TOWARDS A SIMPLIFIED CAN SLIM MODEL

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Abstract

AAII.com ranks four stock-picking models by Buffet, Graham, Greenblatt, and O'Neil (CAN SLIM) that consistently outperform the S&P 500. Implementing these models requires complicated procedures that an average investor might find challenging. Also, the website does not identify the companies comprising each portfolio or provide statistical analyses. We show how even an unskilled investor can implement these models. Given that AAII.com ranks CAN SLIM the best, coupled with the observed popularity of this model among practitioners and student investment funds, we offer a simpler version of the model, which too consistently outperforms the S&P 500.

1. Introduction

The efficient capital market theory suggests that it is impossible to consistently beat the market portfolio by picking stocks based on publicly available information: the most obvious implication is that if one cannot beat the market portfolio, one might as well join it. Despite the market efficiency, a few "Wizards" have consistently outperformed the market (usually, the S&P 500 Index). Warren Buffet, Benjamin Graham, Joel Greenblatt, and William O'Neil (CAN SLIM) fall in this distinguished group. None of these individuals is privy to the inside information of the firms they hold in their portfolio. So, their extraordinary success must be owing to their unique stock-picking acumen.

The margins of victory of the models over the S&P 500 have varied from one wizard to another. The American Association of Individual Investors (<u>AAII.com</u>), among others, has studied the relative efficiency of the four models. The stock screen on <u>AAII.com</u> gives real-time results of passing companies and breaks down the criteria from the books published on the famous investor model¹. The website provides the reader with a list of criteria and then displays the results without the ability to replicate them.² The first objective of this paper is to show how ordinary investors can use these models with relative ease to compare their efficiencies.

The CAN SLIM appears to be the best-performing Wizard strategy on the AAII stock screen. Also, the CAN SLIM system has been widely used among practitioners and student investment funds.³ Despite

¹ For example, Jack Schwager, Market Wizards, 1989 New York Institute of Finance.

² When filtering forward, the screen shows the returns over the last three or five years or one year but does not show the passing companies and does not allow for statistical analysis.

³ CAN SLIM's parent company, Investor's Business Daily, which the Wall Street Journal recently acquired, publishes a list of the top 50 (IBD 50) following the CAN SLIM criteria. The list has claimed to beat the market over the last several years and has become so popular that it is now an exchange-traded fund (ETF). Furthermore, student funds have found success using the model. For example, the College of Business at East Carolina University ran a study using the CAN SLIM system and beat the

the popularity of CAN SLIM, an average investor will likely find its execution difficult. Our second objective is to propose a much friendlier and shorter version of the model, the Adjusted CAN SLIM method (hereinafter, ACS). Our work will help make implementing these models easier to average investors, student-managed funds, and smaller institutions using tools for under \$100 a month.⁴

The paper proceeds along the following lines. Section II describes the four Wizard models as well as the ACS method we propose. We discuss the methodology in Section III and the results in Section IV. Section V concludes.

2. Details of the Four Models

2.1 CAN SLIM

The CAN SLIM acronym is discussed in the book O'Neil (2002, 1995). The letters stand for the investing criteria such as current quarterly earnings (C), annual earnings (A), new products, new management, new highs (N), supply and demand (S), leader, or laggard (L), institutional sponsorship (I), market direction (M).

The system breaks down individual criteria for each letter in the acronym and how it should relate to buying stock. The "C" and "A" letters refer to quarterly and annual growth rates; the higher, the better. "N" stands for catalysts for growth or momentum. "S" refers to quarterly or annual sales growth (the higher, the better) or supply and demand, such as buying stocks with high relative strength. "L" stands for the position of stock within the industry and the industry's position in the market. The goal is to buy leading stocks in leading industries. "I" stands for institutional sponsorship, large pension fund, and institutional investing. This would refer to following smart money or large shareholders. "M" stands for market direction and means to buy when the market is in an uptrend or expansion period. These are all challenging criteria to screen for and automate, which makes replication and simulation difficult for academic study. After meeting the above fundamental and checklist criteria, the study also looks for stocks from O'Neil proper chart bases.

In summary, the CAN SLIM system recommends making investment decisions not purely based on momentum but focusing on stocks with innovative products, services, and ideas, from properly timed chart patterns, with explosive growth in earnings and before their price is run up⁵. According to O'Neil, no one in their right mind buys stocks that have gone through excessive price increases following extreme relative strength.

2.2 Graham

Benjamin Graham illustrates the method for value investing initially described in 1949. In addition, several publications further elaborate on the technique.⁶ Graham describes buying growth stocks as stocks with steady track records of increasing earnings per share (EPS) and high earnings per share well above the norm for common stock. This is related to the CAN SLIM method of investing but is too

market from 1998 to 2005.³ The College of Business at the University of Southern California (USC) also uses the CAN SLIM method by trading the IBD 50. North Coast Asset Management (northcoast.com) manages a CAN SLIM portfolio which is, to our knowledge, the only investment fund created around a famous investor strategy.

⁴ It's \$84/month using portfolio123.com backtest.

⁵ The hand-collected analysis of CAN SLIM founder Bill O'Neil shows stocks improve 100% or more after meeting the CAN SLIM criteria.

⁶ They include the one by Warren Buffet in the 1976 edition of Financial Analyst Journal titled "Benjamin Graham." Further, Buffet explains investing strategies of Graham and Doddsville in "The Superinvestors of Graham-and-Doddsville."

risky for defensive investing. Graham discusses buying common stock as buying in low markets and selling in high markets, finding bargain issues, selectively choosing growth stocks, and buying special situations. This sounds relatable and is similar to CAN SLIM.

The Enterprising Investor model suggested by Graham is more relatable to the CAN SLIM method and involves buying bargain companies with a long dividend track record and strong earnings stability. The strategy aims to find low price-earnings (P/E) ratio stocks. This is something the CAN SLIM method ignores but is critical to Graham. These stocks are considered bargains. Graham also discusses finding stocks with robust financial conditions. This involves picking stocks with a current ratio of at least 1.5 and long-term debt no higher than 100% of current assets. Graham recommends stocks with at least a 5-year track record of positive earnings for earnings per share. Lastly, Graham recommends buying stocks with a Price-to-Book-ratio (P/B) of 120% of tangible book value.

3.3 Buffett

Buffet's methodology is somewhat similar to Graham's. The Buffet factors include a strong uptrend in earnings per share, high return on equity, high sustainable earnings per share, low debt to assets compared to the industry, net profit margin and net operating margin better than the industry, and better return on equity than the industry.

3.4 Greenblatt

Greenblatt is famous for the 'Magic Formula' of investing. The formula is based on two sorts, one for value and another for quality. The purpose is to find quality companies that are undervalued. Stocks are selected with the following characteristics: liquid stocks not trading on the over the counter (OTC) market, a market cap of at least \$50 million, no ADR stocks (the U.S. only), no financial companies, utility companies, or Real Estate Investment Trusts (REITS), and high values of 5-year return on investment. Appendix I details each strategy, the definition of the variable, and the corresponding code for replication based on Portfolio123.com.

We make additional efforts to make implementing these models friendlier. First, we remove limiting factors that would cause the model to hold only a few stocks at a time and give volatile results. For example, the Buffet model's screening process includes a strong uptrend in earnings per share, high return on equity, high sustainable earnings per share, low debt to assets compared to the industry, net profit margin, and net operating margin better than the industry, and better return on equity than the industry. We modify the Buffet model requirements to a) the stocks being in the top 75% of earnings per share (EPS) compared to the industry, b) EPS better than the last three years compared with the last seven, and c) EPS having grown within the past year and past seven years. Appendix II provides the details of such modifications. Second, to help investors better understand some of the technical words used in this paper, we provide a list of glossaries in Appendix III.

3. Methodology

3.1 Procedure

Following AAII's back-testing procedure, we scan each month for the list of passing stocks and carry the portfolio for the next trading day⁷. We use data from the fact set to screen for the positions and plug in the criteria for screening through a portfolio management tool from portfolio123.com, which uses point-in-time data from FactSet. We combine the rules from AAII.com with what is already in

⁷ We take the positions at the average of the next trading day's high, low, and 2x close and incur no carrying cost or transaction costs.

portfolio123.com for implementing the four models. We follow the steps prescribed by each 'Wizard'-Buffet, Graham, O'Neil, and Greenblatt and compare their performances.⁸

For benchmarking purposes, we select annual return, total return, standard deviation (for risk measurement), Sharpe ratio (for risk-adjusted returns), and alpha and beta. These are commonly used benchmarking measures (Neely et al., 2014).

AAII.COM's 'Wizard' model site suggests buying stocks that pass a fundamental filter each month and dropping stocks from their portfolio that no longer pass the filter. This is known as rebalancing. For each of our famous investor models, we modify the number of filters to aggregate any difference between the AAII.com website, the books from the famous investor models, and the screening tool from portfolio123.com (see Appendix II)⁹.

According to AAII.com, the CAN SLIM model performs best over the January 1998 – March 2023 sample period. We shorten their sample period to match the maximum data available from Portfolio123.com (January 1999-March2023). Shortening their sample involves recomputing the total return for each model by downloading the data and recomputing the cumulative return across the new sample. Doing this leads to a slightly different ranking of the models. For example, their site for the new sample shows that Graham outperforms the CAN SLIM model. Our sample consistently gives CAN SLIM the top ranking.

4. Results

We report the results in the two sub-sections below. In the first section, we compare the efficiency of models relative to each other and the INDEX portfolio—the four models discussed above. The second section explains the adjusted CAN SLIM model (ACS) and compares its results with the S&P500 index.

For a fee, AAII.com produces a list of the passing stocks from each screen. There are no legal issues with producing the information on a paid or free document.

4.1 Comparing the Wizards

Figure 1 depicts the models' performances (including the market index) over the period from January 2, 1999, through March 2023. All models begin with an original investment of \$100 (000's). All four Wizard models overwhelmingly outperform the market index. In terms of performance ranking, CAN SLIM is at the forefront with the ending portfolio value of \$16,601.55, with Buffet being the second (\$7,173.34) and the third being nearly tied between Graham (\$1,583.81) and Greenblatt (\$1,367.08).

Table 1 compares five models, four Wizard models, and the S&P 500 across several performance measures. In addition to annualized returns, the table provides Sharpe Ratio and alpha and beta; Max Drawdown is defined as the lowest peak to trough on the equity curve, and Sharpe Ratio stands for the return from the investment over the treasury bill divided by the investment standard deviation. CAN SLIM ranks as the best performer among the five models. CAN SLIM has the highest annualized returns. In addition, it has the highest alpha along with the lowest beta.

Although CAN SLIM ranks the best, the full implementation of the model is still complicated for an average investor. To simplify the CAN SLIM strategy further, we suggest an adjusted CAN SLIM method

⁸ Investors that want to implement the screen in real-time would buy the list of passing companies and rebalance monthly.

⁹ AAII does not consider transaction costs. We do not either.

(ACS) for such investors. We do not expect the ACS model to perform as well as the fully executed CAN SLIM model. We will consider the ACS model successful if it can beat the S&P 500.



Figure 1: Famous Investor Growth Models

Note: The Figure charts the investment growth of four Wizard models and the S&P 500 from January 2, 1999, to March 30, 2023. The starting investment in each portfolio is \$100.00.

Table 1: Comparing Efficiencies

	Buffet	Graham	CAN SLIM	GREENBLATT	S&P 500
Total Return	7273.14%	1683.81%	16550.93%	1472.21%	405.10%
Annualized Return	19.42%	12.63%	23.50%	12.04%	6.91%
Max Drawdown	-49.44%	-51.84%	-55.08%	-56.77%	-55.19%
Sharpe	0.60	0.73	0.76	0.63	0.39
Std Dev	33.19%	15.94%	30.62%	18.66%	15.41%
Beta	0.80	0.90	0.69	1.08	1.00
Alpha	16.04%	6.46%	20.99%	5.31%	0.00%

Note: This table compares five models, four Wizard models, and the S&P 500 across several performance measures. Max Drawdown is the lowest return from peak to trough, and Sharpe Ratio is the excess return divided by the standard deviation. Alpha and beta are excess return and slope coefficients on the regression of the stock returns explained by the market return.

4.2 The ACS Model

We simplify the CAN SLIM model by using only the factors related to price and earnings per share. While it seeks to mimic the full-scale CAN SLIM model results, the ACS model relies only on a simple small-scale version of the key component factors of CAN SLIM (earnings and price). We call it the ACS model because it is the acronym for adjusted CAN SLIM (A C S). Appendix III provides details of the ACS model. We do not provide a shortened version of other models, but it would be an interesting avenue for future work.

Figure 2 portrays the performances of the ACS model versus the S&P 500 and testifies to the consistent superiority of the ACS model.



Figure 2: Returns on S&P 500 and the ACS Model

Note: The Figure charts the investment growth of the ACS model and the S&P 500 from January 2, 1999, to March 30, 2023. The starting investment in each portfolio is \$100.00.

Table 2 is similar in construction to Table 1 and compares the ACS model with the S&P 500 across several performance measures. The results show that, from January 1999 through March 2023, the ACS portfolio earned a 3,558.48% return compared to the S&P 500's 405.10%. Additionally, the ACS portfolio has a lower beta and higher alpha than the market index. Thus, Figure 2 and Table 2 confirm the superiority of the ACS model to the market index.

Table 2: Comparing Performances: ACS vs. S&P 500

	ACS	S&P 500
Total Return	3558.48%	405.10%
Annualized Return	16.01%	6.91%
Max Drawdown	-47.01%	-55.19%
Sharpe	0.97	0.39
Std Dev	15.04%	15.41%
Beta	0.71	1
Alpha	10.87%	0.00%

Note: This table compares the ACS and S&P 500 models across several performance measures. Max Drawdown is the lowest return from peak to trough, and Sharpe Ratio is the excess return divided by the standard deviation. Alpha and beta are excess return and slope coefficients on the regression of the stock returns explained by the market return.

5. Conclusions

The efficient capital market theory suggests that it is not possible to consistently beat the market portfolio by picking stocks based on publicly available information. However, a few "Wizards" have consistently outperformed the market (specifically, the S&P 500 Index). Warren Buffet, Benjamin Graham, Joel Greenblatt, and William O'Neil fall into this distinguished group. None of these individuals is privy to the inside information of the firms they hold in their portfolio. So, their extraordinary successs must be owing to their unique stock-picking acumen.

AAll.com, the official website of the American Association of Individual Investors, implements these models based on the criteria espoused by the wizards and provides real-time results on their performances (i.e., the last five-, three-, and one-year returns). An average investor is likely to find replicating these models rather tricky. In addition, the website does not identify the companies comprising each portfolio or provide statistical analyses. This paper demonstrates how ordinary investors can use these Wizard models relatively easily.

Upon analyzing the four models, AAII.com places O'Neil's CAN SLIM model at the top. Our analyses of these models also arrive at the same conclusion. The observed superior performance of CAN SLIM has contributed to its popularity among practitioners and student investment funds. This model, however, requires several steps that might be difficult for average investors to execute, thus prompting us to suggest and implement a shorter and friendlier model, which we call Adjusted CAN SLIM (ACS). We demonstrate that the ACS model consistently outperforms S&P500. The procedures outlined in this paper will be helpful for individuals who want to manage their portfolios with limited time, expertise, and resources.

References

AAll.com, the Website of The American Association of Individual Investors.

- Buffett, W. (1976). Benjamin Graham (1894–1976). Financial Analysts Journal 32.6, 19-19.
- Buffett, W. (1984). The super investors of Graham-and-Doddsville. Hermes, 4-15.
- Graham, B (2005). Intelligent Investor: The Classic Text on Value Investing. Harper Collins
- Han, Y., Yang, K., & Zhou, G. (2013). A new anomaly: The cross-sectional profitability of technical analysis. Journal of Financial and Quantitative Analysis, 48(5), 1433-1461.
- Neely, C. J., Rapach, D. E., Tu, J., & Zhou, G. (2014). Forecasting the equity risk premium: the role of technical indicators. Management Science, 60(7), 1772-1791
- O'Neil, W. J., & Ryan, C. (2002). How to make money in stocks: A winning system in good times or bad (p. 266). New York: McGraw-Hill.
- O'Neil, W. J. "How to Make Money in Stocks: A Winning System in Good Times or Bad." (1995).

Schwager, J. D. (1989). Market Wizards. New York Institute of Finance.

Appendices

Appendix 1. Four Wizards' Stock Screening Models

MODEL		STEPS	DEFINITION OF VARIABLES	PORTFOLIO 123.COM
Buffet	1	Stocks in the top 75% of EPS compared to the industry.	EPS Excluding Extraordinary Items is earnings per share, including all- expense except those deemed extraordinary.	Frank("EPSExclXorGr%5Y",#industry)>25
	2	Annual EPS has been better in the last three years than the last 7.	Growth=Earnings Per Share value taken straight out of the SEC filing with the most recent three-year and 7- year values. The 3-year value is the average growth over the last three years, and the seven years is t.	EPSExclXor(2,ann)>=EPSExclXor(6,ann)
	3	EPS grew over the past year and the past seven years.	EPS Growth Last year = % Change in EPS from the previous year. EPS Growth in the last Seven years is a %Change in EPS from 7 years ago.	EPSExclXor(0,ann)>EPSExclXor(1,ann)
	4	ROE last 12 months better than the industry median	ROE = Return on Equity divided by the Average Common Equity as a percentage. Average Common Equity is the average of the Common Equity at the beginning and the end of the period. Median = The trailing 12-month return compared to the median of the industry	EPSExclXor(0,ann)>EPSExclXor(6,ann)
	5	ROE 5 year-average better than the industry	Average ROE = each year's ROE for the last five years added and divided by five. The industry is value for each stock trading in the same industry.	ROE%5YAvg>FMedian("ROE%5YAvg",# industry)
	6	Sustainable growth rate in the top 15% compared to industry peers.	Sustainable Growth = Trailing twelve- month Retention Rate multiplied by the trailing twelve-month Return on Equity, divided by 100.	Frank("SusGr%",#industry)>85
	7	Debt to equity lower than the industry	Debt To Equity = Total Debt divided by Total Common Equity for the same period.	DbtTot2EqQ <= DbtTot2EqQInd
	8	Net profit margin higher than the industry	Net Profit Margin (NPM) = NPM divided by Total Revenue for the period expressed as a percentage above value for industry value	NPMgn%TTM >= NPMgn%TTMInd
	9	Operating profit margin higher than the industry	Operating Profit Margin = percent of revenues remaining after paying all operating expenses. It is calculated as operating Income divided by Total Revenue	OpMgn%TTM >= OpMgn%TTMInd
MODEL		STEPS	DEFINITION OF VARIABLES	PORTFOLIO 123.COM
Graham	1	No thinly traded over- the-counter (OTC) stocks. Choose more liquid stocks.	Over the Counter = Least liquid stocks.	Universe(NOOTC)
	2	Current ratio is at least 1.5	Current Ratio = Total Current Assets divided by Total Current Liabilities for the same period.	CurRatioQ>=1.5
	3	Long-term debt is less than 110% of working capital.	Long-term debt = All debt that is due more than 12 months after the date of the latest balance sheet,	DbtLTQ<=(CurAstQ- CurLiabQ)*1.10
	4	Last four quarters of EPS positive	Positive EPS = EPS above 0 for each of the last four quarters	EPSExclXor(0,qtr)>0 and EPSExclXor(1,qtr)>0 and EPSExclXor(2,qtr)>0 and EPSExclXor(3,qtr)>0

Annual EPS grew over 6 the past year and EPS Growth = EPS this year above EPSExclXor(0, a	ann)>0 and ann)>0 and ann)>0 and ann)>0
past five years. I last year's and 5 years ago. and EPSExcIXc	ann)>EPSExclXor(1,ann) or(0,ann)>EPSExclXor(4,ann)
Company has paid 7 dividends within the past year Dividends = Dividends per share in the previous year. DivPSTTM>0	
MODEL STEPS DEFINITION OF VARIABLES PORTFOLIO 12	3.COM
CAN SLIM Percentile Rank = Percent of Institutional Ownership in relation to other stocks in the universe. Frank(" Inst%O 1 institutional ownership between 10 and 50 Institutional Ownership is the number of institutional investors, including large firms and pension funds, who buy the stock. Frank(" Inst%O	wn",#all,#desc)>=10 and wn",#all,#desc)<50
EPS growth (latest 2 qtr.) Percentile rank in top 35% Percentile Rank = EPS growth within the top 35% of available stocks Frank(" EPSExc	:IXorGr%PYQ")>=65
Share price % gain in 3 last 240 trading days ranks in the top 35% of available stocks over roughly last year. Share Price Gain = Share Price Percent Gain in the top 35% of available stocks over roughly last year.))/Close(240)")>=65
Distance between the current price and the 12-month high ranks in top 50%	e/ PriceH")>=50
MODEL STEPS DEFINITION OF VARIABLES PORTFOLIO 12	3.COM
Greenblatt Choose liquid stocks not trading over the counter (OTC). Over the Counter = Least liquid stocks. Universe(NOO	JTC)
2 Market cap is at least Market Cap = Share Price x Shares MktCap>=50 \$50 million. Outstanding.	
Non-U.S. companies = American	R)=false
ADR companies trading on a U.S. exchange)	
3 J.S. Stocks only, no Deposition receipts (toreight companies trading on a U.S. exchange) Universe(\$ADF 4 No financial or utility companies or REITs Financial sector, Utility Sector, Real estate Investment Trusts !GICS(FINANC) and !GICS(UTILIT) and
3 J.S. stocks only, no Depending reacipits (toreight companies trading on a U.S. exchange) Universe(\$ADF 4 No financial or utility companies or REITs Financial sector, Utility Sector, Real estate Investment Trusts !GICS(FINANC !GICS(reoper) 5 investment is in the top 35% Return on Investment = This value is the trailing twelve-month Income After Taxes divided by the average total long-term debt and Stockholder's Equity, expressed as a percentage. Frank(" ROI%5%) and !GICS(UTILIT) and YAvg")>=65
3 J.S. stocks only, no Depending iterating in companies trading on a U.S. exchange) Universe(\$ADF 4 No financial or utility companies or REITs Financial sector, Utility Sector, Real estate Investment Trusts !GICS(FINANC !GICS(reoper) 5 5-year return on investment is in the top 35% Return on Investment = This value is the trailing twelve-month Income After Taxes divided by the average total long-term debt and Stockholder's Equity, expressed as a percentage. Frank(" ROI%5" MODEL STEPS DEFINITION OF VARIABLES PORTFOLIO 12) and !GICS(UTILIT) and YAvg")>=65 3.COM
33.5.5.5 control of hy, heDepending interesting interest	2) and !GICS(UTILIT) and YAvg")>=65 3.COM 65Y>=15And 6PQ > 25

MODEL		AAII.COM	OUR MODIFICATION
BUFFETT	1	Market capitalization (price * shares outstanding) of greater than or equal to 1 billion dollars.	No minimum cutoff market capitalization
	2	Positive operating income for the trailing twelve months and each of the last seven years	Not considered
	3	ROE greater than 15%	Return on equity over the last 12 months (also last five years) is better than the industry median.
	4	Current operating profit margin greater than the industry's current median operating margin	The current operating profit margin greater than that of the industry over the last year.
	5	The current net profit margin exceeds the industry's median operating profit margin.	Net profit margin better than the industry's median last year.
	6	Low price to free cash flows	Not considered
	7	EPS growth over the last year and seven years; a sustainable growth rate within the top 15% of the industry peers.	Not considered
MODEL		AAII.COM	OUR MODIFICATION
GRAHAM	1	Price-earnings ratio among the lowest 25%	Not considered
OKANAM	2	Firms that intend to pay a dividend next year	Firms that paid a dividend last year
	3	EPS for the last 12 months is more significant than the previous five years.	EPS growth over the last 12 months and last five years
MODEL		AAII.COM	OUR MODIFICATION
CAN SLIM	1	Buy stocks with earnings per share up at least 20% in the most recent quarter compared to the same quarter one year prior.	EPS growth in the latest quarter is in the top 35% of available stocks
	2	Buy stocks with a growth rate in earnings in the most recent quarter and the same quarter one year prior greater than the growth rate in earnings between two quarters ago and the same quarter one year prior.	Not considered
	3	Buy stocks with a growth rate in sales of at least 25% in the most recent quarter compared to the same quarter one year prior.	Not considered
	4	Buy stocks with EPS from continuing operations for the latest quarter greater than zero.	Not considered
	5	Buy stocks with EPS from operations in the last 12 months greater than earnings per share for the previous year.	Not considered
	6	Buy stocks with earnings per share from continuing operations for the last year greater than earnings per share from operations two years ago.	Not considered
	7	Buy stocks with earnings per share growing more two years ago than three years ago and earnings growing three years ago more than four years ago.	Not considered
	8	By stocks with consensus earnings for the current year greater than diluted earnings for the last year.	Not considered
	9	By stocks with a three-year average growth rate greater than or equal to 25%.	Not considered

Appendix II. Modification of the filters employed at AAII.com.

	10	Buy stocks that have relative strength over 52 weeks greater than 80	Not considered
	11	Buy firms with at least ten institutional shareholders.	Not considered
	12	Buy firms where the number of shares purchased by institutions over the last quarter is greater than or equal to the number sold over the previous quarter.	The percentage of institutional ownership is between 10 and 50 percent.
MODEL		AAII.COM	OUR MODIFICATION
GREENBLATT	1	Buy stocks with EBIT/EV above the risk-free rate. The higher, the better.	Not considered
	2	The higher the return on invested capital, the better the investment	We buy the top 35% of companies ranked by return on invested capital.
	3	Minimum market cap between 50 million and 5 billion	We use a cutoff of 50 million for the market cap
	4	Rank stocks on return on capital (highest to lowest)	Not considered
	5	Next, rank on the ratio of EBIT to EV (highest to lowest)	Not considered
	6	Buy 20 to 30 stocks by purchasing five to seven every few months.	We buy all passing stocks.
	7	Hold for one year	We rebalance monthly

Appendix III. Glossary

Term	Definition
ADR	American Depository Receipts
Backtesting	Backtesting involves following the historical buy and sells rules with data as it occurred at that point in time and recording the performance.
Chart Bases	Chart bases include a pattern, such as a trading range breakout, that would signal a low-risk entry to buy the stock.
Chart Patterns	Chart patterns include double bottom and inverse head and shoulders (see Lo et al. 2000).
Double Bottom	A chart pattern indicating a reversal in stock prices from a selloff. The pattern involves a decline, rebound, another decile to a similar level, and a final rebound to end the falling of stock prices.
Equity Curve	The equity curve involves the plotting of a real money investment (e.g., growth of \$1) from investing in the fund returns.
High Relative Strength	Stocks that have been advancing by more than the market or have a high accumulation rating or a large number of funds flowing into the stock.
Index	INDEX is the S&P 500 Index and is used as our benchmark for success
Special Situations	The payout is independent of stock market factors and is a one-time event.