Media content for value and growth stocks

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September 2017

The value premium

Figure 1: News Article from the Institutional Investor (July 20th 2017)

Is Growth the New Value?

Value investing is on the decline as a result of a slower growth environment and faster technology innovation, one strategist argues.

By Alicia McElhaney

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When it comes to active equity management, growth stocks have outperformed their value peers — and at least one manager thinks that trend will continue, and not just for cyclical reasons.

Brad Neuman, senior vice president and client investment strategist at growth-focused investment firm Alger, argues that growth stocks have persistently

The value premium

What drives Value and Growth stocks returns?

- **Systematic risk** exposure explains value stocks' outperformance (e.g. Zhang (2005); Petkova and Zhang (2005),...).
- **Mental constructs** of investors create groups of stocks in which investors put their money as a whole, causing observed co-movements (e.g. Barberis and Shleifer (2003)).

The value premium

Value and Growth stocks exhibit specific sensitivities to news.

- **Different news sensitivities** for Value and Growth stocks have been documented by Porta et al. (1997). Annual reports have different impacts.
- Distressed and extreme growth firms exhibit a **greater sensitivity** to **high** levels of investor **sentiment** (Baker and Wurgler, 2006).
- **Value** stocks are more sensitive to **cash-flow** news and **Growth** stocks to **discount-rate** news (Campbell and Vuolteenaho, 2004). $\rightarrow$ Different reaction to news.

News and stock returns

Measuring impact of semantic content of media still a recent field.

- General market news have a significant impact on the aggregated stock market, causing **overreaction followed by a correction** (Tetlock, 2007). The effect is also documented for **individual** stocks and the effect is more significant for **news about fundamentals** (Tetlock et al., 2008).
- Stocks with no **media coverage** earn higher abnormal returns (Fang and Peress, 2009).
- Prices react to new information $\rightarrow$ **Novelty effect**? (Huang and Zang, 2017).

Measuring semantic content in finance

Text mining methods employed have evolved over the years...

- Tetlock (2007): **generic purposed** Harvard IV-4 dictionary.
- Loughran and Mcdonald (2011) proposed a word **list dedicated to finance**.
- Jegadeesh and Wu (2013) use a **Bayesian** approach to **weight** words.
- Ho et al. (2013) and others: **deep learning classifiers**.
- Huang and Zang (2017) use a **topic modeling** approach to extract information.

We use TRNA[1], which uses deep learning classifiers to score news along several metrics.

[1] Thomson Reuters News Analytics

TRNA Metrics

- **Tonality/Polarity** is declined in:
  - $P(Positive) \in [0; 1]$
  - $P(Neutral) \in [0; 1]$
  - $P(Negative) \in [0; 1]$
- **Relevance** $\in [0; 1]$
- **Volume** : # news concerning stock i over past x hours.
- **Repetition** : # news concerning stock i AND current topic tp over past x hours.

Hypothesis

Do news contain relevant information for the pricing of the Value anomaly?

- Can the value-growth spread be explained by news polarity?
  $\rightarrow$ If yes, how does it fit in the literature about the impact of news on value and growth stocks?
- Does news relevance, coverage level or repetition matter to explain stock returns?

$$R_{Value,t} - R_{Growth,t} = \alpha + R_{M,t} + \sum_{i=1}^{D} \beta_i News\_Analytic_{i,t} + CoHoldings\_effect_t + \epsilon_t$$

2. Data

2.1. Market Data & Portfolio Creation

Data

Data comes from 3 databases and covers the period from 2003 to 2015.

- Stock market data[2] for all stocks listed on the NYSE.
- News stories (i.e. the text body archive) from Reuters.
  - Whole Sample refers to all news mentioning at least 1 company from our NYSE sample.
  - Value and Growth refer to news mentioning at least one such stock.
- News Analytics from TRNA[3].

[2] obtained from CRSP

[3] Thomson Reuters News Analytics

Summary Statistics: Stock market data

Value and Growth portfolio are constructed following the methodology of Fama and French (1993). Value stocks are over 70th percentile B/M ratio. Growth stocks are below the 30th percentile. Rebalancing occurs yearly on June 30th.

Table 1: Accounting characteristics of Value and Growth Portfolios

	Whole Sample	Value Stocks	Growth Stocks	p-value
Avg. # Companies	1461	426	684	
Avg. Market Cap	$ 3.55b	$ 1.36b	$ 5.70b	
Tobin Q[4]	1.98	0.97	3.24	7.94e-11***
Altman Z-score[5]	5.03	2.60	7.80	1.45e-7***
Profitability[6]	0.33	0.28	0.38	3.16e-9***

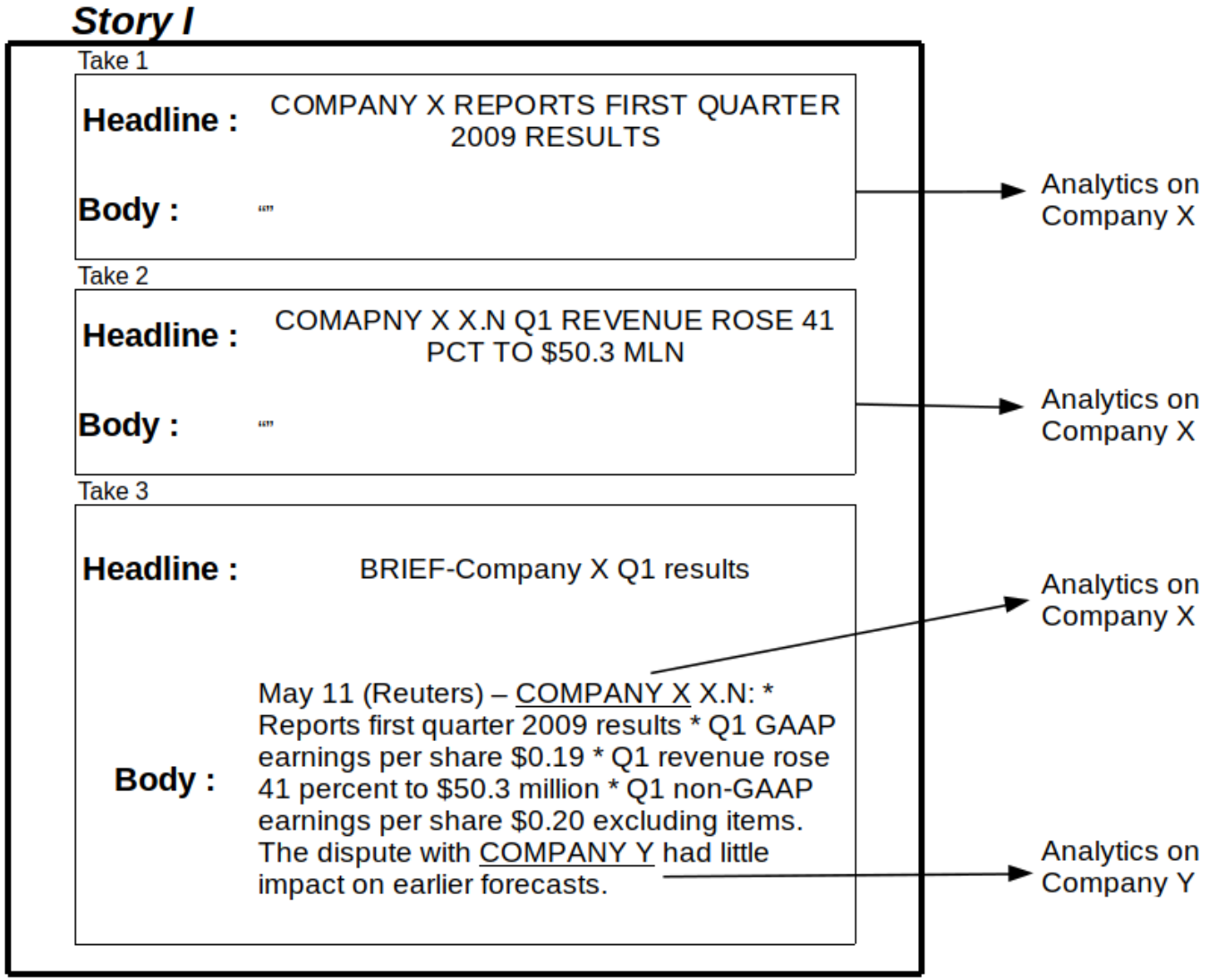
[4] Market Value/Total Assets

[5] Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E

A = working capital / total assets; B = retained earnings / total assets; C = earnings before interest and tax / total assets; D = market value of equity / total liabilities; E = sales / total assets

[6] Gross Profit/Total Assets

Takes and Stories



Summary Statistics: News Stories

Table 2: This table reports the media attention per company and per period. A distinction is made between stories and takes

		Whole Dataset	Value	Growth
# of Stories	per company/year	128	111	137
	per week	2.46	2.14	2.64
	per month	10.65	9.29	11.42
# of Takes	per story	1.70	1.71	1.66
	% single take/story	76%	76	76%
	% 2 take/story	11%	11%	12%
	% >=3 take/story	13%	13%	12%
# of Companies (per month)	per story	1.61	1.76	1.59
	% companies with no story	27%	28%	25%
	% companies 1-5 stories	37%	38%	36%
	% companies 5-50 stories	34%	32%	36%
	% companies >50 stories	3%	2%	3%

2.3. News Analytics

News Analytics: Repetition and Volume

Table 7: Differences in Repetition and Volume for Value and Growth news.

		Whole dataset	Value	Growth	P-value
Repetition 24H	AVG	0.39	0.38	0.39	0.00***
	min/max	0/38.7	0/31.3	0/29.8	
Volume 24H	AVG	2.6	2.1	2.8	0.00***
	min/max	0/546	0/230	0/221	
% of repetition		0.15	0.18	0.14	0.00***
Repetition 7D	AVG	0.63	0.62	0.63	0.65
	min/max	0/92.2	0/44.5	0/53.6	
Volume 7D	AVG	10.9	8.6	11.9	0.00***
	min/max	0/1988	0/728	0/660	
% of repetition		0.06	0.07	0.05	0.00***

The News Polarity Spread

We construct a *simplified* news polarity index as follows :

- Value Polarity = A - C
- Growth Polarity = B - D
- Relative Polarity (HML_Polarity) = (A - C) - (B - D)

	Value Stocks Takes	Growth Stocks Takes
AVG. P(Positive)	A	B
AVG. P(Negative)	C	D

News Analytics: Sentiment and Relevance

Table 8: Polarity & Relevance

		Whole dataset	Value	Growth	P-value
Daily **Polarity Spread**	AVG	0.11	0.10	0.11	0.0006***
	min/max	-0.59 / 0.79	-0.76 / 0.81	-0.69 / 0.76	
	STD		0.20	0.15	
Relevance	AVG	0.87	0.88	0.85	0.28
	STD	0.11	0.11	0.10	

3. Preliminary Results

- News associated to value stocks are on average significantly less positive than news related to growth stocks.
- The difference vanishes during recession.

Table 9: gives the difference between Value and Growth stocks. Specifically for expansion in column 1 and recession in column 2.

	Expansion (Value-Growth)	Recession (Value-Growth)
Consumer Cyclicals	-0.02***	-0.05***
Basic Materials	-0.06***	-0.03
Financials	0.03***	-0.09***
Healthcare	0.09***	0.08***
Consumer Non-cyclical	0.01	0.07***
Telecom	-0.02**	-0.03
Energy	-0.02**	-0.01
All	-0.01***	-0.01

Regression Analysis

Does the *Polarity_Spread* explain the returns of the Value-Growth premium?

$$Cat\_Score_{t,i} = \frac{\sum_{take=1}^{N_{t,i}} Cat_{take} * Relevance_{take}}{N_{t,i}} \quad (1)$$

$Cat_{take} = +1$, if $P(Pos) = Max[P(Pos), P(Neg), P(Neut)]$
$Cat_{take} = 0$, if $P(Neut) = Max[P(Pos), P(Neg), P(Neut)]$
$Cat_{take} = -1$, if $P(Neg) = Max[P(Pos), P(Neg), P(Neut)]$

$$Polarity_{t,g} = Cat\_Score_{t,i_g} * VW_{t,i_g} \quad (2)$$

Table 10: Shows for monthly (1), weekly (2) and daily (3) frequency how much of the variation of the returns of the Value-Growth premium is captured by the relative Polarity (HML_Polarity) and by the market return (FF_Mkt_Rf). Data used goes from 1-1-2003 to 1-1-2015.

	Dependent variable:		
	Monthly_FF_HML	Weekly_FF_HML	Daily_FF_HML
	(1)	(2)	(3)
HML_Polarity	0.131**	0.005	0.002*
	(0.056)	(0.008)	(0.001)
HML_Polarity Lag -1	0.007	0.0171**	−0.001
	(0.055)	(0.008)	(0.001)
FF_Mkt_Rf	0.185***	0.233***	0.196***
	(0.045)	(0.020)	(0.009)
Constant	0.005	0.0001	0.00004
	(0.003)	(0.001)	(0.0001)
Observations	144	626	3,021
Adjusted R^2	0.141	0.175	0.147
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 11: Regresses the returns of growth and value stocks separately. Uses both the relative HML polarity and the chosen stock's polarity as explanatory variables. Monthly Data ranging from 1-1-2003 to 1-1-2015 was used.

	Dependent variable:			
	FF_Value		FF_Growth	
	(1)	(2)	(3)	(4)
FF_Mkt_Rf	1.229***	1.237***	0.908***	0.901***
	(0.041)	(0.042)	(0.015)	(0.015)
HML_Polarity	0.110**		−0.047***	
	(0.046)		(0.016)	
Value_Polarity		0.009		
		(0.034)		
Growth_Polarity				0.022
				(0.016)
Constant	0.005*	−0.001	0.00000	−0.003
	(0.003)	(0.006)	(0.001)	(0.003)
Observations	144	144	144	144
Adjusted R^2	0.868	0.863	0.965	0.963
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 12: Adds the NBER as dummy variable in the analysis. The dummy alone and in interaction with the Sentiment spread seems to be significant. Monthly Data ranging from 1-1-2003 to 1-1-2015 was used.

	Dependent variable:		
	FF_HML	FF_Value	FF_Growth
	(1)	(2)	(3)
FF_Mkt_Rf	0.189***	1.240***	0.908***
	(0.046)	(0.042)	(0.015)
HML_Polarity	0.106**	0.099**	−0.041**
	(0.052)	(0.047)	(0.017)
NBER	0.029**	0.022*	−0.006
	(0.014)	(0.012)	(0.004)
HML_Polarity:NBER	0.558**	0.333	−0.123
	(0.241)	(0.218)	(0.078)
Constant	0.003	0.003	0.0002
	(0.003)	(0.003)	(0.001)
Observations	144	144	144
Adjusted R^2	0.161	0.869	0.965
Note:		*p<0.1; **p<0.05; ***p≤0.01	

Conclusion

- Growth stock get more media attention.
- A long term component of the news polarity is priced at the end of each month.
- Economic magnitude is significant : Explains $\sim 5\%$ of variation.
- The relative difference in polarity between Value and Growth stocks is what drives both the returns of Value and Growth stocks separately.
- The Economic cycle exacerbates the effect of the relative difference in polarity.

Thank You for your attention.

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