PART I

VALUATION PERSPECTIVES: THEN AND NOW

CHAPTER 1

TWO ILLUSTRATIVE APPROACHES TO FORMULA VALUATIONS OF COMMON STOCKS

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Two common-stock valuation approaches are examined in detail. The first approach considers company profitability, earnings growth and stability, and dividend payout. It derives an independent value of a stock that is then compared with the market price. In contrast, the second approach starts with the market price of a stock and calculates the rate of future growth implied by the market. From the expected growth rate, future earnings can be derived, as well as the implicit earnings multiplier in the current market price. Both approaches demonstrate that the market often has future growth expectations that cannot be derived from companies' past performance.

Of the various basic approaches to common-stock valuation, the most widely accepted is that which estimates the average earnings and dividends for a period of years in the future and capitalizes these elements at an appropriate rate. This statement is reasonably definite in form, but its application permits of the widest range of techniques and assumptions, including plain guesswork. The analyst has first a broad choice as to the future period he will consider; then the earnings and dividends for the period must be estimated, and finally a capitalization rate selected in accordance with his judgment or his prejudices. We may observe here that since there is no *a priori* rule governing the number of years to which the valuer should look forward in the future, it is almost inevitable that in bull markets investors and analysts will tend to see far and hopefully ahead, whereas at other times they will not be so disposed to

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"heed the rumble of a distant drum." Hence arises a high degree of built-in instability in the market valuation of growth stocks, so much so that one might assert with some justice that the more dynamic the company the more inherently speculative and fluctuating may be the market history of its shares.[1]

When it comes to estimating future earnings few analysts are willing to venture forth, Columbus-like, on completely uncharted seas. They prefer to start with known quantities—e.g., current or past earnings—and process these in some fashion to reach an estimate for the future. As a consequence, in security analysis the past is always being thrown out of the window of theory and coming in again through the back door of practice. It would be a sorry joke on our profession if all the elaborate data on past operations, so industriously collected and so minutely analyzed, should prove in the end to be quite unrelated to the real determinants of the value—the earnings and dividends of the future.

Undoubtedly there are situations, not few perhaps, where this proves to be the rueful fact. But in most cases the relationship between past and future proves significant enough to justify the analyst's preoccupation with the statistical record. In fact the daily work of our practitioner consists largely of an effort to construct a plausible picture of a company's future from his study of its past performance, the latter phrase inevitably suggesting similar intensive studies carried on by devotees of a very different discipline. The better the analyst he is, the less he confines himself to the published figures and the more he adds to these from his special study of the company's management, its policies, and its possibilities.

The student of security analysis, in the classroom or at home, tends to have a special preoccupation with the past record as distinct from an independent judgment of the company's future. He can be taught and can learn to analyze the former, but he lacks a suitable equipment to attempt the latter. What he seeks, typically, is some persuasive method by which a company's earnings record—including such aspects as the average, the trend or growth, stability, etc.—plus some examination of the current balance sheet, can be transmuted first into a projection of future earnings and dividends, and secondly into a valuation based on such projection.

A closer look at this desired process will reveal immediately that the future earnings and dividends need not be computed separately to produce the final value. Take the simplest presentation:

1. Past earnings times X equal future earnings.
2. Future earnings times Y equal Present Value.

This operation immediately foreshortens to:

3. Past Earnings times XY equal Present Value.

It is the XY factor, or multiplier of past earnings, that my students would dearly love to learn about and to calculate. When I tell them that there is no dependable method of finding this multiplier they tend to be incredulous or to ask, "What good is security analysis then?" They feel that if the right weight is given to all the relevant factors in the past record, at least a reasonably good present valuation of a common stock can be produced, one that will take probable future earnings into account and can be used as a guide to determine the attractiveness or the reverse of the issue at its current market price.

In this article I propose to explain two approaches of this kind which have been developed in a Seminar on Common-Stock Valuation. I believe the first will illustrate reasonably well how formula operations of this kind may be worked out and applied. Ours is an endeavor to establish a comparative value in 1957 for each of the 30 stocks in the Dow-Jones Industrial

Average, related to a base valuation of 400 and 500, respectively, for the composite or group. (The 400 figure represented the approximate "Central Value" of the Dow-Jones Average, as found separately by a whole series of formula methods derived from historical relationships. The 500 figure represented about the average market level for the preceding twelve months.)

As will be seen, the valuations of each component issue take into account the four "quality elements" of profitability, growth, stability and dividend pay-out, applying them as multipliers to the average earnings for 1947–1956. In addition, and entirely separately, a weight of 20% is given to the net asset value.

The second approach is essentially the reverse of that just described. Whereas the first method attempts to derive an independent value to be compared with the market price, the second starts with the market price and calculates therefrom the rate of future growth expected by the market. From that figure we readily derive the earnings expected for the future period, in our case 1957–1966, and hence the multiplier for such future earnings implicit in the current market price.

The place for detailed comment on these calculations is after they have been developed and presented. But it may be well to express the gist of my conclusions at this point, viz.:

1. Our own "formula valuations" for the individual stocks, and probably any others of the same general type, have little if any utility in themselves. It would be silly to assert that Stock A is "worth" only half its market price, or Stock B twice its market price, because these figures result from our valuation formula.
2. On the other hand, they may be suggestive and useful as composite reflections of the past record, taken by itself. They may even be said to represent what the value would be, assuming that the future were merely a continuation of past performances.
3. The analyst is thus presented with a "discrepancy" of definite magnitude, between formula "value" and the price, which it becomes his task to deal with in terms of his superior knowledge and judgment. The actual size of these discrepancies, and the attitude that may possibly be taken respecting them, are discussed below.

Similarly, the approach which starts from the market price, and derives an implied "growth factor" and an implied multiplier therefrom, may have utility in concentrating the analyst's attention on just what the market seems to be expecting from each stock in the future, in comparison or contrast with what it actually accomplished in the past. Here again his knowledge and judgment are called upon either to accept or reject the apparent assumptions of the marketplace.

Method 1. A Formula Valuation Based Solely on Past Performance in Relation to the Dow-Jones Industrial Average as a Group.

The assumptions underlying this method are the following:

1. Each component issue of the Dow-Jones Industrial Average may be valued in relation to a base value of the average as a whole by a comparison of the statistical records.
2. The data to be considered are the following:
   a. *Profitability*—as measured by the rate of return on invested capital. (For convenience this was computed only for the year 1956.)
   b. *Growth of per-share earnings*—as shown by two measurements: 1947–56 earnings vs. 1947 earnings, and 1956 earnings vs. 1947–56 earnings.

(It would have been more logical to have used the 1954−56 average instead of the single year 1956, but the change would have little effect on the final valuations.)

c. *Stability*—as measured by the greatest shrinkage of profits in the periods 1937−1938 and 1947−1956.
(The calculation is based on the percentage of earnings retained in the period of maximum shrinkage.)

d. *Pay-out*—as measured by the ratio of 1956 dividends to 1956 earnings. In the few cases where the 1956 earnings were below the 1947−56 average we substituted the latter for the former, to get a more realistic figure of current pay-out.

These criteria demonstrate the quality of the company's earnings (and dividend policy) and thus may control the multiplier to be applied to the earnings. The figure found under each heading is divided by the corresponding figure for the Dow-Jones group as a whole, to give the company's relative performance. The four relatives were then combined on the basis of equal weights to give a final "quality index" of the company as against the overall quality of the group.

The rate of earnings on invested capital is perhaps the most logical measure of the success and quality of an enterprise. It tells how productive are the dollars invested in the business. In studies made in the relatively "normal" market of 1953 I found a surprisingly good correlation between the profitability rate and the price-earnings ratio, after introducing a major adjustment for the dividend payout and a minor (moderating) adjustment for net asset value.

It is not necessary to emphasize the importance of the growth factor to stock-market people. They are likely to ask rather why we have not taken it as the major determinant of quality and multipliers. There is little doubt that the expected future growth is in fact the major influence upon current price-earnings ratios, and this truth is fully recognized in our second approach, which deals with growth expectations as reflected in market prices. But the correlation between market multipliers and past growth is by no means close.

Some interesting figures worked out by Ralph A. Bing show this clearly.[2] Dow Chemical, with per-share earnings growth of 31% (1955 vs. 1948) had in August 1956 a price-earnings ratio of 47.3 times 1955 earnings. Bethlehem Steel, with corresponding growth of 93%, had a multiplier of only 9.1. The spread between the two relationships is thus as wide as fourteen to one. Other ratios in Mr. Bing's table show similar wide disparities between past growth and current multipliers.

It is here that the stability factor asserts its importance. The companies with high multipliers may not have had the best growth in 1948−55, but most of them had greater than average stability of earnings over the past two decades.

These considerations led us to adopt the simple arithmetical course of assigning equal weight to past growth, past stability, and current profitability in working out the quality coefficient for each company. The dividend payout is not strictly a measure of quality of earning power, though in the typical case investors probably regard it in some such fashion. Its importance in most instances is undeniable, and it is both convenient and plausible to give it equal weight and similar treatment with each of the other factors just discussed.

Finally we depart from the usual Wall Street attitude and assign a weight of 20% in the final valuation to the net assets per share. It is true that in the typical case the asset value has no perceptible influence on current market price. But it may have some long-run effect on future market price, and thus it has a claim to be considered seriously in any independent valuation of a company. As is well known, asset values invariably play some part, sometimes a

fairly important one, in the many varieties of legal valuations of common stocks, which grow out of tax cases, merger litigation, and the like. The basic justification for considering asset value in this process, even though it may be ignored in the current market price, lies in the possibility of its showing its weight later, through competitive developments, changes in management or its policies, merger or sale eventuality, etc.

The above discussion will explain, perhaps not very satisfactorily, why the four factors entering into the quality rating and the fifth factor of asset value were finally assigned equal weight of 20% each.

The actual application of our illustrative method can now be explained by working through the figures for the first company in the group, Allied Chemical & Dye. Following are data used in computing the "value" of ACD relative to a 400 and a 500 valuation for the Dow-Jones Industrial Average:

	D.J. Ind. Av.	Allied C. & D.	"Quality" Factors: Ratio of ACD to D.J.
Earned per share 1956	$36.00	$4.74	
1947–56	27.50	4.50	
1947–49	21.80	3.73	
1938 (unadjusted)	6.01	5.92	
1937 "	11.49	11.19	
Dividends 1956	23.15	3.	
Net Asset Value 1956	275.	40.	
Profitability:			
1956 earnings/1956 net assets	13.0%	11.85%	91%
Growth-A: 1947–56 vs. 1947–9	26%	21%	
B: 1956 vs. 1947–56	30%	5%	
A plus B.	56%	26%	46%
Stability:			
1938 earnings/1937 earnings	52.3%	53%	101%
Payout:			
1956 dividend/1956 earnings	64.3%	64%	100%
	Average of four Quality Factors		84%

Formula to produce value of 400 for D.J. Ind. Av.:

"Value" equals 1/5 Net Assets plus 12.5 × 1947–56 earnings or 55 plus 12.5 × 27.50 or 400.

(*Continued*)

Corresponding "Valuation" of Allied Chem. & Dye, (including Quality Factor of 84%):

Value equals 1/5 × 40 plus .84 × 12.5 × 4.50 or 55.

Formula to produce value of 500 for D.J. Ind. Av.:

Value equals 1/5 Net Assets plus 16.2 × 1947–56 earnings or 500.

Corresponding "Valuation" of Allied Chem. & Dye:

Value equals 1/5 × 40 plus .84 × 16.2 × 4.50 or 69.

In Table 1.1 we supply the "valuation" reached by this method for each of the 30 stocks in the Dow Jones Industrial Average. Our table includes the various quality factors, the average earnings, and the asset values used to arrive at our final figures.

In about half the cases these "valuations" differ quite widely from the prices ruling on August 5 last, on which date the D. J. Average actually sold at 500. Seven issues were selling at 20% or more above their formula value, and an equal number at 20% or more below such value. At the extremes we find Westinghouse selling at a 100% "premium," and United Aircraft at about a 50% "discount." The extent of these disparities naturally suggests that our method is technically a poor one, and that more plausible valuations could be reached—i.e., ones more congruous with market prices—if a better choice were made of the factors and weights entering into the method.

A number of tests were applied to our results to see if they could be "improved" by some plausible changes in the technique. To give these in any detail would prolong this report unnecessarily. Suffice it to say that they were unproductive. If the asset-value factor had been excluded, a very slight change would have resulted in favor of the issues which were selling at the highest premium over their formula value. On the other hand, if major emphasis had been placed on the factor of past growth, some of our apparently undervalued issues would have been given still larger formula values; for Table 1.1 shows that more of the spectacular growth percentages occur in this group than in the other—e.g., United Aircraft, International Nickel, and Goodyear.

It is quite evident from Table 1.1 that the stock market fixes its valuation of a given common stock on the basis not of its past statistical performance but rather of its expected future performance, which may differ significantly from its past behavior. The market is, of course, fully justified in seeking to make this independent appraisal of the future, and for that reason any automatic rejection of the market's verdict because it differs from a formula valuation would be the height of folly. We cannot avoid the observation, however, that the independent appraisals made in the stock market are themselves far from infallible, as is shown in part by the rapid changes to which they are subject. It is possible, in fact, that they may be on the whole a no more dependable guide to what the future will produce than the "values" reached by our mechanical processing of past data, with all the latter's obvious shortcomings.

Let us turn now to our second mathematical approach, which concerns itself with future growth, or future earnings, as they appear to be predicted by the market price itself. We start with the theory that the market price of a representative stock, such as any one in the Dow-Jones group, reflects the earnings to be expected in a future period, times a multiplier which is in turn based on the percentage of future growth. Thus an issue for which more than average growth is expected will have this fact shown to a double degree, or "squared," in its market price—first in the higher figure taken for future earnings, and second in the higher multiplier applied to those higher earnings.

TABLE 1.1 Formula Valuations of Dow-Jones Industrial Issues

Company	Quality Factors				Av. Factor	Earns. 1947–1956	Book Value	Indicated Value		Price Aug. 5 1957
	Profitability	Growth	Stability	Payout				D.J. 400 Basis	D.J. 500 Basis	
Allied Ch.	91	46	94	100	84	4.50	40	55	69	89
Am. Can	81	70	137	107	99	2.61	28	39	48	44
Am. S. & Ref.	101	39	100	81	80	5.43	51	65	85	54
Am. T. & T.	54	40	163	130	97	9.90	150	151	185	173
Am. Tob.	98	27	111	104	85	6.58	59	82	102	72
Beth. St.	95	138	0	97	83	2.88	31	36	45	49
Chrysler	*91	0	38	51	45	8.15	74	66	80	77
Corn. Prod.	100	65	114	98	94	1.96	40	31	37	31
Du Pont	154	198	100	109	140	5.60	41	107	136	199
East. Kod.	136	100	148	85	117	3.49	28	57	63	104
Gen. Elec.	139	129	84	127	120	1.87	14	31	39	68
Gen. Foods	138	99	141	79	114	2.42	20	39	49	49
Gen. Motors	160	119	95	104	120	2.48	20	42	53	45
Goodyear T.	108	207	129	83	132	4.18	43	78	98	76
Int. Harv.	*58	0	91	98	62	3.70	49	39	47	35
Int. Nickel	164	263	119	90	159	3.86	31	83	105	92

(*Continued*)

TABLE 1.1 (Continued)

Company	Quality Factors				Av. Factor	Earns. 1947–1956	Book Value	Indicated Value		Price Aug. 5 1957
	Profitability	Growth	Stability	Payout				D.J. 400 Basis	D.J. 500 Basis	
Int. Paper	100	46	0	101	62	6.40	55	61	76	101
Johns Man.	93	96	44	100	83	3.07	29	38	47	45
Nat. Dist.	*73	0	62	118	63	2.47	26	25	31	26
Nat. Steel	95	96	101	88	95	5.71	68	79	99	75
Proc. & Gam.	110	46	105	103	91	2.61	21	34	42	49
Sears Roe.	112	56	144	84	99	1.82	15	26	32	28
S. O. Cal.	124	113	134	65	109	3.09	24	47	59	58
S. O. N. J.	130	166	97	80	118	2.85	24	47	59	67
Texas Corp.	126	171	81	66	111	3.48	34	56	70	74
Un. C. & C.	138	92	108	100	110	3.73	27	53	67	117
Un. Aircr.	158	361	181	66	192	3.65	35	96	121	62
U. S. Steel	99	239	0	67	101	3.51	47	54	67	69
Westinghouse	*65	0	0	83	37	3.79	43	27	32	64
Woolworth	*69	0	116	109	74	3.58	40	41	51	42
D.J. Ind. Av.	(13.0)	(56)	(52.3)	(64.3)	100	27.50	275	400	500	500

*Based on 1947–1956 average earnings versus 1956 book value plus adjustments.

We shall measure growth by comparing the expected 1957–66 earnings with the actual figures for 1947–56. Our basic formula says, somewhat arbitrarily, that where no growth is expected the current price will be 8 times both 1947–56 earnings and the expected 1957–66 earnings. If growth G is expected, expressed as the ratio of 1957–66 to 1947–56 earnings, then the price reflects such next decade earnings multiplied by 8 times G.

From these assumptions we obtain the simple formula:

$$\text{Price equals } (E \times G) \times (8 \times G), \text{ or } 8G^2 \times E,$$

where E is the per-share earnings for 1947–56.

To find G, the expected rate of future growth, we have only to divide the current price by 8 times 1947–56 earnings, and take the square root.

When this is done for the Dow-Jones Average as a whole, using its August 5, 1957, price of 500, we get a value of 1.5 for G—indicating an expected growth of 50% for 1957–66 earnings vs. the 1947–56 actuality. This anticipates an average of $41 in the next decade, as against $27.50 for the previous 10 years and about $36 in 1956. This estimate appears reasonable to the writer in relation to the 500 level. (In fact, he started with this estimate and worked back from it to get the basic multiplier of 8 to be applied to issues with no expected growth.) The price of 500 for the D. J. Average would represent in turn a multiplier of 8 × 1.5, or 12, to be applied to the expected future earnings of $41. (Incidentally, on these assumptions the average current formula value of about 400 for the Dow-Jones Average would reflect expectations of a decade-to-decade growth of 35%, average earnings of $37.1 for 1957–66, and a current multiplier of 10.8 for such future earnings.)

In Table 1.2 we set forth the results of applying this second approach to the 30 Dow-Jones issues. (The figures for Am. Tel. & Tel. might well be ignored, since utility issues should take a different basic formula.) The main interest in the table lies in the disparities it indicates between the expected future growth, implicit in the market prices, and the actual growth during the past decade. Ten of the companies (plus ATT) sold at prices anticipating at least twice the Dow-Jones Average rate of growth, comparing 1957–66 with 1956. Of these only two, Du Pont and General Electric, had actually shown distinctly better than average growth in the last 10 years. Conversely, eight of the companies were indicating less than half the average expected rate of growth, including five for which actual declines from 1956 levels were apparently predicted. Yet of these eight companies, no less than five had actually shown far greater than average growth in the past decade.

This leads us to our final observations, which tie our two tables together. The 10 companies previously mentioned, for which unusually rapid growth is anticipated, includes seven of those shown in Table 1.1 as selling significantly above their formula valuation. Again, the eight for which subnormal or no growth is expected include six which were selling substantially below their formula valuations.

We conclude that a large part of the discrepancies between carefully calculated formula values and the market prices can be traced to the growth factor, not because the formulas underplay its importance, but rather because the market often has concepts of future earnings changes which cannot be derived from the companies' past performance. The reasons for the market's breaking with the past are often abundantly clear. Investors do not believe, for example, that United Aircraft will duplicate its brilliant record of 1947–1956, because they consider that a company with the United States Department of Defense as its chief customer is inherently vulnerable. They have the opposite view with regard to Westinghouse. They feel

TABLE 1.2 Formula Calculations of Expected Growth of Earnings of Dow-Jones Ind. Issues, as Indicated by August 5, 1957 Price

Company	Price 8/5/57	Average Earnings 1947–1956	Expected Growth 1957–1966 vs. 1947–1956	Indicated Earnings 1957–1966	Indicated Multiplier*	Earnings 1956	Expected Increase 1957–1966 vs. 1956	Actual Increase 1956 vs. 1947–1956
Allied Ch.	89	$4.50	+58%	$7.22	12.6	$4.74	+52%	+6%
Am. Can	44	2.61	46	3.83	11.6	2.92	33	12
Am. S. & R.	54	5.43	12	6.10	9.0	6.67	(−8)	23
Am. T. & T.**	173	9.90	47	14.70	11.8	10.74	36	14
Am. Tob.	72	6.58	18	7.80	9.4	7.51	4	14
Beth. St.	49	2.88	44	4.15	11.5	3.83	8	33
Chrysler	77	8.95	4	9.28	8.3	2.29	(large)	(−76)
Corn Prod.	31	1.96	41	2.76	11.4	2.36	18	12
Du Pont	199	5.60	112	11.85	17.0	8.20	45	47
East. Kod.	104	3.49	93	6.62	15.4	4.89	36	37
Gen. Elec.	68	1.87	113	4.00	17.0	2.45	62	31
Gen. Foods	49	2.42	59	3.86	12.7	3.56	9	45
Gen. Motors	45	2.48	51	3.74	12.1	3.02	24	22
Goodyear T.	76	4.18	42	5.96	11.4	6.03	(−1)	47
Int. Harv.	35	3.70	8	4.02	8.6	3.14	29	(−15)
Int. Nickel	92	3.86	62	6.30	13.0	6.50	(−3)	68
Int. Paper	101	6.40	40	9.03	11.2	7.05	28	11
Johns Man.	45	3.07	36	4.21	10.9	3.50	20	14

Nat. Dist.	26	2.47	15	2.86	9.2	2.11	36	(−15)
Nat. Steel	75	5.71	28	7.32	10.2	7.09	3	25
Proc. & Gam.	49	2.61	53	3.99	12.2	3.05	30	20
Sears Roebuck	28	1.82	38	2.53	11.0	2.20	16	18
S.O. Cal.	58	3.09	55	4.78	12.4	4.24	12	39
S.O.N.J.	67	2.85	72	4.99	13.8	4.11	21	44
Texas Corp.	74	3.48	62	5.66	13.0	5.51	3	59
Un. C. & C.	117	3.73	99	7.43	15.9	4.86	53	32
Un. Air.	62	3.65	45	5.31	11.6	7.66	(−32)	93
U.S. Steel	69	3.51	57	5.55	12.6	6.01	(−8)	73
Westinghouse	64	3.79	45	5.53	11.6	.10	(large)	(−97)
Woolworth	42	3.58	22	4.39	9.8	3.57	23	0
D.J. Ind. Av.	500	$27.50	50	$41.25	12.0	$35.80	15	30

*December 1956 price ÷ indicated 1957−1966 earnings.
**The basic formula is less applicable to A.T. & T. than to industrial issues.

its relatively mediocre showing in recent years was the result of temporary factors, and that the electric manufacturing industry is inherently so growth-assured that a major supplier such as Westinghouse is bound to prosper in the future.

These cases are clear cut enough, but other divergencies shown in our table are not so easy to understand or to accept. There is a difference between these two verbs. The market may be right in its general feeling about a company's future, but the price tag it sets on that future may be quite unreasonable in either direction.

It is here that many analysts will find their challenge. They may not be satisfied merely to find out what the market is doing and thinking, and then to explain it to everyone's satisfaction. They may prefer to exercise an independent judgment—one not controlled by the daily verdict of the marketplace, but ready at times to take definite issue with it. For this kind of activity one or more valuation processes, of the general type we have been illustrating, may serve a useful purpose. They give a concrete and elaborated picture of the past record, which the analyst may use as a point of departure for his individual exploration and discoveries in the field of investment values.

NOTES

1. On this point the philosophically inclined are referred to the recent article of David Durand on "Growth Stocks and the Petersburg Paradox," in the September 1957 issue of the *Journal of Finance*. His conclusion is "that the growth-stock problem offers no great hope of a satisfactory solution."
2. "Can We Improve Methods of Appraising Growth Stocks?" by R. A. Bing, *Commercial and Financial Chronicle*, Sept. 13, 1956; table on p. 24.