Journal of Business, Economics & Finance
Year: 2013 Volume: 2 Issue: 4

EXAMINING THE PERFORMANCE OF A VALUE INVESTING HEURISTIC: EVIDENCE FROM THE S&P/TSX 60 FROM 2001-2011

Eben Otuteye[1], Mohammad Siddiquee[2]

[1]Faculty of Business Administration, University of New Brunswick, Fredericton NB, Canada. E-mail: Otuteye@unb.ca.

[2]Faculty of Business, University of New Brunswick, Saint John, NB, Canada. E-mail: m.siddiquee@unb.ca.

KEYWORDS

Value investing, heuristic, value premium, skewness.

ABSTRACT

Heuristics are useful practical tools for cutting through the complex confluence of uncertainty, limited information and bounded rationality. We develop a simple heuristic for making value investing decisions based on profitability, financial stability, susceptibility to bankruptcy, and margin of safety. As an empirical test, we apply this heuristic to the S&P/TSX 60 group of companies of the Toronto Stock Exchange. Analysis of the data shows that the portfolio that is picked from the S&P/TSX 60 by the heuristic has desirable characteristics required of value portfolios. Thus the heuristic can be viewed as a reliable set of value investing decision criteria.

1. INTRODUCTION

Value investing is an investment paradigm proposed by Benjamin Graham (Graham and Dodd, 1934; Graham, 1949). According to Graham and Dodd (1934), "An investment operation is one which, upon thorough analysis, promises safety of principal and a satisfactory return. Operations not meeting these requirements are speculative."[1] There are three essential components of this definition to take note of. First, an investment must be based on thorough analysis; second, it should have an assurance of safety of principal; third, it should entail an expectation of satisfactory return. Benjamin Graham further proposed the concept of "margin of safety" as the cornerstone principle for operationalizing this definition of investment. Margin of safety is a measurement of the degree to which an asset is trading at a discount to its intrinsic value. While there is no standardized method for making value investing decisions, Benjamin Graham's definition of investment and the accompanying philosophy of investment enable value investors to make their investment decisions in a consistent manner. The purpose of this paper is twofold. First, it presents a stock analysis system, based on value investing principles, for making investment decisions.[2] Secondly, we carry out an empirical validation of the system using the Toronto Stock Exchange S&P/TSX 60 Index from January 2001 to May 2011. We propose a simple heuristic that incorporates the key tenets of value investing as propounded by Benjamin Graham. The heuristic is designed to identify and select common stock of companies with three salient features: that they

[1]p.54 of Graham and Dodd (1934); see also Graham (1949), p 3.

[2] The ratioanales for the choice of metrics in our stock selection system is provided in details in the paper, "Overcoming Cognitive Biases: A Heuristic for Making Value Investing Decisions," forthcoming in the *Journal of Behavioral Finance*. (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2297170)

(i) have good history and prospects of continued profitability, (ii) are financially stable, and (iii) are priced significantly below their intrinsic values. We hypothesize that a consistent and disciplined application of such a heuristic will generate common stock portfolios whose returns will outperform the market average over long periods of time. To facilitate easy discussion, we call this heuristic the O-S heuristic.[3]

We did the study on stocks that are members of the S&P/TSX 60. We reckon that since the S&P/TSX 60 index is made up of well established companies, if the O-S heuristic demonstrates value added in that group then it is even more likely to demonstrate value added when it is applied to the entire market. Focusing on this group of companies is consistent with Benjamin Graham's (1949) recommendation to the defensive investor that "each company selected should be large, prominent, and conservatively financed" (p. 65).

The contribution of this paper is threefold. First, it attempts to give some clarity as to what constitutes value investing when it comes to implementation. Second, it contributes to the discussion on the sources of the value premium – the observation that portfolios formed on the basis of value criteria tend to outperform other portfolios. A common explanation of this observation is that value portfolios assume higher risk than their counterparts and that is why they earn higher returns. However, evidence from empirical studies suggests that risk explanations may not be supported by the data but rather behavioral explanations could hold the key to understanding the value premium. The third contribution of this paper is that it demonstrates the simplicity and power of value investing by showing how a simple heuristic based on very familiar financial ratios and data from public sources can be used to make effective portfolio selection decisions.

2. EVIDENCE AND EXPLANATION OF THE VALUE PREMIUM

Academic research has shown consistently that value investing outperforms other investment styles.[4] Benjamin Graham (1976) showed in a 51-year performance study (1925-1975) that the value approach consistently resulted in a 15 per cent or better per annum return, which is twice the record of the DJIA for that period. Buffett (1984) tracked the performance of nine successful investment funds,[5] that were managed using value investing principles learned either directly or indirectly from Benjamin Graham. Out of these funds, seven investment partnerships demonstrated long-term returns with a double-digit lead over the market average. Even the pension funds, expected to have more conservative portfolio mix, showed 5 per cent to 8 per cent return above the market.

Oppenheimer (1984) selected stocks listed on NYSE and AMEX from 1974 to 1981 using Graham's criteria and reported that an investor who had used Graham's criteria would have achieved a mean annual return of 38 per cent against the CRSP Index of NYSE-AMEX securities return of 14 per cent. Ibbotson and Riepe (1997) documented the performance of various value andgrowth indexes, such as Wilshire, Frank Russell, S&P/BARRA, and Barclays Global Investors and found that regardless of capitalization, every value index provided higher returns with less volatility than their growth counterparts. Dhatt, Kim, and Mukherji (1999) confirmed that value

[3] O-S represents the initials of the last names of the authors.
[4] See, for example, Athanassakos (2011); Chan and Lakonishok (2004); Fama and French (1998).
[5] WJS Limited Partners; TBK Limited Partners; Buffett Partnership Ltd.; Sequoia Fund Inc.; Charles Munger Ltd.; Pacific Partners Ltd.; Perlmeter Investments Ltd.; Washington Post Master Trust; and FMC Pension Fund.

stocks during 1979-1997 outperformed growth stocks by 5.28 to 8.40 percentage points a year and had lower standard deviations and lower coefficients of variation than growth stock. Kwag and Lee (2006) show that investors, on average, always benefit from value investing regardless of economic conditions (both expansion and contraction periods), but benefit more when they pursue a value investing strategy during a period of economic contraction.

The existence of value premium is not confined to the US market. Fama and French (1998) confirmed that value premium exists in the twelve major EAFE markets (Europe, Australia, and the Far East). Chan and Lakonishok (2004) summarized the various explanations of the superior performance of value over growth stocks, and provide some new results on the profitability of value strategies based on an updated (incorporating data through 2001) and expanded sample (included developed markets outside the United States). Using a short sample period (10 years), Capaul, Rowley, and Sharpe (1993) confirmed that the value premium is pervasive in international stock returns. Chan, Hamao, and Lakonishok (1991) documented a strong value premium in Japan. Using four valuation ratios (i.e. P/E, price to cash flow, P/B and Dividend yield), Bauman, Conover and Miller (1998) found that value stocks generally outperformed growth stocks both on total-return and risk-adjusted basis in 21 countries for a 10-year period. Chen and Zhang (1998) documented that value stocks offer reliably higher returns in the US, Japan, Hong Kong and Malaysia, but not in the high-growth markets of Taiwan and Thailand. Capaul et al. (1993) analyzed value (defined as low price/book ratios) and growth (defined as high price/book ratios) for six countries over the period from January 1981 through June 1992 and confirmed that value stocks outperformed growth stocks on average in each country during the period studied, both absolutely and after adjustment for risk.

Although academia is in agreement that value stocks outperform growth stocks, much less consensus exists about the underlying reasons behind this superior performance. For example, Fama and French (1992, 1996) reported that higher returns of value stocks relate to their higher levels of risk because these stocks are more prone to financial distress. Chen and Zhang (1998) concluded that value stocks are riskier because they are usually firms under distress, have high financial leverage, and face substantial uncertainty in future earnings. Just like the Fama-French model, the findings of Rozeff and Zaman (1998) also characterize growth stocks as less risky and value stocks as more risky.

However, these explanations of value premium are in contradiction to some other studies like Lakonishok, Shleifer and Vishny (1994) and Ibbotson and Reipe (1997). For example, Lakonishok et al. (1994) suggested that investors' cognitive biases and agency costs of professional investment management were the reasons for the superior performance of value portfolios. La Porta, Lakonishok, Shleifer and Vishny (1997) report that the superior return of value stocks is due to the expectational errors made by investors. Chan and Lakonishok (2004) documented that the market betas of both the value and glamour portfolios are very close to each other, so systematic risk is not an obvious suspect for explaining the value premium. Chan, Karceski, and Lakonishok (2000) examined the relative performance of value and growth stocks in the late 1990s and concluded that only a behavioral thesis can explain the recent relative stock price performance of the equity asset classes, not the rational-asset-pricing hypothesis or the new-paradigm thesis.

To our knowledge, only two studies (Athanassakos, 2009, 2011) have been conducted so far to test the existence and pervasiveness of value premium in the Canadian market. Athanassakos (2009) documented a consistently strong value premium using Canadian data from 1985-2005, which persisted in both bull and bear markets, as well as in recessions and recoveries. Unlike Fama and French (1992), Athanassakos (2009) showed that value portfolios have lower betas than the

growth portfolios, regardless of whether sorting is based on P/E or P/BV. However, he used the risk argument to explain the value premium like Fama and French (1992), Chen and Zhang (1998) and Rozeff and Zaman (1998) in the sense that higher returns observed from value portfolios is due to higher risk inherent in those portfolios. On the contrary, Athanassakos (2011) showed that value analysis (what value investors do) does add value and furthermore that value portfolios are not riskier than their non-value counterparts.

The higher risk explanation of value premium may be plausible if "value" is narrowly defined as low P/E or other similar price ratios, such as low P/B or low price to cash flow ratios. However, we do not think this is a valid explanation for the value premium since stocks with poor performance in terms of earnings, cash flow or sales growth will not fulfill the criteria used by true value investors and thus would not normally be among the stocks that value investors will select for their portfolios. Value investors do not select stocks solely on the basis of low P/E or other price ratio. In fact such an approach to investment will be regarded as antithesis to value investing because it does not meet Benjamin Graham's requirement of "thorough analysis." A true value investor may buy a stock that is momentarily experiencing a downturn in earnings but not one with a persistent past history of poor earnings. Chan et al. (2000) argued that the high prices of growth stocks did not reflect their fundamentals; rather, they reflected investors' rosy expectations of future growth and of the companies' ability to sustain growth.

3. A HEURISTIC FOR MAKING VALUE INVESTING DECISION

We develop a simple heuristic for making stock selection decisions. The philosophical underpinning of the O-S heuristic is that it is possible to create a simple value investing decision making tool using criteria based on earnings potential, financial stability, and fair valuation. Furthermore, application of this tool will help the user to develop a consistent and disciplined approach to value investing decision making that will yield very satisfactory results. We hypothesize that portfolios that are created from this heuristic will yield returns above the market average. The market return is the average returns from two sets of portfolios: those with above average returns and those with below average returns. We reason that if the stock selection criteria of the O-S heuristic are carefully applied, the resulting portfolios should be among the group with above average returns.

The way the O-S heuristic works is that prospective stocks that an investor is interested in will be subjected to a set of screening criteria. At the end, the investor will make one of three decisions: (i) reject the stock, (ii) put it on a watch list, or (iii) buy it. If a company is not investment worthy then the decision to reject it will be made immediately at the stage that the screening criteria point to that. A company will be put on the watch list if all the financial metrics are sound as revealed by the screening criteria but the stock price fails to meet the margin of safety criterion. Failing the margin of safety criterion means either the stock is selling above the intrinsic value or there is not sufficient margin of safety to classify it as a safe investment. A recommendation to buy a stock means that all the financial metrics are sound and the "price is right" (i.e. it is selling at a price that gives a good margin safety, as explained below). There are two main parts to executing the heuristic: the preliminary stock selection criteria (referred to as the "5-Minute QuickScan") and the full set of value investing criteria. The two parts are presented in the Appendix: Table 1 and Table 2 respectively.

The 5-Minute QuickScan is a preliminary screening tool to determine if a company is worth taking through the entire screening criteria. It is essentially a device for narrowing down the number and types of companies that we will process through the full set of value investing screening criteria.

Needless to say, an investor is only interested in good quality stocks. The 5-Minute QuickScan is the tool by which we focus our analysis only on companies that meet some minimum quality standards.

Companies that fulfill all these preliminary screening criteria will now be subjected to the full set of value investing criteria in Table 2. There is one point we need to make specifically about criterion number 2 in the 5-Minute QuickScan: that the market capitalization must be greater than $500 million. The O-S heuristic is designed with what Benjamin Graham (1949) calls the "defensive investor" in mind. Specifically, Benjamin Graham's (1949) recommendation to the defensive investor is that "each company selected should be large, prominent, and conservatively financed." (p. 65). Limiting our set to companies with market capitalization greater than $500 million satisfies the condition of excluding small companies.

4. DATA AND METHODOLOGY

We used the Infomart financial database for our study. We used the first five years (2001 to 2005) of financial statement data to make our portfolio selection decision. After that, we tracked the monthly performance of the portfolios from January 2006 to May 2011. We created three portfolios that we labeled "Value", "Watch" and "Other" from the S&P/TSX 60 index using the O-S heuristic approach. The companies that qualify according to the O-S heuristics we call "Value." The companies that have satisfactory financial stability and earnings potential but do not have an acceptable margin of safety we call "Watch." We used the label "Other" for the portfolio of companies which do not fall in either of the above two categories.

We used three portfolio performance tracking periods: the entire period (from January 2006 to May 2011); the recession period (from October 2007 to July 2009); and the period from October 2007 to May 2011.

We used the companies in the S&P/TSX 60 Index as our stock universe for two reasons. First, this group constitutes approximately 73 per cent of the Toronto Stock Exchange's equity market capitalization and addresses the needs of investment managers who require a portfolio index of the large-cap market segment of the Canadian equity market (Standard & Poor's, 2011). Secondly, we chose the S&P/TSX 60 for a first empirical test of the O-S heuristic because we hypothesize that if the heuristic can successfully extract a value portfolio from this group of relatively uniform high-end category of stocks then it will have more discriminating power when applied to the entire market with a wider quality range of stocks.

5. COMPARING PORTFOLIO PERFORMANCE

There are two main things we want to examine in order to make judgment as to whether the use of the heuristic adds value in the value investing context. First, we hypothesize that if the value portfolio derived using the O-S heuristic adds value then the distribution of the returns of that value portfolio should be more negatively skewed than the group (the S&P/TSX 60 Index) from which it is derived. That means if we assume a symmetric normal distribution, then the O-S value portfolio will have a return distribution where the mode and the median shift to the right of the mean of the parent population (in this case, the S&P/TSX 60 Index). If the original distribution of the Index is already negatively skewed then the O-S portfolio will be more negatively skewed than the index. What this will demonstrate is that the O-S heuristic is capable of selecting portfolios with the following characteristics: the stocks within the value portfolio that outperform market

average will do so by such a wide margin to more than compensate for the stocks within the value portfolio that yield returns below the market average.

The second criterion on which we intend to compare the performance of the O-S heuristic with the other portfolios is long-term returns. In the value investing paradigm, measuring and comparing returns on short-term basis is meaningless. While t-tests of differences in daily or monthly returns are common in the literature, that type of comparison is not in line with the philosophy of value investing. Value investors hold for long periods and they do not care about daily or monthly volatility of stock prices. As Warren Buffett put it in his 1988 letter to shareholders of Berkshire Hathaway "…when we own portions of outstanding businesses with outstanding managements, our favorite holding period is forever" (Buffett, 1988). Therefore, for purposes of comparing performance, we compare the cumulative returns over a five-year period of the value portfolio with the other portfolios.

6. RESULTS, ANALYSIS AND DISCUSSION

6.1 Descriptive Statistics

Tables 3 to 5 show the average monthly compounded means, medians, and variances of the four portfolios: the index, the O-S value portfolio, the watch list, and other. As already mentioned, month-to-month performance of value portfolios has little or no significance in value investing paradigm so these descriptive statistics are provided mainly for information.

Table 3: Mean Monthly Compound Return

Portfolio	Entire Period (Jan 06 – May 11)		Oct 07 – Jul 09		Oct 07 – May 11	
	Return	Rank	Return	Rank	Return	Rank
S&P/TSX 60 Index	0.0020	4th	0.0018	4th	0.0014	4th
Value	0.0102	1st	0.0033	2nd	0.0062	2nd
Watch	0.0059	3rd	0.0028	3rd	0.0040	3rd
Other	0.0083	2nd	0.0059	1st	0.0068	1st

"Value" is the portfolio created with the O-S heuristic; "Watch" is the portfolio with shares that meet the O-S financial soundness criteria but do not meet the margin of safety requirement. "Other" consists of stocks from the S&P/TSX 60 Index that are neither "Value" nor "Watch." The index has 60 stocks; Value has 5 members; Watch has 20 members and Other has 12 members. The ranks of the portfolios are in ascending order of mean returns. Since high return is a desirable attribute of a portfolio, 1st refers to the portfolio with the highest mean return. The number of stocks in the three portfolios – Value, Watch and Other – does not add up to 60 (the number of stocks in the index) because some companies (25 of them) had missing financial statement data and could not be analyzed using the O-S heuristic and thus not classified as either Value, Watch or Other.

From Table 3, we see that Value portfolio had the highest mean monthly return for the entire period but ranked second to "Other" during the October 2007 to July 2009 recession period as well as the October 2007 to May 2011 period. The fact that the value portfolio ranked first over the entire period but ranked second during the other sub-periods is interesting. We would expect that Value will rank first in each period. Another interesting observation is that the Index portfolio

ranked fourth in each period which means that the index as a whole ranks below each of the three portfolios that were derived from it. It appears the companies with missing data that were excluded had significant weight in the index and their aggregate returns were below the returns of the overall index.

Table 4: Median Monthly Compound Return

Portfolio	Entire Period (Jan 06 – May 11)		Oct 07 – Jul 09		Oct 07 – May 11	
	Median Return	Rank	Median Return	Rank	Median Return	Rank
S&P/TSX 60 Index	0.0018	4th	0.0037	4th	0.0010	4th
Value	0.0088	1st	0.0063	1st	0.0084	1st
Watch	0.0051	3rd	0.0043	3rd	0.0049	3rd
Other	0.0083	2nd	0.0056	2nd	0.0078	2nd

"Value" is the portfolio created with the O-S heuristic; "Watch" is the portfolio with shares that meet the O-S financial soundness criteria but did not meet the margin of safety requirement. "Other" consists of stocks from the S&P/TSX 60 Index that are neither "Value" nor "Watch." The index has 60 members, Value has 5 members, Watch has 20 members and Other has 12 members. The ranks of the portfolios are in ascending order of median returns. Since high return is a desirable attribute of a portfolio, 1st refers to the portfolio with the highest median return.

Table 4, shows that when the average is measured by median, the Value portfolio had the highest median monthly return for all three periods: the entire period, January 2006 to May 2011, October 2007 to July 2009, and October 2007 to May 2011 period.

The variances and their ranks are shown in Table 5.

Table 5: Variance of Monthly Compounded Returns

Portfolio	Entire Period (Jan 06 – May 11)		Oct 07 – Jul 09		Oct 07 – May 11	
	Variance	Rank	Variance	Rank	Variance	Rank
S&P/TSX 60 Index	0.005	2nd	0.006	2nd	0.005	2nd
Value	0.004	1st	0.005	1st	0.004	1st
Watch	0.008	4th	0.006	2nd	0.004	2nd
Other	0.007	3rd	0.008	4th	0.006	4th

The ranks of the portfolios according to their variances are given in parentheses. Since low volatility is a desirable characteristic, 1st refers to the portfolio with the ***lowest*** variance.

The Value portfolio has the lowest variance for all three periods. While low volatility is generally regarded as a nice feature to have, from a value investing perspective, we are indifferent to volatility once a desirable portfolio that meets all the criteria of the heuristic is created. As we pointed out earlier, we aim at holding our value portfolio for a long time. Month to month volatilities are not relevant for purposes of measuring risk of the portfolio. The riskiness of a portfolio is determined at the time of portfolio creation by checking for its financial soundness. Risk of a portfolio is not based on day-to-day volatility after the portfolio is created. The type of risk that we make an effort to avoid is the risk of permanent impairment of capital. It is for this reason that the O-S heuristic puts a lot of effort in screening explicitly on the basis of financial stability and susceptibility to bankruptcy. This perspective is in line with what is commonly

attributed to Warren Buffett as his two rules of investment: "Rule #1: Don't lose money" and "Rule #2: Don't forget rule #1." Or, as Seth Klarman (1991) puts it, "risk avoidance is the single most important element of an investment program" and therefore "loss avoidance must be the cornerstone of your investment philosophy" (p. 94). We endeavour to avoid risk at the time of setting up the portfolio not by dodging volatility after the portfolio is created.

6.2 Skewness

One of the more relevant statistics from a value investing perspective is skewness of the portfolio returns. Skewness measures the degree of symmetry of distribution of random variables about the mean. If the bulk of the data (frequency weighted) is greater than the mean then the distribution will have a long left tail and it is classified as negatively skewed. If the bulk of the data is less than the mean then the distribution will have a right long tail and the distribution will be positively skewed. It will be interesting to find out what happens to skewness when a portfolio is created on the basis of a sound value investing heuristic. The measure of coefficient of skewness that we used was:

$$Sk = \frac{n}{(n-1)} \sum_{i=1}^{n} \frac{(R_i - R_p)}{s^3}$$

Sk = coefficient of skewness

R_i = return on stock i

R_p = return on portfolio p (p = either "Index," "Watch" or "Other")

n = number of stocks in the portfolio

s = standard deviation of portfolio p's returns

The results are presented in Table 6.

Our hypothesis is that if a value investing heuristic adds value to the portfolio selection process then the selected value portfolio should be more negatively skewed than the parent population from which it was drawn (in this case the index). This is what is observed with the Value portfolio compared to the other portfolios as shown in Table 6. The Index is itself negatively skewed. The question then is whether the Value portfolio that is obtained by applying the O-S heuristic is more negatively skewed than the Index from which the portfolio was drawn. For the entire period (January 2006 to May 2011), the Watch portfolio ranks the highest in negative skewness and the Value portfolio is second. The Value portfolio has a coefficient of skewness that is 4 times as negatively skewed as the index during that period. The Watch portfolio has skewness that is 5 times that of the index. That means the better performance of the Value portfolio than the Index is attributed mainly to stocks that had returns above the median of the Value group. So the O-S heuristic is capable of selecting stocks with a bias towards outperformance, which is what we are looking for.

Table 6: Skewness

Portfolio	Entire Period (Jan 06 – May 11)		Oct 07 – Jul 09		Oct 07 – May 11	
	Skewness	Rank	Skewness	Rank	Skewness	Rank
S&P/TSX 60 Index	-0.175	3rd	-0.209	3rd	-0.004	4th
Value	-0.716	2nd	-0.564	1st	-1.380	1st
Watch	-0.864	1st	-0.364	2nd	-0.204	3rd
Other	0.256	4th	0.165	4th	-0.298	2nd

The ranks of the portfolios are given in parenthesis where high negative skewness is the desirable characteristic that is being sought.

6.3 Cumulative Returns

Apart from skewness, the other comparison that we consider to be meaningful in the context of value investing is the overall cumulative return over the entire period. For value investors that is what really matters. This is because the value investor sets an investment horizon and then structures a portfolio that will preserve the original investment and yield a "satisfactory" return at the end of the investment horizon. For this comparison, what we did was to find the percentage of the members of each of the three portfolios that beat the index performance. The results are given in Table 7. The Value portfolio ranked first in each of the three sub-periods. Another observation is that the Watch portfolio consistently ranked second in all three periods. Both of these observations support the notion that the O-S heuristic must be picking stocks not only in the manner desired by value investors but also producing desirable outcomes.

Table 7: Cumulative Returns

Portfolio	Entire Period (Jan 06 – May 11)		Oct 07 – Jul 09		Oct 07 – May 11	
Cumulative Return on S&P/TSX 60 Index	1.135		0.80		0.93	
	% of Stocks that Outperformed the Index	**Rank**	**% of Stocks that Outperformed the Index**	**Rank**	**% of Stocks that Outperformed the Index**	**Rank**
Value	4/5 = 80%	1st	3/5 = 60%	1st	5/5 = 100%	1st
Watch	11/20 = 55%	2nd	8/20 = 40%	2nd	14/20 = 70%	2nd
Other	6/12 = 50%	3rd	4/12 = 33%	3rd	8/12 = 67%	3rd

The percentages represent the percentage of the group of stocks in the portfolio that outperformed the index.

7. SUMMARY AND CONCLUSION

The paper presented a brief overview of value investing. Although there is no question that there is a value premium, there are conflicting explanations as to why it exists. Psychologists suggest that when decision makers find themselves with limited capacity to deal with complex data and high degrees of uncertainty (as in making investment decisions) they resort to the use of heuristics as a simplifying tool. We developed a value investing heuristic and applied it to stock selection using the Toronto Stock Exchange S&P/TSX 60 as the stock universe. A presentation of some pertinent descriptive statistics show that the value portfolio based on the heuristic ranks above the other portfolios. Thus this heuristic could potentially be used as a valid tool for making value investing decisions. Moreover, given the simplicity of the heuristic and that it can be implemented using only publicly available data, this process is accessible to all investors.

REFERENCES

Altman, E. I. (1968) Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy, *The Journal of Finance,* **23**, 189-209.

Athanassakos, G. (2009) Value versus Growth Stock Returns and the Value Premium: The Canadian Experience 1985-2005, *Canadian Journal of Administrative Science*, **26**, 109-121.

Athanassakos, G. (2011) Do Value Investors Add Value?,*The Journal of Investing*, **20**, 86-100.

Bauman, W. S., Conover, C. M., and Miller, R. E. (1998) Growth versus Value and Large-Cap versus Small-Cap Stocks in International Markets, *Financial Analysts Journal*, **54**, 75-89.

Buffett, W. (1984) TheSuperinvestors of Graham-and-Doddsville, *Hermes*, 4-15.

Buffett, W. (1988) Chairman's Letter to the Shareholders of Berkshire Hathaway, Available at

http://www.berkshirehathaway.com/letters/1988.html (Accessed on December 31, 2012)

Capaul, C., Rowley, I., and Sharpe, W. F. (1993) International Value and Growth Stock Returns, *Financial Analysts Journal*, **49**, 27-36.

Chan, L. K. C., Hamao, Y., and Lakonishok, J. (1991) Fundamentals and Stock Returns in Japan, *The Journal of Finance*, **46**, 1739-1789.

Chan, L. K. C. and Lakonishok, J. (2004) Value and Growth Investing: Review and Update, *Financial Analysts Journal*, **60**, 71-86.

Chan, L. K. C., Karceski, J., Lakonishok, J. (2000) New Paradigm or Same Old Hype in Equity Investing?,*Financial Analysts Journal*, **56**, 23-36.

Chen, N., and Zhang, F. (1998) Risk and Return of Value Stocks, *Journal of Business*, **71**, 501-535.

Dhatt, M. S., Kim, Y. H. and Mukherji, S. (1999) The Value Premium for Small-Capitalization Stocks, *Financial Analysts Journal*, **55**, 60-68.

Fama, E. F., and French, K. R. (1992) The Cross-Section of Expected Stock Returns, *The Journal of Finance*, **47**, 427-465.

Fama, E. F., and French, K. R. (1998) Value vs. Growth: The International Evidence, *The Journal of Finance*, **53**, 1975-1999.

Fama, E. F., and French, K. R. (1996) Multifactor Explanations of Asset Pricing Anomalies, *The Journal of Finance*, **51**, 55-84.

Graham, B. (1949) *The Intelligent Investor*, Revised Edition, HarperBusiness Essentials, New York.

Graham, B. (1976) A Conversation with Benjamin Graham, *Financial Analysts Journal*, **32**, 20-23.

Ibbotson, R. G. and Riepe, M. W. (1997) Growth vs. Value Investing: And the Winner Is..., *Journal of Financial Planning*, **10**, 64-71.

Graham, B., and Dodd, D. (1934) *Security Analysis*, The Classic 1934 Edition, McGraw-Hill, New York.

Kwag, S. W. A., and Lee, S. W. (2006) Value Investing and the Business Cycle, *Journal of Financial Planning*, **19**, 64-71.

La Porta, R., Lakonishok, J., Shleifer, A., and Vishny, R. (1997) Good News for Value Stocks: Further Evidence on Market Efficiency, *The Journal of Finance*, **52**, 859-874.

Lakonishok, J., Shleifer, A., and Vishny, R. W. (1994) Contrarian Investment, Extrapolation, and Risk, *The Journal of Finance*, **49**,1541-78.

Oppenheimer, H. R. (1984) A Test of Ben Graham's Stock Selection Criteria, *Financial Analysts Journal*, **40**, 68-74.

Piotroski, J. D. (2000) Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers, *Journal of Accounting Research*, Supplement, **38**, 1-41.

Rozeff, M. S., and Zaman, M. A. (1998) Overreaction and Insider Trading: Evidence from Growth and Value Portfolios, *The Journal of Finance*, **53**, 701-716.

Standard & Poor's (2011) S&P/TSX 60, Available at http://www.standardandpoors.com/indices/sp-tsx-60/en/us/?indexId=spcadntx--caduf--p-ca-l-- (Accessed on December 31, 2012)

APPENDIX

Table 1: Preliminary Stock Screening Criteria (The "5-Minute QuickScan" Screening Criteria)

No.	Criterion/ Question	Decision Rule	Rationale
1	Is the company listed on the OTC or on Pink sheet? Check whether the company's ticker symbol has a .OB (NASDAQ bulletin board stock) or .PK (pink sheet) extension	Reject if the ticker has either .OTCBB or .PK extension.	Information about .OB or .PK shares tends not to be up to date or always reliable. Although .OTCBB companies have to file regular forms with the SEC, they are still not as safe as stocks listed on the major exchanges.
2	Is the company's market capitalization below $500 million?	Include only companies with market cap > $500 million	The original intent of setting up this heuristic is to design a system that even investment novices can use and not lose money. For that clientele we felt it advisable to limit them to well established companies and this criterion increases the chances of that.
3	Recent IPO	Reject if the company does not have at least 5 years of public trading data.	Same reason as criterion # 2 – to limit the search to relatively well established companies with a reasonable (minimum 5 years) public trading history.
4	3 to 5 years of positive EBIT?	Include only companies with positive operating profit for at least 3 years but preferably 5 years or more.	A critical indicator of future profitability is a track record of past profitability. Operating profit is regarded as a sign that this company can sustain itself through its business operation and also an indicator that it has been operating a viable business model.
5	3 to 5 years of positive Cash Flow from Operating Activities?	Include only companies with positive cash flow from operating activities for at least 3 years but preferably 5 years or more.	This shows that the company is able to end up with positive cash flow of its own. Rationale similar to criterion # 4.
6	5 years of ROE >10%	Accept only companies with at least 3 continuous years of ROE > 10%. If one of the past three years has ROE < 10% then look for 3 years out of the past 5 years.	ROE is an indicator of profitability and a 3 to 5-year track record is an indicator that profitability has been sustained in the past.
7	5 years of Debt/Equity ratio < 1	Accept only companies that meet that condition.	The goal is to limit the set to low leverage companies. We prefer companies with zero debt.
9	Tangible Book Value > 0 for the past 3 years.	Accept only companies that meet the condition.	While companies with good business models and sustainable competitive advantage can have negative net tangible value, analysis of such companies might be beyond the scope of beginners who are part of the user group for whom this heuristic is designed.

Table 2: Value Investing Screening Criteria[6]

Screening Criterion # 2A: Earnings Strength, Earnings Stability and Moat Indicators		
No	**Financial Ratio or Value Indicator**	**Decision Rule**
1	Return on Invested Capital (ROIC)	ROIC must be at least 10% in each of the past five years.
2	Equity Growth Rate	The annual compounded equity growth rate (measured by the rate of growth of Book Value per Share) must be at least 10% for the past 5 years.
3	Rate of Growth of Earnings per Share (EPS)	The annual compounded EPS growth rate must be at least 10% for the past 5 years.
4	Sales Growth Rate	The annual compounded rate of growth of sales must be at least 10%.
5	Operating Cash Flow (OCF) Growth Rate	The annual compounded rate of growth for OCF must be at least 10%.
6	Free Cash Flow (FCF) Growth Rate	The annual compounded rate of growth for both FCF must be at least 10%.
7	Gross Margin	A gross margin greater than 40% is classified as an indicator of durable competitive advantage.
8	Operating Margin	First we find the average operating margin for the industry or a core group of competitors. And then we look at the company's operating margin, which must be above the average of the industry or its competitors.
9	Net Margin	Net margin greater than 20% is considered a sign of durable competitive advantage and net margin less than 10% is interpreted as the company being in a highly competitive environment.
10	Free Cash Flow (FCF) Margin	FCF margin greater than 10% is considered a sign of durable competitive advantage.
Screening Criterion # 2B: Financial Strength and Financial Stability		
Screening Criterion # 2B Part 1: Short-Term Financial Health		
11	Current Ratio	Current ratio has to be at least 2.
12	Quick Ratio	Quick Ratio has to be at least 1.5
13	Interest Coverage Ratio	Interest coverage ratio has to be at least 5.
14	Operating Cash Flow Ratio (OCF)	OCF ratio has to be at least 1.

[6] It is obvious to see how these criteria make common sense to an investor who is looking for god quality companies. We arrived at them from an amalgamation of various stock selection criteria alluded in writings and interviews of various value investors including Benjamin Graham, Warren Buffett, Walter Schloss, Joel Greenblatt, etc.

Screening Criterion # 2B Part 2: Long-Term Financial Health		
15	Leverage Ratio	Leverage ratio (measured by Debt to Total Assets) has to be less than 0.5 except utilities for which leverage ratio equal to or less than 1.0 is acceptable.
16	Debt to Equity Ratio	Debt-Equity ratio has to be less than 1.
17	Long-Term Debt to Operating Cash Flow Ratio	This ratio is used to measure how long it will take to pay off long-term debt using OCF and it has to be 3 years or less.
Screening Criterion # 3: Susceptibility to Bankruptcy		
18	Piotroski F-Score[7]	Companies are accepted if the F-Score is 8 or 9 and they are rejected if the F score is less than or equal to 2. However, for companies with F score between 3 and 7, the decision to accept or reject is more subjective and the overall profile of the company in light of the other ratios is considered in arriving at a decision.
19	Altman Z-Score	A company with Z score less than 1.8 is rejected. A Z-score of 3 or higher is accepted. For companies with Z scores between 1.8 and 3, the entire profile of the company is considered before a final "accept" or "reject" decision is made.
Screening Criterion # 4: Company Valuation and Margin of Safety		
20	Margin of Safety = (Intrinsic Value – Price)/Intrinsic Value	Margin of Safety must be at least 20%. (Intrinsic Value is estimated by two methods: the P/E ratio approach and Discounted Free Cash Flow approach)

Final Stock Selection Decision

If a stock meets all the benchmarks of Steps 1 to 19 then it is classified as "accepted" for inclusion in the portfolio. If in addition to fulfilling the requirements for Steps 1 to 19, the company also has a margin of safety of at least 20% then it will be recommended for purchase. Essentially, criteria 1 to 19 answer the question: is this a good company? And criterion 20 answers the question: is it a good time to buy the stock?

Sometimes the intrinsic value based on P/E ratio valuation method may yield an acceptable margin of safety whereas the Discounted Free Cash Flow method does not or vice versa. In those cases, we make the decision based on the overall profile of the company. If all other indicators are very good then the company may be included in the "buy" portfolio. But if the other indicators barely make it past the acceptable standards then it will be put on the watch list.

[7] See Piotroski (2000) and Altman (1968) on how these indices are calculated.