that exceeds its equity capital cost, every dollar of equity capital initially invested in this particular business is worth $1.29 in market value for shareholders. The company is aptly named; the shareholder's cup does run over.

Exit, pursued by a bear

At the other end of the investment spectrum is a business offering only a 10% ROE on a $100 investment (see *Exhibit VI*). Assuming no growth opportunity in real terms, we need to reinvest all of our $10 profit to support nominal growth in an environment of 10% inflation. No dividends are possible since financing the inflation-induced growth absorbs all profit. We continue this reinvestment process for ten years before liquidation. We return the accumulated book value of the investment (grown to $259.37 at the end of ten years) to our investors. When we calculate the present value of the annual dividends (there were none) and the final liquidating payment, the result is $41.89, or $58.11 less than the $100 investment.

Because the company earned a rate of return far below the cost of equity capital, every shareholder dollar initially invested in the business is now worth only 42 cents. The company may describe its 10% sales growth as progress, but in fact it is entirely due to inflation. The need to retain and invest capital has destroyed shareholder value.

The middle of the spectrum

Between these extremes on the profitability spectrum lie companies whose future ROEs are expected to be 20% to 15%. A business with a 20% ROE, which we'll call the Much Ado About Nothing Company, should enjoy a market value that exactly equals book value because capital costs exactly equal anticipated rates of return. Unless profitability exceeds equity capital costs, growth creates no value for shareholders.

Another type of company, Things Are Not Always What They Seem Corporation, expects an ROE of 15% and enjoys a market value equal to only 71% of book value. A decade ago the annual reports of these kinds of companies featured statements setting 15% as an ROE target, thought then to be a stellar achievement. Some companies continue to operate with this objective even though inflationary expectations and alternative Treasury bond investments have made a 15% return totally inadequate. Most depressing, the average profitability of the Dow Jones industrials has never reached even 15%.

Exhibit VII shows the ratio between a company's market value and book value for various growth rates, as defined by the fraction of earnings reinvested annually. It is a richer profile of the interrelationships between profitability, growth, and value than that shown in *Exhibit V* because growth is not fixed. The exhibit shows that growth boosts value dramatically when profitability is expected to be high and destroys it when profitability is inadequate.

When a company with a 25% ROE grows fast enough to absorb two times its profits annually, its common stock value is 2.4 times its book value. (To reinvest at this rate, the company would have to sell annually an amount of new equity equal in value to the year's net income.) Similarly, if the company

Exhibit VII **Market to book value ratios for common stock based on a 20% cost of equity and a ten-year horizon**

	Expected future return on book equity			
	10%	15%	20%	25%
Fraction of earnings reinvested each year				
30%	.5	.8	1.0	1.3
70%	.5	.7	1.0	1.4
100%	.4	.7	1.0	1.5
200%	.2	.4	1.0	2.4

2 For additional insights into real sustainable growth rates, see Robert C. Higgins, "How Much Growth Can a Firm Afford?" *Financial Management.* Fall 1977, p. 7; Dana J. Johnson, "The Behavior of Financial Structure and Sustainable Growth in an Inflationary Environment," *Financial Management,* Fall 1981, p. 30; and Robert C. Higgins, "Sustainable Growth Under Inflation," *Financial Management,* Fall 1981, p. 36.

enjoys only a 10% ROE and chooses to reinvest two times its profits annually, its common stock ought to be valued at only .2 times book value. (These examples assume a ten-year reinvestment horizon. A different time horizon would greatly alter these values.)

Valuation versus profitability & growth

A look at the 1966 to 1975 average rate of profitability and reinvestment by more than 1,400 U.S. industrial companies shows that nearly one-third earned an average ROE of 7.9% or less *(Exhibit VIII)*. Slightly more than 1% earned an average ROE of 25% and over in that decade.

Poor performers tended to have high reinvestment rates, to issue stock to finance acquisitions (often aimed at diversification), or to fund attempts to enhance the profitability of existing businesses. At the other end of the ROE spectrum, where high rates of reinvestment would have added greatly to shareholder value, the reinvestment rate is more restrained. In short, high-return opportunities are not as abundant as are the resources to pursue them.

It is surprising how close the theoretically determined market to book value ratios are to those based on actual data (see *Exhibit IX*). Refining the assumptions helps bring the two even closer together. To do this:

Use data for individual rather than aggregate companies.

Make more precise estimates of ROE and equity capital costs in both nominal and real terms.

In determining the book value of common equity, use replacement cost values for assets rather than historic cost values.

With these refinements it is not even necessary to forecast growth rates to get a reasonable valuation fit between the theoretical and the actual market to book value ratios. *Exhibit X* demonstrates this fact.

What price growth?

Both theory and evidence demonstrate just how profitability and growth open up a gap between market and book value of a share of common stock. *Exhibit XI* gives data on the evolution of that gap for three companies—Tandy Corporation, Xerox, and National Steel. The present value of expected excess returns on existing corporate investments, as well as all future corporate investment opportunities, is represented by the gap, stated in dollars per common share outstanding as well as in billions of dollars for the sum of the company's outstanding shares.

We can imagine that the financial histories of these companies represent the categories of rising star, fallen angel, and corporate clinker, respectively. Investor expectations of future profitability (expected ROE) would place these companies in the categories represented by My Cup Runneth Over, Things Are Not Always What They Seem, and Exit, Pursued By A Bear.

Since 1976, investors in Tandy Corporation have been rewarded with truly remarkable levels of company profitability and growth (see *Exhibit XI*). They have responded by opening up a gap of $4.5 billion

Exhibit VIII Profitability vs. reinvestment rate profile of 1,448 companies 1966–1975

	Average rate of return on common equity					
	7.9% or less	8.0% to 11.9%	12.0% to 17.9%	18.0% to 24.9%	25% and over	
Percent of earnings reinvested						**Total**
19% and less	5.1%	0.6%	0.5%	0.3%	0.1%	6.6%
20% to 39%	2.3	1.9	1.3	0.2	0.3	6.0
40% to 59%	3.1	6.4	5.2	1.2	0.5	16.4
60% to 79%	3.3	8.2	9.2	2.4	0.2	23.3
80% to 119%	4.7	9.9	10.6	2.0	0.1	27.4
120% to 159%	4.4	4.8	2.8	0.5	0.0	12.5
160% and over	6.5	.9	.4	0.0	0.0	7.8
Total	29.4%	32.7%	30.1%	6.6%	1.2%	100.0%

Exhibit IX Market to book value ratios of 1,448 companies 1966–1975

	Average rate of return on common equity				
	2.0% to 7.9%	8.0% to 11.9%	12% to 17.9%	18% to 24.9%	25% and over
Percent of earnings reinvested					
19% or less	0.4	0.4	1.2	1.4	*
20% to 39%	0.3	0.7	1.0	*	3.7
40% to 59%	0.4	0.7	1.1	2.2	4.6
60% to 79%	0.4	0.7	1.0	1.9	*
80% to 119%	0.4	0.7	1.0	2.1	*
120% to 159%	0.4	0.7	1.5	3.0	*
160% and over	0.4	0.6	1.9	*	*

*Not a meaningful figure.

Exhibit X Rank-ordered market to book value ratios and spreads between profitability and equity capital cost for large grocery chains 1980

	Historic cost accounting			Replacement cost accounting	
Company	Market value* / Book value	ROE-Cost of equity	Company	Market value* / Book value†	ROE-Cost of equity††
Dillon Companies	2.25	.021	Weis Markets	1.61	.037
Cullum	1.93	.062	Dillon Companies	1.45	.024
Weis Markets	1.88	.037	Albertsons	.80	(.030)
Albertsons	1.73	.047	Cullum	.79	(.023)
Jewel	1.22	(.050)	Jewel	.68	(.066)
American Stores	1.08	(.015)	American Stores	.59	(.067)
Supermarkets General	1.06	.009	Kroger	.51	(.055)
Kroger	1.02	(.027)	Giant Foods	.43	(.064)
Fisher Foods	.89	(.135)	Supermarkets General	.41	(.098)
Safeway Stores	.81	(.044)	Fisher Foods	.40	(.150)
Giant Foods	.78	(.051)	Safeway Stores	.35	(.081)
Stop & Shop	.70	(.097)	Stop & Shop	.33	(.104)
Waldbaums	.51	(.037)	Waldbaums	.27	(.065)
A&P	.51	(.312)	A&P	.25	(.224)
Borman's	.35	(.255)	Borman's	.16	(.185)

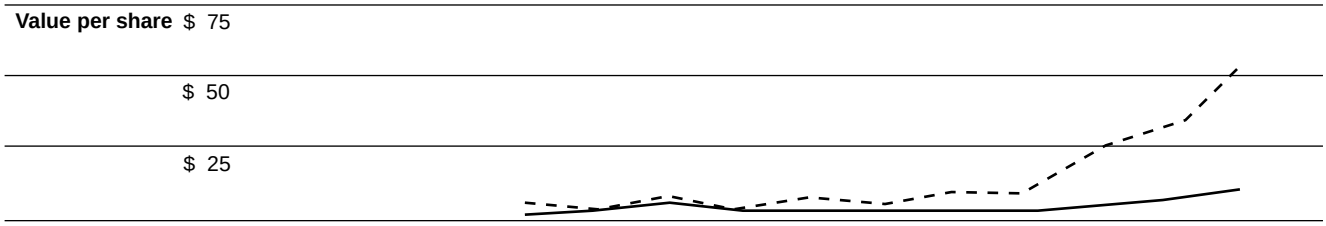
*As of June 12, 1981.
†Under replacement cost accounting, the book value of the company's common equity is increased by the amount of the LIFO valuation reserve and by the difference between the net fixed assets at replacement cost and the net fixed assets at historic cost.
††Under replacement cost accounting, ROE is reduced as a result of higher depreciation charges due to the higher replacement cost of net fixed assets, and the cost of equity capital is reduced by the expected rate of inflation.

between the market value and the book value of the company's outstanding shares.

Xerox presents a picture of dramatically altered investor expectations. In 1972 the total market value of Xerox's common equity was $10.5 billion higher than the book value of that equity. By 1982 Xerox's

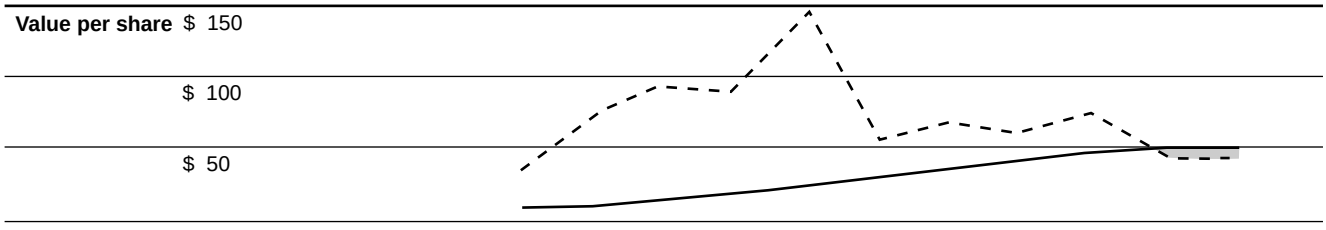
Exhibit XI Common stock market value, book value, and corporate profitability (ROE) for three companies

Tandy Corporation
1972-1982



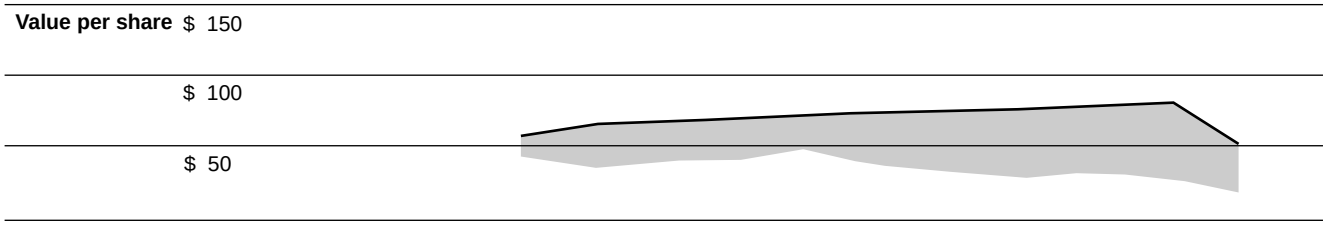
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Year											
Total company market value less book value in $ billions	$ 0.3	$ 0	$ (.1)	$ 0	$ 0.5	$ 0.4	$ 0.5	$ 0.5	$ 1.9	$ 2.9	$ 4.5
ROE	.095	.109	.107	.176	.334	.373	.436	.479	.456	.400	.324

Xerox Corporation
1964-1982



	1964	1966	1968	1970	1972	1974	1976	1978	1980	1981	1982
Year											
Total company market value less book value in $ billions	$ 1.9	$ 3.9	$ 5.5	$ 5.9	$ 10.5	$ 2.3	$ 2.5	$ 1.5	$ 1.4	$ (.3)	$ (.6)
ROE	.36	.33	.25	.23	.22	.20	.18	.18	.18	.16	.11

National Steel Corporation
1972-1982



	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Year											
Total company market value less book value in $ billions	$ (.3)	$ (.5)	$ (6)	$ (.5)	$ (.4)	$ (.6)	$ (.8)	$ (.9)	$ (1.0)	$ (1.1)	$ (.7)
ROE	.071	.094	.156	.048	.069	.047	.086	.092	.059	.059	deficit

– – – **Market value** —— **Book value**

star had fallen so low that the book value of Xerox's common equity was $550 million higher than its market value. In 1982 investors evidently believed that Xerox could not in the future achieve an ROE equal to its cost of equity capital. Why the bleak picture? During the 1970s, Xerox's highly profitable franchise in the copier market came under attack from the U.S. Federal Trade Commission, IBM, and Japanese competitors. The erosion of profitability in the basic copier business, exacerbated by a disastrous history of acquisition, shoved the market to book value ratio of Xerox's common stock below the level of an average industrial in 1982.

The National Steel data in *Exhibit XI* show the consequences of earning ROEs that fall behind escalating equity capital costs. As inflation pushed National's equity cost higher during the decade, its nominal ROE declined. In spite of earnings retentions of nearly $25 per share over the decade ending 1981, the market price of National Steel's stock was $22.75 per share lower at the end of 1982 than at the end of 1972. In aggregate terms, National had reinvested close to $500 million in new equity capital, but over ten years the total value of the company's common equity had declined by $400 million. Such performance was common to many of the Dow Jones industrials. Because National Steel earned far less than its cost of equity capital, the more aggressively the company reinvested, the less the stock was worth on the market.

To grow or not to grow?

The Tandy Corporation and National Steel examples provide a useful basis for reexamining our opening questions: How fast should a company grow, and under what circumstances does growth add value for shareholders? The answers to both hang on whether future profitability (ROE) exceeds or falls short of the cost of equity capital. If ROE is expected to exceed the cost of equity capital, the more growth the better. But inadequate profitability, coupled with a need to do nothing more than finance inflation-induced sales growth, can be disastrous for the company's valuation. If they cannot improve profitability, companies in such a position should consider a policy of rapid negative growth. National Steel has adopted just such a strategy, as the Weirton divestiture demonstrates.

In short, the key to value is profitability. If you've got it, flaunt it. If you haven't got it, try to get it. If you can't get it, get out.