

AFTER THE CRASH: THE OPPORTUNITIES ACCORDING TO BENJAMIN GRAHAM

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Benjamin Graham is generally regarded as the father of modern Security Analysis and still has a strong following among the "Value" school of fund managers. According to Graham, a sharp drop in Stock Market prices normally leads to profitable opportunities. After the crash of October 1987, it is appropriate to see whether it is likely to be prudent and profitable to follow Graham's advice now.

Graham's approach depends on his key concept of the "value" of a share, and his methodology is outlined here. He saw value as giving an objective criterion for investment and he advised that a share should be purchased when the price fell substantially below its value. From long investment experience, he found that such buying opportunities were much more frequent after a sharp general fall in share prices. Furthermore, he found that after a time the price would eventually increase to the value and thus lead to a profitable investment.

While the empirical evidence that Graham provides to support his theories is extensive, it does not meet modern standards of rigour. Some modern evidence concerning the effectiveness of Graham's methods is presented here, both from the performance of funds operated according to his principles and from more rigorous academic studies. The evidence appears strong enough to encourage an interested investor to explore Graham's methods further, but is not fully conclusive at present.

Graham's basic tenets appeared to be undermined by the emerging modern theory of finance, particularly in the 1970s. Furthermore, evidence in favour of efficient markets created the illusion, as Graham (1974) says: "... that it is fruitless, or

at least insufficiently rewarding, for security analysts to look for discrepancies between price and value."

More recent evidence has thrown up a number of important anomalies and the finance theory of the 1980s is evolving to encompass these new results. It is argued here that, in effect, Graham is not necessarily in conflict with contemporary finance theory as it now stands.

It is also suggested that there is considerable scope for developing Graham's ideas along modern lines.

Benjamin Graham

Graham had a long and successful career as an investor on Wall Street, starting in 1914 and only retiring from fund management in 1956. He was particularly influenced by the 1929 crash and the long period afterwards when shares were considered by many as pure speculation. Nonetheless, he held a strong belief that investment should be a rational and systematic activity.

Graham was a gifted teacher and eventually became Professor at Columbia University and UCLA. He greatly influenced investment thinking through his books. *Security Analysis*¹ (first published in 1934), with David Dodd, is addressed to the analyst and aimed to put this discipline on a professional basis. *The Intelligent Investor*² (first published in 1949) is addressed to the private investor. The success of these books is demonstrated by the fact that both are still in print.

Some of his students who became fund managers still constitute a devoted body of followers, the "Value" school. His most prominent disciple,

Warren Buffett³, has been a spectacularly successful investor who has built up a personal fortune of over \$1 billion, even after the recent crash.

In many ways his approach is very much in line with modern thinking. An important example is the way he discourages the investor from imagining that he may have superior forecasting ability. "Readers of this book, however intelligent and knowing, could scarcely expect to do a better job of portfolio selection than the top analysts of the country. But if it is true that a fairly large segment of the stock market is often discriminated against or entirely neglected in the standard analytical selections, then the intelligent investor may be in a position to profit from the resultant undervaluations."⁴

Graham's basic principles

Graham covered in some detail all aspects of investment, such as the analysis of accounts and the various kinds of instrument available in his day. Perhaps his most interesting ideas, however, concern the valuation of ordinary shares. He believed that (a) the value of a share could be assessed by rational methods, (b) market prices could often considerably differ from value, and in particular that many shares are under-priced after a fall in the stock market and (c) superior returns could be obtained by buying considerably under-priced shares, as prices would eventually match value.

The above views have been held by many investors: Graham's originality lies in arguing cogently for his theses, in having practised them successfully over a number of years, and in his attempts to explain in detail how to assess value. Perhaps his most notable contribution is the encouragement he gives for comparing price with value, as potentially a very profitable occupation.

Value

Graham wrote at length on how to determine value, and the 180 pages devoted to the matter in *Security Analysis* probably still remain the most comprehensive and thoughtful discussion of the subject.

His description of valuation appears, at first reading, to be a setting out of conventional security analysis as we now know it. The main components are:

- (a) forecasts of future earnings
- (b) forecasts of future dividends
- (c) multipliers of the dividends and earnings
- (d) asset values

Forecasts of earnings and dividends are made usually for a period ahead of between five and ten years. The multipliers are applied to a typical

year in the future, say year seven, to give a value. The assets affect the valuation in two exceptional cases, first, when tangible assets are low in relation to the earning-power value (when they decrease valuations) and, second, when working capital exceeds the earning-power value (when they increase valuations). The whole section on share valuation in *Security Analysis* systematically explores the detail of valuation on this basis.

There are perhaps four points where Graham departs fairly radically from conventional practice:

1. The "value" obtained is not a short-term price forecast, and it is not intended to be one.
2. The "value" is a medium term sustainable value for the firm as an on-going operation. Even then it is a minimum reasonable value, not a "mean" value. The future is estimated conservatively, using realistic estimates of earnings, and prudent multipliers are applied.
3. The investor is advised only to purchase when price is substantially below value, thus using a considerable "margin of safety". The security should be sold when price begins to exceed value by a given proportion.
4. Graham thinks that, particularly at times when the market is low, a sufficiently large number of under-priced securities will exist so as to give a diversified portfolio using this method. This insight is perhaps his most unusual one.

Graham says that, while valuation may be partly an art rather than a purely mechanical process, it is within the scope of the active private investor, provided he brings to it intelligence, hard work and an independent mind. In his view, his method of valuation does not require an unusual business insight, inside information or an exceptional network of contacts.

Market prices

Graham strongly felt that market prices could be considerably out of line with values. The reason for this discrepancy he took to be psychological.

He felt that the overall level of the market could go to extremes in either direction, as optimism or pessimism holds sway. Furthermore, he thought that favoured stocks would sell at unduly high prices, while unpopular stocks would sell at unduly low prices⁵.

Graham's view of the market, which is not unusual among professional investors, is profoundly unacceptable to modern finance theory which starts from the idea of rational, not psychological, behaviour. A much weaker assumption would be sufficient to support his

under-priced shares to provide a reasonable portfolio of profitable investment opportunities.

Another related phenomenon which Graham noted and mentions repeatedly is that under-priced shares almost disappear when the market is historically high, and reappear when it falls. This view has been supported by some recent studies referenced below. It would thus appear that the search for opportunities could be productive after the recent crash.

Superior returns

Graham believed that the price of a diversified portfolio which is initially under-priced would eventually come up to its value. He strongly felt that there was an innate business or economic reason for this readjustment, and the resulting superior returns were confirmed by his own experience as an investor.

He did not generally specify how long the readjustment would take, but once mentioned that he expected that it would normally require one and a half to two and a half years⁶. An interesting recent study⁷ says "in surprising agreement with Benjamin Graham's claim, the overreaction phenomenon mostly occurs during the second and third year of the test period". The length of the time to adjust may help to explain why the effects have not generally been noticed.

Rules of thumb

Graham provided a number of "rules of thumb"⁸ for investment: it was only natural to embody his principles in ways that were applicable in a simple way. Some of these are described below in relation to some recent studies. These rules can naturally be useful for the investor; they also are of great help to the academic researcher, who is thus provided with a specific model for empirical testing.

The rules can be used as a useful "sieve" to find those firms that can be studied more intensively for under-pricing; it is unfortunate that they are sometimes thought of as encapsulating Graham's main teaching.

Evidence for Graham's methods

Perhaps the most intriguing evidence for Graham's methods is provided in a talk given in 1984 by Warren Buffett, the phenomenally successful investor and disciple of Graham, which is given as an Appendix to the latest printing of *The Intelligent Investor*. Buffett, the "sage of Omaha" uses ordinary, non-academic, language to make his case, but shows that he is aware of many

modern developments, if only to make his debating points.

His key evidence is the performance of funds managed by Graham's disciples, and he stresses that he identified these some 15 years prior to presenting his results, so that the performance was subsequent to the identification. The excellent results for seven funds are given, year by year, in the first seven tables that are appended; the interested reader is referred to these.

Some of the highlights are as follows. Buffett's own fund operated from 1957 to 1969 and gave a compound return of 29.5% p.a. (The return from the Dow-Jones in the corresponding period was 7.4% p.a.) Compound returns are shown inclusive of dividends, and the fund returns are shown prior to management costs as normally this type of fund was operated on an incentive basis to the managers.

The best and worst of the remaining five funds (excluding the Sequoia Fund, which is a special case), using the difference between the return of the fund and the benchmark to rank them, were as follows:

	Return from Fund	Return from S & P 500
Best: Pacific Partners Ltd 1965-1983	32.9% p.a.	7.8% p.a.
Worst: Walter J. Schloss Ltd. 1956-1984 (1st Qtr.)	21.3% p.a.	8.4% p.a.

Buffett also points out, interestingly, that there were very few overlapping investments between the funds and that some of the funds invested in large companies while others invested in small ones.

A few modern studies have been carried out to assess Graham's "rules of thumb", using up-to-date methods, and perhaps the most interesting ones are those due to Oppenheimer (1984, 1986). Two examples from his work help to illustrate his findings, the first one from the 1984 paper and the second from the 1986 paper.

Example 1

Firms were selected which met both of the following criteria: (1) earnings to price ratio at least twice the AAA bond rate and (2) total debt less than book value of the equity.

Eligible firms were selected on the 31st December, and about 70 companies were picked from these (about half from the NYSE and the remainder from AMEX). An equally weighted hypothetical portfolio was set up on the last working day of March following the December selection. This process was carried out in seven successive years, from December 1973 to 1979, giving seven portfolios for testing.

Securities in a portfolio were disposed of if they appreciated by 50% in price or at the end of two years.

Returns, including dividends, of applying this strategy over the period were as follows:

From strategy: 38% p.a.
Benchmark (CRSP index): 14% p.a.

The strategy thus beat the benchmark by a wide margin.

Abnormal returns were significant at the 10% level for all seven portfolios, and at the 1% level for four out of the seven; excess returns remained after adjusting for the size effect. Superior performance declined but did not disappear after 1976, the year the criteria were published.

Example 2

Firms were selected on the following criterion: the share price had to be below two-thirds of the Net Asset Value per share. The Net Asset Value was defined as the net current assets less all long term liabilities, thus ignoring the value of all fixed assets. This criterion is perhaps the most famous one put forward by Graham.

Eligible securities were selected at the end of November and about 50 securities were picked from these. An equally weighted hypothetical portfolio was set up at the end of December. Thirteen portfolios were set up, in the successive years from December 1970 to 1982.

A security was disposed of if it ceased to trade, when the last traded price was used, or at the end of 12 months.

Returns (excluding dividends) over the period were as follows:

From strategy: 28% p.a.
Benchmark 1 20% p.a.
(Ibbotson and Sinquefeld)
Benchmark 2 11% p.a.
(NYSE-AMEX)

Two benchmarks were used, the first one being a small-firm index which was considered more relevant as the portfolios tested were mainly of small firms: it was seen that the strategy beat this index considerably. The second benchmark, which is a general market index, is used to illustrate the much higher returns obtainable from small firms.

Abnormal returns against both benchmarks were significant at the 10% level. A reservation about the strategy is that the yearly results were variable (there were two years of heavy losses) and did not always beat the small firm index.

Assessment of the evidence

The evidence in these studies appears to be positive enough for an interested investor to

explore Graham's methods, but it cannot be said to be conclusive.

Buffett's results on the actual performance of funds managed according to Graham's principles could naturally carry weight with the practical investor, as the superior returns have been achieved in practice. Furthermore, his point that these could hardly have been achieved by chance appears convincing. However, he gives no details as to the methods used to value investments, and these are in any case unlikely to be documented. Furthermore, the data Buffett gives are not analysed so as to provide a statistical measure of significance.

The two examples given by Oppenheimer tend to support two of Graham's "rules of thumb", and the methodology used is one that is generally accepted in modern academic studies. It is probably too early to say that an academic consensus on these studies has been reached.

Graham and modern finance theory

Graham and his followers tend to attack the Efficient Market Hypothesis, one of the central tenets of modern finance theory. This hypothesis states that all information is instantaneously reflected in prices, and hence that it is not possible to make a consistent profit after transaction costs from any system of investment. A radical difference between Graham's ideas and the emerging modern finance theory did persist for some time, but finance theory has evolved since then. This evolution is perhaps best seen by looking at the historical development of the theory.

In the first stage, the Efficient Market Hypothesis was a very fruitful assumption, leading (together with other assumptions) to such important developments as the Capital Asset Pricing Model. Extensive empirical work tended to confirm in practice its implications, such as the random walk descriptions of share price movements.

A second stage, the one we are in now, is the recognition of a number of "anomalies"⁹, or statistically significant departures from the hypothesis, that have been shown to exist. Perhaps the best known anomaly is the "size" effect, that the risk-adjusted returns from small firms are substantially larger than for big firms. A considerable number of other anomalies¹⁰ have also been shown to exist. The existence of anomalies, however, does not necessarily imply that the market is not efficient but it may be that, for instance, the asset pricing model used is not valid and thus leads to anomalies.

Doubts have also been raised about the statistical tests that were used to establish the empir-

ical validity of the Efficient Market Hypothesis: were they powerful enough to pick up inefficiency, even if it existed? The hypothesis is thus now the subject of active research from a number of different directions. In the research climate of the eighties a "Graham anomaly", if it were shown to exist, would take its place among other anomalies, and would not be ruled out of court as it may have been in the seventies. Hence the polemic carried out by the followers of Graham against the hypothesis may be out of date: his ideas may now well fit in with contemporary finance theory.

A very interesting recent development has been the modification to the Capital Asset Pricing Model put forward by Merton (1987), one of the architects of modern finance theory. This new model is much too recent for a judgment to be made on whether it will provide a fruitful line of development. However, it is still very interesting as perhaps the first theoretically derived model which tries to bring together many empirical results which have lacked explanation until now.

Merton starts from a world where each investor is only interested in a limited number of securities, which he holds in his portfolio. Different investors hold different sets of securities and, while researching their own securities, take no interest in those outside their own portfolio. As an example, it is well known that institutions do not hold shares in many small firms, because the maximum 5% holding they are allowed to have is just too small an investment to warrant the research and administration costs.

From this simple assumption, Merton derives a model of the market price of the equity of a firm depending, among other factors, on the size of its shareholder base (the proportion of shareholders who know about it). Other things being equal, the smaller the shareholder base the more the firm is under-priced. There seems to be here an analogy with Graham's concept of "neglected" firms which provide superior returns.

The possible development of Graham's ideas

However, Graham's contribution to the development of security analysis could well extend beyond having perhaps established an anomaly. Once it is accepted that share prices can deviate from values, there is a strong case for developing modern valuation methods to give them the scope envisaged by Graham. The aim would be to give both the security analyst and the private investor a safe and rational method of portfolio selection, which produces a superior return for sound economic reasons.

Graham relied on accounting data much more heavily than is the practice now, and the apparent

success of his approach could prove one more indication that accounting numbers contain information that can be valuable to investors.

Furthermore, there appears to be a great deal of scope for sharpening up the Graham prescriptions using the modern methods that have been employed in finance. For example, the concept that equity represents a call option on the assets of a firm brings to bear the framework of option valuation theory within which many of Graham's concepts will be seen to have a more clearly defined meaning. In addition, the vast statistical apparatus that has been used to test the various hypotheses of modern finance theory can be brought to bear on selecting more precisely the securities that are truly under-priced.

In conclusion, Graham's approach is cogent, well argued and has a substantial following among successful investors. There is some modern evidence to support him. It may well be worthwhile to sharpen up his methods along modern lines and to test them thoroughly.

Notes

1. There have been a number of editions of this work, and a new author joined Graham and Dodd. All references here are to the fourth edition of 1962.
2. Again, there have been a number of editions, and all references, except one which is noted, are to the fourth revised edition of 1973, and to the printing described in the reference Graham (1973).
3. An interesting recent study of Buffett, describing the influence of Graham on his thinking, is given in Train (1987).
4. *The Intelligent Investor* p. 204.
5. *Security Analysis* p. 513; this reference is just one of many to this view throughout his work.
6. *The Intelligent Investor* (1959) 3rd ed. p. 37; the reference is given in De Bondt and Thaler (1985).
7. The study of De Bondt and Thaler (1985) is interesting from a number of points of view. They show, for the years 1926-1982, that a share which has an exceptionally high return in a three year formation period will, on average, have a low return in the subsequent three years, and vice versa. No reversal is observed if the formation period is reduced to a year. In effect, this study implies that weak form market efficiency holds in the short term, in agreement with previous research, but not in the medium term. Their results only give an indirect confirmation of Graham's methods, as Graham would not have suggested their rule for picking shares.
8. References to these occur throughout his work. Their latest development, published posthumously, is described in Blustein (1977) and Rea (1977).
9. The term anomaly can be traced to Kuhn (1970), who put forward a very influential account of the development of scientific theories. He saw a scientific discipline as being, at any one time, based on a number of paradigms: examples in finance theory include the Efficient Market Hypothesis and Rational Expectations. As research proceeds, eventually evidence is obtained which does not conform to these paradigms, and this evidence constitutes the anomalies. Kuhn's approach sheds a great deal of light on the development of finance theory in the last five years. For

instance, the approach helps to explain why, in spite of the growing body of evidence against it, the Efficient Market Hypothesis has still not been abandoned: paradigms have, of necessity, only to be adapted or changed for very good reason.

10. A recent survey of anomalies is given in Keim (1986).

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