q^5

Kewei Hou[1] Haitao Mo[2] Chen Xue[3] Lu Zhang[1]

[1]Ohio State

[2]LSU

[3]University of Cincinnati

PBCSF
November 21, 2018

Augment the q-factor model with an expected growth factor to form the q^5 model

Stress-test factor models with a large set of 158 anomalies:

- The q^5 model improves on the q-factor model substantially
- The q-factor model already compares well with the Fama-French (2018) 6-factor model

Outline

Outline

$$E[R_i - R_f] = \beta^i_{\text{MKT}} E[\text{MKT}] + \beta^i_{\text{Me}} E[R_{\text{Me}}] + \beta^i_{\text{I/A}} E[R_{\text{I/A}}] + \beta^i_{\text{Roe}} E[R_{\text{Roe}}]$$

- MKT, R_{Me}, $R_{\text{I/A}}$, and R_{Roe} are the market, size, investment, and profitability (return on equity, Roe) factors, respectively
- β^i_{MKT}, β^i_{Me}, $\beta^i_{\text{I/A}}$, and β^i_{Roe} are factor loadings

Outperform the Fama-French 3-factor and Carhart 4-factor models

The Fama-French (2015) 5-factor model:

$$E[R_i - R_f] = b_i\, E[\text{MKT}] + s_i\, E[\text{SMB}] + h_i\, E[\text{HML}] + r_i\, E[\text{RMW}] + c_i\, E[\text{CMA}]$$

- MKT, SMB, HML, RMW, and CMA are the market, size, value, profitability, and investment factors, respectively
- b_i, s_i, h_i, r_i, and c_i are factor loadings

Fama and French (2018) add UMD to form the 6-factor model

Background

Historical timeline: The q-factor model predates the Fama-French 5-factor model by 3–6 years

Neoclassical factors	July 2007
An equilibrium three-factor model	January 2009
Production-based factors	April 2009
A better three-factor model that explains more anomalies	June 2009
An alternative three-factor model	April 2010, April 2011
Digesting anomalies: An investment approach	October 2012, August 2014
Fama and French (2013): A four-factor model for the size, value, and profitability patterns in stock returns	June 2013
Fama and French (2014): A five-factor asset pricing model	November 2013, September 2014

A comparison of new factor models	October 2014
Replicating anomalies	May 2017, October 2018
Motivating factors	December 2017
q^5	June 2018, November 2018
Which factors?	July 2018, September 2018
Dissecting anomalies with a five-factor model	2015, 2016
Which alpha?	2015, 2017
Mispricing factors	2015, 2017
Comparing asset pricing models	2015, 2018
Choosing factors	2017, 2018
Short- and long-horizon behavioral factors	2017, 2018

Background

Spanning tests in Hou et al. (2018, "Which factors?"), 1/1967–12/2016

	$\overline{R}$	α	β_{MKT}	β_{SMB}	β_{HML}	β_{RMW}	β_{CMA}	β_{UMD}
R_{Me}	0.31	0.05	0.01	0.97	0.03	−0.03	0.02	
	(2.43)	(1.58)	(0.72)	(64.99)	(1.63)	(−0.98)	(0.72)	
		0.03	0.01	0.97	0.05	−0.04	0.01	0.03
		(0.90)	(1.21)	(68.50)	(2.81)	(−1.34)	(0.34)	(2.57)
$R_{\text{I/A}}$	0.41	0.12	0.01	−0.04	0.03	0.06	0.82	
	(4.92)	(3.48)	(0.80)	(−3.08)	(1.32)	(2.46)	(31.26)	
		0.11	0.01	−0.05	0.04	0.06	0.81	0.01
		(3.15)	(0.97)	(−3.06)	(1.79)	(2.21)	(33.12)	(0.77)
R_{Roe}	0.55	0.47	−0.03	−0.12	−0.24	0.70	0.10	
	(5.25)	(5.91)	(−1.18)	(−2.98)	(−3.72)	12.80	1.03	
		0.30	0.00	−0.12	−0.10	0.65	−0.01	0.24
		(4.50)	0.03	(−3.74)	(−2.02)	(14.77)	(−0.21)	(9.94)

Spanning tests in Hou et al. (2018, "Which factors?"), 1/1967–12/2016

	$\overline{R}$	α_q	β_{MKT}	β_{ME}	$\beta_{\text{I/A}}$	β_{ROE}
SMB	0.25	0.04	–0.01	0.94	–0.08	–0.09
	(1.92)	(1.32)	(–0.66)	(54.18)	(–4.21)	(–5.84)
HML	0.37	0.07	–0.04	0.02	1.01	–0.19
	(2.71)	(0.63)	(–1.01)	(0.31)	(12.18)	(–2.65)
RMW	0.26	0.01	–0.03	–0.12	0.03	0.54
	(2.53)	(0.11)	(–1.21)	(–1.70)	(0.35)	(8.53)
CMA	0.33	–0.00	–0.04	0.04	0.96	–0.10
	(3.51)	(–0.13)	(–3.74)	(1.90)	(34.93)	(–3.48)
UMD	0.64	0.11	–0.08	0.24	–0.00	0.91
	(3.60)	(0.49)	(–1.24)	(1.73)	(–0.02)	(5.88)

The q-factors subsume RMW, CMA, and UMD in the Fama-French 6-factor model, which in turn cannot subsume the q-factors

HXZ: A Comparison of New Factor Models

Discussion

ASU Sonoran Winter Finance Conference

Jay Shanken
Emory University

February 20, 2015

Empirical Results: Barillas-Shanken (2015b)

We develop a Bayesian test for comparing models

q-model prob = 97%, FF5 3%

Asness and Frazzini (2013) argue for a **better value factor** than HML

FF (1993) update portfolios once a year using prices lagged 6 months; ignores recent return

Updating monthly with the most recent stock price gives a factor HML^m with higher mean and more negatively correlated with momentum

Question: does q-model explain HML^m ?

Answer: HML^m alpha on q-factors is 5.3% (t = 3.3)

Also, UMD alpha on q-factors + HML^m is 6.5% (t = 4.0)

We explore a 6-factor model **M** = {Mkt, SMB, HML^m, ROE, I/A, UMD}

Outline

In the multiperiod investment framework:

$$r_{it+1} = \frac{X_{it+1} + (a/2)\left(I_{it+1}/A_{it+1}\right)^2 + (1-\delta)\left[1 + a\left(I_{it+1}/A_{it+1}\right)\right]}{1 + a\left(I_{it}/A_{it}\right)}$$

The "capital gain" roughly proportional to investment-to-assets growth, $\left(I_{it+1}/A_{it+1}\right)/\left(I_{it}/A_{it}\right)$

Intuition analogous with the profitability-expected return relation

Upgrade the q-factor model with an expected growth factor

Forecast $d^{\tau}I/A$, τ-year ahead investment-to-assets changes, with monthly cross-sectional regressions

Motivating predictors based on a priori conceptual arguments:

- Tobin's q: Erickson and Whited (2000)
- Cash flows: Fazzari, Hubbard, and Petersen (1988)
- Change in return on equity: Liu, Whited, and Zhang (2009)

Cash flows: Internal funds available for investments

Accounting conservatism: Cash flows better than earnings in capturing expected growth due to intangibles (Ball, Gerakos, Linnainmaa, and Nikolaev 2016)

- Total revenue minus cost of goods sold, minus SG&A, plus R&D, minus change in accounts receivable, minus change in inventory, minus change in prepaid expenses, plus change in deferred revenue, plus change in trade accounts payable, and plus change in accrued expenses, all scaled by book assets

dRoe: Capturing short-term dynamics of investment growth

The Expected Growth Factor

Monthly cross-sectional regressions of future investment-to-assets changes, 7/1963–12/2016

τ	$\log(q)$	Cop	dRoe	R^2	Pearson	Rank
1	−0.03	0.53	0.80	6.64	0.14	0.21
	(−5.86)	(12.82)	(7.75)		[0.00]	[0.00]
2	−0.08	0.72	0.93	8.88	0.16	0.23
	(−10.09)	(12.58)	(10.25)		[0.00]	[0.00]
3	−0.09	0.76	0.74	9.18	0.16	0.22
	(−12.14)	(12.20)	(8.62)		[0.00]	[0.00]

Relatively reliable out-of-sample correlations with subsequent, realized investment-to-assets changes

The Expected Growth Factor

Properties of the expected growth deciles, 1/1967–12/2016

Low	2	3	4	5	6	7	8	9	High	H–L
Average excess returns, $\overline{R}$										
–0.12	0.26	0.33	0.45	0.46	0.51	0.57	0.65	0.75	0.95	1.06
–0.39	1.05	1.43	2.09	2.31	2.64	3.03	3.41	3.99	4.57	6.25
The expected 1-year-ahead growth, $E_t[\mathrm{d}^1\mathrm{I/A}]$										
–15.21	–7.70	–5.61	–4.18	–2.99	–1.92	–0.80	0.55	2.62	7.79	23.00
–35.58	–30.23	–24.17	–19.68	–15.25	–10.44	–4.63	3.50	17.61	39.62	44.31
Average future 1-year-ahead realized growth, $\mathrm{d}^1\mathrm{I/A}$										
–17.43	–12.37	–3.83	–3.51	–1.22	–0.35	–0.42	0.56	1.64	6.09	23.52
–12.01	–8.33	–6.44	–5.19	–2.36	–0.73	–0.90	1.01	3.72	9.15	15.03

$E_t[\mathrm{d}^1\mathrm{I/A}]$ and $\mathrm{d}^1\mathrm{I/A}$ aligned at the portfolio level (Corr = 0.66)

The Expected Growth Factor

R_{Eg}, independent 2×3 monthly sorts on size and $E_t[d^1 I/A]$, 1/1967–12/2016

$\overline{R}_{Eg}$	α	β_{Mkt}	β_{Me}	$\beta_{I/A}$	β_{Roe}	R^2
0.82	0.63	−0.10	−0.09	0.25	0.30	0.48
(9.81)	(9.11)	(−6.17)	(−3.47)	(6.26)	(9.43)	

	α	β_{Mkt}	β_{Me}	$\beta_{I/A}$	β_{Roe}	$\beta_{\log(q)}$	R^2
	0.63	−0.11	−0.09	0.27	0.30	−0.02	0.48
	(9.15)	(−6.20)	(−3.54)	(6.00)	(9.05)	(−0.50)	

	α	β_{Mkt}	β_{Me}	$\beta_{I/A}$	β_{Roe}	β_{Cop}	R^2
	0.36	−0.03	−0.02	0.32	0.15	0.57	0.66
	(6.09)	(−1.84)	(−0.70)	(10.36)	(5.07)	(10.41)	

	α	β_{Mkt}	β_{Me}	$\beta_{I/A}$	β_{Roe}	β_{dRoe}	R^2
	0.59	−0.11	−0.09	0.22	0.23	0.15	0.49
	(8.06)	(−6.44)	(−3.86)	(4.81)	(5.20)	(2.43)	

Results robust to the use of percentile rankings and composite score across $\log(q)$, Cop, and dRoe

Outline

8 competing factor models:

- The q-factor model, the q^5 model
- The Fama-French 5-factor model, the 6-factor model, the alternative 6-factor model with RMWc
- The Stambaugh-Yuan 4-factor model
- The Barillas-Shanken 6-factor model, including MKT, SMB, $R_{\text{I/A}}$, R_{Roe}, the Asness-Frazzini monthly formed HML, UMD
- The Daniel-Hirshleifer-Sun 3-factor model

Use the replicated Stambaugh-Yuan and Daniel-Hirshleifer-Sun models via the traditional construction (Hou et al. 2018)

Start with two clusters of anomalies:

- MGMT: net stock issues, composite issues, accruals, net operating assets, asset growth, and change in gross PPE and inventory scaled by lagged book assets
- PERF: failure probability, O-score, momentum, gross profitability, and return on assets

Form composite scores by equal-weighting a stock's percentiles in each cluster (realigned to yield average L–H returns > 0)

Form the MGMT and PERF factors from independent 2×3 sorts by interacting size with each composite score

Stambaugh and Yuan (2017) deviate from the traditional construction in important ways

The NYSE-Amex-NASDAQ 20–80 breakpoints, as opposed to the NYSE 30–70 breakpoints

The size factor contains stocks only in the middle portfolios of the double sorts, as opposed to from all portfolios

Use the replicated factors via the traditional construction

FIN based on 1-year net share issuance and 5-year composite issuance; PEAD on 4-day cumulative abnormal return around the most recent quarterly earnings announcement, Abr

Factor construction also deviates from the more common approach:

- NYSE 20–80, as opposed to NYSE 30–70, breakpoints
- Abr only, as opposed to Abr, Sue, and Re per Chan, Jegadeesh, and Lakonishok (1996)
- More ad hoc, involved sorts on FIN

Use the replicated factors (NYSE 30–70 breakpoints on the composite scores of FIN from combining net share and composite issuances and of PEAD from combining Abr, Sue, and Re by equal-weighting a stock's percentile rankings)

Stress Tests

Monthly Sharpe ratios

Individual factors							
R_{Mkt}	R_{Me}	$R_{I/A}$	R_{Roe}	R_{Eg}	SMB	HML	CMA
0.11	0.10	0.22	0.21	0.44	0.08	0.13	0.16
RMW	RMWc	UMD	HML^m	MGMT	PERF	FIN	PEAD
0.12	0.19	0.15	0.10	0.21	0.16	0.11	0.32
Factor models							
q	q^5	FF5	FF6	FF6c	BS6	SY4	DHS
0.43	0.63	0.33	0.37	0.45	0.49	0.42	0.42

158 anomalies with NYSE breakpoints and value-weighted returns significant at the 5% level (Hou, Xue, and Zhang 2018):

- Momentum: 36
- Value-versus-growth: 29
- Investment: 28
- Profitability: 35
- Intangibles: 26
- Trading frictions: 4

Stress Tests

Testing deciles, momentum (36)

Sue1	Earnings surprise (1-month holding period), Foster, Olsen, and Shevlin (1984)
Abr6	Cumulative abnormal returns around earnings announcements (6-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
Re1	Revisions in analysts' forecasts (1-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
$R^6 1$	Price momentum (6-month prior returns, 1-month holding period), Jegadeesh and Titman (1993)
$R^6 12$	Price momentum (6-month prior returns, 12-month holding period), Jegadeesh and Titman (1993)
Abr1	Cumulative abnormal returns around earnings announcements (1-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
Abr12	Cumulative abnormal returns around earnings announcements (12-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
Re6	Revisions in analysts' forecasts (6-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
$R^6 6$	Price momentum (6-month prior returns, 6-month holding period), Jegadeesh and Titman (1993)
$R^{11} 1$	Price momentum (11-month prior returns, 1-month holding period), Fama and French (1996)

Stress Tests

Testing deciles, momentum (36)

$R^{11}6$	Price momentum, (11-month prior returns, 6-month holding period), Fama and French (1996)
Im6	Industry momentum (6-month holding period), Moskowitz and Grinblatt (1999)
Rs1	Revenue surprise (1-month holding period), Jegadeesh and Livnat (2006)
dEf6	Analysts' forecast change (6-month hold period), Hawkins, Chamberlin, and Daniel (1984)
Nei1	# of consecutive quarters with earnings increases (1-month holding period), Barth, Elliott, and Finn (1999)
$\epsilon^6 6$	Six-month residual momentum (6-month holding period), Blitz, Huij, and Martens (2011)
Im1	Industry momentum, (1-month holding period), Moskowitz and Grinblatt (1999)
Im12	Industry momentum (12-month holding period), Moskowitz and Grinblatt (1999)
dEf1	Analysts' forecast change (1-month hold period), Hawkins, Chamberlin, and Daniel (1984)
dEf12	Analysts' forecast change (12-month hold period), Hawkins, Chamberlin, and Daniel (1984)
52w6	52-week high (6-month holding period), George and Hwang (2004)
$\epsilon^6 12$	Six-month residual momentum (12-month holding period), Blitz, Huij, and Martens (2011)

Stress Tests

Testing deciles, momentum (36)

$\epsilon^{11}1$	11-month residual momentum, 1-month, Blitz, Huij, and Martens (2011)
$\epsilon^{11}12$	11-month residual momentum, 12-month, Blitz, Huij, and Martens (2011)
Ilr1	Industry lead-lag effect in prior returns, 1-month, Hou (2007)
Ilr12	Industry lead-lag effect in prior returns, 12-month, Hou (2007)
Cm1	Customer momentum, 1-month Cohen and Frazzini (2008)
Sim1	Supplier industries momentum, 1-month, Menzly and Ozbas (2010)
Cim6	Customer industries momentum, 6-month, Menzly and Ozbas (2010)
$\epsilon^{11}6$	11-month residual momentum, 6-month, Blitz, Huij, and Martens (2011)
Sm1	Segment momentum 1-month, Cohen and Lou (2012)
Ilr6	Industry lead-lag effect in prior returns, 6-month, Hou (2007)
Ile1	Industry lead-lag effect in earnings news, 1-month, Hou (2007)
Cm12	Customer momentum, 12-month Cohen and Frazzini (2008)
Cim1	Customer industries momentum, 1-month, Menzly and Ozbas (2010)
Cim12	Customer industries momentum, 12-month, Menzly and Ozbas (2010)

Stress Tests

Testing deciles, value-versus-growth (29)

Bm	Book-to-market equity, Rosenberg, Reid, and Lanstein (1985)
$Bm^{q}12$	Quarterly book-to-market equity (12-month holding period)
Rev12	Reversal (12-month holding period) De Bondt and Thaler (1985)
$Ep^{q}1$	Quarterly earnings-to-price (1-month holding period)
$Ep^{q}12$	Quarterly earnings-to-price (12-month holding period)
$Cp^{q}1$	Quarterly cash flow-to-price (1-month holding period)
$Cp^{q}12$	Quarterly cash flow-to-price (12-month holding period)
Em	Enterprise multiple, Loughran and Wellman (2011)
Bmj	Book-to-June-end market equity, Asness and Frazzini (2013)
Rev6	Reversal (6-month holding period), De Bondt and Thaler (1985)
Ep	Earnings-to-price, Basu (1983)
$Ep^{q}6$	Quarterly earnings-to-price (6-month holding period)
Cp	Cash flow-to-price, Lakonishok, Shleifer, and Vishny (1994)
$Cp^{q}6$	Quarterly cash flow-to-price (6-month holding period)
Nop	Net payout yield, Boudoukh, Michaely, Richardson, and Roberts (2007)
$Em^{q}1$	Quarterly enterprise multiple (1-month holding period)

Em^q6	Quarterly enterprise multiple (6-month holding period)
Sp	Sales-to-price, Barbee, Mukherji, and Raines (1996)
Sp^q6	Quarterly sales-to-price (6-month holding period)
Ocp	Operating cash flow-to-price, Desai, Rajgopal, and Venkatachalam (2004)
Ir	Intangible return, Daniel and Titman (2006)
Vfp	Analysts-based intrinsic value-to-market, Frankel and Lee (1998)
Dur	Equity duration, Dechow, Sloan, and Soliman (2004)
Em^q12	Quarterly enterprise multiple (12-month holding period)
Sp^q1	Quarterly sales-to-price (1-month holding period)
Sp^q12	Quarterly sales-to-price (12-month holding period)
Ocp^q1	Operating cash flow-to-price (1-month holding period)
Vhp	Intrinsic value-to-market, Frankel and Lee (1998)
Ebp	Enterprise book-to-price, Penman, Richardson, and Tuna (2007)

Stress Tests

Testing deciles, investment (28)

Aci	Abnormal corporate investment, Titman, Wei, and Xie (2004)
Ia^q6	Quarterly investment-to-assets (6-month holding period)
dPia	(Changes in PPE and inventory)/assets, Lyandres, Sun, and Zhang (2008)
dNoa	Changes in net operating assets, Hirshleifer, Hou, Teoh, and Zhang (2004)
Ig	Investment growth, Xing (2008)
Nsi	Net stock issues, Pontiff and Woodgate (2008)
Cei	Composite equity issuance, Daniel and Titman (2006)
I/A	Investment-to-assets, Cooper, Gulen, and Schill (2008)
Ia^q12	Quarterly investment-to-assets (12-month holding period)
Noa	Net operating assets, Hirshleifer, Hou, Teoh, and Zhang (2004)
dLno	Change in long-term net operating assets, Fairfield, Whisenant, and Yohn (2003)
2Ig	Two-year investment growth, Anderson and Garcia-Feijoo (2006)
dIi	% change in investment– % change in industry investment, Abarbanell and Bushee (1998)
Ivg	Inventory growth, Belo and Lin (2011)

Stress Tests

Testing deciles, investment (28)

Ivc	Inventory changes, Thomas and Zhang (2002)
dWc	Change in net non-cash working capital, Richardson, Sloan, Soliman, and Tuna (2005)
dNco	Change in net non-current operating assets, Richardson, Sloan, Soliman, and Tuna (2005)
dFin	Change in net financial assets, Richardson, Sloan, Soliman, and Tuna (2005)
dBe	Change in common equity, Richardson, Sloan, Soliman, and Tuna (2005)
Poa	Percent operating accruals, Hafzalla, Lundholm, and Van Winkle (2011)
Pda	Percent discretionary accruals
Oa	Operating accruals, Sloan (1996)
dCoa	Change in current operating assets, Richardson, Sloan, Soliman, and Tuna (2005)
dNca	Change in non-current operating assets, Richardson, Sloan, Soliman, and Tuna (2005)
dFnl	Change in financial liabilities, Richardson, Sloan, Soliman, and Tuna (2005)
Dac	Discretionary accruals, Xie (2001)
Pta	Percent total accruals, Hafzalla, Lundholm, and Van Winkle (2011)
Ndf	Net debt finance, Bradshaw, Richardson, and Sloan (2006)

Roe1	Return on equity, 1-month, Hou, Xue, and Zhang (2015)
dRoe1	Change in Roe, 1-month horizon
dRoe12	Change in Roe, 12-month horizon
dRoa1	Change in Roa, 1-month horizon
Rna^q1	Return on net operating assets, 1-month horizon
Ato^q1	Quarterly asset turnover, 1-month horizon
Ato^q12	Quarterly asset turnover, 12-month horizon
Cto^q6	Quarterly capital turnover, 6-month horizon
Gpa	Gross profits-to-assets, Novy-Marx (2013)
Roe6	Return on equity, 6-month, Hou, Xue, and Zhang (2015)
dRoe6	Change in Roe, 6-month horizon
Roa1	Return on assets, 1-month horizon, Balakrishnan, Bartov, and Faurel (2010)
dRoa6	Change in Roa, 6-month horizon
Rna^q6	Return on net operating assets, 6-month horizon
Ato^q6	Quarterly asset turnover, 6-month horizon
Cto^q1	Quarterly capital turnover, 1-month horizon
Cto^q12	Quarterly capital turnover, 12-month horizon
Gla^q1	Gross profits-to-lagged assets, 1-month horizon

Stress Tests

Testing deciles, profitability (35)

Gla^q6	Gross profits-to-lagged assets, 6-month horizon
Ole^q1	Operating profits-to-lagged equity, 1-month horizon
Opa	Operating profits-to-assets, Ball, Gerakos, Linnainmaa, and Nikolaev (2015)
Ola^q6	Operating profits-to-lagged assets, 6-month horizon
Cop	Cash-based operating profitability, Ball, Gerakos, Linnainmaa, and Nikolaev (2016)
Cla^q1	Cash-based operating profits-to-lagged assets, 1-month horizon
Cla^q12	Cash-based operating profits-to-lagged assets, 12-month horizon
F^q6	Quarterly F-score, 6-month horizon
Fp^q6	Failure probability, 6-month horizon, Campbell, Hilscher, and Szilagyi (2008)
Gla^q12	Gross profits-to-lagged assets, 12-month horizon
Ole^q6	Operating profits-to-lagged equity , 6-month horizon
Ola^q1	Operating profits-to-lagged assets, 1-month horizon
Ola^q12	Operating profits-to-lagged assets, 12-month horizon
Cla	Cash-based operating profits-to-lagged assets
Cla^q6	Cash-based operating profits-to-lagged assets, 6-month horizon
F^q1	Quarterly F-score, 1-month horizon
F^q12	Quarterly F-score, 12-month horizon

Stress Tests

Testing deciles, intangibles (26)

Oca	Organizational capital-to-assets, Eisfeldt and Papanikolaou (2013)	Ioca	Industry-adjusted organizational capital-to-assets, Eisfeldt and Papanikolaou (2013)
Adm	Advertising expense-to-market, Chan, Lakonishok, and Sougiannis (2001)	Rdm	R&D-to-market, Chan, Lakonishok, and Sougiannis (2001)
Rdm^q1	Quarterly R&D-to-market, 1-month horizon	Rdm^q6	Quarterly R&D-to-market, 6-month horizon
Rdm^q12	Quarterly R&D-to-market, 12-month horizon	Ol	Operating leverage, Novy-Marx (2011)
Ol^q1	Quarterly operating leverage, 1-month horizon	Ol^q6	Quarterly operating leverage, 6-month horizon
Ol^q12	Quarterly operating leverage, 12-month horizon	Hs	Industry concentration (sales), Hou and Robinson (2006)
Etr	Effective tax rate, Abarbanell and Bushee (1998)	Rer	Real estate ratio, Tuzel (2010)
Eprd	Earnings predictability, Francis, Lafond, Olsson, and Schipper (2004)	Etl	Earnings timeliness, Francis, Lafond, Olsson, and Schipper (2004)

Stress Tests

Testing deciles, intangibles and trading frictions (4)

$\text{Alm}^{\text{q}}1$	Asset liquidity (market assets), 1-month horizon	$\text{Alm}^{\text{q}}6$	Asset liquidity (market assets), 6-month horizon
$\text{Alm}^{\text{q}}12$	Asset liquidity (market assets), 12-month horizon	R_{a}^{1}	12-month-lagged return, Heston and Sadka (2008)
$R_{\text{a}}^{[2,5]}$	Years 2–5 lagged returns, annual Heston and Sadka (2008)	$R_{\text{n}}^{[2,5]}$	Years 2–5 lagged returns, nonannual Heston and Sadka (2008)
$R_{\text{a}}^{[6,10]}$	Years 6–10 lagged returns, annual Heston and Sadka (2008)	$R_{\text{n}}^{[6,10]}$	Years 6–10 lagged returns, nonannual Heston and Sadka (2008)
$R_{\text{a}}^{[11,15]}$	Years 11–15 lagged returns, annual Heston and Sadka (2008)	$R_{\text{a}}^{[16,20]}$	Years 16–20 lagged returns, annual Heston and Sadka (2008)

Trading frictions (4)

Sv1	Systematic volatility risk, 1-month horizon, Ang, Hodrick, Xing, and Zhang (2006)	Dtv12	Dollar trading volume, 12-month horizon, Brennan, Chordia, and Subrahmanyam (1998)
Isff1	Idiosyncratic skewness per the 3-factor model, 1-month horizon	Isq1	Idiosyncratic skewness per the q-factor model, 1-month horizon

Stress Tests

Relative performance of factor models

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
			All (158)		
q	0.25	46	17	0.11	98
q^5	0.18	19	4	0.10	58
FF5	0.38	89	61	0.12	113
FF6	0.28	67	33	0.11	95
FF6c	0.25	55	21	0.10	68
BS6	0.28	61	34	0.14	147
SY4	0.27	57	25	0.10	87
DHS	0.42	83	45	0.15	108

Stress Tests

Relative performance of factor models

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
	Momentum (36)				
q	0.26	8	1	0.10	23
q^5	0.19	6	1	0.09	12
FF5	0.64	34	27	0.16	34
FF6	0.29	18	8	0.10	25
FF6c	0.27	16	5	0.10	18
BS6	0.25	12	5	0.13	33
SY4	0.34	21	7	0.10	22
DHS	0.26	12	2	0.15	26

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
	Value-versus-growth (29)				
q	0.20	4	0	0.11	17
q^5	0.19	4	0	0.13	15
FF5	0.14	1	0	0.08	9
FF6	0.16	4	1	0.09	11
FF6c	0.15	4	0	0.09	8
BS6	0.24	11	5	0.13	26
SY4	0.20	6	2	0.11	15
DHS	0.81	29	26	0.23	29

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
	Investment (28)				
q	0.20	9	4	0.10	17
q^5	0.10	0	0	0.08	7
FF5	0.23	11	6	0.09	17
FF6	0.21	10	5	0.09	17
FF6c	0.18	7	1	0.08	7
BS6	0.20	7	4	0.11	26
SY4	0.17	5	3	0.08	17
DHS	0.33	19	2	0.10	21

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
	Profitability (35)				
q	0.23	12	4	0.10	19
q^5	0.14	2	0	0.09	12
FF5	0.45	28	21	0.12	30
FF6	0.32	22	11	0.10	21
FF6c	0.26	14	6	0.10	17
BS6	0.28	16	11	0.13	34
SY4	0.29	15	7	0.09	21
DHS	0.19	6	1	0.09	12

Stress Tests

Relative performance of factor models

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
	Intangibles (26)				
q	0.41	11	8	0.17	19
q^5	0.31	7	3	0.13	10
FF5	0.41	13	6	0.15	20
FF6	0.42	11	8	0.16	18
FF6c	0.43	12	9	0.16	17
BS6	0.42	13	7	0.19	25
SY4	0.33	8	6	0.14	10
DHS	0.59	14	12	0.19	17

Stress Tests

Relative performance of factor models

	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#_{\lvert t\rvert\geq 1.96}$	$\#_{\lvert t\rvert\geq 3}$	$\overline{\lvert\alpha\rvert}$	$\#^{GRS}_{p<5\%}$
	Trading frictions (4)				
q	0.23	2	0	0.09	3
q^5	0.17	0	0	0.08	2
FF5	0.22	2	1	0.08	3
FF6	0.20	2	0	0.08	3
FF6c	0.19	2	0	0.07	1
BS6	0.21	2	2	0.10	3
SY4	0.19	2	0	0.08	2
DHS	0.43	3	2	0.16	3

All (158): $\overline{R} = 1.62$ $(t = 9.13)$

	α_{H-L}	t_{H-L}	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.78	5.18	0.15	0.00
q^5	0.31	2.32	0.07	0.18
FF5	1.19	7.86	0.24	0.00
FF6	0.83	6.89	0.15	0.00
FF6c	0.71	6.05	0.11	0.00
BS6	0.51	3.54	0.10	0.00
SY4	0.80	6.35	0.14	0.00
DHS	0.92	5.59	0.18	0.00

Mom (36): $\overline{R} = 1.05$ $(t = 4)$

	$\alpha_{\text{H-L}}$	$t_{\text{H-L}}$	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.29	0.84	0.10	0.07
q^5	−0.21	−0.70	0.10	0.24
FF5	1.18	3.57	0.28	0.00
FF6	0.29	1.86	0.10	0.03
FF6c	0.25	1.55	0.10	0.02
BS6	0.19	1.15	0.11	0.04
SY4	0.41	1.78	0.11	0.01
DHS	−0.39	−1.59	0.17	0.00

VvG (29): $\overline{R} = 0.74$ $(t = 3.53)$

	$\alpha_{\text{H-L}}$	$t_{\text{H-L}}$	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.32	1.67	0.14	0.01
q^5	0.33	1.83	0.16	0.00
FF5	0.03	0.21	0.10	0.02
FF6	0.18	1.49	0.11	0.02
FF6c	0.09	0.74	0.10	0.08
BS6	−0.20	−1.45	0.13	0.01
SY4	0.32	2.02	0.14	0.00
DHS	1.11	5.81	0.30	0.00

Inv (28): $\overline{R} = 0.7$ $(t = 4.89)$

	α_{H-L}	t_{H-L}	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.22	2.34	0.09	0.00
q^5	0.01	0.11	0.06	0.26
FF5	0.30	3.19	0.09	0.00
FF6	0.26	2.82	0.08	0.01
FF6c	0.25	2.50	0.06	0.07
BS6	0.14	1.39	0.09	0.00
SY4	0.09	0.87	0.07	0.03
DHS	0.56	3.80	0.13	0.00

Prof (35): $\overline{R} = 0.83$ $(t = 4.61)$

	$\alpha_{\text{H-L}}$	$t_{\text{H-L}}$	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.27	2.24	0.08	0.01
q^5	−0.11	−0.91	0.07	0.17
FF5	0.67	5.61	0.13	0.00
FF6	0.50	4.31	0.11	0.00
FF6c	0.32	2.24	0.10	0.03
BS6	0.34	2.70	0.11	0.00
SY4	0.41	3.05	0.09	0.00
DHS	−0.10	−0.64	0.08	0.13

Intan (26): $\overline{R} = 1.08$ $(t = 6.13)$

	$\alpha_{\text{H-L}}$	$t_{\text{H-L}}$	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.47	3.22	0.17	0.00
q^5	0.45	3.31	0.16	0.00
FF5	0.56	4.37	0.18	0.00
FF6	0.54	4.24	0.17	0.00
FF6c	0.55	3.93	0.17	0.00
BS6	0.23	1.64	0.14	0.00
SY4	0.46	3.46	0.15	0.00
DHS	0.90	5.22	0.26	0.00

Fric (4): $\overline{R} = 0.34$ $(t = 2.87)$

	α_{H-L}	t_{H-L}	$\overline{\lvert\alpha\rvert}$	p_{GRS}
q	0.21	1.68	0.09	0.01
q^5	0.21	1.52	0.08	0.23
FF5	0.20	1.79	0.08	0.04
FF6	0.21	1.81	0.08	0.06
FF6c	0.18	1.64	0.08	0.19
BS6	0.17	1.33	0.10	0.00
SY4	0.21	1.85	0.09	0.04
DHS	0.50	3.70	0.14	0.00

Outline

Individual Factor Regressions

Examples, 1/1967–12/2016

	Sue1	$R^6 6$	Bm	Nop	Nsi	Oa	dFin	Dac	Cop	Rdm
$\overline{R}$	0.46	0.82	0.54	0.63	−0.64	−0.27	0.28	−0.39	0.63	0.70
$t_{\overline{R}}$	3.48	3.50	2.61	3.40	−4.46	−2.19	2.39	−2.95	3.57	2.75
α_q	0.06	0.25	0.15	0.35	−0.29	−0.56	0.43	−0.67	0.69	0.72
α_{q^5}	−0.04	−0.16	0.08	0.20	−0.12	−0.23	0.12	−0.28	0.10	0.25
t_q	0.46	0.83	0.99	2.42	−2.32	−4.10	3.00	−4.73	5.04	3.11
t_{q^5}	−0.30	−0.60	0.51	1.33	−0.89	−1.51	0.81	−1.91	0.89	1.13
α_{FF5}	0.52	1.00	−0.10	0.22	−0.30	−0.52	0.50	−0.64	0.82	0.57
α_{FF6}	0.30	0.18	−0.08	0.24	−0.28	−0.47	0.48	−0.63	0.73	0.60
α_{FF6c}	0.25	0.16	−0.08	0.16	−0.20	−0.31	0.36	−0.53	0.51	0.76
t_{FF5}	3.92	3.65	−0.88	1.83	−2.58	−4.20	4.17	−4.90	6.53	2.55
t_{FF6}	2.54	1.77	−0.70	1.92	−2.39	−3.42	3.86	−4.55	6.15	2.77
t_{FF6c}	2.10	1.44	−0.63	1.22	−1.60	−2.04	2.65	−3.63	4.28	3.34

Individual Factor Regressions

Momentum, 1/1967–12/2016

	Sue1	Abr1	Abr6	Abr12	Re1	Re6	$R^6$1	$R^6$6	$R^6$12	R^{11}1
$\overline{R}$	0.46	0.70	0.33	0.23	0.75	0.47	0.60	0.82	0.55	1.16
$t_{\overline{R}}$	3.48	5.45	3.41	2.99	3.18	2.24	2.08	3.50	2.91	3.99
α_q	0.06	0.62	0.30	0.24	0.09	−0.02	−0.03	0.25	0.16	0.31
α_{q^5}	−0.04	0.56	0.25	0.20	0.08	−0.08	−0.44	−0.16	−0.06	−0.20
α_{FF5}	0.52	0.82	0.46	0.40	0.78	0.59	0.74	1.00	0.80	1.29
α_{FF6}	0.30	0.64	0.30	0.26	0.37	0.21	−0.21	0.18	0.20	0.21
α_{FF6c}	0.25	0.65	0.30	0.25	0.38	0.21	−0.18	0.16	0.13	0.20
α_{BS6}	0.14	0.67	0.30	0.25	0.08	−0.01	−0.16	0.12	0.12	0.13
α_{SY4}	0.29	0.71	0.36	0.31	0.58	0.35	−0.05	0.28	0.33	0.30
α_{DHS}	−0.35	0.28	0.06	0.04	−0.41	−0.50	−0.70	−0.25	−0.32	−0.33
t_q	0.46	4.25	2.61	2.79	0.38	−0.08	−0.08	0.83	0.81	0.81
t_{q^5}	−0.30	4.00	2.26	2.24	0.31	−0.38	−1.31	−0.60	−0.31	−0.59
t_{FF5}	3.92	5.81	4.58	5.37	3.16	2.73	2.20	3.65	4.16	3.73
t_{FF6}	2.54	4.66	3.30	4.10	1.89	1.26	−1.10	1.77	1.83	1.74
t_{FF6c}	2.10	4.50	3.12	3.69	1.96	1.28	−0.90	1.44	1.19	1.63
t_{BS6}	1.25	4.48	2.93	3.29	0.43	−0.04	−0.76	1.00	0.86	1.01
t_{SY4}	2.42	5.11	3.61	4.19	2.59	1.92	−0.17	1.38	2.10	1.22
t_{DHS}	−3.17	2.20	0.76	0.62	−2.14	−2.91	−1.97	−1.02	−2.08	−1.03

Individual Factor Regressions

Momentum, 1/1967–12/2016

	$R^{11}6$	Im1	Im6	Im12	Rs1	dEf1	dEf6	dEf12	Nei1	52w6
$\overline{R}$	0.80	0.68	0.60	0.63	0.32	0.94	0.56	0.33	0.33	0.56
$t_{\overline{R}}$	3.13	2.86	3.01	3.57	2.28	4.33	3.19	2.37	3.04	2.01
α_q	0.14	0.28	0.07	0.32	0.24	0.55	0.18	0.07	0.12	0.01
α_{q^5}	−0.17	−0.10	−0.33	0.03	0.12	0.48	0.16	0.06	0.02	−0.34
α_{FF5}	1.06	0.74	0.66	0.84	0.56	1.08	0.72	0.50	0.41	0.77
α_{FF6}	0.20	0.09	−0.01	0.30	0.44	0.74	0.40	0.27	0.27	0.03
α_{FF6c}	0.13	0.09	−0.05	0.22	0.41	0.64	0.37	0.22	0.23	0.02
α_{BS6}	0.08	0.20	−0.07	0.23	0.40	0.55	0.20	0.11	0.17	−0.14
α_{SY4}	0.33	0.18	0.08	0.37	0.37	0.90	0.49	0.34	0.27	0.07
α_{DHS}	−0.45	−0.19	−0.29	−0.07	−0.26	0.17	−0.22	−0.27	−0.30	−0.75
t_q	0.49	0.93	0.30	1.45	1.71	2.49	1.08	0.60	1.20	0.02
t_{q^5}	−0.63	−0.34	−1.37	0.13	0.86	2.07	0.92	0.49	0.25	−1.47
t_{FF5}	3.88	2.67	2.81	4.30	4.06	4.68	4.07	3.89	4.28	3.09
t_{FF6}	1.57	0.43	−0.10	1.99	3.27	3.75	3.14	2.60	2.95	0.26
t_{FF6c}	1.03	0.46	−0.35	1.44	3.01	3.06	2.77	2.13	2.33	0.14
t_{BS6}	0.52	0.91	−0.44	1.32	3.15	2.80	1.51	1.05	1.82	−1.08
t_{SY4}	1.55	0.72	0.43	2.08	2.81	4.42	3.31	3.14	2.65	0.42
t_{DHS}	−1.85	−0.70	−1.41	−0.39	−1.80	0.92	−1.70	−2.63	−2.17	−3.08

Individual Factor Regressions

Momentum, 1/1967–12/2016

	$\epsilon^6 6$	$\epsilon^6 12$	$\epsilon^{11} 1$	$\epsilon^{11} 6$	$\epsilon^{11} 12$	Sm1	Ilr1	Ilr6	Ilr12	Ile1
$\overline{R}$	0.45	0.37	0.61	0.50	0.33	0.53	0.69	0.34	0.35	0.58
$t_{\overline{R}}$	3.74	3.85	3.72	3.82	2.88	2.36	3.33	3.35	4.27	3.48
α_q	0.26	0.20	0.26	0.22	0.12	0.59	0.73	0.19	0.19	0.32
α_{q^5}	0.06	0.05	0.02	0.05	0.01	0.40	0.50	0.01	0.02	0.11
α_{FF5}	0.47	0.43	0.57	0.56	0.42	0.66	0.80	0.37	0.39	0.70
α_{FF6}	0.20	0.19	0.21	0.23	0.16	0.58	0.66	0.10	0.12	0.49
α_{FF6c}	0.18	0.17	0.22	0.21	0.14	0.55	0.65	0.09	0.10	0.44
α_{BS6}	0.17	0.18	0.14	0.16	0.12	0.64	0.77	0.15	0.13	0.43
α_{SY4}	0.27	0.25	0.28	0.31	0.22	0.64	0.67	0.17	0.17	0.45
α_{DHS}	0.07	−0.01	0.07	0.02	−0.09	0.56	0.51	0.00	0.00	0.01
t_q	1.64	1.57	1.25	1.31	0.82	2.15	2.94	1.45	1.80	1.84
t_{q^5}	0.38	0.35	0.08	0.29	0.08	1.37	2.03	0.04	0.22	0.59
t_{FF5}	3.45	3.78	3.03	3.62	3.16	2.77	3.41	3.11	3.83	4.21
t_{FF6}	1.76	2.16	1.32	1.90	1.51	2.43	3.03	1.22	2.06	2.92
t_{FF6c}	1.54	1.76	1.37	1.73	1.30	2.10	2.74	1.01	1.57	2.53
t_{BS6}	1.36	1.85	0.84	1.23	1.08	2.55	3.30	1.59	2.04	2.38
t_{SY4}	1.91	2.27	1.53	2.11	1.84	2.41	2.94	1.62	2.04	2.64
t_{DHS}	0.47	−0.07	0.35	0.16	−0.72	2.00	2.15	0.02	0.05	0.04

Individual Factor Regressions

Momentum and value-versus-growth, 1/1967–12/2016

	Cm1	Cm12	Sim1	Cim1	Cim6	Cim12	Bm	Bmj	$\text{Bm}^{\text{q}}12$	Rev6
$\overline{R}$	0.78	0.15	0.79	0.75	0.29	0.27	0.54	0.46	0.48	−0.42
$t_{\overline{R}}$	3.85	2.22	3.65	3.35	2.76	3.41	2.61	2.12	2.21	−2.01
α_q	0.70	0.05	0.57	0.64	0.06	0.08	0.15	0.28	0.37	−0.21
α_{q^5}	0.68	−0.02	0.25	0.36	−0.17	−0.12	0.08	0.30	0.38	−0.07
α_{FF5}	0.75	0.13	0.75	0.74	0.25	0.29	−0.10	−0.13	−0.12	−0.01
α_{FF6}	0.74	0.02	0.60	0.62	−0.01	0.04	−0.08	0.07	0.16	−0.10
α_{FF6c}	0.72	0.02	0.56	0.54	0.02	0.03	−0.08	0.10	0.18	−0.15
α_{BS6}	0.74	0.03	0.57	0.66	0.02	0.03	−0.29	−0.11	−0.04	−0.06
α_{SY4}	0.75	0.03	0.56	0.57	0.01	0.05	0.03	0.08	0.23	0.10
α_{DHS}	0.76	0.02	0.47	0.40	−0.05	−0.04	0.87	1.05	1.20	−0.99
t_q	2.84	0.55	1.87	2.36	0.35	0.65	0.99	1.59	2.18	−1.20
t_{q^5}	2.70	−0.23	0.82	1.25	−1.05	−1.03	0.51	1.77	2.25	−0.37
t_{FF5}	3.38	1.45	2.72	3.02	1.76	2.48	−0.88	−0.95	−0.84	−0.04
t_{FF6}	3.00	0.23	2.36	2.66	−0.07	0.56	−0.70	0.54	1.35	−0.59
t_{FF6c}	2.84	0.19	2.11	2.32	0.20	0.38	−0.63	0.79	1.47	−0.85
t_{BS6}	3.09	0.38	2.11	2.66	0.16	0.32	−2.17	−0.80	−0.37	−0.30
t_{SY4}	3.05	0.33	2.07	2.35	0.05	0.52	0.20	0.48	1.77	0.59
t_{DHS}	2.92	0.24	1.51	1.59	−0.35	−0.42	4.16	5.09	6.11	−3.88

Individual Factor Regressions

Value-versus-growth, 1/1967–12/2016

	Rev12	Ep	Ep^{q}1	Ep^{q}6	Ep^{q}12	Cp	Cp^{q}1	Cp^{q}6	Cp^{q}12	Nop
$\overline{R}$	−0.39	0.44	0.93	0.59	0.43	0.43	0.62	0.48	0.40	0.63
$t_{\overline{R}}$	−1.99	2.26	4.94	3.42	2.60	2.14	2.93	2.42	2.12	3.40
α_q	−0.13	0.02	0.41	0.09	−0.04	0.04	0.42	0.31	0.16	0.35
α_{q^5}	−0.01	−0.07	0.52	0.10	−0.04	0.02	0.53	0.37	0.21	0.20
α_{FF5}	−0.02	−0.10	0.41	0.08	−0.07	−0.22	0.05	−0.05	−0.15	0.22
α_{FF6}	−0.06	−0.14	0.55	0.17	−0.03	−0.18	0.40	0.23	0.02	0.24
α_{FF6c}	−0.09	−0.21	0.47	0.10	−0.09	−0.25	0.37	0.19	−0.01	0.16
α_{BS6}	−0.00	−0.52	−0.04	−0.32	−0.46	−0.47	0.01	−0.09	−0.26	0.12
α_{SY4}	0.11	0.04	0.70	0.32	0.13	0.07	0.48	0.32	0.18	0.17
α_{DHS}	−0.84	0.56	0.94	0.55	0.41	0.67	1.19	1.00	0.82	0.38
t_q	−0.78	0.12	1.74	0.46	−0.25	0.20	1.96	1.65	0.95	2.42
t_{q^5}	−0.08	−0.37	2.25	0.58	−0.25	0.10	2.59	2.11	1.36	1.33
t_{FF5}	−0.14	−0.81	2.38	0.56	−0.57	−1.74	0.28	−0.31	−1.23	1.83
t_{FF6}	−0.41	−1.04	3.21	1.23	−0.21	−1.48	2.91	1.81	0.18	1.92
t_{FF6c}	−0.56	−1.59	2.85	0.69	−0.68	−2.08	2.69	1.51	−0.07	1.22
t_{BS6}	−0.01	−3.05	−0.23	−2.27	−3.66	−3.02	0.06	−0.69	−2.13	0.83
t_{SY4}	0.66	0.19	3.77	1.99	0.90	0.39	2.97	2.18	1.27	1.35
t_{DHS}	−3.40	3.12	4.34	3.06	2.63	3.75	5.92	5.78	5.13	3.16

Individual Factor Regressions

Value-versus-growth, 1/1967–12/2016

	Em	Em^{q}1	Em^{q}6	Em^{q}12	Sp	Sp^{q}1	Sp^{q}6	Sp^{q}12	Ocp	Ocp^{q}1
$\overline{R}$	−0.54	−0.71	−0.43	−0.43	0.50	0.59	0.56	0.53	0.70	0.64
$t_{\overline{R}}$	−2.86	−3.21	−2.05	−2.15	2.37	2.39	2.43	2.47	3.14	2.28
α_{q}	−0.24	−0.48	−0.21	−0.19	−0.05	0.20	0.14	0.05	0.36	0.48
α_{q^5}	−0.05	−0.45	−0.15	−0.12	0.05	0.36	0.28	0.18	0.24	0.43
α_{FF5}	−0.05	−0.33	−0.04	−0.03	−0.26	−0.21	−0.23	−0.24	−0.02	0.12
α_{FF6}	−0.01	−0.45	−0.14	−0.08	−0.16	0.13	0.05	−0.04	0.06	0.41
α_{FF6c}	0.13	−0.31	−0.01	0.05	−0.18	0.10	0.03	−0.06	0.01	0.40
α_{BS6}	0.17	−0.17	0.07	0.12	−0.47	−0.25	−0.28	−0.36	−0.15	0.31
α_{SY4}	−0.16	−0.55	−0.27	−0.23	−0.09	0.16	0.10	0.02	0.30	0.60
α_{DHS}	−0.70	−0.86	−0.59	−0.54	0.73	1.15	1.07	0.91	1.01	1.13
t_{q}	−1.40	−2.00	−0.99	−1.03	−0.28	0.70	0.59	0.23	1.98	1.62
t_{q^5}	−0.27	−1.91	−0.72	−0.65	0.30	1.44	1.33	1.00	1.28	1.66
t_{FF5}	−0.35	−1.70	−0.20	−0.21	−1.82	−1.04	−1.38	−1.60	−0.12	0.53
t_{FF6}	−0.06	−2.55	−0.87	−0.51	−1.22	0.70	0.33	−0.33	0.47	2.59
t_{FF6c}	0.94	−1.77	−0.05	0.34	−1.33	0.55	0.22	−0.48	0.07	2.46
t_{BS6}	1.07	−1.01	0.43	0.75	−3.01	−1.27	−1.73	−2.38	−0.92	1.81
t_{SY4}	−0.94	−2.79	−1.47	−1.37	−0.57	0.78	0.60	0.13	1.70	3.04
t_{DHS}	−4.07	−4.16	−3.38	−3.17	3.53	4.05	4.42	4.25	5.01	4.50

Individual Factor Regressions

Value-versus-growth and investment, 1/1967–12/2016

	Ir	Vhp	Vfp	Ebp	Dur	Aci	I/A	Ia^{q}6	Ia^{q}12	dPia
$\overline{R}$	−0.47	0.38	0.47	0.41	−0.42	−0.30	−0.44	−0.50	−0.48	−0.48
$t_{\overline{R}}$	−2.22	2.05	2.18	2.00	−2.19	−2.13	−2.89	−3.00	−3.11	−3.64
α_q	−0.16	0.01	0.12	0.06	−0.03	−0.16	0.07	−0.11	0.00	−0.18
α_{q^5}	−0.02	−0.11	0.11	0.08	0.06	−0.16	0.08	0.00	0.09	−0.11
α_{FF5}	0.13	−0.15	0.09	−0.22	0.11	−0.30	0.02	0.01	0.03	−0.30
α_{FF6}	0.05	−0.15	0.08	−0.13	0.12	−0.21	0.02	−0.06	0.02	−0.26
α_{FF6c}	0.03	−0.22	0.02	−0.11	0.14	−0.20	0.00	−0.12	−0.04	−0.29
α_{BS6}	0.18	−0.48	−0.25	−0.33	0.48	−0.17	0.14	0.00	0.10	−0.18
α_{SY4}	0.02	0.05	0.28	−0.03	−0.02	−0.19	0.16	0.14	0.19	−0.05
α_{DHS}	−1.00	0.55	0.50	0.85	−0.53	−0.20	−0.43	−0.67	−0.53	−0.43
t_q	−1.05	0.06	0.55	0.42	−0.17	−1.02	0.62	−1.09	0.03	−1.47
t_{q^5}	−0.12	−0.61	0.49	0.49	0.30	−1.07	0.63	0.02	0.77	−0.91
t_{FF5}	0.96	−1.06	0.50	−1.70	0.80	−2.05	0.17	0.10	0.36	−2.61
t_{FF6}	0.39	−1.06	0.42	−1.09	0.91	−1.37	0.22	−0.56	0.18	−2.26
t_{FF6c}	0.21	−1.48	0.09	−0.86	0.99	−1.29	−0.02	−1.23	−0.46	−2.29
t_{BS6}	1.20	−2.71	−1.23	−2.65	3.07	−1.00	1.28	0.01	0.92	−1.42
t_{SY4}	0.14	0.29	1.31	−0.18	−0.09	−1.31	1.30	1.30	1.83	−0.43
t_{DHS}	−4.25	3.05	2.21	4.32	−2.79	−1.27	−2.49	−3.77	−2.99	−2.76

Individual Factor Regressions

Investment, 1/1967–12/2016

	Noa	dNoa	dLno	Ig	2Ig	Nsi	dIi	Cei	Ivg	Ivc
$\overline{R}$	−0.44	−0.55	−0.39	−0.46	−0.33	−0.64	−0.29	−0.57	−0.33	−0.44
$t_{\overline{R}}$	−3.25	−4.14	−2.99	−3.76	−2.52	−4.46	−2.61	−3.32	−2.44	−3.33
α_q	−0.45	−0.15	0.03	−0.07	0.06	−0.29	0.11	−0.29	0.01	−0.28
α_{q^5}	−0.13	−0.10	0.13	−0.12	0.06	−0.12	0.10	−0.04	0.10	0.01
α_{FF5}	−0.53	−0.26	−0.09	−0.18	−0.07	−0.30	0.00	−0.30	−0.08	−0.36
α_{FF6}	−0.45	−0.23	−0.04	−0.15	0.01	−0.28	0.09	−0.26	−0.03	−0.30
α_{FF6c}	−0.44	−0.22	−0.12	−0.19	−0.03	−0.20	0.09	−0.17	−0.01	−0.24
α_{BS6}	−0.61	−0.07	0.01	−0.02	0.09	−0.22	0.27	−0.08	0.09	−0.25
α_{SY4}	−0.17	−0.09	0.19	−0.04	0.08	−0.15	0.09	−0.22	0.03	−0.19
α_{DHS}	−0.32	−0.42	−0.22	−0.37	−0.31	−0.29	−0.13	−0.30	−0.21	−0.48
t_q	−2.59	−1.04	0.19	−0.59	0.49	−2.32	1.06	−2.25	0.09	−2.08
t_{q^5}	−0.88	−0.66	0.79	−0.90	0.44	−0.89	0.83	−0.31	0.75	0.08
t_{FF5}	−3.37	−1.81	−0.62	−1.65	−0.59	−2.58	−0.01	−2.92	−0.66	−2.97
t_{FF6}	−3.18	−1.64	−0.28	−1.37	0.08	−2.39	0.89	−2.33	−0.26	−2.44
t_{FF6c}	−2.88	−1.64	−0.82	−1.57	−0.23	−1.60	0.86	−1.56	−0.06	−1.89
t_{BS6}	−4.02	−0.53	0.05	−0.13	0.71	−1.65	2.37	−0.55	0.69	−1.78
t_{SY4}	−1.21	−0.66	1.36	−0.37	0.69	−1.36	0.79	−1.91	0.27	−1.45
t_{DHS}	−2.20	−2.94	−1.23	−3.17	−1.73	−2.52	−1.03	−2.72	−1.53	−2.95

Individual Factor Regressions

Investment, 1/1967–12/2016

	Oa	dWc	dCoa	dNco	dNca	dFin	dFnl	dBe	Dac	Poa
$\overline{R}$	−0.27	−0.42	−0.31	−0.41	−0.42	0.28	−0.32	−0.32	−0.39	−0.39
$t_{\overline{R}}$	−2.19	−3.25	−2.28	−3.52	−3.47	2.39	−3.09	−2.03	−2.95	−2.89
α_q	−0.56	−0.51	0.08	−0.06	−0.02	0.43	−0.07	0.12	−0.67	−0.13
α_{q^5}	−0.23	−0.22	0.20	0.05	0.03	0.12	0.01	0.17	−0.28	−0.01
α_{FF5}	−0.52	−0.50	0.05	−0.20	−0.15	0.50	−0.17	0.13	−0.64	−0.13
α_{FF6}	−0.47	−0.45	0.06	−0.17	−0.14	0.48	−0.15	0.13	−0.63	−0.10
α_{FF6c}	−0.31	−0.30	0.09	−0.17	−0.17	0.36	−0.13	0.07	−0.53	0.01
α_{BS6}	−0.54	−0.40	0.18	−0.08	−0.05	0.53	−0.12	0.19	−0.72	−0.04
α_{SY4}	−0.44	−0.43	0.13	0.00	0.01	0.38	−0.06	0.28	−0.50	−0.15
α_{DHS}	−0.33	−0.28	−0.33	−0.33	−0.35	0.26	−0.24	−0.32	−0.43	−0.28
t_q	−4.10	−3.80	0.78	−0.50	−0.21	3.00	−0.62	0.97	−4.73	−1.00
t_{q^5}	−1.51	−1.62	1.66	0.41	0.24	0.81	0.12	1.19	−1.91	−0.05
t_{FF5}	−4.20	−3.90	0.55	−1.62	−1.26	4.17	−1.63	1.17	−4.90	−1.13
t_{FF6}	−3.42	−3.45	0.56	−1.39	−1.18	3.86	−1.39	1.18	−4.55	−0.88
t_{FF6c}	−2.04	−2.14	0.76	−1.38	−1.37	2.65	−1.19	0.67	−3.63	0.05
t_{BS6}	−3.68	−2.74	1.55	−0.71	−0.43	3.71	−1.06	1.44	−4.94	−0.32
t_{SY4}	−3.23	−3.33	1.14	−0.02	0.11	2.90	−0.60	2.19	−3.45	−1.19
t_{DHS}	−2.30	−1.74	−2.08	−2.30	−2.49	2.08	−1.83	−1.69	−2.96	−2.04

Individual Factor Regressions

Investment and profitability, 1/1967–12/2016

	Pta	Pda	Ndf	Roe1	Roe6	dRoe1	dRoe6	dRoe12	Roa1	dRoa1
$\overline{R}$	−0.42	−0.48	−0.30	0.68	0.42	0.75	0.36	0.24	0.57	0.56
$t_{\overline{R}}$	−3.14	−3.91	−2.45	3.12	1.98	5.53	3.16	2.39	2.63	3.76
α_q	−0.19	−0.39	0.01	−0.03	−0.16	0.34	−0.03	−0.10	0.04	0.06
α_{q^5}	−0.04	−0.12	0.10	−0.17	−0.29	0.10	−0.21	−0.18	−0.20	−0.13
α_{FF5}	−0.16	−0.42	−0.07	0.53	0.32	0.79	0.40	0.26	0.53	0.53
α_{FF6}	−0.16	−0.37	−0.06	0.35	0.16	0.56	0.21	0.11	0.30	0.31
α_{FF6c}	−0.13	−0.34	−0.03	0.23	0.04	0.56	0.19	0.09	0.16	0.28
α_{BS6}	−0.08	−0.40	0.01	−0.07	−0.20	0.35	−0.05	−0.11	−0.02	0.11
α_{SY4}	−0.07	−0.26	−0.03	0.35	0.16	0.55	0.18	0.10	0.31	0.35
α_{DHS}	−0.29	−0.41	−0.16	−0.46	−0.63	0.12	−0.18	−0.21	−0.48	−0.05
t_q	−1.42	−2.60	0.11	−0.28	−1.32	2.37	−0.31	−1.11	0.34	0.37
t_{q^5}	−0.34	−0.78	0.84	−1.40	−2.53	0.68	−1.76	−1.93	−1.75	−0.72
t_{FF5}	−1.32	−3.01	−0.67	3.98	2.49	5.54	3.31	2.58	3.80	3.41
t_{FF6}	−1.32	−2.57	−0.58	2.86	1.33	4.36	1.98	1.28	2.51	2.01
t_{FF6c}	−1.04	−2.28	−0.23	1.45	0.24	4.24	1.77	0.93	1.10	1.84
t_{BS6}	−0.54	−2.54	0.11	−0.56	−1.55	2.61	−0.46	−1.25	−0.19	0.62
t_{SY4}	−0.61	−1.92	−0.27	2.20	0.98	3.93	1.62	1.11	2.01	2.18
t_{DHS}	−2.25	−2.73	−1.21	−2.47	−3.37	0.93	−1.77	−2.24	−2.61	−0.33

Individual Factor Regressions

Profitability, 1/1967–12/2016

	dRoa6	Rna^{q}1	Rna^{q}6	Ato^{q}1	Ato^{q}6	Ato^{q}12	Cto^{q}1	Cto^{q}6	Cto^{q}12	Gpa
$\overline{R}$	0.27	0.64	0.43	0.62	0.53	0.42	0.44	0.40	0.36	0.37
$t_{\overline{R}}$	1.99	2.77	2.01	3.44	3.07	2.56	2.44	2.34	2.14	2.63
α_q	−0.19	0.19	0.10	0.35	0.34	0.32	−0.10	−0.08	−0.06	0.17
α_{q^5}	−0.27	−0.04	−0.15	0.11	0.11	0.11	−0.16	−0.14	−0.11	0.04
α_{FF5}	0.25	0.57	0.38	0.52	0.50	0.45	0.07	0.07	0.08	0.26
α_{FF6}	0.05	0.42	0.28	0.42	0.40	0.36	0.03	0.02	0.04	0.24
α_{FF6c}	0.05	0.30	0.14	0.37	0.34	0.29	−0.09	−0.10	−0.09	0.17
α_{BS6}	−0.19	0.19	0.11	0.52	0.53	0.52	−0.04	−0.02	0.03	0.31
α_{SY4}	0.08	0.44	0.30	0.25	0.24	0.20	−0.11	−0.10	−0.08	0.05
α_{DHS}	−0.24	−0.25	−0.30	0.34	0.25	0.18	−0.10	−0.10	−0.08	0.08
t_q	−1.38	1.41	0.79	2.06	2.09	2.03	−0.60	−0.50	−0.35	1.24
t_{q^5}	−1.77	−0.29	−1.24	0.62	0.69	0.67	−0.95	−0.81	−0.66	0.29
t_{FF5}	1.83	4.08	3.02	3.17	3.41	3.19	0.47	0.50	0.58	2.06
t_{FF6}	0.42	3.22	2.37	2.74	2.85	2.61	0.21	0.15	0.29	1.86
t_{FF6c}	0.35	1.96	1.04	2.28	2.23	1.97	−0.50	−0.62	−0.58	1.24
t_{BS6}	−1.42	1.39	0.83	3.24	3.67	3.61	−0.25	−0.10	0.16	2.14
t_{SY4}	0.58	2.58	1.90	1.65	1.67	1.42	−0.69	−0.69	−0.51	0.35
t_{DHS}	−1.71	−1.34	−1.68	1.67	1.33	0.99	−0.53	−0.52	−0.45	0.49

Individual Factor Regressions

Profitability, 1/1967–12/2016

	Gla^{q}1	Gla^{q}6	Gla^{q}12	Ole^{q}1	Ole^{q}6	Opa	Ola^{q}1	Ola^{q}6	Ola^{q}12	Cop
$\overline{R}$	0.51	0.33	0.28	0.71	0.48	0.41	0.75	0.52	0.46	0.63
$t_{\overline{R}}$	3.48	2.46	2.18	3.40	2.39	2.09	3.53	2.59	2.46	3.57
α_q	0.21	0.11	0.14	0.03	−0.11	0.46	0.40	0.26	0.32	0.69
α_{q^5}	0.04	−0.04	0.00	−0.17	−0.31	−0.04	−0.08	−0.20	−0.10	0.10
α_{FF5}	0.41	0.28	0.26	0.32	0.12	0.57	0.74	0.54	0.54	0.82
α_{FF6}	0.33	0.22	0.22	0.18	0.02	0.52	0.58	0.41	0.43	0.73
α_{FF6c}	0.25	0.13	0.13	0.04	−0.14	0.41	0.50	0.32	0.33	0.51
α_{BS6}	0.31	0.20	0.22	−0.20	−0.30	0.58	0.48	0.34	0.38	0.82
α_{SY4}	0.23	0.14	0.16	0.21	0.06	0.39	0.55	0.41	0.45	0.58
α_{DHS}	0.08	−0.04	−0.01	−0.28	−0.37	−0.01	0.00	−0.13	−0.08	0.19
t_q	1.59	0.93	1.17	0.18	−0.79	2.96	2.64	1.89	2.49	5.04
t_{q^5}	0.31	−0.28	0.01	−1.17	−2.23	−0.28	−0.59	−1.79	−0.92	0.89
t_{FF5}	3.01	2.34	2.27	2.35	0.99	3.60	4.47	3.85	4.24	6.53
t_{FF6}	2.51	1.90	1.97	1.35	0.20	3.67	3.89	3.25	3.75	6.15
t_{FF6c}	1.80	1.08	1.06	0.23	−0.89	2.55	2.87	2.10	2.44	4.28
t_{BS6}	2.20	1.63	1.78	−1.33	−2.08	3.57	3.23	2.52	3.01	5.93
t_{SY4}	1.66	1.12	1.30	1.23	0.40	2.44	3.60	2.91	3.44	4.51
t_{DHS}	0.54	−0.28	−0.10	−1.62	−2.24	−0.04	0.01	−0.71	−0.47	1.16

Individual Factor Regressions

Profitability and intangibles, 1/1967–12/2016

	Cla	Cla^{q}1	Cla^{q}6	Cla^{q}12	F^{q}1	F^{q}6	F^{q}12	Fp^{q}6	Oca	Ioca
$\overline{R}$	0.55	0.52	0.49	0.46	0.52	0.48	0.38	−0.62	0.54	0.53
$t_{\overline{R}}$	3.23	3.26	3.60	3.63	2.32	2.39	2.05	−1.99	2.67	4.31
α_q	0.75	0.46	0.41	0.45	0.13	0.14	0.05	−0.18	0.13	0.07
α_{q^5}	0.17	−0.02	−0.03	0.04	0.24	0.28	0.18	0.33	−0.13	−0.02
α_{FF5}	0.85	0.63	0.57	0.60	0.37	0.37	0.26	−0.86	0.36	0.30
α_{FF6}	0.78	0.54	0.47	0.51	0.23	0.26	0.18	−0.35	0.34	0.17
α_{FF6c}	0.56	0.45	0.37	0.40	0.25	0.24	0.12	−0.32	0.43	0.16
α_{BS6}	0.89	0.53	0.46	0.51	0.05	0.09	0.00	−0.24	0.27	0.03
α_{SY4}	0.66	0.41	0.40	0.43	0.33	0.38	0.28	−0.28	0.00	0.09
α_{DHS}	0.19	0.10	0.11	0.15	0.05	0.04	−0.04	0.56	0.19	0.20
t_q	5.23	3.02	2.97	3.63	0.58	0.85	0.36	−0.68	0.69	0.57
t_{q^5}	1.40	−0.13	−0.28	0.41	1.21	1.67	1.28	1.39	−0.63	−0.16
t_{FF5}	6.82	4.28	4.35	5.07	1.78	2.23	1.94	−3.18	1.80	2.40
t_{FF6}	6.36	3.93	4.10	4.84	1.15	1.53	1.30	−2.17	1.71	1.41
t_{FF6c}	4.68	3.16	3.06	3.71	1.20	1.33	0.82	−1.85	1.90	1.21
t_{BS6}	6.22	3.69	3.70	4.63	0.27	0.53	0.02	−1.40	1.39	0.25
t_{SY4}	4.87	2.97	3.44	4.23	1.59	2.24	1.85	−1.93	−0.01	0.72
t_{DHS}	1.12	0.67	0.85	1.26	0.23	0.22	−0.24	2.29	0.88	1.40

Individual Factor Regressions

Intangibles, 1/1967–12/2016

	Adm	Rdm	Rdm^{q}1	Rdm^{q}6	Rdm^{q}12	OI	OI^{q}1	OI^{q}6	OI^{q}12	Hs
$\overline{R}$	0.66	0.70	1.11	0.80	0.82	0.44	0.49	0.48	0.48	−0.31
$t_{\overline{R}}$	2.71	2.75	2.91	2.18	2.43	2.62	2.60	2.62	2.77	−2.12
α_q	0.09	0.72	1.39	0.95	0.81	0.01	0.08	0.10	0.12	−0.30
α_{q^5}	0.06	0.25	1.07	0.54	0.37	0.06	0.11	0.04	0.04	−0.12
α_{FF5}	−0.09	0.57	0.89	0.63	0.60	0.14	0.26	0.25	0.29	−0.41
α_{FF6}	0.04	0.60	1.33	0.92	0.77	0.13	0.26	0.25	0.27	−0.34
α_{FF6c}	0.03	0.76	1.36	1.01	0.88	0.13	0.24	0.24	0.26	−0.32
α_{BS6}	−0.26	0.73	1.40	0.96	0.80	−0.02	0.10	0.09	0.11	−0.46
α_{SY4}	0.08	0.30	1.14	0.63	0.47	0.02	0.15	0.14	0.14	−0.26
α_{DHS}	0.93	1.13	1.82	1.48	1.36	0.13	0.15	0.18	0.18	−0.17
t_q	0.35	3.11	3.06	2.87	3.01	0.06	0.48	0.61	0.77	−1.56
t_{q^5}	0.27	1.13	2.26	1.57	1.31	0.33	0.61	0.21	0.25	−0.55
t_{FF5}	−0.50	2.55	2.26	1.98	2.22	0.94	1.51	1.54	1.81	−2.50
t_{FF6}	0.21	2.77	3.58	3.05	3.00	0.88	1.56	1.57	1.71	−1.96
t_{FF6c}	0.13	3.34	3.65	3.36	3.51	0.81	1.29	1.35	1.52	−1.85
t_{BS6}	−1.14	3.09	3.44	2.89	2.84	−0.10	0.59	0.53	0.64	−2.46
t_{SY4}	0.35	1.34	2.87	2.13	1.84	0.17	0.93	0.86	0.96	−1.44
t_{DHS}	3.07	4.31	3.91	3.34	3.34	0.76	0.83	0.94	0.98	−1.01

Individual Factor Regressions

Intangibles, 1/1967–12/2016

	Etr	Rer	Eprd	Etl	Alm^{q}1	Alm^{q}6	Alm^{q}12	R_a^1	$R_a^{[2,5]}$	$R_n^{[2,5]}$
$\overline{R}$	0.24	0.34	−0.53	0.34	0.58	0.60	0.54	0.67	0.69	−0.50
$t_{\overline{R}}$	2.29	2.44	−2.96	2.79	2.75	3.05	2.84	3.43	4.11	−2.22
α_q	0.09	0.34	−0.55	0.27	0.25	0.24	0.14	0.58	0.81	−0.20
α_{q^5}	0.11	0.18	−0.43	0.18	0.24	0.22	0.17	0.50	0.85	−0.09
α_{FF5}	0.20	0.29	−0.91	0.36	0.02	0.09	0.05	0.67	0.73	0.05
α_{FF6}	0.17	0.27	−0.81	0.26	0.09	0.10	0.03	0.48	0.74	−0.05
α_{FF6c}	0.23	0.25	−0.85	0.33	0.09	0.10	0.02	0.41	0.66	−0.05
α_{BS6}	0.13	0.35	−0.81	0.35	−0.03	−0.03	−0.12	0.47	0.78	0.12
α_{SY4}	0.13	0.20	−0.58	0.18	0.15	0.17	0.12	0.59	0.83	0.05
α_{DHS}	0.13	0.15	0.00	0.37	0.94	0.89	0.76	0.32	0.58	−0.77
t_q	0.75	2.05	−3.02	1.56	1.68	1.78	1.01	2.75	4.06	−1.06
t_{q^5}	0.82	1.14	−2.49	1.10	1.61	1.62	1.22	2.25	4.02	−0.42
t_{FF5}	1.83	1.86	−5.56	2.48	0.18	0.76	0.44	3.58	4.03	0.27
t_{FF6}	1.51	1.73	−4.97	1.90	0.71	0.93	0.28	2.67	3.80	−0.31
t_{FF6c}	2.03	1.59	−5.08	2.41	0.72	0.90	0.21	2.12	3.24	−0.28
t_{BS6}	0.97	2.08	−4.64	2.23	−0.20	−0.28	−0.93	2.23	3.73	0.69
t_{SY4}	1.10	1.23	−3.71	1.30	1.06	1.28	0.90	3.16	4.21	0.29
t_{DHS}	1.13	0.82	0.01	2.38	4.77	4.49	3.93	1.31	2.56	−3.24

Individual Factor Regressions

Intangibles and trading frictions, 1/1967–12/2016

	$R_a^{[6,10]}$	$R_n^{[6,10]}$	$R_a^{[11,15]}$	$R_a^{[16,20]}$	Sv1	Dtv12	Isff1	Isq1
$\overline{R}$	0.83	−0.46	0.62	0.54	−0.49	−0.40	0.28	0.25
$t_{\overline{R}}$	5.06	−2.38	4.46	3.26	−2.23	−2.23	3.11	2.80
α_q	1.11	0.03	0.60	0.62	−0.22	−0.13	0.27	0.29
α_{q^5}	0.95	0.05	0.55	0.61	−0.16	−0.15	0.20	0.19
α_{FF5}	1.05	−0.08	0.68	0.60	−0.26	−0.06	0.30	0.28
α_{FF6}	1.11	0.00	0.65	0.60	−0.25	−0.06	0.26	0.24
α_{FF6c}	1.11	−0.03	0.66	0.63	−0.18	−0.09	0.27	0.24
α_{BS6}	1.11	0.33	0.58	0.59	−0.21	−0.01	0.31	0.33
α_{SY4}	1.01	−0.09	0.59	0.56	−0.24	−0.03	0.24	0.25
α_{DHS}	1.13	−0.36	0.52	0.59	−0.11	−0.95	0.27	0.38
t_q	5.05	0.15	3.48	3.22	−0.90	−1.72	2.56	2.84
t_{q^5}	4.74	0.24	3.16	2.83	−0.59	−1.94	1.73	1.76
t_{FF5}	5.37	−0.47	3.91	3.72	−1.15	−0.77	3.05	2.89
t_{FF6}	5.69	−0.02	4.13	3.43	−1.08	−0.79	2.76	2.54
t_{FF6c}	5.25	−0.19	3.76	3.30	−0.75	−1.13	2.63	2.35
t_{BS6}	4.73	1.70	3.16	3.32	−0.84	−0.11	3.12	3.14
t_{SY4}	4.97	−0.50	3.85	3.01	−0.98	−0.35	2.36	2.39
t_{DHS}	5.43	−1.72	3.07	3.08	−0.52	−4.41	2.68	3.19

The q^5 model with an expected growth factor substantially improves the q-factor model, which already compares well with the Fama-French 6-factor model