by Henry R. Oppenheimer

Ben Graham's Net Current Asset Values: A Performance Update

Ben Graham's "net asset value" (NAV) criterion calls for buying securities whose prices are below the value of the net current assets of the company. Portfolios formed from such NAV securities had higher mean returns than the market benchmarks over the 1970–83 period. Furthermore, the 13-year risk-adjusted returns of the NAV portfolios were significantly greater than those of the benchmarks. Although individual NAV portfolio performances over 30-month holding periods were widely variable, these portfolios, too, outperformed the market.

NAV portfolios consisting of the securities of companies that had positive earnings but did not pay dividends had higher mean and risk-adjusted returns than the NAV portfolios of companies with positive earnings that did pay dividends. In addition, portfolios of securities that were the most undervalued (as measured by purchase price as a percentage of net asset value) tended to outperform the benchmarks by the widest margins. During the period examined, the net asset value criterion allowed investors to achieve above-market returns.

> "It always seemed, and still seems, ridiculously simple to say that if one can acquire a diversified group of common stocks at a price less than the applicable net current assets alone—after deducting all prior claims, and counting as *zero* the fixed and other assets—the results should be quite satisfactory."
>
> —Benjamin Graham,
> *The Intelligent Investor*, 1973

BENJAMIN GRAHAM'S net current asset value (NAV) criterion for stock selection is very well known. Graham developed and tested this criterion between 1930 and 1932, and it was used extensively in the operations of the Graham-Newman Corporation through 1956. Graham reported that issues selected on the basis of the rule earned, on average, about 20 per cent per year over a 30-year period. After the mid-1950s, however, "bargain" issues became relatively scarce. Some issues became available again during the early 1970s, following the market declines of the late 1960s, and became abundant after the 1973–74 bear market.

This article examines the performance of securities that were bargain issues during the 1970–83 period. Even though the NAV criterion is the valuation technique Graham is most famous for, it has been subject to relatively little research.[1] Oppenheimer has provided tests of its performance over the 1949–72 period, but his tests (which do *not* demonstrate consistent profits) are largely confined to data prior to 1958. Greenblatt *et al.* purport to examine the criterion, but in fact examine a somewhat different one, intergrating into their screening mechanism a criterion relating firm P/E and bond yields. Furthermore, their risk analysis is limit-

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1. Footnotes appear at end of article.

ed and their sample size for most portfolios only satisfactory for the period December 1973 through August 1977, a period of less than four years.[2] It is in light of this lack of analysis, and of a recent emphasis on Graham's precepts, that we undertook this analysis.[3]

The Study

We simulated the investment experience of a hypothetical investor who invested in portfolios of common stock using Graham's NAV criterion. To create these portfolios for each year of the 1970–82 period, we screened the entire December *Security Owner's Guide*. For each security, we took the sum of *all* liabilities and preferred stock and subtracted it from current assets; this result was then divided by the number of common shares outstanding to give NAV. Our investor bought a security if its November closing price was no more than two-thirds of its NAV.[4] For these firms, we recorded the NAV, November closing price, number of shares outstanding, exchange the firm was traded on, and whether the firm had positive earnings or dividends over the prior 12 months.

For the most part, we used standard methods of performance evaluation. All securities selected from the December 1970 through December 1972 and December 1978 through December 1982 *Security Owner's Stock Guide* were evaluated. For the remaining years, we evaluated all NYSE securities as well as random samples of about 20 to 30 AMEX and OTC securities.[5] Table I summarizes the distribution of sampled securities.

We assumed that portfolios initially created were equally weighted on the date of purchase, the last business day of December of each year. The securities were held for either 12 or 30 months, depending on the analysis.[6]

Table I Distribution of Sampled Net Asset Values by Exchange

Year	*NYSE*	*AMEX*	*OTC*	*Total*
1970	8	11	13	32
1971	1	13	12	26
1972	2	7	9	18
1973	24	25	24	73
1974	25	34	25	84
1975	23	30	23	76
1976	11	27	24	62
1977	6	24	24	54
1978	9	46	34	89
1979	2	28	21	51
1980	3	16	14	33
1981	4	12	13	29
1982	2	3	13	18
Totals	120	276	249	645

A full set of data could not be obtained. Some firms were acquired, others liquidated, and still others went private; for these firms, we used the final values obtained by shareholders to calculate returns. Other firms had trading halted by exchanges (including the NASD) for various reasons, including filing for bankrupty and lack of investor interest; for these firms, we used the last monthly return for the month in which trading was halted and not resumed on another exchange (including the over-the-counter market). This treatment tacitly assumed the investor liquidated his interest in the firm at the last traded price we could obtain from the standard sources listed above.[7]

For each analysis, we compared mean monthly returns for the NAV portfolios with various market benchmarks. These mean return comparisons provide an indication of how an investor might have fared from a wealth perspective *vis-a-vis* benchmarks he or she might consider relevant. Security returns were also evaluated using the following model:

$$\tilde{R}_{pt} - R_{ft} = \alpha_p + \beta_p (\tilde{R}_{mt} - R_{ft}) + \tilde{e}_{pt}, \quad (1)$$

where

$\tilde{R}_{pt}$ = the month t (t = 1, ... , T) return earned by a portfolio of securities meeting the NAV criterion purchased in month 0 and held T months;

R_{ft} = the "risk-free" (T-bill) rate of return in month t;

$\tilde{R}_{mt}$ = the rate of return on the market benchmark used;

$\tilde{e}_{pt}$ = an error term assumed to have expected value of zero and be serially uncorrelated;

β_p = cov $(\tilde{R}_{pt}, \tilde{R}_{mt}) / \sigma^2 (\tilde{R}_{mt})$ or the portfolio's risk relative to the market; and

α_p = the measure of monthly abnormal performance for the portfolios evaluated.

Equation (1) indicates that realized portfolio return in excess of the risk-free rate is a linear function of three terms—a premium for accepting risk (namely the product of the portfolio risk and the market's return in excess of the risk-free rate), a random error term (with expected return of zero) and an estimate of security performance not accounted for by either portfolio risk or market return. This last parameter, α_p, provides

a direct estimate of the selectivity of the NAV criterion.[8]

We performed several additional tests to determine if any evidence of selective ability might actually represent a small-firm effect. First, we analyzed each exchange's firms separately, providing separate comparisons with the CRSP value-weighted index, the exchange benchmark and a small-firm index. Second, given that recent evidence indicates that much of the small-firm effect occurs in January, we analyzed these portfolios assuming purchase on January 31, thus omitting possible high January returns. Finally, we compared the tested portfolios directly with portfolios of similar market capitalization.

Results

Table II summarizes results for the entire 13-year period of the study. Panel A compares returns of NAV portfolios with returns on both the NYSE-AMEX value-weighted index and the small-firm index. We assumed all securities meeting the NAV criterion in December 1970 were purchased on December 31, 1970, held for one year and replaced on December 31, 1971 by those meeting the criterion in December 1971. This procedure was followed for subsequent years. Thus these results cover the period from December 31, 1970 through December 31, 1983. Panel B represents the 13-year performance of each exchange's securities versus the NYSE-AMEX index, an exchange benchmark and the small-firm index.[9] Panel C presents results for four consecutive subperiods of approximately equal length.

During the 1970–83 period, the mean monthly return of NAV portfolios was 2.45 per cent. By contrast, the mean monthly returns for the NYSE-AMEX and small firm indexes were 0.96 and 1.75 per cent, respectively. To put these results in a form more meaningful to an investor, $10,000 invested in the NAV portfolio on December 31, 1970 would have grown to

Table II Performance Measures for the 13-Year Period[a]

	Mean Returns		*Risk-Adjusted Measures*				
	R_{pt} (%)	R_{mt} (%)	α (%)	$t(\alpha)$[b]	β	$t(\beta)$[b]	R^2
Panel A: Entire Sample							
vs. NYSE-AMEX Index	2.45	0.96	1.46	2.60[c]	1.10	9.23[d]	0.356
vs. Small-Firm Index	2.45	1.75	0.67	1.72[b]	1.03	18.70[d]	0.694
Panel B: Securities in Each Exchange vs. Various Benchmarks							
NYSE vs. NYSE-AMEX Index	0.69	0.96	−0.40	−0.67	1.41	11.15[d]	0.447
NYSE vs. S & P 500	0.56	0.47	0.15	0.25	1.42	10.30[d]	0.408
NYSE vs. Small-Firm Index	0.69	1.75	−1.22	−2.53[c]	1.15	16.92[d]	0.650
AMEX vs. NYSE-AMEX Index	2.36	0.96	1.38	2.04[c]	1.07	7.48[d]	0.266
AMEX vs. AMEX Index	2.26	1.17	1.10	1.80[b]	0.99	10.33[d]	0.409
AMEX vs. Small-Firm Index	2.36	1.75	0.51	1.03	1.10	15.92[d]	0.622
OTC vs. NYSE-AMEX Index	2.87	0.96	1.92	3.28[d]	0.98	7.91[d]	0.289
OTC vs. NASDAQ	2.66	0.87	1.78	3.48[d]	1.04	11.53[d]	0.463
OTC vs. Small-Firm Index	2.87	1.75	1.23	2.60[c]	0.90	13.58[d]	0.545
Panel C: Three-Year Periods[a]							
vs. NYSE-AMEX Index							
1970–1972	0.05	0.38	−0.30	−0.26	1.58	5.14[d]	0.437
1973–1975	3.58	0.82	2.81	3.79[d]	1.34	9.09[d]	0.489
1976–1978	2.41	0.76	1.65	2.11[c]	1.01	5.18[d]	0.441
1979–1982	3.42	1.64	2.03	2.18[c]	0.65	3.38[d]	0.199
vs. Small-Firm Index							
1970–1972	0.05	−0.25	0.89	1.20	1.14	10.86[d]	0.581
1973–1975	3.58	2.15	0.78	1.96[b]	1.14	23.41[d]	0.862
1976–1978	2.41	2.49	0.18	0.55	0.81	19.09[d]	0.811
1979–1982	3.42	2.37	1.26	1.68[b]	0.86	6.80[d]	0.501

a. Purchase on December 31 of designated year.
b. Significant at 10 per cent level.
c. Significant at 5 per cent level.
d. Significant at 1 per cent level.

$254,973 (with monthly compounding) by December 31, 1983. The comparable figures for the NYSE-AMEX and small-firm indexes are $37,296 and $101,992, respectively.

Comparing the returns of the NAV securities on any exchange with the exchange benchmark, the NYSE-AMEX index or the small-firm index yields similar results. With the exception of the NYSE securities, the NAV portfolios outperformed the benchmarks by relatively large margins. It should be noted, however, that the results of Panel C indicate that these results were not stable over time.

Over the 13-year period, the NAV portfolios on average outperformed the comprehensive NYSE-AMEX index by approximately 1.46 per cent per month (19 per cent per year) after adjusting for risk. When compared to the small-firm index, these portfolios earned, on average, an excess return of approximately 0.67 per cent per month (8 per cent per year).[10]

Several interesting results emerge from the risk-adjusted results in Panel B of Table II. First, portfolios of NYSE securities did not earn excess returns when compared with any of the three benchmarks used.[11] Second, both the AMEX and OTC portfolios outperformed the indexes by wide margins. Third, perhaps surprisingly, the systematic risk levels were highest for NYSE securities and lowest for OTC securities. Finally, the results do not reflect size effects; although, on average, the NYSE firms are the largest, the OTC firms are only slightly smaller, with the AMEX firms being much smaller than either the NYSE or OTC firms.

Table II presents a picture of aggregate NAV portfolio performance over the 13-year period. On the whole, performance, when measured from any perspective, would have been quite satisfactory.

Thirty-Month Holding Periods

Table III presents the results when NAV securities are purchased on each December 31

Table III Performance Measures for 30-Month Holding Periods

	Mean Returns		*Terminal Wealth of $10,000*		*Risk-Adjusted Measures*				
Purchase Date[a]	R_{pt} *(%)*	R_{mt} *(%)*	*NAV Issues*	*Market Index*	α *(%)*	$t(\alpha)$[b]	β	$t(\beta)$[b]	R^2
Panel A: vs. NYSE-AMEX Value-Weighted Index									
1970	0.47	0.56	$19,557	$11,639	−0.21	−0.19	1.64	4.94[d]	0.466
1971	−0.08	−0.47	8,584	8,552	0.62	0.37	1.23	2.69[c]	0.205
1972	1.36	−0.31	11,556	8,599	1.81	0.77	1.14	3.07[d]	0.252
1973	3.60	0.78	24,441	11,930	2.78	1.69	1.19	4.58[d]	0.429
1974	5.37	1.88	42,581	16,993	2.48	1.88[b]	1.70	6.01[d]	0.563
1975	3.70	0.88	28,180	12,726	2.72	3.31[d]	1.23	5.64[d]	0.532
1976	2.75	0.58	21,533	11,624	2.17	3.07[d]	1.05	5.82[d]	0.547
1977	2.64	1.36	19,736	14,473	1.06	1.20	1.37	7.73[d]	0.681
1978	2.86	1.78	22,131	16,446	1.17	1.43	0.90	5.17[d]	0.489
1979	2.16	0.94	18,176	12,767	1.19	1.36	0.73	4.14[d]	0.380
1980	3.88	1.61	30,220	15,635	2.53	3.11[d]	0.61	3.55[d]	0.311
1981[e]	3.53	1.73	21,923	14,798	2.29	1.65	0.48	1.54	0.098
1982[f]	5.85	1.77	18,937	12,297	4.11	1.35	0.97	0.93	0.089
Panel B: vs. Ibbotson and Sinquefield Small-Firm Index									
1970	0.47	−0.27	$19,557	$ 8,778	0.88	1.38	1.22	16.34[d]	0.821
1971	−0.08	−0.98	8,584	6,958	1.03	0.83	1.09	5.99[d]	0.562
1972	1.36	0.14	11,556	9,310	1.32	0.76	1.22	6.21[d]	0.579
1973	3.60	2.17	24,441	17,151	1.11	1.34	1.19	13.08[d]	0.859
1974	5.37	3.74	42,581	27,859	2.22	1.91[b]	1.47	11.28[d]	0.927
1975	3.70	3.34	28,180	25,305	0.57	1.46	0.93	16.89[d]	0.911
1976	2.75	2.70	21,533	19,674	0.58	1.34	0.75	12.26[d]	0.843
1977	2.64	2.42	19,736	18,423	0.17	0.14	0.84	6.73[d]	0.819
1978	2.86	3.32	22,131	24,959	−0.11	−0.11	0.72	5.39[d]	0.744
1979	2.16	1.55	18,176	14,966	0.73	1.12	0.77	7.43[d]	0.664
1980	3.88	1.65	30,220	21,154	1.54	2.49[c]	0.82	7.00[d]	0.636
1981[e]	3.53	2.55	21,923	17,877	1.02	0.91	0.98	4.37[d]	0.465
1982[f]	5.85	2.92	18,937	13,967	1.68	0.76	1.56	3.48[d]	0.548

a. Purchase on December 31 of designated year.
b. Significant at 10 per cent level.
c. Significant at 5 per cent level.
d. Significant at 1 per cent level.
e. Holding period of 24 months.
f. Holding period of 12 months.

Table IV Yearly NAV Returns vs. Small-Firm Index and Reinganum's MV1 Portfolio

Panel A: Return Comparisons

Year Starting December 31	*NAV Return*	*Small-Firm Index Return*	*MV1 Return*
1970	21.3%	16.5%	27.8%
1971	29.0	4.4	9.8
1972	−43.0	−30.9	−38.1
1973	−19.0	−20.0	−12.7
1974	127.1	52.8	80.9
1975	58.4	57.4	57.0
1976	35.4	25.4	20.6
1977	23.1	23.5	33.5
1978	32.1	43.5	43.9
1979	36.7	39.3	27.6
1980	25.5	13.9	N.A.
1981	39.4	28.0	N.A.
1982	89.4	39.7	N.A.
13-Year Terminal Wealth	$254,973	$101,992	N.A.*
13-Year Annual Geometric Mean Return	28.2%	19.6%	N.A.*
1970–74 Terminal Wealth	$ 16,148	$ 10,273	$13,718
5-Year Annual Geometric Mean Return	10.1%	0.5%	6.5%
1975–78 Terminal Wealth	$ 34,877	$ 34,980	$36,374
4-Year Annual Geometric Mean Return	36.7%	36.8%	38.1%
1979–82 Terminal Wealth	$ 45,295	$ 28,371	N.A.
4-Year Annual Geometric Mean Return	45.9%	29.8%	N.A.
Panel B: Risk Comparisons			
1970–79			
High Beta	1.92	—	—
Mean Beta	1.27	—	1.58
Low Beta	0.52	—	—
1970–74 Mean Beta			
vs. NYSE-AMEX Index	1.39		
vs. Small-Firm Index	1.27		
1975–78 Mean Beta			
vs. NYSE-AMEX Index	1.11		
vs. Small-Firm Index	0.79		
1979–82 Mean Beta			
vs. NYSE-AMEX Index	0.70		
vs. Small-Firm Index	1.03		

* MV1 returns end at the end of the year beginning 12/31/79. The 1970–79 terminal wealth and geometric mean returns for the three portfolios are, in order: ($76,950; 22.6%), ($50,257; 17.5%) and ($63,667; 20.3%).

and held for 30 months.[12] This table provides comparisons with both the NYSE-AMEX index (Panel A) and the small-firm index (Panel B).

The results largely parallel those of Table II. From a return (and wealth) perspective, the advantage of the NAV portfolios over the market indexes is consistently pronounced. Similarly, the risk-adjusted excess returns are invariably large—11 of the 13 excess returns obtained in comparisons with the NYSE-AMEX index are greater than 1 per cent monthly (over 12 per cent annually), and 11 of the 13 comparisons with the small-firm index are greater than 0.7 per cent monthly (over 8 per cent annually). However, few of these excess returns are statistically significant.

Firm Size and Return

All analyses presented so far assume a December 31 purchase date. Many studies have noted that, in general, stocks of small firms trade infrequently. Thus attempted purchase of these firms on December 31 may not result in realized purchase until some time in January. Furthermore, Keim finds that 50 per cent of the excess returns from investing in small firm stocks occurs in January and, indeed, 25 per cent occurs during the first five trading days in January.[13] Thus one might logically wonder if the returns reported thus far are realizable, or if they are merely selectivity effects emanating from the small-firm effects. There are several ways of addressing this issue.

Table V Performance Measures Considering Earnings and Dividends[a]

	Mean Returns		*Risk-Adjusted Measures*				
	R_{pt}	R_{mt} (%)	α (%)	$t(\alpha)^b$ (%)	β	$t(\beta)^b$	R^2
Panel A: Entire Sample							
vs. NYSE-AMEX Index	2.45	0.96	1.46	2.60[c]	1.10	9.23[d]	0.356
vs. Small-Firm Index	2.45	1.75	0.67	1.72[b]	1.03	18.70	0.694
Panel B: Positive Earnings During Prior Year							
vs. NYSE-AMEX Index	2.41	0.96	1.43	2.88[d]	1.05	9.98[d]	0.393
vs. Small-Firm Index	2.41	1.75	0.75	2.02[c]	0.93	17.78[d]	0.673
Panel C: Negative Earnings During Prior Year							
vs. NYSE-AMEX Index	2.61	0.96	1.58	1.97[b]	1.22	7.17[d]	0.250
vs. Small-Firm Index	2.61	1.75	0.62	0.99	1.22	13.94[d]	0.558
Panel D: Positive Earnings and Dividends During Prior Year							
vs. NYSE-AMEX Index	2.01	0.96	1.08	2.47[c]	0.90	9.67[d]	0.378
vs. Small-Firm Index	2.01	1.75	0.50	1.48	0.79	16.66[d]	0.643
Panel E: Positive Earnings and No Dividends During Prior Year							
vs. NYSE-AMEX Index	2.88	0.96	1.84	2.54[c]	1.28	8.38[d]	0.313
vs. Small-Firm Index	2.88	1.75	0.99	1.66[b]	1.14	13.61[d]	0.546

a. All panels for 13 years.
b. Significant at 10 per cent level.
c. Significant at 5 per cent level.
d. Significant at 1 per cent level.

First, we could assume the securities were purchased in mid-December. Unless the mid-December to December 31 average price change was significantly different from zero, the returns presented thus far *were* realizable if you assume it takes no more than two weeks to purchase securities that were thinly traded.[14]

Second, separate regressions (comparable to those of Table III) with assumed purchase date of January 31 could be performed. We did so and found that the mean and excess returns estimated from these regressions, while consistently smaller than those reported in Table III, still supported the conclusion that the NAV criterion provided satisfactory performance.[15]

Third, in Table IV we provide yearly mean return comparisons of the NAV portfolios and the small-firm index. These results show that, in a majority of the years, the NAV portfolios outperformed the small-firm index. The results of this table support the conclusion that the NAV portfolios were, on average, about as risky as the small-firm index and provided significantly higher returns.

Fourth, it is possible that the securities in the NAV portfolios are, on average, even smaller than those in the small-firm portfolio. Table IV compares the returns of the NAV portfolios with those of Reinganum's smallest market value portfolio (MV1).[16] In terms of size of securities, these portfolios are comparable. Reinganum reports a median capitalization for his 18-year period of $4.7 million. The median capitalization of the 10 NAV portfolios is $4.1 million. While we do not know the mean capitalization of the MV1 portfolio, it is clearly *less* than that of the NAV portfolios ($10.7 million), because we know that the median value of Reinganum's MV2 portfolio (his second-smallest portfolio) is $10.8 million. On the other hand, Reinganum reports a mean beta (versus the NYSE-AMEX value-weighted index) of 1.58; the mean of the 10 NAV portfolios' estimated betas is 1.22. It would appear that the NAV portfolios achieved a slightly higher return (22.6 vs. 20.3 per cent) than the MV1 portfolios while being considerably less risky.

Close examination of Tables II, III and IV suggests that this period can be divided into three distinct periods—1970–74, when NAV issues outperformed the relevant benchmarks; 1975–78, when no advantage existed; and 1979–82, when again the NAV issues outperformed the benchmarks. Table IV clarifies this division.

The table indicates that, during 1970–74, the NAV portfolio had considerably higher returns than both the small-firm and MV1 portfolios, while having somewhat higher risk than the small-firm portfolio (a beta of 1.27 as measured against that portfolio) and somewhat lower risk

Table VI NAV Performance by Quintiles of Purchase Price as a Percentage of Net Asset Value

	Mean Returns		*Risk-Adjusted Measures*				
Quintile	R_{pt} *(%)*	R_{mt} *(%)*	α *(%)*	$t(\alpha)$[a] *(%)*	β	$t(\beta)$[a]	R^2
Panel A: vs. NYSE-AMEX Index							
1	2.95	0.96	1.92	2.32[b]	1.23	6.96[c]	0.239
2	2.66	0.96	1.64	2.20[b]	1.17	7.39[c]	0.262
3	2.51	0.96	1.59	2.09[b]	0.89	5.56[c]	0.167
4	2.14	0.96	1.17	1.63	1.07	7.08[c]	0.246
5	1.88	0.96	0.86	1.54	1.18	9.96[c]	0.392
Sample	2.45	0.96	1.46	2.60[b]	1.10	9.23[c]	0.356
Panel B: vs. Ibbotson and Sinquefield Small-Firm Index							
1	2.95	1.75	1.01	1.47	1.17	12.11[c]	0.488
2	2.66	1.75	0.83	1.31	1.08	12.14[c]	0.489
3	2.51	1.75	0.80	1.27	0.97	10.94[c]	0.436
4	2.14	1.75	0.44	0.71	0.97	11.00	0.440
5	1.88	1.75	0.11	0.26	1.02	16.88	0.649
Sample	2.45	1.75	0.67	1.72[a]	1.03	18.70[c]	0.694

a. Significant at 10 per cent level.
b. Significant at 5 per cent level.
c. Significant at 1 per cent level.

than the MV1 portfolio (a beta of 1.39 relative to the NYSE-AMEX index, while MV1 had a beta of 1.58 relative to it).

In contrast, during the 1975–78 period, the returns of the three portfolios were identical. However, the NAV portfolio had a beta relative to the small firm index of only 0.79, while its beta relative to the NYSE-AMEX index was 1.11 (and MV1's was 1.58).

Finally, during the 1979–82 period, the return of the NAV portfolio was far greater than that of the small-firm index, while the portfolio was approximately as risky as the index. Thus, during all three periods, the NAV portfolios provided excess returns after explicit consideration of both risk and size.

Do Earnings or Dividends Matter?

Graham frequently provided his NAV advice with the caveat that it was best to select securities that had positive earnings and that were paying a dividend. To that end, we divided the sample into two groups—a group that had positive earnings over the past year (approximately two-thirds of the firms) and a group operating at a loss. Panels B and C of Table V present the performances of these groups. No clear-cut pattern emerges from an examination of these panels. If anything, firms operating at a loss seem to have slightly higher returns and risk than firms with positive earnings.

We next asked if the dividend criterion improved performance. Panels D and E of Table V present these results. Firms having positive earnings and paying a dividend provided a *lower* mean return than portfolios of firms with positive earnings not paying a dividend. They also had a lower systematic risk. Finally, their risk-adjusted excess returns were not as high as those of the portfolio of firms with positive earnings but not paying dividends. Choosing only firms that have earnings and pay a dividend does not help the investor.[17]

Degree of Undervaluation and Performance

The NAV criterion indicates that the investor is to purchase all securities with a price that is two-thirds or less of NAV. A question of some interest is whether the degree of undervaluation is related to subsequent performance. To examine this, we calculated for each security purchase price as a percentage of NAV. Each year, we divided the population into quintiles according to this variable and analyzed mean returns as well as risk-adjusted performance. The results are presented in Table VI.

The conclusion is clear-cut. Returns and excess returns can be rank-ordered, with securities having the smallest purchase price as a percentage of net asset value having the largest returns. It appears that degree of undervaluation is important: The difference in both mean return and risk-adjusted return between quintiles 1 and 5 is over 10 per cent per year.[18] ■

Footnotes

1. See for example P. Bluestein, "Ben Graham's Last Will and Testament," *Forbes*, August 1, 1977.
2. See H. Oppenheimer, *Common Stock Selection: An Analysis of Benjamin Graham's "Intelligent Investor" Approach* (Ann Arbor, MI: UMI Research Press, 1981) and J. Greenblatt, R. Pzena and B. Neuberg, "How the Small Investor Can Beat the Market," *Journal of Portfolio Management*, Summer, 1981, pp. 48–52.
3. See for example W. Buffet, "Up the Inefficient Market! Graham and Dodd is Alive and Well in Wall Street," *Barrons*, February 25, 1985, pp. 11, 37–40.
4. For OTC securities, the bid price was used throughout. We know of no other commonly available source that provides a more comprehensive listing of publicly available firms. The *Stock Guide* includes all NYSE and AMEX firms as well as a large number of firms traded over-the-counter, on regional exchanges and on the Canadian exchanges. It is unclear whether the *Stock Guide* systematically excludes any set of firms likely to meet the criterion that an American investor would likely look at and trade through a broker. Thus it is reasonable to believe that the tests presented are of the criterion rather than the data source. Finally, *The Stock Owner's Guide* was usually received by December 10, in the library in which the screening was performed, so this procedure would be feasible for an investor. Finally, it should be noted that this screening process was also performed in 1983, but only four securities met the criterion. These were not analyzed.
5. NYSE security returns were obtained from the CRSP tapes, while some AMEX and OTC security returns were obtained from the PDE tape. The remaining security prices for AMEX and OTC firms had to be hand-gathered from standard sources. To keep this project of managable size, only 20 to 30 securities (every third or fourth AMEX or OTC NAV on each of these lists) were used.
6. Graham, in various editions of *The Intelligent Investor*, suggested holding these issues up to 2-1/2 years was appropriate.
7. This procedure likely biases the performance measures of the next section *downward*. Only two firms that filed for bankruptcy actually went bankrupt during the period examined. Others that filed for Chapter XI (such as Interstate Department Stores) later either emerged from bankrupty (Interstate Stores became Toys 'R Us) or were acquired, in both cases invariably becoming far more valuable than the last price we used. Those firms no longer listed in standard sources invariably were either acquired, went private or had subsequent yearly price ranges in Moody's manuals higher than the last price we used.
8. This method of analysis was first introduced by M. Jensen in "The Performance of Mutual Funds in the Period 1945–1964," *The Journal of Finance*, May 1968, pp. 389–416.
9. Please note that in all comparisons with the exchange benchmarks returns *without* dividends are used for both the security return and the benchmark return. The small-firm index was obtained from R. Ibbotson, "Stocks, Bonds, Bills and Inflation 1984 Yearbook" (R. G. Ibbotson Associates, Inc.; Chicago, 1984).
10. The securities evaluated have relatively conservative balance sheets, with very little long-term debt. From that perspective, the estimate risk levels are relatively high; average systematic risk of the portfolios versus the NYSE-AMEX index was 1.10, while relative systematic risk versus the small-firm index was 1.03.
11. However, some care should be exercised in interpreting the results for portfolios of NYSE securities. In several years it would not have been possible to purchase a diversified portfolio of NYSE securities (see Table I). If, for example, the analysis of NYSE securities is confined to only those years when 10 or more securities were available (1973–76 inclusive), much different results emerge:

	R_p	R_m	α	$t(\alpha)$	β	$t(\beta)$	R^2
vs. NYSE-AMEX Index	2.974	0.534	2.43	2.41**	1.40	7.30***	0.537
vs. S&P 500	2.752	0.077	2.82	2.63**	1.34	6.52***	0.481
vs. Small-firm Index	2.974	2.109	0.52	0.83	1.22	15.01***	0.830

12. At the time the author performed the study, certain data for periods subsequent to December 1983 were not available. Consequently, for the December 1981 and 1982 portfolios, holding periods of 24 and 12 months were analyzed.
13. See D. Keim, "Size Related Anomalies and Stock Return Seasonality—Further Empirical Evidence," *Journal of Financial Economics*, March 1983, pp. 3–32.
14. It should be noted that the mean price change for the 645 securities during each appropriate whole month of December was only 0.35 per cent.
15. These tables are available upon request to the author.
16. See M. Reinganum, "Portfolio Strategies Based on Market Capitalization," *Journal of Portfolio Management*, Winter 1983, pp. 29–36.
17. An analysis of the 13 portfolios was also performed. The conclusions about earnings and dividends also hold for them.
18. This is not a size effect. The correlation between size and price as a percentage of NAV is -0.03, which is not significant at the 10 per cent level.