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## Stock Anomaly Smorgasbord–Wow!

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### Stock Anomaly Smorgasbord–Wow!

by [Wesley R. Gray, Ph.D.](#) | November 7th, 2014 | [Research Insights](#) | [6 Comments](#)

#### Digesting Anomalies: An Investment Approach

- Hou, Xue, and Zhang
- A version of the paper can be found [here](#)
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#### Abstract:

*An empirical q-factor model consisting of the market factor, a size factor, an investment factor, and a profitability factor largely summarizes the cross section of average stock returns. A comprehensive examination of nearly 80 anomalies reveals that about **one-half of the anomalies are insignificant in the broad cross section**. More importantly, with a few exceptions, the q-factor model's performance is at least comparable to, and in many cases better than that of the Fama-French (1993) 3-factor model and the Carhart (1997) 4-factor model in capturing the remaining significant anomalies*

#### Alpha Highlight:

The laundry list of items tested...

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Wesley Gray



Jack Vogel

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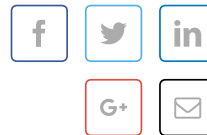
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Panel A: Momentum	
SUE-1 Earnings surprise (1-month holding period), Foster, Olsen, and Shevlin (1984)	SUE-6 Earnings surprise (6-month holding period), Foster, Olsen, and Shevlin (1984)
Abr-1 Cumulative abnormal stock returns around earnings announcements (1-month holding period), Chan, Jegadeesh, and Lakonishok (1996)	Abr-6 Cumulative abnormal stock returns around earnings announcements (6-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
RE-1 Revisions in analysts' earnings forecasts (1-month holding period), Chan, Jegadeesh, and Lakonishok (1996)	RE-6 Revisions in analysts' earnings forecasts (6-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
R6-1 Price momentum (6-month prior returns, 1-month holding period), Jegadeesh and Titman (1993)	R6-6 Price momentum (6-month prior returns, 6-month holding period), Jegadeesh and Titman (1993)
R11-1 Price momentum, (11-month prior returns, 1-month holding period), Fama and French (1996)	I-Mom Industry momentum, Moskowitz and Grinblatt (1999)
Panel B: Value-versus-growth	
B/M Book-to-market equity, Rosenberg, Reid, and Lanstein (1985)	A/ME Market leverage, Bhandari (1988)
Rev Reversal, De Bondt and Thaler (1985)	E/P Earnings-to-price, Basu (1983)
EF/P Analysts' earnings forecasts-to-price, Elgers, Lo, and Pfeiffer (2001)	CF/P Cash flow-to-price, Lakonishok, Shleifer, and Vishny (1994)
D/P Dividend yield, Litzberger and Ramaswamy (1979)	O/P Payout yield, Boudoukh, Michaely, Richardson, and Roberts (2007)
NO/P Net payout yield, Boudoukh, Michaely, Richardson, and Roberts (2007)	SG Sales growth, Lakonishok, Shleifer, and Vishny (1994)
LTG Long-term growth forecasts of analysts, La Porta (1996)	Dur Equity duration, Dechow, Sloan, and Soliman (2004)
Panel C: Investment	
ACI Abnormal corporate investment, Titman, Wei, and Xie (2004)	I/A Investment-to-assets, Cooper, Gulen, and Schill (2008)
NOA Net operating assets, Hirshleifer et al. (2004)	$\Delta$ PI/A Changes in property, plant, and equipment plus changes in inventory scaled by assets, Lyandres, Sun, and Zhang (2008)
IG Investment growth, Xing (2008)	NSI Net stock issues, Pontiff and Woodgate (2008)
CEI Composite issuance, Daniel and Titman (2006)	NXF Net external financing, Bradshaw, Richardson, and Sloan (2006)
IvG Inventory growth, Belo and Lin (2011)	IvC Inventory changes, Thomas and Zhang (2002)
OA Operating accruals, Sloan (1996)	TA Total accruals, Richardson et al. (2005)
POA Percent operating accruals, Hafzalla, Lundholm, and Van Winkle (2011)	PTA Percent total accruals, Hafzalla, Lundholm, and Van Winkle (2011)
Panel D: Profitability	
ROE Return on equity, Haugen and Baker (1996)	ROA Return on assets, Balakrishnan, Bartov, and Faurel (2010)
RNA Return on net operating assets, Soliman (2008)	PM Profit margin, Soliman (2008)
ATO Asset turnover, Soliman (2008)	CTO Capital turnover, Haugen and Baker (1996)
GP/A Gross profits-to-assets, Novy-Marx (2013)	F F-score, Piotroski (2000)
TES Tax expense surprise, Thomas and Zhang (2011)	TI/BI Taxable income-to-book income, Green, Hand, and Zhang (2013)
RS Revenue surprise, Jegadeesh and Livnat (2006)	NEI Number of consecutive quarters with earnings increases, Barth, Elliott, and Finn (1999)
FP Failure probability, Campbell, Hilscher, and Szilagyi (2008)	O O-score, Dichev (1998)
Panel E: Intangibles	
OC/A Organizational capital-to-assets, Eisfeldt and Papanikolaou (2013)	BC/A Brand capital-to-assets, Belo, Lin, and Vitorino (2014)
Ad/M Advertisement expense-to-market, Chan, Lakonishok, and Sougiannis (2001)	RD/S R&D-to-sales, Chan, Lakonishok, and Sougiannis (2001)
RD/M R&D-to-market, Chan, Lakonishok, and Sougiannis (2001)	RC/A R&D capital-to-assets, Li (2011)
H/N Hiring rate, Belo, Lin, and Bazdresch (2014)	OL Operating leverage, Novy-Marx (2011)
G Corporate governance, Gompers, Ishii, and Metrick (2003)	AccQ Accrual quality, Francis et al. (2005)
Ind Industries, Fama and French (1997)	
Panel F: Trading frictions	
ME The market equity, Banz (1981)	Ivol Idiosyncratic volatility, Ang et al. (2006)
Tvol Total volatility, Ang et al. (2006)	Svol Systematic volatility, Ang et al. (2006)
MDR Maximum daily return, Bali, Cakici, and Whitelaw (2011)	$\beta$ Market beta, Frazzini and Pedersen (2014)
D- $\beta$ Dimson's beta, Dimson (1979)	S-Rev Short-term reversal, Jegadeesh (1990)
Disp Dispersion of analysts' earnings forecasts, Diether, Malloy, and Scherbina (2002)	Turn Share turnover, Datar, Naik, and Radcliffe (1998)
1/P 1/share price, Miller and Scholes (1982)	Dvol Dollar trading volume, Brennan, Chordia, and Subrahmanyam (1998)
Illiq Illiquidity as absolute return-to-volume, Amihud (2002)	

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## About the Author: Wesley R. Gray, Ph.D.



After serving as a Captain in the United States Marine Corps, Dr. Gray earned a PhD, and worked as a finance professor at Drexel University. Dr. Gray's interest in bridging the research gap between academia and industry led him to found Alpha Architect, an asset management that delivers affordable active exposures for tax-sensitive investors. Dr. Gray has published four books and a number of academic articles. Wes is a regular contributor to multiple industry outlets, to include the following: Wall Street Journal, Forbes, ETF.com, and the CFA Institute. Dr. Gray earned an MBA and a PhD in finance from the University of Chicago and graduated magna cum laude with a BS from The Wharton School of the University of Pennsylvania.

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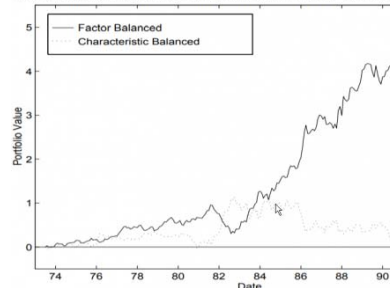
### Earnings seasonality and stock returns

Panel A: Base four-factor regressions

Earnings rank	(VW) Intercept	(EW) Intercept	MKTFF	SMB	HML	UMD	R <sup>2</sup>	N
1 (Low)	0.358*** (2.77)	0.306*** (3.35)	0.948*** (45.68)	0.566*** (19.27)	0.370*** (11.71)	-0.039* (-1.95)	0.868	492
2	0.159 (1.24)	0.278*** (3.37)	1.004*** (55.52)	0.701*** (26.36)	0.281*** (9.83)	-0.025 (-1.39)	0.908	492
3	0.452*** (2.82)	0.291*** (3.41)	1.001*** (51.36)	0.666*** (25.07)	0.178*** (6.05)	-0.044** (-2.19)	0.904	492
4	0.216** (1.69)	0.375*** (4.77)	0.986*** (55.24)	0.655*** (25.81)	0.179*** (6.59)	0.031* (1.82)	0.912	492
5 (High)	0.009*** (6.03)	0.653*** (6.98)	0.936*** (44.02)	0.473*** (15.69)	0.292*** (9.03)	-0.048** (-2.41)	0.854	492
5-1	0.551*** (3.44)	0.347*** (3.13)	-0.011 (-0.45)	-0.093*** (-2.61)	-0.077** (-2.92)	-0.01 (-0.42)	0.020	492

This table presents the abnormal returns to portfolios formed on measures of earnings seasonality. For each stock with a quarterly earnings announcement 12 months ago, we rank earnings announcements from six years ago to one year ago by earnings per share (e.g., adjusted for stock splits). The earnings rank variable is the average rank of the past five announcements from the same fiscal quarter as the expected upcoming announcement. We sort stocks each month into quintiles according to the distribution of earnings rank that month, with quintile 5 corresponding to stocks where the earnings were historically higher than normal in the upcoming quarter and quintile 1 being historically lower than normal earnings in the upcoming quarter. EW and VW are equal-weighted and value-weighted portfolios, respectively. We compute abnormal returns under a four-factor model (Fama and French 1993, Carhart 1997) by regressing portfolio excess returns on excess market returns, SMB, HML, and UMD (Ken French's website). In Panel A, all firms with a predicted earnings announcement are included, quintiles based on the earnings rank variable that month. In Panel B, we examine firms with four values of earnings rank in the current year and rank the four announcements according to where they placed the firm in the distribution of earnings rank in the month in question. In other words, portfolio 4 buys whichever earnings announcement has the highest relative value of earnings rank for the given firm that year, and portfolio 1 has the lowest value of earnings rank. The data run from October 1972 to September 2013. The top number is the coefficient, the bottom number in parentheses is the t-statistic, and \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

Figure 5: Cumulative Returns on Characteristic and Factor Balanced



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## 6 Comments

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**sx** November 7, 2014 at 12:53 pm [Log in to Reply](#)

Hi Wes, are you aware any literature survey that summarizes the relationship between companies performance and companies Qualitative factors?

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**Wesley Gray, PhD** November 7, 2014 at 3:28 pm [Log in to Reply](#)

In general, research involving surveys is not considered reliable due to bias data samples—hence the reason you don't see many studies like this in the academic finance journals. It would be wonderful to tie qualitative elements with quantitative elements, but the data challenges are too great. Here is an example of making it work:

[https://faculty.fuqua.duke.edu/~charvey/Research/Working\\_Papers/W105\\_Management\\_miscalibration.pdf](https://faculty.fuqua.duke.edu/~charvey/Research/Working_Papers/W105_Management_miscalibration.pdf)

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**sx** November 7, 2014 at 5:41 pm [Log in to Reply](#)

Would love to see some robust test based on qualitative elements!! I believe that lot of financial statement related quant factors are backward looking data, but factors like companies culture, companies' executives, process and product, which are qualitative factors and are forward looking data, are more likely to drive companies performance.

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**Wesley Gray, PhD** November 7, 2014 at 5:43 pm [Log in to Reply](#)

hard to say without some data on the subject. Intuitively that makes sense, but intuition is often flawed

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**Denys Glushkov** November 7, 2014 at 3:04 pm [Log in to Reply](#)

Green, Hand and Zhang (2013, 2014) claim to test 100 anomalies and find that a remarkably large 24 of them are "multidimensionally" priced, Harvey, Liu, and Zhu (2014) conclude that only a handful of the factors among 315 tested are actually statistically significant. whereas Levi and Welch (2014) examined 600 factors and found that 49% of the factors produced zero to negative premia out-of-sample. So the dizzying factor zoo is growing.

The real question is why investment and profitability in and out of themselves are risk factors. If profitability was a risk factor, it would make me believe that prices of profitable firms would be bid up, hence, lowering future expected returns of these stocks. In fact, it is the opposite. Behavioral stories also are not that intuitive. More importantly, only a handful of factors were found to be robust in international setting, namely, Value, Low Beta/Low Vol, and Momentum. The rest such as ROE, Gross Profitability and other Quality-like metrics do not work in international setting. So, as Hsu

and Kalesnik (2014) put it, “we will gladly bet a simple blend of market, value, low beta and momentum exposures against anyone’s optimized N-factor portfolio”.

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**Bob Marlin** November 9, 2014 at 10:23 pm [Log in to Reply](#)

Hello, I tried reading the paper “Implied Equity Duration: A New Way to measure equity risk”. I didn’t really understand it. Is there a way to make a stock screen using the results of the paper? I don’t really have a handle on the statistics to make sense of it.

Thanks,  
Bob

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