The
Ben Graham
Centre for
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The Performance, Pervasiveness and Determinants of Value Premium in Different US Exchanges

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Motivation

- A large body of academic research has documented the existence of a value premium (Basu (1977), Chan, Hamao and Lakonishok (1991), Fama and French (1992, 1993, 1996), Lakonishok, Shleifer and Vishny (1994) and Chan and Lakonishok (2004))

- As a result, most arguments in academia now revolve around the reasons of such superior performance of value stocks

Motivation

- Proponents of efficient markets, such as Fama and French (1992, 1993, 1996, 1998), argue that the value premium exists because value stocks bear more risk

- Others, such as La Porta, Lakonishok, Shleifer and Vishny (1997), and Chan and Lakonishok (2004), argue against market efficiency and rational pricing

  - They advocate that systematic errors made by investors and agency problems faced by institutional investors prevent the value premium from disappearing

Motivation

- Doukas, Kim and Pantzalis (2002) reject the non-risk based explanation of the value premium, while Doukas, Kim and Pantzalis (2004) find support for a risk based explanation of the value premium
- Petkova and Zhang (2005) argue that value stocks are riskier than growth stocks, at least in the adverse states of the world
- Phalippou (2004) finds evidence consistent with behavioral explanations of the value premium and so is Lettau and Wachter (2007)

Motivation

- Consequently, the jury is then still out with regards to the drivers of the value premium

Objectives

- Using US data for each of AMEX, NASDAQ and NYSE for the period 1985-2006, the purpose of this paper is:
  - To shed further light on the performance of value and growth stocks
  - To shed light into the argument of whether the value premium is driven by risk or behavioral factors
- The paper will provide tests that prevent confounding inferences, utilizing a more comprehensive set of data and tests than previous studies and a research methodology that minimizes any potential data snooping problems

Contribution

- I document a consistently strong value premium over the 1985-2006 sample period, which persists in both bull and bear markets, as well as in recessions and recoveries

- I show that the value premium is not driven by a few outliers, but it is pervasive as the overwhelming majority of stocks in the value portfolio have positive returns, and the majority of industries in the sample contain stocks that have positive value premiums

- The value premium, in general, remains positive and statistically significant over time

Contribution

- In terms of explaining the drivers of the value premium, and having looked at this question from many angles, the findings seem to support the notion that it what drives the value premium is
  - (Most likely) errors in expectations
  - Not risk, as argued by the market efficiency school of thought

Proxy Variables Employed

- Risk Proxies
  - Recessions & Bear Markets
  - Liquidity
  - Standard deviation of returns
  - Dispersion of analysts' forecasts
- Behavioral Proxies
  - % of Institutional holdings
  - Firm size
  - Analyst following
  - Analyst Optimism

Data

- This study uses data from four data bases
  - The first data base is the I/B/E/S data base from which data on analysts' mean and median EPS forecasts, forecast dispersion, analyst optimism and number of analysts are obtained/calculated
  - The second data base is the CRSP database from which prices per share, shares outstanding, trading volume and stock returns are obtained and used to estimate market cap, the measure of liquidity and the standard deviation of stock returns
  - The third is CDA/Spectrum from which the number of institutions holding a stock, the number of shares of a given stock held by institutions, shares outstanding are obtained
  - The final database is COMPUSTAT from which trailing EPS and BVPS and the industry in which a stock belongs are obtained

Data

- The timing of recessions/recoveries and bear/bull markets is obtained from www.thedowtheory.com/bear&recessions.htm
- The data is for each month in the 1985 through 2006 sample period
- After all screens and further adjustments for missing observations, the intersection of the four databases resulted in a total of 12,804, 313,779 and 344,712 cross sectional-time series observations for the final sample of 583, 4908 and 2977 AMEX, NASDAQ and NYSE firms, respectively, representing 10 industries as classified by the 1-digit Standard Industrial Classification (SIC) code

Methodology

- Starting in June 1985, firms are ranked based on P/E (trailing) and P/BV ratios from low to high and the ranked firms are divided into four groups of equal size
- Returns are then obtained for each month over the following year (starting in July 1985) for each stock within each quartile and equally weighted mean returns for each quartile are derived
- This process is repeated for each year of the sample
- Quartile-1 (Q1) is the low P/E (P/BV) ratio quartile or the value stocks, while Quartile-4 (Q4) is the high P/E (P/BV) ratio quartile or the growth stocks
- A time series of non-overlapping monthly returns are obtained for each quartile from July 1985 to June 2006, sub-periods, recessions/recoveries, and bear/bull markets

Methodology

- I carry out uni(bi)variate analysis that looks at value and growth stock performance and carries out a first stage examination of the drivers of the value premium
- To further examine the drivers of the value premium, I also carry out regression analysis and robustness tests
  - First, I regress subsequent returns of the value and growth stocks against a number of explanatory variables drawn from previous research and the paper's earlier findings
  - Second, I examine the value premium using trailing P/E as of December of year (t-1) and forward P/E ratio
  - Finally, I examine whether the risks specified by a formal asset pricing model, such as the Fama and French three factor model, explain the returns of the value and growth stocks

Empirical Results

Figure 1

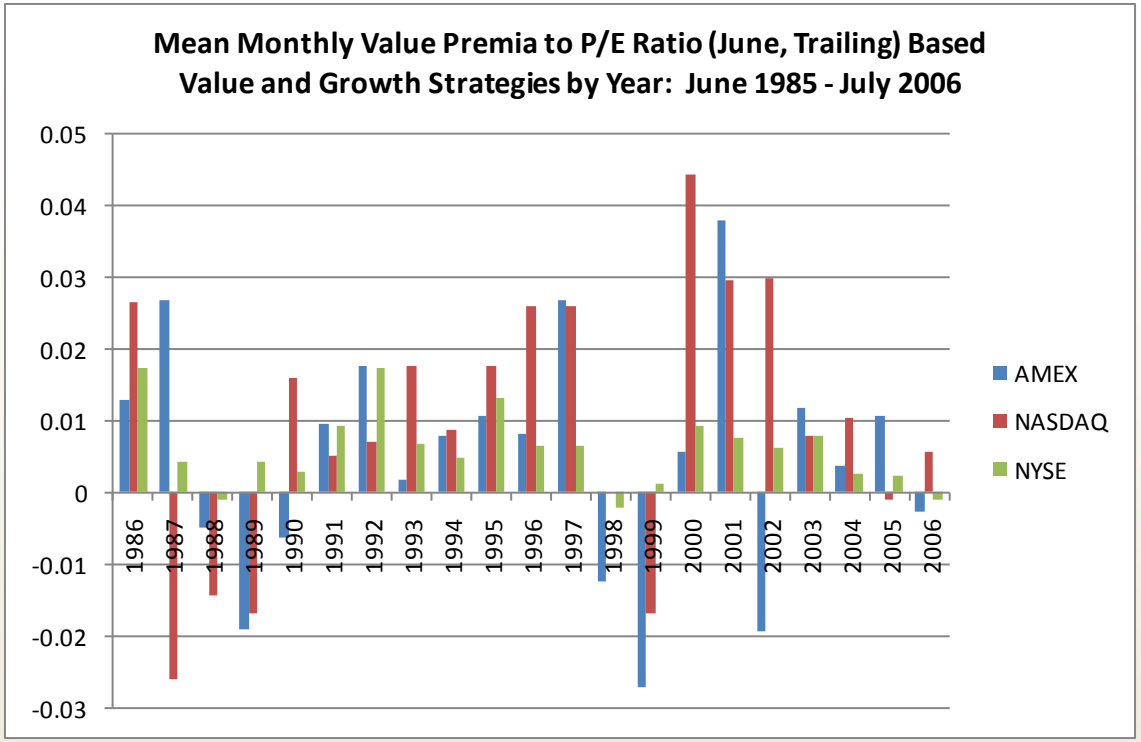

Mean Monthly Value Premia to P/E Ratio (June, Trailing) Based
Value and Growth Strategies by Year: June 1985 - July 2006
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
AMEX
NASDAQ
NYSE

Figure 2

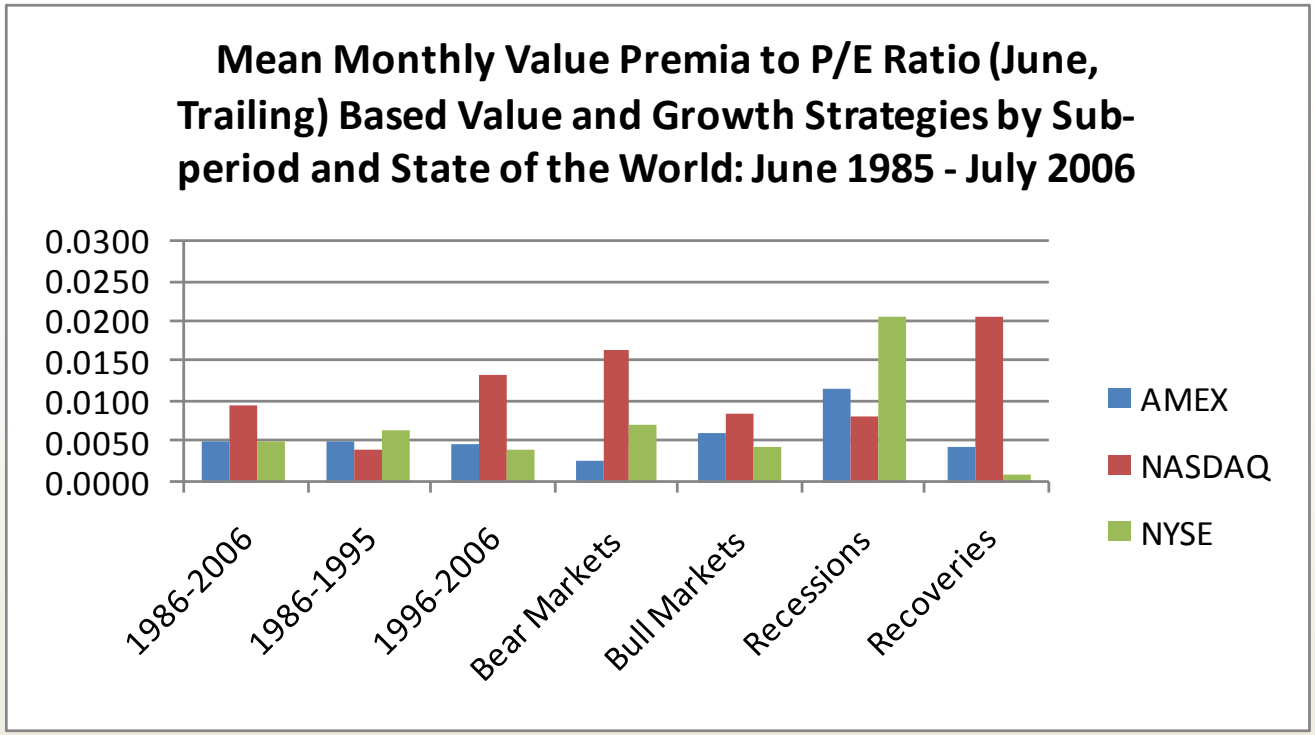

Mean Monthly Value Premia to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Sub-period and State of the World: June 1985 - July 2006
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
1986-2006
1986-1995
1996-2006
Bear Markets
Bull Markets
Recessions
Recoveries
AMEX
NASDAQ
NYSE

Figure 3

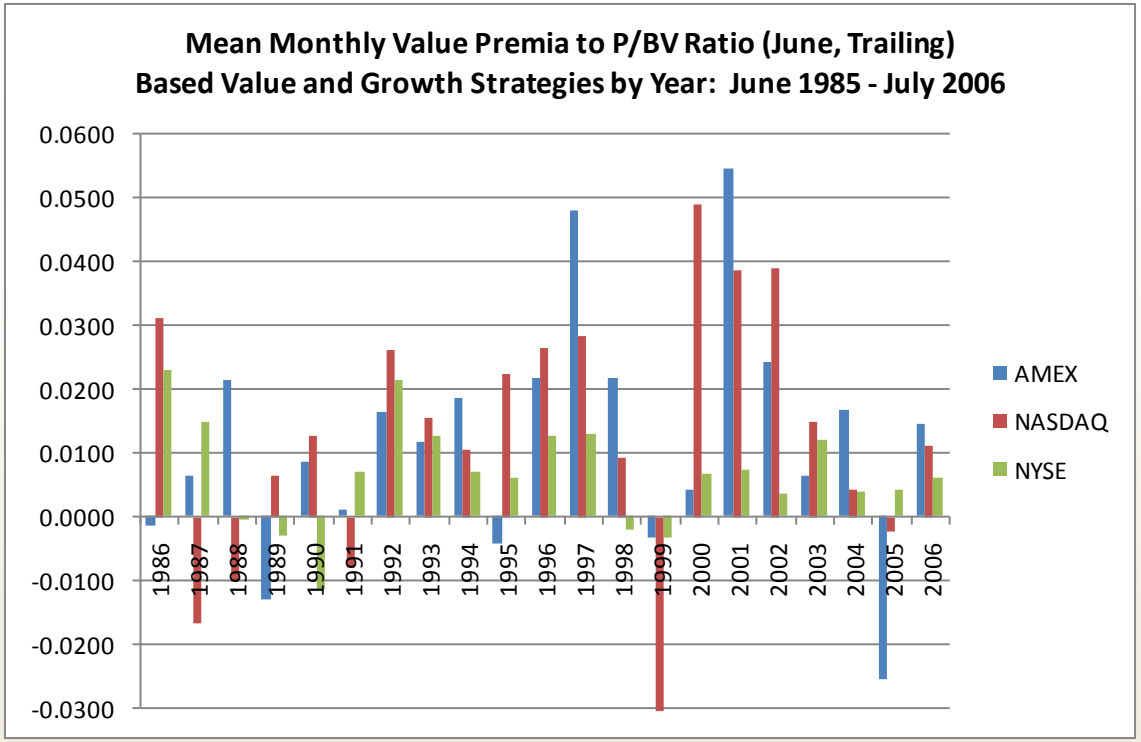
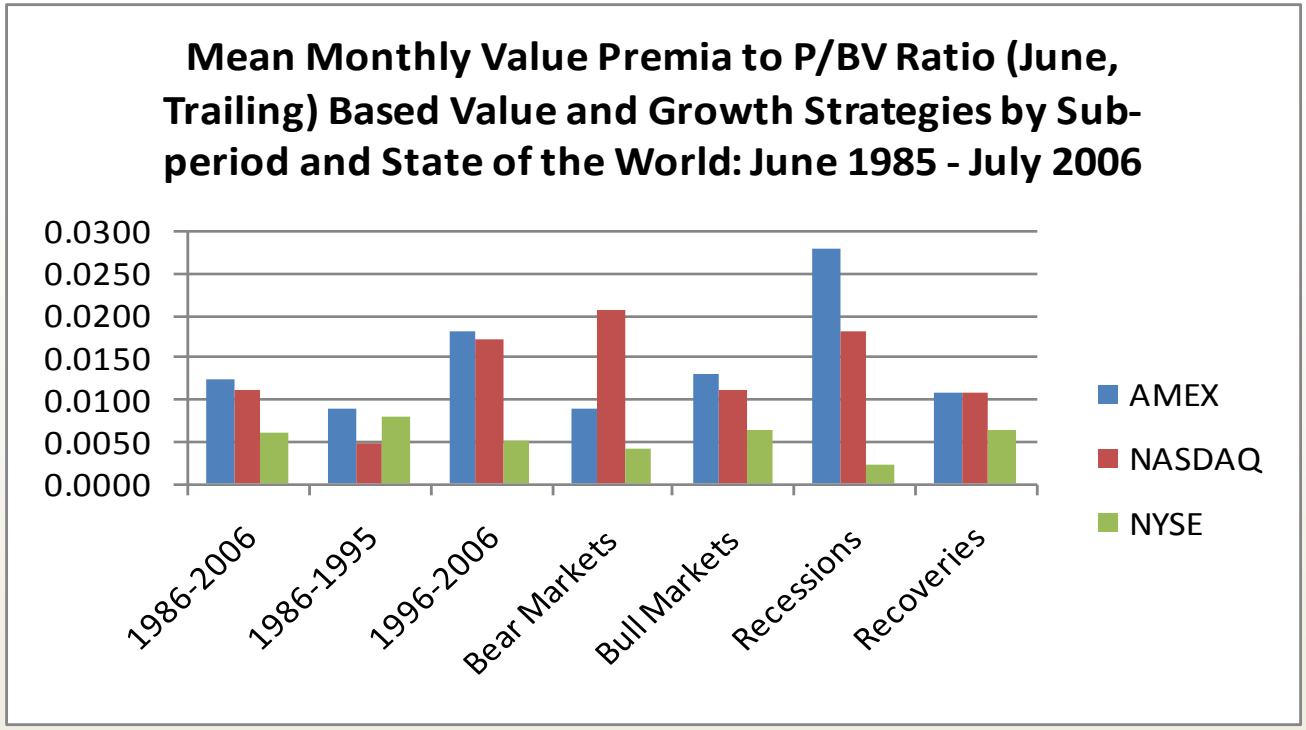

Mean Monthly Value Premia to P/BV Ratio (June, Trailing)
Based Value and Growth Strategies by Year: June 1985 - July 2006
0.0600
0.0500
0.0400
0.0300
0.0200
0.0100
0.0000
-0.0100
-0.0200
-0.0300
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
AMEX
NASDAQ
NYSE

Figure 4


Mean Monthly Value Premia to P/BV Ratio (June, Trailing) Based Value and Growth Strategies by Sub-period and State of the World: June 1985 - July 2006
0.0300
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
1986-2006
1986-1995
1996-2006
Bear Markets
Bull Markets
Recessions
Recoveries
AMEX
NASDAQ
NYSE

Percentage of Positive and Negative Monthly AMEX Stock Returns to P/E Ratio (June, Trailing) Based Value and Growth Strategies: July 1985-June 2006

P/E Ratio Sorted Quartiles		
	Q1 (Value)	Q4 (Growth)
% Positive	54.3	47.9
% Negative	45.7	52.1

Percentage of Positive and Negative Monthly NASDAQ Stock Returns to P/E Ratio (June, Trailing) Based Value and Growth Strategies: July 1985-June 2006

P/E Ratio Sorted Quartiles		
	Q1 (Value)	**Q4 (Growth)**
% Positive	56.1	43.9
% Negative	43.9	56.1

Percentage of Positive and Negative Monthly NYSE Stock Returns to P/E Ratio (June, Trailing) Based Value and Growth Strategies: July 1985-June 2006

P/E Ratio Sorted Quartiles		
	Q1 (Value)	Q4 (Growth)
% Positive	58.9	49.8
% Negative	41.6	50.2

Mean Monthly AMEX Stock Returns to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Industry: July 1985-June 2006

Industry		Q1 (Value)	Q4 (Growth)	Value Premium	Q1 ≠ Q4 (P-Values)
No of OBS	*Name*				
N/A	Agriculture, Forestry and Fishing	-	-	-	N/A
408	Mining	0.0162	-0.0060	0.0222	0.2158
18	Construction	-0.0123	-	-	N/A
1350	Manufacturing	-0.0026	-0.0084	0.0058	0.3087
390	Transporation & Public Utilities	-0.0068	0.0005	-0.0073	0.6334
60	Wholesale Trade	-0.0102	0.0032	-0.0134	0.5500
156	Retail Trade	0.0167	-0.0069	0.0236	0.0637
228	Finance, Insurance & Real Estate	-0.0076	0.0079	-0.0155	0.1232
552	Services	0.0189	-0.0103	0.0292	0.0812
N/A	Public Administration	-	-	-	N/A

Mean Monthly NASDAQ Stock Returns to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Industry: July 1985-June 2006

Industry		Q1 (Value)	Q4 (Growth)	Value Premium	Q1 ≠ Q4 (P-Values)
No of OBS	*Name*				
328	Agriculture, Forestry and Fishing	-0.0038	-0.0086	0.0048	0.7889
2201	Mining	0.0012	0.0064	-0.0052	0.3908
611	Construction	-0.0112	0.0048	-0.0160	0.2304
37075	Manufacturing	0.0031	-0.0076	0.0107	0.0001
6648	Transporation & Public Utilities	-0.0006	-0.0034	0.0028	0.3556
4155	Wholesale Trade	0.0034	-0.0079	0.0113	0.0099
6612	Retail Trade	0.0043	-0.0088	0.0131	0.0001
36803	Finance, Insurance & Real Estate	0.0045	-0.0029	0.0074	0.2821
16628	Services	0.0034	-0.0082	0.0116	0.0001
N/A	Public Administration	-	-	-	N/A

Mean Monthly NYSE Stock Returns to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Industry: July 1985-June 2006

Industry		Q1 (Value)	Q4 (Growth)	Value Premium	Q1 ≠ Q4 (P-Values)
No of OBS	*Name*				
360	Agriculture, Forestry and Fishing	-0.0054	-0.0083	0.0029	0.7388
7880	Mining	0.0006	-0.0023	0.0029	0.0023
738	Construction	0.0069	0.0092	-0.0023	0.7180
36399	Manufacturing	0.0023	-0.0023	0.0046	0.0001
8923	Transporation & Public Utilities	0.0030	0.0009	0.0021	0.2627
2166	Wholesale Trade	0.0098	-0.0043	0.0141	0.0004
6072	Retail Trade	0.0069	-0.0031	0.0100	0.0016
11730	Finance, Insurance & Real Estate	0.0021	0.0020	0.0001	0.9960
11579	Services	0.0087	-0.0040	0.0127	0.0001
252	Public Administration	-0.0042	0.0023	-0.0065	0.5336

Mean Monthly AMEX Stock Returns, Sigma, Dispersion, # Analysts, Size, Optimism and Liquidity to P/E Ratio (June, Trailing) Based Value and Growth Strategies by % Inst Based categories: July 1985-June 2006

	Q1 (Value)		Q4 (Growth)		Q1 ≠ Q4 (P-Values)
Q1 (Low % Inst.)					
Returns	0.0043		-0.0142		0.0121
Sigma	0.0362		0.0330		0.0001
Dispersion	0.0146		0.0056		0.0001
# Analysts	1.40		1.89		0.1916
Size ($000)	45122.0		273229.0		0.0001
Optimism	-0.0150		0.0345		0.0001
Liquidity	0.0015		0.0029		0.0001
Q4 (High % Inst.)					
Returns	0.0003		-0.0034		0.1598
Sigma	0.0226		0.0236		0.2244
Dispersion	0.0046		0.0019		0.0001
# Analysts	3.15		5.13		0.0001
Size ($000)	260435.0		906408.0		0.0001
Optimism	-0.0103		0.0014		0.0021
Liquidity	0.0027		0.0035		0.0277
Q1 ≠ Q4 (P-Values)					
Returns	0.1423		0.0066		
Sigma	0.0001		0.0009		
Dispersion	0.0001		0.0001		
# Analysts	0.0001		0.0001		
Size ($000)	0.0064		0.0001		
Optimism	0.0561		0.0006		
Liquidity	0.0001		0.0401		

Mean Monthly NASDAQ Stock Returns, Sigma, Dispersion, # Analysts, Size, Optimism and Liquidity to P/E Ratio (June, Trailing) Based Value and Growth Strategies by % Inst Based categories: July 1985-June 2006

	Q1 (Value)		Q4 (Growth)		Q1 ≠ Q4 (P-Values)
Q1 (Low % Inst.)					
Returns	0.0043		-0.0076		0.0011
Sigma	0.0417		0.0416		0.6723
Dispersion	0.0063		0.0068		0.1001
# Analysts	1.75		2.82		0.1916
Size ($000)	85626.00		232694.0		0.0001
Optimism	-0.0107		0.0187		0.0001
Liquidity	0.0028		0.0052		0.0001
Q4 (High % Inst.)					
Returns	0.0047		-0.0080		0.0001
Sigma	0.0114		0.0335		0.0044
Dispersion	0.0034		0.0011		0.0001
# Analysts	6.16		8.50		0.0001
Size ($000)	614713.0		1553654.0		0.0001
Optimism	-0.0486		-0.0001		0.0001
Liquidity	0.0088		0.0137		0.0001
Q1 ≠ Q4 (P-Values)					
Returns	0.1124		0.2866		
Sigma	0.0001		0.0009		
Dispersion	0.0001		0.0001		
# Analysts	0.0001		0.0001		
Size ($M)	0.0064		0.0001		
Optimism	0.0001		0.0001		
Liquidity	0.0001		0.0001		

Mean Monthly NYSE Stock Returns, Sigma, Dispersion, # Analysts, Size, Optimism and Liquidity to P/E Ratio (June, Trailing) Based Value and Growth Strategies by % Inst Based categories: July 1985-June 2006

	Q1 (Value)		Q4 (Growth)		Q1 ≠ Q4 (P-Values)
Q1 (Low % Inst.)					
Returns	0.0000		-0.0113		0.0001
Sigma	0.0242		0.0261		0.0001
Dispersion	0.0051		0.0029		0.0001
# Analysts	4.87		6.54		0.0016
Size ($000)	1345028.0		3355389.0		0.0001
Optimism	-0.0364		0.0136		0.0001
Liquidity	0.0028		0.0036		0.0001
Q4 (High % Inst.)					
Returns	0.0046		0.0000		0.0121
Sigma	0.0287		0.0228		0.0244
Dispersion	0.0020		0.0013		0.0001
# Analysts	10.77		11.52		0.2745
Size ($000)	2528011.0		3126913.0		0.0001
Optimism	-0.0396		0.0036		0.0001
Liquidity	0.0045		0.0063		0.0001
Q1 ≠ Q4 (P-Values)					
Returns	0.0124		0.0001		
Sigma	0.0001		0.0009		
Dispersion	0.0001		0.0001		
# Analysts	0.0001		0.0001		
Size ($M)	0.0064		0.1233		
Optimism	0.0001		0.0001		
Liquidity	0.0001		0.0001		

Mean Monthly AMEX Stock Returns, Dispersion, # Analysts, Size, Optimism, Liquidity and % Inst to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Sigma Based categories: July 1985-June 2006

	Q1 (Value)		Q4 (Growth)		Q1 ≠ Q4 (P-Values)
Q1 (Low Sigma)					
Returns	-0.0032		-0.0058		0.2201
Dispersion	0.0044		0.0023		0.0052
# Analysts	2.2500		4.1200		0.0060
Size ($000)	192030.00		708769.00		0.0001
Optimism	-0.0268		0.0083		0.0001
Liquidity	0.0012		0.0015		0.3578
% Inst.	29.30		31.00		0.0611
Q4 (High Sigma)					
Returns	0.0174		-0.0042		0.0001
Dispersion	0.0377		0.0080		0.0001
# Analysts	1.9200		2.9100		0.0245
Size ($000)	67513.00		200512.00		0.0012
Optimism	0.0271		0.0302		0.1263
Liquidity	0.0027		0.0048		0.0065
% Inst.	19.00		19.80		0.6544
Q1 ≠ Q4 (P-Values)					
Returns	0.0029		0.3518		
Dispersion	0.0001		0.0001		
# Analysts	0.1126		0.0018		
Size ($M)	0.0021		0.0092		
Optimism	0.0001		0.0004		
Liquidity	0.0001		0.0001		
% Inst.	0.0001		0.0001		

Mean Monthly NASDAQ Stock Returns, Dispersion, # Analysts, Size, Optimism, Liquidity and % Inst to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Sigma Based categories: July 1985-June 2006

	Q1 (Value)		Q4 (Growth)		Q1 ≠ Q4 (P-Values)
Q1 (Low Sigma)					
Returns	0.0019		-0.0007		0.1001
Dispersion	0.0017		0.0014		0.2052
# Analysts	4.5200		6.6800		0.0001
Size ($000)	446842.00		2007239.00		0.0001
Optimism	-0.0271		0.0037		0.0001
Liquidity	0.0027		0.0052		0.0001
% Inst.	23.70		45.30		0.0001
Q4 (High Sigma)					
Returns	0.0066		-0.0165		0.0001
Dispersion	0.0081		0.0048		0.0001
# Analysts	3.4500		5.2600		0.0245
Size ($000)	151997.00		672410.00		0.0124
Optimism	-0.0391		0.0143		0.0001
Liquidity	0.0076		0.0134		0.0001
% Inst.	16.70		38.50		0.0001
Q1 ≠ Q4 (P-Values)					
Returns	0.0288		0.0001		
Dispersion	0.0001		0.0001		
# Analysts	0.1126		0.6818		
Size ($M)	0.0001		0.0001		
Optimism	0.0001		0.0004		
Liquidity	0.0001		0.0001		
% Inst.	0.0301		0.0112		

Mean Monthly NYSE Stock Returns, Dispersion, # Analysts, Size, Optimism, Liquidity and % Inst to P/E Ratio (June, Trailing) Based Value and Growth Strategies by Sigma Based categories: July 1985-June 2006

	Q1 (Value)		Q4 (Growth)		Q1 ≠ Q4 (P-Values)
Q1 (Low Sigma)					
Returns	0.0040		0.0015		0.0210
Dispersion	0.0017		0.0014		0.2052
# Analysts	9.6600		10.2100		0.5660
Size ($000)	4069132.00		6226104.00		0.0001
Optimism	-0.0331		0.0048		0.0001
Liquidity	0.0032		0.0037		0.0201
% Inst.	47.00		58.70		0.0001
Q4 (High Sigma)					
Returns	0.0041		-0.0074		0.0001
Dispersion	0.0056		0.0027		0.0001
# Analysts	6.9900		8.2700		0.0245
Size ($000)	1264298.00		2362805.00		0.0124
Optimism	-0.0482		0.0146		0.0001
Liquidity	0.0066		0.0074		0.0065
% Inst.	44.00		50.50		0.0004
Q1 ≠ Q4 (P-Values)					
Returns	0.7288		0.0018		
Dispersion	0.0001		0.0001		
# Analysts	0.0126		0.0118		
Size ($M)	0.0001		0.0001		
Optimism	0.0001		0.0004		
Liquidity	0.0001		0.0001		
% Inst.	0.0301		0.0001		

Regression Estimates of Monthly AMEX Stock Returns Against P/E Ratios, # Analysts, Liquidity, Sigma and Dispersion (Fama-MacBeth Procedure): July 1985-June 2006

		P/E Ratio Sorted Quartiles	
Independent Variables	**Total Sample**	**Q1 (Value)**	**Q4 (Growth)**
Intercept	0.0053	0.1924	-0.2017
(p-value)	(0.05)	(0.02)	(0.58)
PERATIO	-0.0001	-0.0031	-0.0138
(p-value)	(0.42)	(0.39)	(0.32)
#ANALYSTS	-0.0004	0.0072	0.0053
(p-value)	(0.58)	(0.11)	(0.14)
LLIQUID	-0.0038	-0.0084	-0.0006
(p-value)	(0.90)	(0.32)	(0.93)
LSIGMA	0.0126	0.0359	0.0381
(p-value)	(0.03)	(0.00)	(0.01)
LDISP	-1.4944	-9.3421	-50.9977
(p-value)	(0.00)	(0.10)	(0.25)
Adjusted R^2	0.02	0.06	0.06
(p-value)	(0.00)	(0.09)	(0.04)

Regression Estimates of Monthly NASDAQ Stock Returns Against P/E Ratios, # Analysts, Liquidity, Sigma and Dispersion (Fama-MacBeth Procedure): July 1985-June 2006

		P/E Ratio Sorted Quartiles	
Independent Variables	**Total Sample**	**Q1 (Value)**	**Q4 (Growth)**
Intercept	-0.0202	0.0490	-0.0580
(p-value)	(0.42)	(0.08)	(0.06)
PERATIO	-0.0003	-0.0156	-0.0000
(p-value)	(0.00)	(0.05)	(0.19)
#ANALYSTS	-0.0008	-0.0004	-0.0005
(p-value)	(0.00)	(0.17)	(0.05)
LLIQUID	-0.0031	0.0052	-0.0010
(p-value)	(0.16)	(0.06)	(0.63)
LSIGMA	-0.0064	0.0079	-0.0166
(p-value)	(0.33)	(0.30)	(0.04)
LDISP	-1.4919	-2.6372	-2.4185
(p-value)	(0.00)	(0.00)	(0.00)
Adjusted R^2	0.02	0.04	0.01
(p-value)	(0.00)	(0.00)	(0.01)

Regression Estimates of Monthly NYSE Stock Returns Against P/E Ratios, # Analysts, Liquidity, Sigma and Dispersion (Fama-MacBeth Procedure): July 1985-June 2006

		P/E Ratio Sorted Quartiles	
Independent Variables	**Total Sample**	**Q1 (Value)**	**Q4 (Growth)**
Intercept	-0.0158	0.0394	-0.0328
(p-value)	(0.58)	(0.21)	(0.24)
PERATIO	-0.0000	-0.0004	-0.0000
(p-value)	(0.81)	(0.40)	(0.21)
#ANALYSTS	-0.0002	-0.0001	-0.0003
(p-value)	(0.00)	(0.80)	(0.04)
LLIQUID	0.0024	-0.0003	0.0010
(p-value)	(0.03)	(0.82)	(0.38)
LSIGMA	-0.0046	0.0066	-0.0087
(p-value)	(0.50)	(0.40)	(0.19)
LDISP	-1.2407	-1.7711	-1.6739
(p-value)	(0.00)	(0.00)	(0.03)
Adjusted R^2	0.02	0.03	0.02
(p-value)	(0.04)	(0.00)	(0.05)

Time Series Regression Results of Size and Book-to-Market (B/M) Stock Portfolio Monthly AMEX Returns on the Three Fama-French Factors: July 1985-June 2006

Sub-sample	Intercept a	RMF b	SMB c	HML d	R-Square
Small Value	-0.0046	0.128	0.333	0.267	0.84
(P-Value)	(0.78)	**(0.05)**	**(0.03)**	**(0.00)**	
Small Growth	-0.0135	0.225	0.572	-0.283	0.88
(P-Value)	(0.42)	**(0.01)**	**(0.00)**	**(0.00)**	
Large Value	-0.0188	0.591	0.027	0.317	0.72
(P-Value)	(0.48)	(0.39)	(0.41)	**(0.00)**	
Large Growth	-0.0137	0.341	0.034	-0.011	0.60
(P-Value)	(0.27)	(0.52)	(0.67)	(0.20)	

Time Series Regression Results of Size and Book-to-Market (B/M) Stock Portfolio Monthly NASDAQ Returns on the Three Fama-French Factors: July 1985-June 2006

Sub-sample	Intercept a	RMF b	SMB c	HML d	R-Square
Small Value	-0.0091	0.391	0.701	0.539	0.91
(P-Value)	(0.63)	**(0.00)**	**(0.00)**	**(0.00)**	
Small Growth	-0.0274	0.833	0.812	-0.203	0.94
(P-Value)	(0.38)	**(0.00)**	**(0.00)**	**(0.00)**	
Large Value	-0.0378	0.852	0.073	0.351	0.81
(P-Value)	(0.22)	(0.25)	(0.08)	**(0.00)**	
Large Growth	-0.0195	0.408	0.111	-0.013	0.71
(P-Value)	(0.43)	(0.39)	(0.48)	(0.15)	

Time Series Regression Results of Size and Book-to-Market (B/M) Stock Portfolio Monthly NYSE Returns on the Three Fama-French Factors: July 1985-June 2006

Sub-sample	Intercept a	RMF b	SMB c	HML d	R-Square
Small Value (P-Value)	-0.0042 (0.51)	0.325 **(0.00)**	0.658 **(0.00)**	0.284 **(0.00)**	0.90
Small Growth (P-Value)	-0.0103 (0.30)	0.621 **(0.00)**	0.780 **(0.00)**	-0.185 **(0.00)**	0.93
Large Value (P-Value)	-0.0175 (0.12)	0.808 (0.36)	0.033 (0.19)	0.304 **(0.00)**	0.79
Large Growth (P-Value)	-0.0126 (0.20)	0.366 (0.43)	0.041 (0.30)	-0.010 (0.30)	0.65

Conclusions

- I document a consistently strong value premium over the 1985-2006 sample period, which persists in both bull and bear markets, as well as in recessions and recoveries

- I show that the value premium is not driven by a few outliers, but it is pervasive as the overwhelming majority of stocks in the value portfolio have positive returns, and the majority of industries in the sample contain stocks that have positive value premiums

- The value premium, in general, remains positive and statistically significant over time

Conclusions

- In terms of explaining the drivers of the value premium, and having looked at this question from many angles, the findings seem to support the notion that what drives the value premium is
  - (Most likely) errors in expectations
  - Not risk, as argued by the market efficiency school of thought.

Motivation of Extensions

- The problem with the academic classification of stocks into value and growth is that such stock selection approach is only part of what value investors do!
- This is the first step value investors follow in stock selection, which helps them identify possibly undervalued stocks.

Motivation of Extensions

- Once stocks are screened out, value investors then proceed to find stocks that are truly undervalued by valuing individually each stock and arriving at their investment decision.
  - And it is this step in particular that previous academic research has not examined.

Objectives of Extensions

- Using Canadian data for the period May 1999 to April 2007, this paper has two objectives:
- To confirm that a value premium exists in my sample of stocks using a search process that consists of cross-sorting stocks by both P/E and P/BV ratios.
- To examine whether the second step of stock selection that value investors follow adds any value.
  - That is: Do value investors add any value?

Contribution of Extensions

- There is a strong and pervasive value premium in Canada over the sample period that persists in a bull and bear market and during a recession/recovery.
- Value investors do add value, in the sense that their process of selecting truly undervalued stocks, via in-depth security valuation, produces significantly positive excess returns over and above a naive approach of simply selecting low P/E and P/BV ratio stocks.

Data

- Data are from COMPUSTAT from which trailing price to earnings (P/E) and price to book value (P/BV) ratios and market cap and total stock returns are derived.
- For the trailing P/E and P/BV ratios, the price (P) is as of the end of April of year (t) and E and BV are, respectively, the December (t-1) basic annual earnings per share and book value per share for companies with fiscal year end December (t-1), as reported in COMPUSTAT.

Data

- Companies are from the Toronto Stock Exchange (TSX).
- Companies are not in the financial services or income trust sectors.
- Negative P/E and P/BV ratios, as well as P/E ratios in excess of 150 and P/BV in excess of 20 are excluded.
- Firms had to have both P/E and P/BV ratios within the aforementioned boundaries to be included in the sample.
- To be included in the sample a stock had to have a price over $1 and fiscal year end December.

Data

- The data, which are adjusted for stock splits and stock dividends, are for each year in the 1999 to 2007 period.
- After all aforementioned screenings, there are 1301 cross sectional-time series (firm-year) observations left belonging to a cumulative number of 377 companies over the sample period.
- Since the sample only includes firms with fiscal year end December of year (t-1), all firms have released their annual reports needed for the valuations and information for EPS and BVPS by April of year (t).

Range of P/E – P/BV ratios per year for the low P/E – low P/BV basket (Q1) and the high P/E – high P/BV basket (Q4)

		Q1 (Value)		Q4 (Growth)	
Year		P/E	P/BV	P/E	P/BV
1999	Max	9.72	0.72	83.72	17.64
1999	Min	2.38	0.35	25.00	2.41
2000	Max	7.23	0.67	144.00	11.48
2000	Min	0.42	0.39	29.12	3.87
2001	Max	8.19	0.78	140.00	8.52
2001	Min	2.65	0.27	21.46	3.28
2002	Max	8.72	0.78	133.33	6.41
2002	Min	3.45	0.33	27.17	3.76
2003	Max	9.82	0.72	85.00	5.23
2003	Min	3.26	0.47	23.91	2.85
2004	Max	10.77	1.09	135.00	7.19
2004	Min	5.05	0.54	28.64	3.31
2005	Max	11.30	1.03	135.00	13.34
2005	Min	4.05	0.73	30.95	4.94
2006	Max	12.82	1.27	86.11	18.61
2006	Min	2.55	0.58	29.80	4.57

Number of observations for each basket per year

	Q1 (Value)	Q4 (Growth)
Year	Number of observations	Number of observations
1999	8	10
2000	10	11
2001	11	12
2002	8	9
2003	9	10
2004	10	10
2005	11	11
2006	12	12
Total	79	85

Methodology

- To determine the truly undervalued stocks, all naively chosen stocks from Q1 were individually valued.
  - The annual reports of the companies in question were obtained from Sedar.com.

Methodology

- For each stock in Q1, two valuations were carried out.
- First, the net replacement value of each company's assets (called Net Asset Value - NAV) was estimated.
- Second, a Free cash Flow (FCF) based valuation for each company was produced (called Earnings Power Value - EPV), by normalizing FCFs and discounting them to infinity using a perpetuity formula.

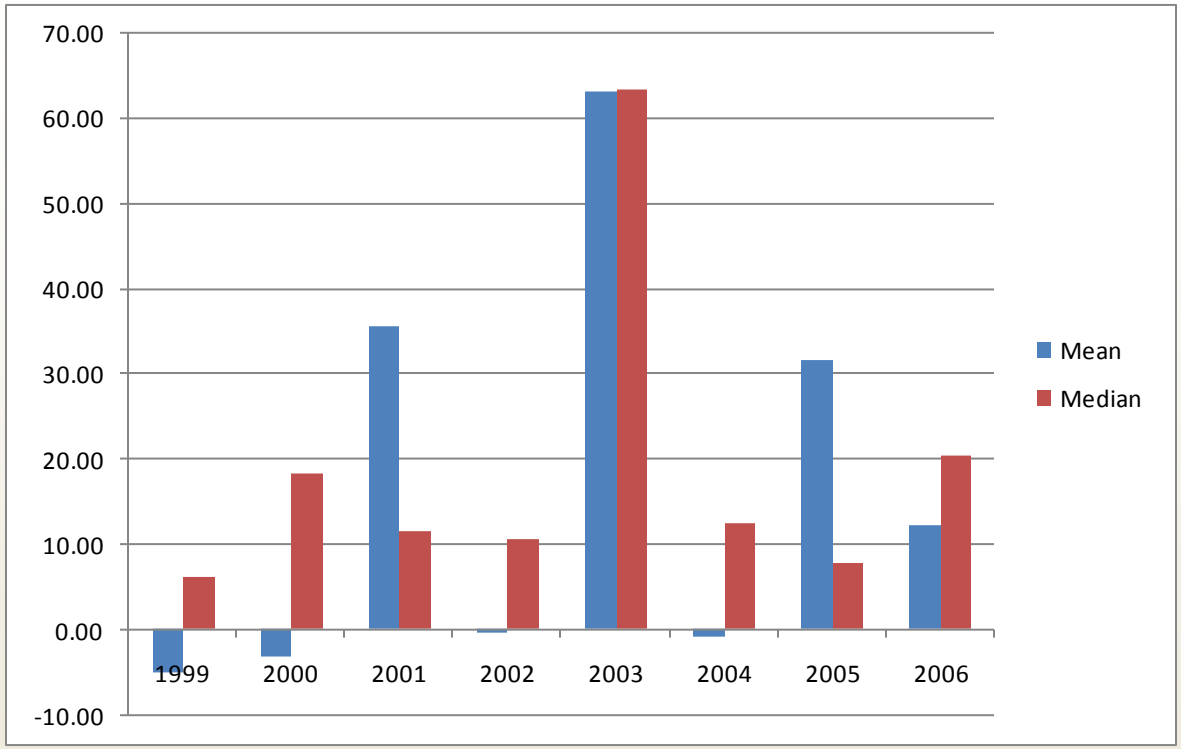
Methodology

- Where exactly the company's intrinsic value lies depends on strategic analysis and the probabilities of possible outcomes.
- Most of the time the Intrinsic Value lies between NAV and EPV.
- The Entry Price was set at 2/3 of the Intrinsic Value, i.e., Intrinsic Value less 1/3 Margin of Safety.
- If a stock's current price was below the Entry Price, a decision was made to purchase the stock.

Final number of stocks per year in the invested "sophisticated" portfolio (Q1S)

Year	# of Stocks in Sophisticated Portfolio
1999	4
2000	6
2001	7
2002	4
2003	4
2004	2
2005	4
2006	4

Mean and Median Annual (%) Value Premia to P/E – P/BV Ratio Based Value (Q1) and Growth (Q4) Strategies by Year: May 1999 – April 2007



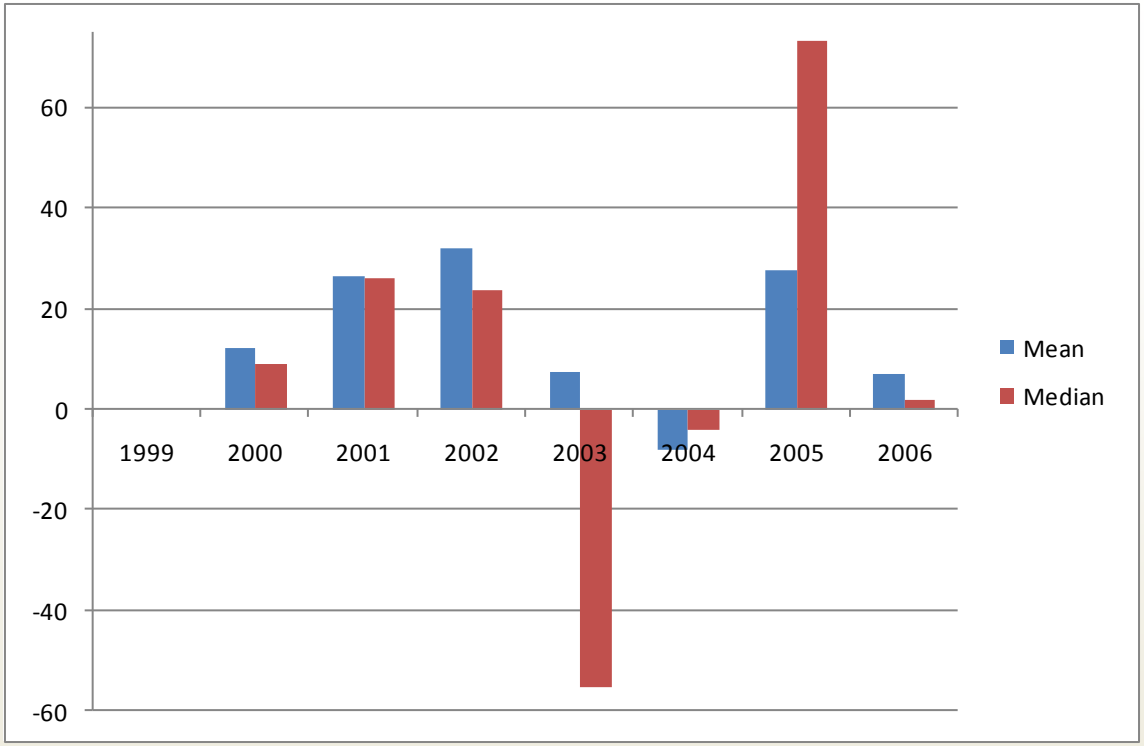
Mean Annual (%) Returns to P/E – P/BV Ratio Based Value (Q1) and Growth (Q4) Strategies by Year: May 1999 – April 2007

	Mean Return		Value Premium
Year	Q1	Q4	Q1-Q4
1999	5.7%	10.9%	-5.2%
2000	1.5%	4.8%	-3.3%
2001	45.4%	9.7%	35.7%
2002	-4.6%	-4.2%	-0.4%
2003	92.8%	29.7%	63.1%
2004	32.5%	33.4%	-0.9%
2005	84.8%	53.2%	31.6%
2006	17.8%	5.6%	12.2%
Overall average	34.5%	17.9%	16.6%
Variance	14.0%	3.6%	
Risk-free rate	3.6%	3.6%	
SHARPE ratio	0.83	0.75	

Median Annual (%) Returns to P/E – P/BV Ratio Based Value (Q1) and Growth (Q4) Strategies by Year: May 1999 – April 2007

	Median Return		Value Premium
Year	Q1	Q4	Q1-Q4
1999	1.4%	-4.8%	6.2%
2000	0.6%	-17.7%	18.3%
2001	20.1%	8.4%	11.6%
2002	1.8%	-8.8%	10.7%
2003	89.4%	26.0%	63.4%
2004	28.6%	16.2%	12.4%
2005	42.1%	34.4%	7.7%
2006	22.9%	2.5%	20.4%
Overall average	25.9%	7.0%	18.8%
Variance	8.8%	3.2%	
Risk-free rate	3.6%	3.6%	
SHARPE ratio	0.75	0.19	

Mean and Median Annual (%) Returns to P/E – P/BV Ratio Based Naïve Value (Q1) and Sophisticated Value (Q1S) Strategies by Year: May 1999 – April 2007



Mean Annual (%) Returns to P/E – P/BV Ratio Based Naïve Value (Q1) and Sophisticated Value (Q1S) Strategies by Year: May 1999 – April 2007

	Mean Return		Value Investor Premium
Year	Q1S	Q1	Q1S - Q1
1999	5.7%	5.7%	0.0%
2000	13.9%	1.5%	12.4%
2001	71.7%	45.4%	26.4%
2002	27.5%	-4.6%	32.2%
2003	100.4%	92.8%	7.6%
2004	24.7%	32.5%	-7.8%
2005	112.7%	84.8%	27.9%
2006	25.0%	17.8%	7.2%
Overall average	47.7%	34.5%	13.2%
Variance	17.1%	14.0%	
Risk-free rate	3.6%	3.6%	
SHARPE ratio	1.07	0.83	

Median Annual (%) Returns to P/E – P/BV Ratio Based Naïve Value (Q1) and Sophisticated Value (Q1S) Strategies by Year: May 1999 – April 2007

	Median Return		Value Investor Premium
Year	Q1S	Q1	Q1S - Q1
1999	1.4%	1.4%	0.0%
2000	9.6%	0.6%	9.1%
2001	46.3%	20.1%	26.2%
2002	25.6%	1.8%	23.8%
2003	34.0%	89.4%	-55.4%
2004	24.7%	28.6%	-3.9%
2005	115.5%	42.1%	73.4%
2006	25.0%	22.9%	2.1%
Overall average	35.3%	25.9%	9.4%
Variance	12.4%	8.8%	
Risk-free rate	3.6%	3.6%	
SHARPE ratio	0.9	0.75	

Conclusions of Extensions

- A strong and pervasive value premium existed in Canada over the sample period that persisted in a bull and bear market and during a recession/recovery.
- Value stocks beat growth stocks even when using a very mechanical screening of the search process.
- Value investors do add value, in the sense that their process of selecting truly undervalued stocks, via in-depth security valuation of the possibly undervalued stocks, produced significantly positive excess returns over and above the naive approach of simply selecting low P/E - P/BV ratio stocks.
  - Value investors proceeding to their second step of the stock selection process do add value.