Online Appendix for

"Replicating and Digesting Anomalies in the Chinese A-share Market"

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Table A1. List of anomaly variables

We examine a total of 469 anomalies that have been similarly documented in the U.S. market using the Chinese A-share data. These anomalies are grouped into six categories: (i) momentum, (ii) value-versus-growth, (iii) investment, (iv) profitability, (v) intangibles, and (vi) trading frictions. The number of anomalies in a given category are reported in the panel titles in parentheses. Following Hou, Xue, and Zhang (2020), we list the symbols, brief descriptions, and academic sources for all of the anomaly variables. Appendix A details the variable definitions and portfolio constructions.

Panel A: Momentum (45)			
Sue1	Earnings surprise (1-month holding period), Foster, Olsen, and Shevlin (1984)	Sue3	Earnings surprise (3-month holding period), Foster, Olsen, and Shevlin (1984)
Sue6	Earnings surprise (6-month holding period), Foster, Olsen, and Shevlin (1984)	Sue9	Earnings surprise (9-month holding period), Foster, Olsen, and Shevlin (1984)
Sue12	Earnings surprise (12-month holding period), Foster, Olsen, and Shevlin (1984)	Abr1	Cumulative abnormal stock returns around earnings announcements (1-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
Abr3	Cumulative abnormal stock returns around earnings announcements (3-month holding period), Chan, Jegadeesh, and Lakonishok (1996)	Abr6	Cumulative abnormal stock returns around earnings announcements (6-month holding period), Chan, Jegadeesh, and Lakonishok (1996)
Abr9	Cumulative abnormal stock returns around earnings announcements (9-month holding period), Chan, Jegadeesh, and Lakonishok (1996)	Abr12	Cumulative abnormal stock returns around earnings announcements (12-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)	$R^6 3$	Price momentum (6-month prior returns, 3-month holding period), Jegadeesh and Titman (1993)
$R^6 6$	Price momentum (6-month prior returns, 6-month holding period), Jegadeesh and Titman (1993)	$R^6 9$	Price momentum (6-month prior returns, 9-month holding period), Jegadeesh and Titman (1993)
$R^6 12$	Price momentum (6-month prior returns, 12-month holding period), Jegadeesh and Titman (1993)	$R^{11} 1$	Price momentum (11-month prior returns, 1-month holding period), Fama and French (1996)
$R^{11} 3$	Price momentum (11-month prior returns, 3-month holding period), Fama and French (1996)	$R^{11} 6$	Price momentum (11-month prior returns, 6-month holding period), Fama and French (1996)
$R^{11} 9$	Price momentum (11-month prior returns, 9-month holding period), Fama and French (1996)	$R^{11} 12$	Price momentum (11-month prior returns, 12-month holding period), Fama and French (1996)
Rs1	Revenue surprise (1-month holding period), Jegadeesh and Livnat (2006)	Rs3	Revenue surprise (3-month holding period), Jegadeesh and Livnat (2006)
Rs6	Revenue surprise (6-month holding period), Jegadeesh and Livnat (2006)	Rs9	Revenue surprise (9-month holding period), Jegadeesh and Livnat (2006)
Rs12	Revenue surprise (12-month holding period), Jegadeesh and Livnat (2006)	Tes1	Tax expense surprise (1-month holding period), Thomas and Zhang (2011)
Tes3	Tax expense surprise (3-month holding period), Thomas and Zhang (2011)	Tes6	Tax expense surprise (6-month holding period), Thomas and Zhang (2011)
Tes9	Tax expense surprise (9-month holding period), Thomas and Zhang (2011)	Tes12	Tax expense surprise (12-month holding period), Thomas and Zhang (2011)
52w1	52-week high (1-month holding period),	52w3	52-week high (3-month holding period),

	George and Hwang (2004)		George and Hwang (2004)
52w6	52-week high (6-month holding period), George and Hwang (2004)	52w9	52-week high (9-month holding period), George and Hwang (2004)
52w12	52-week high (12-month holding period), George and Hwang (2004)	$\epsilon^{6}1$	Six-month residual momentum (1-month holding period), Blitz, Huij, and Martens (2011)
$\epsilon^{6}3$	Six-month residual momentum (3-month holding period), Blitz, Huij, and Martens (2011)	$\epsilon^{6}6$	Six-month residual momentum (6-month holding period), Blitz, Huij, and Martens (2011)
$\epsilon^{6}9$	Six-month residual momentum (9-month holding period), Blitz, Huij, and Martens (2011)	$\epsilon^{6}12$	Six-month residual momentum (12-month holding period), Blitz, Huij, and Martens (2011)
$\epsilon^{11}1$	Eleven-month residual momentum (1-month holding period), Blitz, Huij, and Martens (2011)	$\epsilon^{11}3$	Eleven-month residual momentum (3-month holding period), Blitz, Huij, and Martens (2011)
$\epsilon^{11}6$	Eleven-month residual momentum (6-month holding period), Blitz, Huij, and Martens (2011)	$\epsilon^{11}9$	Eleven-month residual momentum (9-month holding period), Blitz, Huij, and Martens (2011)
$\epsilon^{11}12$	Eleven-month residual momentum (12-month holding period), Blitz, Huij, and Martens (2011)		

Panel B: Value-versus-growth (68)

Bm	Book-to-market equity, Rosenberg, Reid, and Lanstein (1985)	Bmj	Book-to-June-end market equity, Asness and Frazzini (2013)
$\text{Bm}^{q}1$	Quarterly book-to-market equity (1-month holding period)	$\text{Bm}^{q}3$	Quarterly book-to-market equity (3-month holding period)
$\text{Bm}^{q}6$	Quarterly book-to-market equity (6-month holding period)	$\text{Bm}^{q}9$	Quarterly book-to-market equity (9-month holding period)
$\text{Bm}^{q}12$	Quarterly book-to-market equity (12-month holding period)	Dm	Debt-to-market, Bhandari (1988)
$\text{Dm}^{q}1$	Quarterly debt-to-market (1-month holding period)	$\text{Dm}^{q}3$	Quarterly debt-to-market (3-month holding period)
$\text{Dm}^{q}6$	Quarterly debt-to-market (6-month holding period)	$\text{Dm}^{q}9$	Quarterly debt-to-market (9-month holding period)
$\text{Dm}^{q}12$	Quarterly debt-to-market (12-month holding period)	Am	Assets-to-market, Fama and French (1992)
$\text{Am}^{q}1$	Quarterly assets-to-market (1-month holding period)	$\text{Am}^{q}3$	Quarterly assets-to-market (3-month holding period)
$\text{Am}^{q}6$	Quarterly assets-to-market (6-month holding period)	$\text{Am}^{q}9$	Quarterly assets-to-market (9-month holding period)
$\text{Am}^{q}12$	Quarterly assets-to-market (12-month holding period)	Rev1	Reversal (1-month holding period), De Bondt and Thaler (1985)
Rev3	Reversal (3-month holding period), De Bondt and Thaler (1985)	Rev6	Reversal (6-month holding period), De Bondt and Thaler (1985)
Rev9	Reversal (9-month holding period), De Bondt and Thaler (1985)	Rev12	Reversal (12-month holding period), De Bondt and Thaler (1985)
Ep	Earnings-to-price, Basu (1983)	$\text{Ep}^{q}1$	Quarterly earnings-to-price (1-month holding period)
$\text{Ep}^{q}3$	Quarterly earnings-to-price (3-month holding period)	$\text{Ep}^{q}6$	Quarterly earnings-to-price (6-month holding period)

Ep^{q}9	Quarterly earnings-to-price (9-month holding period)	Ep^{q}12	Quarterly earnings-to-price (12-month holding period)
Cp	Cash flow-to-price, Lakonishok, Shleifer, and Vishny (1994)	Cp^{q}1	Quarterly cash flow-to-price (1-month holding period)
Cp^{q}3	Quarterly cash flow-to-price (3-month holding period)	Cp^{q}6	Quarterly cash flow-to-price (6-month holding period)
Cp^{q}9	Quarterly cash flow-to-price (9-month holding period)	Cp^{q}12	Quarterly cash flow-to-price (12-month holding period)
Sr	Five-year sales growth rank, Lakonishok, Shleifer, and Vishny (1994)	Sg	Annual sales growth, Lakonishok, Shleifer, and Vishny (1994)
Em	Enterprise multiple, Loughran and Wellman (2011)		
Em^{q}1	Quarterly enterprise multiple (1-month holding period)	Em^{q}3	Quarterly enterprise multiple (3-month holding period)
Em^{q}6	Quarterly enterprise multiple (6-month holding period)	Em^{q}9	Quarterly enterprise multiple (9-month holding period)
Em^{q}12	Quarterly enterprise multiple (12-month holding period)	Sp	Sales-to-price, Barbee, Mukherji, and Raines (1996)
Sp^{q}1	Quarterly sales-to-price (1-month holding period)	Sp^{q}3	Quarterly sales-to-price (3-month holding period)
Sp^{q}6	Quarterly sales-to-price (6-month holding period)	Sp^{q}9	Quarterly sales-to-price (9-month holding period)
Sp^{q}12	Quarterly sales-to-price (12-month holding period)	Ocp	Operating cash flow-to-price, Desai, Rajgopal, and Venkatachalam (2004)
Ocp^{q}1	Quarterly operating cash flow-to-price (1-month holding period)	Ocp^{q}3	Quarterly operating cash flow-to-price (3-month holding period)
Ocp^{q}6	Quarterly operating cash flow-to-price (6-month holding period)	Ocp^{q}9	Quarterly operating cash flow-to-price (9-month holding period)
Ocp^{q}12	Quarterly operating cash flow-to-price (12-month holding period)		
Ebp	Enterprise book-to-price, Penman, Richardson, and Tuna (2007)	Ebp^{q}1	Quarterly enterprise book-to-price (1-month holding period)
Ebp^{q}3	Quarterly enterprise book-to-price (3-month holding period)	Ebp^{q}6	Quarterly enterprise book-to-price (6-month holding period)
Ebp^{q}9	Quarterly enterprise book-to-price (9-month holding period)	Ebp^{q}12	Quarterly enterprise book-to-price (12-month holding period)
Ndp	Net debt-to-price, Penman, Richardson, and Tuna (2007)	Ndp^{q}1	Quarterly net debt-to-price (1-month holding period)
Ndp^{q}3	Quarterly net debt-to-price (3-month holding period)	Ndp^{q}6	Quarterly net debt-to-price (6-month holding period)
Ndp^{q}9	Quarterly net debt-to-price (9-month holding period)	Ndp^{q}12	Quarterly net debt-to-price (12-month holding period)
Panel C: Investment (36)			
Aci	Abnormal corporate investment, Titman, Wei, and Xie (2004)	I/A	Investment-to-assets, Cooper, Gulen, and Schill (2008)
Ia^{q}1	Quarterly investment-to-assets (1-month holding period)	Ia^{q}3	Quarterly investment-to-assets (3-month holding period)
Ia^{q}6	Quarterly investment-to-assets (6-month holding period)	Ia^{q}9	Quarterly investment-to-assets (9-month holding period)

Ia^{q}12	Quarterly investment-to-assets (12-month holding period)	dPia	Changes in PPE and inventory/assets, Lyandres, Sun, and Zhang (2008)
Noa	Net operating assets, Hirshleifer, Hou, Teoh, and Zhang (2004)	dLno	Change in long-term net operating assets, Fairfield, Whisenant, and Yohn (2003)
Ig	Investment growth, Xing (2008)		
2Ig	Two-year investment growth, Anderson and Garcia-Feijoo (2006)	3Ig	Three-year investment growth, Anderson and Garcia-Feijoo (2006)
Nsi	Net stock issues, Pontiff and Woodgate (2008)	dIi	Percentage change in investment relative to industry, Abarbanell and Bushee (1998)
Cei	Composite equity issuance, Daniel and Titman (2006)	Cdi	Composite debt issuance, Lyandres, Sun, and Zhang (2008)
Ivg	Inventory growth, Belo and Lin (2011)	Ivc	Inventory changes, Thomas and Zhang (2002)
Oa	Operating accruals, Sloan (1996)	Ta	Total accruals, Richardson, Sloan, Soliman, and Tuna (2005)
dWc	Change in net non-cash working capital, Richardson, Sloan, Soliman, and Tuna (2005)	dCoa	Change in current operating assets, Richardson, Sloan, Soliman, and Tuna (2005)
dCol	Change in current operating liabilities, Richardson, Sloan, Soliman, and Tuna (2005)	dNco	Change in net non-current operating assets, Richardson, Sloan, Soliman, and Tuna (2005)
dNca	Change in non-current operating assets, Richardson, Sloan, Soliman, and Tuna (2005)	dNcl	Change in non-current operating liabilities, Richardson, Sloan, Soliman, and Tuna (2005)
dFin	Change in net financial assets, Richardson, Sloan, Soliman, and Tuna (2005)	dLti	Change in long-term investments, Richardson, Sloan, Soliman, and Tuna (2005)
dFnl	Change in financial liabilities, Richardson, Sloan, Soliman, and Tuna (2005)	dBe	Change in common equity, Richardson, Sloan, Soliman, and Tuna (2005)
Dac	Discretionary accruals, Dechow, Sloan, and Sweeney (1995)	Poa	Percent operating accruals, Hafzalla, Lundholm, and Van Winkle (2011)
Pta	Percent total accruals, Hafzalla, Lundholm, and Van Winkle (2011)	Pda	Percent discretionary accruals,
Nxf	Net external finance, Bradshaw, Richardson, and Sloan (2006)		
Panel D: Profitability (94)			
Roe	Return on equity	Roa	Return on assets
Roe^{q}1	Quarterly Return on equity (1-month holding period), Hou, Xue, and Zhang (2015)	Roe^{q}3	Quarterly Return on equity (3-month holding period), Hou, Xue, and Zhang (2015)
Roe^{q}6	Quarterly Return on equity (6-month holding period), Hou, Xue, and Zhang (2015)	Roe^{q}9	Quarterly Return on equity (9-month holding period), Hou, Xue, and Zhang (2015)
Roe^{q}12	Quarterly Return on equity (12-month holding period), Hou, Xue, and Zhang (2015)	dRoe1	Change in Roe (1-month holding period),
dRoe3	Change in Roe (3-month holding period)	dRoe9	Change in Roe (9-month holding period)
dRoe6	Change in Roe (6-month holding period)	dRoe12	Change in Roe (12-month holding period)
Roa^{q}1	Quarterly Return on assets (1-month holding period), Balakrishnan, Bartov, and Faurel (2010)	Roa^{q}3	Quarterly Return on assets (3-month holding period), Balakrishnan, Bartov, and Faurel (2010)
Roa^{q}6	Quarterly Return on assets (6-month holding period), Balakrishnan, Bartov, and Faurel (2010)	Roa^{q}9	Quarterly Return on assets (9-month holding period), Balakrishnan, Bartov, and Faurel (2010)
Roa^{q}12	Quarterly Return on assets (12-month holding period),	dRoa1	Change in Roa (1-month holding period)

	Balakrishnan, Bartov, and Faurel (2010)		
dRoa3	Change in Roa (3-month holding period)	dRoa6	Change in Roa (6-month holding period)
dRoa9	Change in Roa (9-month holding period)	dRoa12	Change in Roa (12-month holding period)
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)
Rna^{q}1	Quarterly return on net operating assets (1-month holding period)	Rna^{q}3	Quarterly return on net operating assets (3-month holding period)
Rna^{q}6	Quarterly return on net operating assets (6-month holding period)	Rna^{q}9	Quarterly return on net operating assets (9-month holding period)
Rna^{q}12	Quarterly return on net operating assets (12-month holding period)	Pm^{q}1	Quarterly profit margin (1-month holding period)
Pm^{q}3	Quarterly profit margin (3-month holding period)	Pm^{q}6	Quarterly profit margin (6-month holding period)
Pm^{q}9	Quarterly profit margin (9-month holding period)	Pm^{q}12	Quarterly profit margin (12-month holding period)
Ato^{q}1	Quarterly asset turnover (1-month holding period)	Ato^{q}3	Quarterly asset turnover (3-month holding period)
Ato^{q}6	Quarterly asset turnover (6-month holding period)	Ato^{q}9	Quarterly asset turnover (9-month holding period)
Ato^{q}12	Quarterly asset turnover (12-month holding period)	Cto^{q}1	Quarterly capital turnover (1-month holding period)
Cto^{q}3	Quarterly capital turnover (3-month holding period)	Cto^{q}6	Quarterly capital turnover (6-month holding period)
Cto^{q}9	Quarterly capital turnover (9-month holding period)	Cto^{q}12	Quarterly capital turnover (12-month holding period)
Gpa	Gross profits-to-assets, Novy-Marx (2013)	Gla	Gross profits-to-lagged assets
Gla^{q}1	Gross profits-to-lagged assets (1-month holding period)	Gla^{q}3	Gross profits-to-lagged assets (3-month holding period)
Gla^{q}6	Gross profits-to-lagged assets (6-month holding period)	Gla^{q}9	Gross profits-to-lagged assets (9-month holding period)
Gla^{q}12	Gross profits-to-lagged assets (12-month holding period)	Ope	Operating profits-to-equity, Fama and French (2015)
Ole	Operating profits-to-lagged equity	Ole^{q}1	Operating profits-to-lagged equity (1-month holding period)
Ole^{q}3	Operating profits-to-lagged equity (3-month holding period)	Ole^{q}6	Operating profits-to-lagged equity (6-month holding period)
Ole^{q}9	Operating profits-to-lagged equity (9-month holding period)	Ole^{q}12	Operating profits-to-lagged equity (12-month holding period)
Opa	Operating profits-to-assets, Ball, Gerakos, Linnainmaa, and Nikolaev (2015)	Ola	Operating profits-to-lagged assets
Ola^{q}1	Operating profits-to-lagged assets (1-month holding period)	Ola^{q}3	Operating profits-to-lagged assets (3-month holding period)
Ola^{q}6	Operating profits-to-lagged assets (6-month holding period)	Ola^{q}9	Operating profits-to-lagged assets (9-month holding period)
Ola^{q}12	Operating profits-to-lagged assets (12-month holding period)	Cop	Cash-based operating profitability, Ball, Gerakos, Linnainmaa, and Nikolaev (2016)
Cla	Cash-based operating profits-to-lagged assets	Cla^{q}1	Cash-based operating profits-to-lagged assets (1-month holding period)

Cla^{q}3	Cash-based operating profits-to-lagged assets (3-month holding period)	Cla^{q}6	Cash-based operating profits-to-lagged assets (6-month holding period)
Cla^{q}9	Cash-based operating profits-to-lagged assets (9-month holding period)	Cla^{q}12	Cash-based operating profits-to-lagged assets (12-month holding period)
Cbe	Cash-based operating profits-to-book equity	O	O-score, Dichev (1998)
Z	Z-score, Dichev (1998)		
Tbi	Taxable income-to-book income, Green, Hand, and Zhang (2013)	Tbi^{q}1	Quarterly taxable income-to-book income (1-month holding period)
Tbi^{q}3	Quarterly taxable income-to-book income (3-month holding period)	Tbi^{q}6	Quarterly taxable income-to-book income (6-month holding period)
Tbi^{q}9	Quarterly taxable income-to-book income (9-month holding period)	Tbi^{q}12	Quarterly taxable income-to-book income (12-month holding period)
Bl	Book leverage, Fama and French (1992)	Bl^{q}1	Quarterly book leverage (1-month holding period)
Bl^{q}3	Quarterly book leverage (3-month holding period)	Bl^{q}6	Quarterly book leverage (6-month holding period)
Bl^{q}9	Quarterly book leverage (9-month holding period)	Bl^{q}12	Quarterly book leverage (12-month holding period)
Sg^{q}1	Quarterly sales growth (1-month holding period)	Sg^{q}3	Quarterly sales growth (3-month holding period)
Sg^{q}6	Quarterly sales growth (6-month holding period)	Sg^{q}9	Quarterly sales growth (9-month holding period)
Sg^{q}12	Quarterly sales growth (12-month holding period)		

Panel E: Intangibles (83)

Adm	Advertising expense-to-market, Chan, Lakonishok, and Sougiannis (2001)	gAd	Growth in advertising expense, Lou (2014)
Rdm	R&D-to-market, Chan, Lakonishok, and Sougiannis (2001)	Rdm^{q}1	Quarterly R&D-to-market (1-month holding period)
Rdm^{q}3	Quarterly R&D-to-market (3-month holding period)	Rdm^{q}6	Quarterly R&D-to-market (6-month holding period)
Rdm^{q}9	Quarterly R&D-to-market (9-month holding period)	Rdm^{q}12	Quarterly R&D-to-market (12-month holding period)
Rds	R&D-to-sales, Chan, Lakonishok, and Sougiannis (2001)	Rds^{q}1	Quarterly R&D-to-sales (1-month holding period)
Rds^{q}3	Quarterly R&D-to-sales (3-month holding period)	Rds^{q}6	Quarterly R&D-to-sales (6-month holding period)
Rds^{q}9	Quarterly R&D-to-sales (9-month holding period)	Rds^{q}12	Quarterly R&D-to-sales (12-month holding period)
Ol	Operating leverage, Novy-Marx (2011)	Ol^{q}1	Quarterly operating leverage (1-month holding period)
Ol^{q}3	Quarterly operating leverage (3-month holding period)	Ol^{q}6	Quarterly operating leverage (6-month holding period)
Ol^{q}9	Quarterly operating leverage (9-month holding period)	Ol^{q}12	Quarterly operating leverage (12-month holding period)
Hn	Hiring rate, Belo, Lin, and Bazdresch (2014)	Rca	R&D capital-to-assets, Li (2011)
Fop	Forecast optimism, Frankel and Lee (1998)	Parc	Patent-to-R&D capital, Hirshleifer, Hsu, and Li (2013)
Age1	Firm age (1-month holding period), Jiang, Lee, and Zhang (2005)	Age3	Firm age (3-month holding period), Jiang, Lee, and Zhang (2005)

Age6	Firm age (6-month holding period), Jiang, Lee, and Zhang (2005)	Age9	Firm age (9-month holding period), Jiang, Lee, and Zhang (2005)
Age12	Firm age (12-month holding period), Jiang, Lee, and Zhang (2005)	D1	Price delay based on R^2, Hou and Moskowitz (2005)
D2	Price delay based on slopes, Hou and Moskowitz (2005)	D3	Price delay based on slopes adjusted for standard errors, Hou and Moskowitz (2005)
dSi	% change in sales - % change in inventory, Abarbanell and Bushee (1998)	dSa	% change in sales - % change in accounts receivable, Abarbanell and Bushee (1998)
dGs	% change in gross margin- % change in sales, Abarbanell and Bushee (1998)	dSs	% change in sales - % change in SG&A, Abarbanell and Bushee (1998)
Etr	Effective tax rate, Abarbanell and Bushee (1998)	Lfe	Labor force efficiency, Abarbanell and Bushee (1998)
Ana	Analyst coverage attention, Elgers, Lo, and Pfeiffer (2001)	Rep	Analyst report attention,
Tan	Tangibility of assets, Hahn and Lee (2009)	Tan^{q}1	Quarterly tangibility (1-month holding period)
Tan^{q}3	Quarterly tangibility (3-month holding period)	Tan^{q}6	Quarterly tangibility (6-month holding period)
Tan^{q}9	Quarterly tangibility (9-month holding period)	Tan^{q}12	Quarterly tangibility (12-month holding period)
Kz	Financial constraints (the Kaplan-Zingales index), Lamont, Polk, and Saaá-Requejo (2001)	Sa	Financial constraints (the SA index) Hadlock and Pierce (2010)
Vcf1	Cash flow volatility (1-month holding period), Huang (2009)	Vcf3	Cash flow volatility (3-month holding period), Huang (2009)
Vcf6	Cash flow volatility (6-month holding period), Huang (2009)	Vcf9	Cash flow volatility (9-month holding period), Huang (2009)
Vcf12	Cash flow volatility (12-month holding period), Huang (2009)	Cta1	Cash-to-assets (1-month holding period), Palazzo (2012)
Cta3	Cash-to-assets (3-month holding period), Palazzo (2012)	Cta6	Cash-to-assets (6-month holding period), Palazzo (2012)
Cta9	Cash-to-assets (9-month holding period), Palazzo (2012)	Cta12	Cash-to-assets (12-month holding period), Palazzo (2012)
Gov	Corporate governance index		
Eper	Earnings persistence, Francis, Lafond, Olsson, and Schipper (2004)	Eprd	Earnings predictability, Francis, Lafond, Olsson, and Schipper (2004)
Esm	Earnings smoothness, Francis, Lafond, Olsson, and Schipper (2004)	Evr	Value relevance of earnings, Francis, Lafond, Olsson, and Schipper (2004)
Etl	Earnings timeliness, Francis, Lafond, Olsson, and Schipper (2004)	Ecs	Earnings conservatism, Francis, Lafond, Olsson, and Schipper (2004)
Ala	Asset liquidity (scaled by book assets), Ortiz-Molina and Phillips (2014)	Alm	Asset liquidity (scaled by market assets), Ortiz-Molina and Phillips (2014)
Ala^{q}1	Quarterly asset liquidity (book assets) (1-month holding period)	Ala^{q}3	Quarterly asset liquidity (book assets) (3-month holding period)
Ala^{q}6	Quarterly asset liquidity (book assets) (1-month holding period)	Ala^{q}9	Quarterly asset liquidity (book assets) (9-month holding period)
Ala^{q}12	Quarterly asset liquidity (book assets) (12-month holding period)	Alm^{q}1	Quarterly asset liquidity (market assets) (1-month holding period)
Alm^{q}3	Quarterly asset liquidity (market assets) (3-month holding period)	Alm^{q}6	Quarterly asset liquidity (market assets) (6-month holding period)
Alm^{q}9	Quarterly asset liquidity (market assets)	Alm^{q}12	Quarterly asset liquidity (market assets)

	(9-month holding period)		(12-month holding period)
R^{1}_{a}	12-month-lagged return, Heston and Sadka (2008)	R^{1}_{n}	Year 1 lagged return, non-annual, Heston and Sadka (2008)
$R^{[2,5]}_{a}$	Years 2 to 5 lagged returns, annual, Heston and Sadka (2008)	$R^{[2,5]}_{n}$	Years 2 to 5 lagged returns, non-annual, Heston and Sadka (2008)
$R^{[6,10]}_{a}$	Years 6 to 10 lagged returns, annual, Heston and Sadka (2008)	$R^{[6,10]}_{n}$	Years 6 to 10 lagged returns, non-annual, Heston and Sadka (2008)
Panel F: Trading frictions (143)			
Me	Market equity, Banz (1981)	Iv	Idiosyncratic volatility, Ali, Hwang, and Trombley (2003)
Ivc1	Idiosyncratic volatility per the CAPM (1-month holding period)	Ivc3	Idiosyncratic volatility per the CAPM (3-month holding period)
Ivc6	Idiosyncratic volatility per the CAPM (6-month holding period)	Ivc9	Idiosyncratic volatility per the CAPM (9-month holding period)
Ivc12	Idiosyncratic volatility per the CAPM (12-month holding period)	Ivff31	Idiosyncratic volatility per the FF 3-factor model (1-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Ivff33	Idiosyncratic volatility per the FF 3-factor model (3-month holding period), Ang, Hodrick, Xing, and Zhang (2006)	Ivff36	Idiosyncratic volatility per the FF 3-factor model (6-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Ivff39	Idiosyncratic volatility per the FF 3-factor model (9-month holding period), Ang, Hodrick, Xing, and Zhang (2006)	Ivff312	Idiosyncratic volatility per the FF 3-factor model (12-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Ivff51	Idiosyncratic volatility per the FF 5-factor model (1-month holding period)	Ivff53	Idiosyncratic volatility per the FF 5-factor model (3-month holding period)
Ivff56	Idiosyncratic volatility per the FF 5-factor model (6-month holding period)	Ivff59	Idiosyncratic volatility per the FF 5-factor model (9-month holding period)
Ivff512	Idiosyncratic volatility per the FF 5-factor model (12-month holding period)	Ivq1	Idiosyncratic volatility per the *q*-factor model (1-month holding period)
Ivq3	Idiosyncratic volatility per the *q*-factor model (3-month holding period)	Ivq6	Idiosyncratic volatility per the *q*-factor model (6-month holding period)
Ivq9	Idiosyncratic volatility per the *q*-factor model (9-month holding period)	Ivq12	Idiosyncratic volatility per the *q*-factor model (12-month holding period)
Ivch31	Idiosyncratic volatility per the CH3-factor model (1-month holding period)	Ivch33	Idiosyncratic volatility per the CH3-factor model (3-month holding period)
Ivch36	Idiosyncratic volatility per the CH3-factor model (6-month holding period)	Ivch39	Idiosyncratic volatility per the CH3-factor model (9-month holding period)
Ivch312	Idiosyncratic volatility per the CH3-factor model (12-month holding period)	Ivch41	Idiosyncratic volatility per the CH4-factor model (1-month holding period)
Ivch43	Idiosyncratic volatility per the CH4-factor model (3-month holding period)	Ivch46	Idiosyncratic volatility per the CH4-factor model (6-month holding period)
Ivch49	Idiosyncratic volatility per the CH4-factor model (9-month holding period)	Ivch412	Idiosyncratic volatility per the CH4-factor model (12-month holding period)
Tv1	Total volatility (1-month holding period), Ang, Hodrick, Xing, and Zhang (2006)	Tv3	Total volatility (3-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Tv6	Total volatility (6-month holding period), Ang, Hodrick, Xing, and Zhang (2006)	Tv9	Total volatility (9-month holding period), Ang, Hodrick, Xing, and Zhang (2006)

Tv12	Total volatility (12-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Svr1	Systematic volatility risk (1-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Svr3	Systematic volatility risk (3-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Svr6	Systematic volatility risk (6-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Svr9	Systematic volatility risk (9-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
Svr12	Systematic volatility risk (12-month holding period), Ang, Hodrick, Xing, and Zhang (2006)
$\beta 1$	Market beta (1-month holding period), Fama and MacBeth (1973)
$\beta 3$	Market beta (3-month holding period), Fama and MacBeth (1973)
$\beta 6$	Market beta (6-month holding period), Fama and MacBeth (1973)
$\beta 9$	Market beta (9-month holding period), Fama and MacBeth (1973)
$\beta 12$	Market beta (12-month holding period), Fama and MacBeth (1973)
$\beta^{D}1$	The Dimson (1979) beta (1-month holding period)
$\beta^{D}3$	The Dimson (1979) beta (3-month holding period)
$\beta^{D}6$	The Dimson (1979) beta (6-month holding period)
$\beta^{D}9$	The Dimson (1979) beta (9-month holding period)
$\beta^{D}12$	The Dimson (1979) beta (12-month holding period)
Tur1	Share turnover (1-month holding period), Datar, Naik, and Radcliffe (1998)
Tur3	Share turnover (3-month holding period), Datar, Naik, and Radcliffe (1998)
Tur6	Share turnover (6-month holding period), Datar, Naik, and Radcliffe (1998)
Tur9	Share turnover (9-month holding period), Datar, Naik, and Radcliffe (1998)
Tur12	Share turnover (12-month holding period), Datar, Naik, and Radcliffe (1998)
Cvt1	Coefficient of variation for share turnover (1-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvt3	Coefficient of variation for share turnover (3-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvt6	Coefficient of variation for share turnover (6-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvt9	Coefficient of variation for share turnover (9-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvt12	Coefficient of variation for share turnover (12-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Rtv1	Trading volume (in RMB *yuan*) (1-month holding period), Brennan, Chordia, and Subrahmanyam (1998)
Rtv3	Trading volume (in RMB *yuan*) (3-month holding period), Brennan, Chordia, and Subrahmanyam (1998)
Rtv6	Trading volume (in RMB *yuan*) (6-month holding period), Brennan, Chordia, and Subrahmanyam (1998)
Rtv9	Trading volume (in RMB *yuan*) (9-month holding period), Brennan, Chordia, and Subrahmanyam (1998)
Rtv12	Trading volume (in RMB *yuan*) (12-month holding period), Brennan, Chordia, and Subrahmanyam (1998)
Cvd1	Coefficient of variation for dollar trading volume (1-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvd3	Coefficient of variation for dollar trading volume (3-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvd6	Coefficient of variation for dollar trading volume (6-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvd9	Coefficient of variation for dollar trading volume (9-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Cvd12	Coefficient of variation for dollar trading volume (12-month holding period), Chordia, Subrahmanyam, and Anshuman (2001)
Pps1	Share price (1-month holding period), Miller and Scholes (1982)
Pps3	Share price (3-month holding period), Miller and Scholes (1982)

Pps6	Share price (6-month holding period), Miller and Scholes (1982)
Pps9	Share price (9-month holding period), Miller and Scholes (1982)
Pps12	Share price (12-month holding period), Miller and Scholes (1982)
Ami1	Absolute return-to-volume (1-month holding period), Amihud (2002)
Ami3	Absolute return-to-volume (3-month holding period), Amihud (2002)
Ami6	Absolute return-to-volume (6-month holding period), Amihud (2002)
Ami9	Absolute return-to-volume (9-month holding period), Amihud (2002)
Ami12	Absolute return-to-volume (12-month holding period), Amihud (2002)
Mdr1	Maximum daily return (1-month holding period),
Mdr3	Maximum daily returns (3-month holding period),
Mdr6	Maximum daily returns (6-month holding period), Bali, Cakici, and Whitelaw (2011)
Mdr9	Maximum daily returns (9-month holding period), Bali, Cakici, and Whitelaw (2011)
Mdr12	Maximum daily return (12-month holding period), Bali, Cakici, and Whitelaw (2011)
Ts1	Total skewness (1-month holding period), Bali, Engle, and Murray (2016)
Ts3	Total skewness (3-month holding period), Bali, Engle, and Murray (2016)
Ts6	Total skewness (6-month holding period), Bali, Engle, and Murray (2016)
Ts9	Total skewness (9-month holding period), Bali, Engle, and Murray (2016)
Ts12	Total skewness (12-month holding period), Bali, Engle, and Murray (2016)
Isc1	Idiosyncratic skewness per the CAPM (1-month holding period)
Isc3	Idiosyncratic skewness per the CAPM (3-month holding period)
Isc6	Idiosyncratic skewness per the CAPM (6-month holding period)
Isc9	Idiosyncratic skewness per the CAPM (9-month holding period)
Isc12	Idiosyncratic skewness per the CAPM (12-month holding period)
Isff31	Idiosyncratic skewness per the FF 3-factor model (1-month holding period)
Isff33	Idiosyncratic skewness per the FF 3-factor model (3-month holding period)
Isff36	Idiosyncratic skewness per the FF 3-factor model (6-month holding period)
Isff39	Idiosyncratic skewness per the FF 3-factor model (9-month holding period)
Isff312	Idiosyncratic skewness per the FF 3-factor model (12-month holding period)
Isff51	Idiosyncratic skewness per the FF 5-factor model (1-month holding period)
Isff53	Idiosyncratic skewness per the FF 5-factor model (3-month holding period)
Isff56	Idiosyncratic skewness per the FF 5-factor model (6-month holding period)
Isff59	Idiosyncratic skewness per the FF 5-factor model (9-month holding period)
Isff512	Idiosyncratic skewness per the FF 5-factor model (12-month holding period)
Isq1	Idiosyncratic skewness per the *q*-factor model (1-month holding period)
Isq3	Idiosyncratic skewness per the *q*-factor model (3-month holding period)
Isq6	Idiosyncratic skewness per the *q*-factor model (6-month holding period)
Isq9	Idiosyncratic skewness per the *q*-factor model (9-month holding period)
Isq12	Idiosyncratic skewness per the *q*-factor model (12-month holding period)
Isch31	Idiosyncratic skewness per the CH3-factor model (1-month holding period)
Isch33	Idiosyncratic skewness per the CH3-factor model (3-month holding period)
Isch36	Idiosyncratic skewness per the CH3-factor model (6-month holding period)
Isch39	Idiosyncratic skewness per the CH3-factor model (9-month holding period)
Isch312	Idiosyncratic skewness per the CH3-factor model (12-month holding period)
Isch41	Idiosyncratic skewness per the CH4-factor model (1-month holding period)
Isch43	Idiosyncratic skewness per the CH4-factor model (3-month holding period)
Isch46	Idiosyncratic skewness per the CH4-factor model (6-month holding period)
Isch49	Idiosyncratic skewness per the CH4-factor
Isch412	Idiosyncratic skewness per the CH4-factor

	model (9-month holding period)		model (12-month holding period)
Srev	Short-term reversal, Jegadeesh (1990)	Esba1	Effective bid-ask spread (1-month holding period), Hou and Loh (2016)
Esba3	Effective bid-ask spread (3-month holding period), Hou and Loh (2016)	Esba6	Effective bid-ask spread (6-month holding period), Hou and Loh (2016)
Esba9	Effective bid-ask spread (9-month holding period), Hou and Loh (2016)	Esba12	Effective bid-ask spread (12-month holding period), Hou and Loh (2016)
Qsba1	Quotation bid-ask spread (1-month holding period)	Qsba3	Quotation bid-ask spread (3-month holding period)
Qsba6	Quotation bid-ask spread (6-month holding period)	Qsba9	Quotation bid-ask spread (9-month holding period)
Qsba12	Quotation bid-ask spread (12-month holding period)	$\beta^{PS}1$	The Pastor-Stambaugh beta (1-month holding period)
$\beta^{PS}3$	The Pastor-Stambaugh beta (3-month holding period)	$\beta^{PS}6$	The Pastor-Stambaugh beta (6-month holding period)
$\beta^{PS}9$	The Pastor-Stambaugh beta (9-month holding period)	$\beta^{PS}12$	The Pastor-Stambaugh beta (12-month holding period)
Vpin1	Volume-synchronized probability of Informed trading (1-month holding period)	Vpin3	Volume-synchronized probability of Informed trading (3-month holding period)
Vpin6	Volume-synchronized probability of Informed trading (6-month holding period)	Vpin9	Volume-synchronized probability of Informed trading (9-month holding period)
Vpin12	Volume-synchronized probability of Informed trading (12-month holding period)		

Table A2. Explaining composite anomalies constructed based on significant raw return spreads using different factor models

We compute the composite scores across all anomaly variables that have significant high-minus-low quintile raw return spreads (All) and across each category of anomalies: (i) momentum (Mom), (ii) value-versus-growth (VvG), (iii) investment (Inv), (iv) profitability (Prof), (v) intangibles (Intan), and (vi) trading frictions (Fric). For a given set of anomaly variables, we calculate the composite score for each stock by equal-weighting the stock's percentile rankings for all anomaly variables in this given set. We realign the rankings so that a higher ranking is associated with a higher future returns. For each month *t*, we sort all stocks into quintiles based on the Mainboard breakpoints of the composite score that aggregates a given set of anomalies. Then we compute the value-weighted quintile returns for each month *t* and rebalance the quintiles in month *t*+1. For each model and each set of quintiles, we report the high-minus-low alpha, its *t*-statistic, the mean absolute alpha, and the GRS *p*-value. $r_{H\text{-}L}$ is the average high-minus-low quintile raw return spread for the composite anomaly variables, and t_r is the corresponding *t*-statistic. We also report the results for the CAPM, FF3-factor, FF5-factor, *q*-factor, Liu–Stambaugh–Yuan CH3-factor and CH4-factor, and Carhart 4-factor (Car4) models in each anomaly category. In Panel A, we construct composite anomalies based on the 78 anomaly variables with significant raw return spreads over the whole sample period (July 2000 to June 2019, 228 months). In Panel B, we construct composite anomalies based on the 61 anomaly variables with significant raw return spreads in the post-2007 subsample period (July 2008 to June 2019, 132 months).

Panel A: The whole sample period (2000/07-2019/06), Mainboard-VW															
	All	Mom	VvG	Inv	Prof	Intan	Fric		All	Mom	VvG	Inv	Prof	Intan	Fric
r_{H-L}	1.71	0.85	0.89	0.53	0.92	1.23	0.69	t_r	6.29	3.90	2.85	2.22	3.59	5.64	2.59
	The high-minus-low alpha, α_{H-L}								t_{H-L}						
CAPM	1.77	0.89	0.92	0.56	0.98	1.24	0.77		6.62	4.11	2.92	2.34	3.88	5.63	2.97
FF3	1.73	1.00	0.81	0.76	1.14	0.94	0.82		7.94	4.67	4.29	3.19	4.62	5.64	3.24
FF5	1.74	0.96	0.75	0.85	0.99	0.89	0.89		8.25	4.52	4.23	3.89	4.32	5.37	3.59
q	1.87	0.59	1.37	0.30	0.40	1.53	1.03		7.95	2.93	5.44	1.26	1.93	7.03	4.01
CH3	1.02	0.52	0.40	0.28	0.20	0.87	0.36		3.80	2.13	1.44	1.00	0.77	3.58	1.22
CH4	0.97	0.55	0.49	0.16	0.17	0.85	0.21		3.54	2.23	1.72	0.59	0.65	3.44	0.70
Car4	1.80	0.78	0.91	0.78	0.89	0.97	1.04		8.33	4.10	4.92	3.22	4.05	5.80	4.44
	The mean absolute alpha, $\overline{\lvert\alpha\rvert}$								The GRS *p*-value, p_{GRS}						
CAPM	0.53	0.28	0.39	0.33	0.35	0.48	0.33		0.00	0.00	0.00	0.02	0.00	0.00	0.00
FF3	0.52	0.31	0.35	0.26	0.37	0.40	0.31		0.00	0.00	0.00	0.01	0.00	0.00	0.00
FF5	0.53	0.29	0.33	0.29	0.33	0.38	0.32		0.00	0.00	0.00	0.00	0.00	0.00	0.00
q	0.51	0.15	0.38	0.18	0.16	0.41	0.32		0.00	0.01	0.00	0.16	0.09	0.00	0.00
CH3	0.43	0.34	0.35	0.36	0.31	0.43	0.33		0.00	0.02	0.03	0.04	0.15	0.00	0.02
CH4	0.44	0.36	0.37	0.41	0.35	0.43	0.38		0.00	0.02	0.01	0.03	0.16	0.00	0.03
Car4	0.53	0.24	0.33	0.25	0.28	0.37	0.31		0.00	0.00	0.00	0.02	0.00	0.00	0.00
Panel B: The post-2007 subsample period (2008/07-2019/06), Mainboard-VW															
	All	Mom	VvG	Inv	Prof	Intan	Fric		All	Mom	VvG	Inv	Prof	Intan	Fric
r_{H-L}	1.77	0.91	0.74	1.07	0.97	0.84	0.41	t_r	4.18	3.39	2.45	3.52	3.25	2.34	0.85
	The high-minus-low alpha, α_{H-L}								t_{H-L}						
CAPM	1.76	0.95	0.70	1.06	0.99	0.80	0.35		4.12	3.54	2.33	3.46	3.31	2.23	0.73
FF3	1.40	1.23	0.18	0.63	1.07	0.84	-0.20		4.59	4.66	0.67	2.33	3.44	3.31	-0.61
FF5	1.45	1.26	0.18	0.65	1.14	0.86	-0.22		4.63	4.81	0.77	2.89	3.58	3.63	-0.65
q	0.13	0.22	0.04	0.11	-0.08	-0.04	-0.75		0.42	0.86	0.17	0.48	-0.30	-0.12	-2.01
CH3	0.82	0.44	0.57	0.58	0.35	0.48	-0.45		2.42	1.51	1.80	1.87	1.07	1.38	-1.27

CH4	0.70	0.49	0.68	0.52	0.48	0.37	-0.58	1.99	1.65	2.11	1.67	1.44	1.02	-1.53
Car4	1.36	1.20	0.16	0.62	1.02	0.81	-0.18	5.02	5.14	0.64	2.31	3.85	3.57	-0.56
	The mean absolute alpha, $\overline{\lvert\alpha\rvert}$							The GRS *p*-value, p_{GRS}						
CAPM	0.57	0.30	0.34	0.47	0.39	0.27	0.52	0.00	0.00	0.15	0.03	0.01	0.09	0.02
FF3	0.44	0.34	0.19	0.33	0.37	0.22	0.23	0.00	0.00	0.70	0.17	0.01	0.01	0.05
FF5	0.49	0.36	0.25	0.37	0.39	0.23	0.27	0.00	0.00	0.46	0.03	0.00	0.00	0.09
q	0.17	0.14	0.10	0.05	0.09	0.16	0.24	0.24	0.56	0.84	0.98	0.59	0.46	0.31
CH3	0.38	0.25	0.29	0.38	0.28	0.29	0.47	0.00	0.11	0.13	0.10	0.11	0.17	0.00
CH4	0.36	0.22	0.32	0.34	0.26	0.26	0.48	0.00	0.12	0.09	0.15	0.18	0.28	0.00
Car4	0.43	0.33	0.19	0.32	0.36	0.21	0.23	0.00	0.00	0.71	0.15	0.00	0.00	0.05

Table A3. Explaining significant anomalies with different factor models for the whole sample period (July 2000 to June 2019, 228 months)

This table reports the high-minus-low quintile return spreads for significant anomalies that are based on the benchmark of raw returns for the whole sample period. For each high-minus-low quintile, m, α_{CAPM}, α_{FF3}, α_{FF5}, α_q, α_{CH3}, α_{CH4}, and α_{Car} are the average raw return spread, CAPM alpha, FF3-factor alpha, FF5-factor alpha, q-factor alpha, CH3-factor alpha, CH4-factor alpha, and Carhart 4-factor alpha (in %), respectively, and t_m, t_{CAPM}, t_{FF3}, t_{FF5}, t_q, t_{CH3}, t_{CH4}, and t_{Car} are the corresponding t-statistics. $\overline{|\alpha_{CAPM}|}$, $\overline{|\alpha_{FF3}|}$, $\overline{|\alpha_{FF5}|}$, $\overline{|\alpha_q|}$, $\overline{|\alpha_{CH3}|}$, $\overline{|\alpha_{CH4}|}$, and $\overline{|\alpha_{Car}|}$ are the mean absolute alpha (in %) from the corresponding factor models across the quintile portfolios for a given anomaly, respectively. p_{CAPM}, p_{FF3}, p_{FF5}, p_q, p_{CH3}, p_{CH4}, p_{Car} are the p-value of the GRS test on the null that all alphas across the quintiles are jointly zero in the corresponding factor models, respectively. Columns 1–7 report the results related to the momentum category; columns 8–13 report the results related to the value-versus-growth category; columns 14 report the results related to the investment category; columns 15–22 report the results for the profitability category; columns 23–32 report the results for the intangibles category; and columns 33–78 report the results for the trading frictions category. All of the symbols, variable definitions, and portfolio constructions are described in Online Appendix A and Table A1.

	Momentum							Value-versus-growth						Investment
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Sue1	Sue3	Sue6	Sue9	Abr9	$\epsilon^6$3	$\epsilon^6$6	Ep^{q}1	Ndp	Ndp^{q}3	Ndp^{q}6	Ndp^{q}9	Ndp^{q}12	Noa
m	1.17	0.82	0.54	0.47	0.32	0.56	0.44	0.84	0.68	0.74	0.68	0.71	0.72	-0.51
t_m	4.61	3.60	2.65	2.46	2.08	2.53	2.20	2.18	2.03	2.12	1.98	2.07	2.12	-2.23
α_{CAPM}	1.19	0.83	0.55	0.47	0.37	0.56	0.44	0.92	0.65	0.71	0.66	0.69	0.70	-0.53
t_{CAPM}	4.66	3.61	2.68	2.44	2.51	2.52	2.19	2.44	1.93	2.03	1.90	2.00	2.05	-2.34
α_{FF3}	1.17	0.90	0.68	0.61	0.59	0.62	0.53	1.09	0.32	0.32	0.26	0.31	0.33	-0.70
t_{FF3}	4.56	3.85	3.33	3.18	4.48	2.74	2.66	4.49	1.50	1.37	1.22	1.48	1.62	-3.02
α_{FF5}	1.11	0.86	0.65	0.57	0.53	0.58	0.52	0.91	0.29	0.29	0.22	0.24	0.25	-0.80
t_{FF5}	4.36	3.78	3.36	3.22	4.15	2.54	2.55	4.46	1.37	1.28	1.05	1.19	1.29	-3.91
α_q	0.78	0.39	0.15	0.16	0.30	0.48	0.39	1.01	1.11	1.42	1.36	1.34	1.31	-0.29
t_q	3.10	1.79	0.82	0.89	2.26	2.09	1.89	3.86	3.60	4.56	4.35	4.29	4.25	-1.28
α_{CH3}	0.47	0.18	0.03	0.06	0.22	0.91	0.69	-0.25	0.71	0.61	0.65	0.68	0.66	-0.20
t_{CH3}	1.70	0.71	0.13	0.30	1.47	3.72	3.15	-0.93	2.13	1.68	1.84	1.98	1.96	-0.78
α_{CH4}	0.50	0.20	0.05	0.03	0.19	0.93	0.77	-0.28	0.88	0.76	0.82	0.81	0.81	-0.16
t_{CH4}	1.75	0.79	0.21	0.15	1.22	3.73	3.46	-0.99	2.61	2.10	2.33	2.34	2.37	-0.60
α_{Car}	0.96	0.76	0.59	0.52	0.49	0.47	0.37	1.00	0.35	0.47	0.40	0.39	0.39	-0.74
t_{Car}	4.10	3.39	2.94	2.76	3.94	2.18	1.97	4.14	1.62	2.08	1.90	1.87	1.92	-3.21
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.45	0.40	0.40	0.42	0.18	0.21	0.17	0.41	0.31	0.27	0.28	0.30	0.31	0.34
$\overline{\lvert\alpha_{FF3}\rvert}$	0.37	0.32	0.29	0.29	0.21	0.23	0.21	0.43	0.15	0.18	0.17	0.17	0.17	0.24
$\overline{\lvert\alpha_{FF5}\rvert}$	0.38	0.32	0.29	0.28	0.19	0.21	0.19	0.40	0.19	0.20	0.18	0.18	0.19	0.28
$\overline{\lvert\alpha_q\rvert}$	0.21	0.19	0.17	0.25	0.08	0.18	0.16	0.28	0.37	0.41	0.42	0.41	0.41	0.18
$\overline{\lvert\alpha_{CH3}\rvert}$	0.45	0.47	0.44	0.43	0.18	0.30	0.23	0.38	0.36	0.33	0.32	0.33	0.35	0.37
$\overline{\lvert\alpha_{CH4}\rvert}$	0.48	0.51	0.47	0.47	0.15	0.29	0.22	0.42	0.50	0.41	0.39	0.42	0.44	0.44
$\overline{\lvert\alpha_{Car}\rvert}$	0.31	0.27	0.25	0.24	0.16	0.16	0.14	0.40	0.20	0.21	0.18	0.18	0.18	0.26
p_{CAPM}	0.00	0.00	0.00	0.00	0.14	0.06	0.29	0.00	0.10	0.02	0.04	0.04	0.04	0.02

p_{FF3}	0.00	0.00	0.00	0.00	0.00	0.02	0.12	0.00	0.45	0.10	0.29	0.29	0.25	0.01
p_{FF5}	0.00	0.00	0.00	0.00	0.00	0.02	0.16	0.00	0.19	0.10	0.29	0.35	0.27	0.00
p_q	0.07	0.38	0.66	0.33	0.11	0.13	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.13
p_{CH3}	0.06	0.11	0.20	0.18	0.52	0.01	0.06	0.11	0.06	0.02	0.05	0.05	0.05	0.03
p_{CH4}	0.06	0.09	0.10	0.08	0.50	0.01	0.03	0.04	0.00	0.00	0.01	0.01	0.01	0.02
p_{Car}	0.00	0.00	0.01	0.01	0.01	0.09	0.39	0.00	0.23	0.03	0.11	0.18	0.14	0.02

	Profitability								Intangibles					
#	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	dRoe1	dRoe3	dRoa1	dRoa3	Ato^{q}1	Ato^{q}3	Ato^{q}6	Ato^{q}9	Adm	Rdm^{q}1	Rdm^{q}3	Rdm^{q}6	Rdm^{q}9	Rdm^{q}12
m	1.16	0.68	1.08	0.65	0.56	0.63	0.44	0.42	0.66	0.83	0.73	0.59	0.60	0.61
t_m	4.26	3.02	4.13	2.97	2.28	2.79	2.11	2.03	2.89	3.00	2.58	2.16	2.19	2.28
α_{CAPM}	1.21	0.73	1.12	0.69	0.60	0.66	0.49	0.46	0.70	0.82	0.71	0.58	0.59	0.60
t_{CAPM}	4.44	3.21	4.29	3.15	2.49	2.94	2.34	2.23	3.06	2.94	2.50	2.10	2.15	2.24
α_{FF3}	1.24	0.82	1.14	0.78	0.74	0.84	0.65	0.62	0.68	0.45	0.34	0.21	0.23	0.25
t_{FF3}	4.45	3.53	4.25	3.49	3.24	4.07	3.40	3.35	3.20	2.37	1.86	1.23	1.39	1.54
α_{FF5}	1.18	0.81	1.08	0.76	0.61	0.73	0.52	0.50	0.57	0.45	0.32	0.17	0.18	0.20
t_{FF5}	4.32	3.49	4.09	3.38	2.85	3.75	3.00	2.98	2.85	2.41	1.79	1.02	1.09	1.28
α_q	0.68	0.12	0.62	0.10	0.27	0.46	0.29	0.32	0.66	1.32	1.23	1.11	1.10	1.06
t_q	2.62	0.61	2.45	0.49	1.25	2.35	1.64	1.81	3.01	5.16	4.72	4.31	4.23	4.23
α_{CH3}	0.60	0.14	0.44	0.03	0.05	0.21	0.10	0.13	0.48	0.53	0.52	0.50	0.55	0.55
t_{CH3}	1.96	0.56	1.52	0.13	0.18	0.91	0.47	0.61	1.95	1.72	1.68	1.69	1.89	1.95
α_{CH4}	0.66	0.21	0.49	0.07	-0.03	0.13	0.00	0.01	0.38	0.56	0.58	0.57	0.61	0.62
t_{CH4}	2.09	0.81	1.63	0.27	-0.12	0.53	-0.01	0.03	1.52	1.81	1.86	1.89	2.08	2.14
α_{Car}	0.95	0.63	0.86	0.59	0.57	0.67	0.50	0.47	0.45	0.57	0.45	0.30	0.27	0.29
t_{Car}	3.95	2.95	3.73	2.89	2.62	3.47	2.79	2.72	2.44	3.10	2.54	1.81	1.64	1.76
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.43	0.34	0.46	0.37	0.31	0.31	0.32	0.32	0.34	0.37	0.35	0.35	0.35	0.34
$\overline{\lvert\alpha_{FF3}\rvert}$	0.42	0.32	0.45	0.35	0.27	0.29	0.27	0.26	0.26	0.27	0.27	0.28	0.27	0.28
$\overline{\lvert\alpha_{FF5}\rvert}$	0.40	0.30	0.43	0.35	0.26	0.27	0.27	0.26	0.25	0.25	0.25	0.26	0.25	0.26
$\overline{\lvert\alpha_q\rvert}$	0.23	0.18	0.29	0.22	0.12	0.15	0.16	0.15	0.22	0.38	0.34	0.30	0.29	0.29
$\overline{\lvert\alpha_{CH3}\rvert}$	0.39	0.39	0.42	0.43	0.38	0.36	0.37	0.36	0.33	0.36	0.35	0.34	0.35	0.36
$\overline{\lvert\alpha_{CH4}\rvert}$	0.42	0.43	0.46	0.47	0.41	0.40	0.41	0.40	0.39	0.38	0.37	0.36	0.37	0.38
$\overline{\lvert\alpha_{Car}\rvert}$	0.34	0.27	0.37	0.29	0.21	0.23	0.22	0.21	0.21	0.23	0.21	0.21	0.21	0.22
p_{CAPM}	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
p_{FF3}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.05	0.03
p_{FF5}	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.01	0.02	0.08	0.12	0.07
p_q	0.06	0.33	0.01	0.11	0.41	0.07	0.03	0.02	0.03	0.00	0.00	0.00	0.00	0.00
p_{CH3}	0.04	0.04	0.01	0.02	0.09	0.04	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.00
p_{CH4}	0.04	0.07	0.01	0.04	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00

p_{Car}	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.05	0.00	0.01	0.04	0.10	0.06
	Intangibles				Trading frictions									
#	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Ala^q6	Ala^q9	R^1_a	$R^{[2,5]}_n$	Ivc1	Ivff31	Ivff33	Ivff51	Ivq1	Ivch31	Ivch41	Svr1	β^D1	Cvt1
m	0.49	0.45	0.57	-0.60	-0.77	-0.93	-0.62	-0.72	-0.89	-0.87	-0.86	-0.51	0.79	-0.59
t_m	2.19	2.01	2.10	-2.14	-2.35	-2.91	-1.96	-2.28	-2.76	-2.77	-2.76	-2.24	2.25	-2.31
α_{CAPM}	0.46	0.41	0.56	-0.59	-0.90	-1.06	-0.74	-0.87	-1.02	-1.01	-0.99	-0.49	0.59	-0.54
t_{CAPM}	2.05	1.86	2.09	-2.10	-2.91	-3.54	-2.48	-2.98	-3.39	-3.49	-3.41	-2.16	1.95	-2.14
α_{FF3}	0.68	0.65	0.73	-0.22	-1.00	-1.20	-0.83	-1.02	-1.10	-1.11	-1.13	-0.53	0.33	-0.72
t_{FF3}	3.66	3.60	2.68	-0.81	-3.52	-4.61	-3.83	-4.00	-4.05	-4.12	-4.26	-2.26	1.10	-2.83
α_{FF5}	0.58	0.56	0.66	-0.37	-1.03	-1.25	-0.85	-1.08	-1.18	-1.15	-1.17	-0.56	0.34	-0.62
t_{FF5}	3.52	3.51	2.44	-1.46	-3.80	-4.91	-3.90	-4.44	-4.58	-4.37	-4.55	-2.34	1.15	-2.49
α_q	0.08	0.03	0.36	-0.76	-1.07	-1.34	-1.22	-1.12	-1.29	-1.22	-1.24	-0.47	0.58	-0.52
t_q	0.42	0.16	1.29	-2.78	-3.68	-4.91	-4.92	-4.25	-4.66	-4.34	-4.51	-1.94	1.90	-2.04
α_{CH3}	0.34	0.33	0.33	-0.51	-0.18	-0.48	-0.27	-0.27	-0.39	-0.31	-0.34	-0.21	0.63	-0.62
t_{CH3}	1.35	1.33	1.06	-1.55	-0.56	-1.57	-0.98	-0.92	-1.25	-1.02	-1.13	-0.80	1.87	-2.14
α_{CH4}	0.11	0.13	0.23	-0.75	0.05	-0.28	-0.17	-0.07	-0.22	-0.14	-0.14	-0.41	1.00	-0.53
t_{CH4}	0.46	0.52	0.71	-2.34	0.14	-0.91	-0.58	-0.22	-0.70	-0.46	-0.45	-1.59	3.08	-1.82
α_{Car}	0.47	0.45	0.52	-0.41	-1.18	-1.38	-0.93	-1.20	-1.33	-1.31	-1.31	-0.55	0.50	-0.64
t_{Car}	2.95	2.88	2.01	-1.60	-4.30	-5.49	-4.35	-4.92	-5.21	-5.10	-5.20	-2.32	1.71	-2.52
$\overline{\|\alpha_{CAPM}\|}$	0.32	0.32	0.24	0.37	0.33	0.36	0.27	0.31	0.34	0.37	0.34	0.27	0.36	0.21
$\overline{\|\alpha_{FF3}\|}$	0.27	0.26	0.29	0.23	0.35	0.40	0.29	0.33	0.36	0.38	0.37	0.28	0.28	0.25
$\overline{\|\alpha_{FF5}\|}$	0.25	0.24	0.25	0.25	0.37	0.42	0.27	0.33	0.39	0.40	0.39	0.29	0.26	0.24
$\overline{\|\alpha_q\|}$	0.13	0.15	0.24	0.29	0.34	0.35	0.32	0.34	0.34	0.38	0.37	0.17	0.19	0.19
$\overline{\|\alpha_{CH3}\|}$	0.37	0.36	0.22	0.39	0.18	0.25	0.18	0.20	0.22	0.22	0.21	0.24	0.35	0.26
$\overline{\|\alpha_{CH4}\|}$	0.40	0.40	0.18	0.45	0.22	0.22	0.17	0.22	0.22	0.21	0.21	0.25	0.43	0.25
$\overline{\|\alpha_{Car}\|}$	0.20	0.20	0.23	0.22	0.40	0.43	0.28	0.35	0.40	0.42	0.40	0.27	0.29	0.23
p_{CAPM}	0.10	0.10	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.12
p_{FF3}	0.00	0.00	0.02	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
p_{FF5}	0.00	0.00	0.07	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
p_q	0.56	0.63	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.03	0.05
p_{CH3}	0.03	0.02	0.43	0.05	0.49	0.05	0.06	0.46	0.13	0.18	0.27	0.32	0.06	0.04
p_{CH4}	0.02	0.01	0.40	0.01	0.67	0.13	0.16	0.62	0.24	0.43	0.40	0.08	0.01	0.03
p_{Car}	0.01	0.02	0.06	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
	Trading frictions													
#	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	Rtv1	Rtv3	Rtv6	Rtv9	Rtv12	Pps1	Pps3	Pps6	Pps9	Pps12	Mdr1	Mdr3	Ts1	Ts3
m	-1.30	-1.00	-0.93	-0.96	-1.00	-1.58	-1.21	-1.12	-1.12	-1.06	-0.82	-0.65	-0.64	-0.35

t_m	-3.51	-2.59	-2.44	-2.62	-2.83	-4.27	-3.32	-3.24	-3.32	-3.35	-2.67	-2.52	-2.81	-2.34
α_{CAPM}	-1.30	-1.00	-0.91	-0.94	-0.97	-1.58	-1.21	-1.11	-1.10	-1.04	-0.96	-0.78	-0.62	-0.33
t_{CAPM}	-3.50	-2.57	-2.39	-2.54	-2.74	-4.25	-3.31	-3.20	-3.25	-3.26	-3.36	-3.35	-2.72	-2.23
α_{FF3}	-0.77	-0.49	-0.38	-0.38	-0.38	-0.85	-0.44	-0.38	-0.36	-0.35	-1.19	-0.91	-0.41	-0.11
t_{FF3}	-4.98	-2.94	-2.39	-2.58	-2.86	-2.69	-1.48	-1.35	-1.37	-1.40	-4.25	-4.33	-1.92	-0.80
α_{FF5}	-0.76	-0.50	-0.39	-0.40	-0.38	-1.04	-0.61	-0.57	-0.56	-0.54	-1.23	-0.93	-0.48	-0.16
t_{FF5}	-4.85	-3.28	-2.74	-2.94	-2.94	-4.11	-2.62	-2.64	-2.84	-2.89	-4.48	-4.40	-2.23	-1.20
α_q	-0.51	-0.15	-0.08	-0.10	-0.16	-2.15	-1.75	-1.69	-1.65	-1.52	-0.99	-0.89	-0.48	-0.27
t_q	-2.78	-0.80	-0.46	-0.61	-1.03	-7.33	-5.92	-5.99	-6.09	-5.85	-3.40	-4.07	-2.16	-2.01
α_{CH3}	-0.86	-0.64	-0.63	-0.67	-0.70	-1.51	-1.18	-1.24	-1.25	-1.14	-0.40	-0.25	-0.57	-0.21
t_{CH3}	-3.74	-2.52	-2.51	-2.87	-3.24	-3.49	-2.77	-3.05	-3.18	-3.08	-1.26	-1.04	-2.48	-1.47
α_{CH4}	-0.74	-0.62	-0.68	-0.77	-0.81	-1.82	-1.54	-1.53	-1.53	-1.41	0.04	-0.01	-0.44	-0.21
t_{CH4}	-3.28	-2.46	-2.70	-3.28	-3.77	-4.23	-3.66	-3.80	-3.89	-3.83	0.14	-0.04	-1.91	-1.42
α_{Car}	-0.81	-0.60	-0.49	-0.48	-0.44	-1.26	-0.86	-0.75	-0.69	-0.65	-1.26	-0.95	-0.44	-0.15
t_{Car}	-5.17	-3.76	-3.25	-3.41	-3.42	-4.90	-3.75	-3.38	-3.23	-3.10	-4.51	-4.47	-2.04	-1.11
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.69	0.62	0.58	0.57	0.57	0.36	0.34	0.34	0.33	0.33	0.39	0.30	0.26	0.18
$\overline{\lvert\alpha_{FF3}\rvert}$	0.45	0.39	0.36	0.34	0.34	0.40	0.37	0.33	0.28	0.28	0.42	0.31	0.20	0.11
$\overline{\lvert\alpha_{FF5}\rvert}$	0.42	0.37	0.34	0.33	0.32	0.40	0.38	0.35	0.29	0.28	0.42	0.31	0.20	0.10
$\overline{\lvert\alpha_q\rvert}$	0.26	0.19	0.17	0.16	0.17	0.55	0.52	0.53	0.50	0.46	0.33	0.27	0.14	0.13
$\overline{\lvert\alpha_{CH3}\rvert}$	0.56	0.53	0.51	0.50	0.50	0.39	0.39	0.39	0.39	0.38	0.26	0.20	0.28	0.20
$\overline{\lvert\alpha_{CH4}\rvert}$	0.56	0.56	0.56	0.56	0.57	0.48	0.46	0.43	0.43	0.42	0.21	0.20	0.26	0.20
$\overline{\lvert\alpha_{Car}\rvert}$	0.38	0.34	0.31	0.30	0.29	0.38	0.35	0.32	0.28	0.27	0.43	0.31	0.17	0.07
p_{CAPM}	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04
p_{FF3}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.43
p_{FF5}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.32
p_q	0.00	0.18	0.36	0.30	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.03
p_{CH3}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.02	0.11
p_{CH4}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.07	0.20
p_{Car}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.71

	Trading frictions													
#	57	58	59	60	61	62	63	64	65	66	67	68	69	70
	Isc1	Isc3	Isff31	Isq1	Isq3	Isch31	Isch33	Isch41	Isch43	Srev	Esba1	Esba3	Esba6	Esba9
m	-0.51	-0.38	-0.34	-0.40	-0.25	-0.39	-0.34	-0.41	-0.31	-0.84	1.70	1.65	1.58	1.48
t_m	-2.62	-2.59	-2.05	-2.28	-1.98	-2.18	-2.82	-2.28	-2.48	-2.44	4.95	4.72	4.53	4.32
α_{CAPM}	-0.52	-0.39	-0.36	-0.42	-0.27	-0.39	-0.35	-0.41	-0.32	-0.83	1.69	1.62	1.52	1.41
t_{CAPM}	-2.66	-2.64	-2.17	-2.37	-2.16	-2.16	-2.89	-2.27	-2.54	-2.42	4.88	4.60	4.36	4.12
α_{FF3}	-0.56	-0.42	-0.44	-0.53	-0.29	-0.58	-0.45	-0.55	-0.41	-0.75	1.34	1.24	1.12	0.98
t_{FF3}	-2.76	-2.89	-2.66	-3.09	-2.37	-3.43	-4.10	-3.16	-3.55	-2.24	4.24	4.06	3.66	3.28

α_{FF5}	-0.52	-0.37	-0.47	-0.52	-0.23	-0.62	-0.44	-0.60	-0.39	-0.68	1.29	1.22	1.13	1.01
t_{FF5}	-2.59	-2.71	-2.81	-2.99	-2.00	-3.66	-4.05	-3.43	-3.54	-1.99	4.05	4.16	3.94	3.60
α_q	-0.54	-0.29	-0.52	-0.59	-0.31	-0.51	-0.49	-0.64	-0.49	-0.68	1.50	1.27	1.15	1.05
t_q	-2.56	-2.02	-3.01	-3.27	-2.46	-2.87	-4.26	-3.54	-4.19	-1.92	4.47	4.00	3.73	3.47
α_{CH3}	-0.78	-0.46	-0.40	-0.55	-0.22	-0.58	-0.43	-0.61	-0.36	-0.38	1.90	1.63	1.44	1.31
t_{CH3}	-3.44	-2.72	-2.14	-2.84	-1.55	-2.96	-3.38	-3.05	-2.76	-1.03	5.01	4.26	3.81	3.51
α_{CH4}	-0.71	-0.40	-0.31	-0.53	-0.21	-0.59	-0.44	-0.59	-0.38	-0.07	1.89	1.77	1.68	1.60
t_{CH4}	-3.10	-2.31	-1.62	-2.68	-1.47	-2.92	-3.37	-2.84	-2.86	-0.20	4.91	4.69	4.57	4.47
α_{Car}	-0.46	-0.27	-0.38	-0.51	-0.20	-0.57	-0.41	-0.55	-0.36	-0.83	1.28	1.27	1.15	1.02
t_{Car}	-2.29	-2.10	-2.33	-2.93	-1.70	-3.34	-3.74	-3.09	-3.16	-2.46	4.04	4.09	3.74	3.39
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.21	0.16	0.14	0.14	0.13	0.17	0.16	0.16	0.16	0.37	0.94	0.85	0.78	0.74
$\overline{\lvert\alpha_{FF3}\rvert}$	0.21	0.17	0.15	0.17	0.14	0.20	0.17	0.18	0.18	0.30	0.74	0.66	0.61	0.56
$\overline{\lvert\alpha_{FF5}\rvert}$	0.21	0.15	0.15	0.16	0.11	0.20	0.15	0.18	0.17	0.27	0.70	0.63	0.59	0.55
$\overline{\lvert\alpha_q\rvert}$	0.17	0.15	0.19	0.19	0.11	0.15	0.14	0.22	0.16	0.22	0.70	0.57	0.50	0.44
$\overline{\lvert\alpha_{CH3}\rvert}$	0.31	0.22	0.20	0.25	0.19	0.25	0.21	0.23	0.21	0.26	0.95	0.86	0.78	0.73
$\overline{\lvert\alpha_{CH4}\rvert}$	0.31	0.21	0.21	0.26	0.20	0.28	0.22	0.24	0.21	0.27	0.99	0.92	0.85	0.81
$\overline{\lvert\alpha_{Car}\rvert}$	0.17	0.11	0.13	0.17	0.08	0.16	0.12	0.16	0.14	0.30	0.67	0.58	0.53	0.49
p_{CAPM}	0.09	0.07	0.15	0.05	0.07	0.20	0.04	0.15	0.04	0.01	0.00	0.00	0.00	0.00
p_{FF3}	0.08	0.02	0.13	0.01	0.04	0.02	0.00	0.03	0.00	0.04	0.00	0.00	0.00	0.00
p_{FF5}	0.08	0.01	0.12	0.02	0.03	0.01	0.00	0.01	0.00	0.08	0.00	0.00	0.00	0.00
p_q	0.03	0.06	0.01	0.01	0.06	0.03	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
p_{CH3}	0.01	0.02	0.07	0.00	0.02	0.08	0.01	0.02	0.05	0.27	0.00	0.00	0.00	0.00
p_{CH4}	0.02	0.02	0.01	0.00	0.02	0.05	0.01	0.01	0.03	0.44	0.00	0.00	0.00	0.00
p_{Car}	0.21	0.08	0.24	0.02	0.15	0.02	0.00	0.03	0.01	0.01	0.00	0.00	0.00	0.00

	Trading frictions							
#	71	72	73	74	75	76	77	78
	Esba12	Qsba1	Qsba3	Qsba6	Qsba9	Qsba12	Vpin3	Vpin6
m	1.41	2.07	1.99	1.85	1.65	1.59	-0.91	-0.74
t_m	4.18	5.59	5.46	5.06	4.61	4.53	-2.39	-2.05
α_{CAPM}	1.34	2.06	1.95	1.79	1.60	1.52	-1.06	-0.87
t_{CAPM}	3.98	5.51	5.32	4.89	4.44	4.35	-2.89	-2.48
α_{FF3}	0.90	1.71	1.51	1.33	1.10	1.03	-0.93	-0.68
t_{FF3}	3.07	4.99	4.70	4.12	3.52	3.37	-2.84	-2.23
α_{FF5}	0.95	1.69	1.50	1.38	1.16	1.11	-1.08	-0.84
t_{FF5}	3.46	4.87	4.79	4.45	3.87	3.81	-3.54	-2.90

α_q	0.95	1.83	1.67	1.52	1.31	1.21	-1.46	-1.33
t_q	3.22	5.04	4.99	4.60	4.08	3.89	-4.47	-4.13
α_{CH3}	1.18	2.11	1.85	1.67	1.44	1.31	-0.78	-0.62
t_{CH3}	3.24	5.07	4.64	4.17	3.66	3.43	-1.92	-1.60
α_{CH4}	1.50	2.11	2.02	1.95	1.77	1.66	-0.85	-0.84
t_{CH4}	4.31	5.01	5.13	5.06	4.73	4.59	-2.07	-2.17
α_{Car}	0.94	1.67	1.51	1.36	1.14	1.06	-1.05	-0.81
t_{Car}	3.19	4.81	4.66	4.17	3.60	3.45	-3.21	-2.69
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.71	1.01	0.90	0.83	0.77	0.74	0.53	0.49
$\overline{\lvert\alpha_{FF3}\rvert}$	0.53	0.79	0.70	0.64	0.59	0.56	0.42	0.40
$\overline{\lvert\alpha_{FF5}\rvert}$	0.52	0.78	0.67	0.62	0.57	0.55	0.44	0.39
$\overline{\lvert\alpha_q\rvert}$	0.41	0.77	0.65	0.56	0.49	0.45	0.53	0.47
$\overline{\lvert\alpha_{CH3}\rvert}$	0.70	1.02	0.90	0.82	0.76	0.73	0.52	0.49
$\overline{\lvert\alpha_{CH4}\rvert}$	0.79	1.06	0.96	0.89	0.84	0.82	0.53	0.51
$\overline{\lvert\alpha_{Car}\rvert}$	0.47	0.75	0.62	0.57	0.52	0.49	0.41	0.36
p_{CAPM}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
p_{FF3}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
p_{FF5}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
p_q	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
p_{CH3}	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
p_{CH4}	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
p_{Car}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A4. Explaining significant anomalies with different factor models for the post-2007 subsample period (July 2008 to June 2019, 132 months)

This table reports the high-minus-low quintile return spreads for significant anomalies that are based on the benchmark of raw returns for the post-2007 subsample period. For each high-minus-low quintile, m, α_{CAPM}, α_{FF3}, α_{FF5}, α_q, α_{CH3}, α_{CH4}, and α_{Car} are the average raw spread, CAPM alpha, FF3-factor alpha, FF5-factor alpha, q-factor alpha, CH3-factor alpha, CH4-factor alpha, and Carhart 4-factor alpha (in %), respectively, and t_m, t_{CAPM}, t_{FF3}, t_{FF5}, t_q, t_{CH3}, t_{CH4}, and t_{Car} are the corresponding t-statistics. $\overline{|\alpha_{CAPM}|}$, $\overline{|\alpha_{FF3}|}$, $\overline{|\alpha_{FF5}|}$, $\overline{|\alpha_q|}$, $\overline{|\alpha_{CH3}|}$, $\overline{|\alpha_{CH4}|}$, and $\overline{|\alpha_{Car}|}$ are the mean absolute alpha (in %) from the corresponding factor models across the quintile portfolios for a given anomaly, respectively. p_{CAPM}, p_{FF3}, p_{FF5}, p_q, p_{CH3}, p_{CH4}, and p_{Car} are the p-value of the GRS test on the null that all alphas across the quintiles are jointly zero in the corresponding factor models, respectively. Columns 1–7 report the results related to the momentum category; columns 8 report the results related to the value-versus-growth category; columns 9–17 report the results related to the investment category; columns 18–23 report the results for the profitability category; columns 24–30 report the results for the intangibles category; and columns 31–61 report the results for the trading frictions category. All of the symbols, variable definitions, and portfolio constructions are described in Online Appendix A and Table A1.

	Momentum							Value-versus-growth	Investment					
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Sue1	Sue3	Sue6	Sue9	Sue12	Abr6	Abr9	Sr	I/A	dPia	Noa	dLno	Cei	dNco
m	0.93	0.75	0.62	0.49	0.39	0.40	0.33	-0.66	-0.58	-0.63	-0.67	-0.63	-0.68	-0.64
t_m	3.63	3.05	2.82	2.46	2.07	2.04	2.03	-2.14	-2.27	-3.01	-2.37	-2.01	-2.34	-2.44
α_{CAPM}	0.96	0.77	0.64	0.51	0.41	0.44	0.37	-0.63	-0.57	-0.63	-0.72	-0.58	-0.64	-0.65
t_{CAPM}	3.75	3.13	2.91	2.56	2.17	2.34	2.35	-2.04	-2.21	-2.97	-2.61	-1.86	-2.24	-2.49
α_{FF3}	1.16	0.99	0.86	0.72	0.64	0.66	0.57	-0.11	-0.11	-0.41	-0.95	-0.36	-0.39	-0.43
t_{FF3}	4.49	4.07	3.95	3.69	3.60	3.57	3.83	-0.40	-0.51	-1.96	-3.46	-1.32	-1.47	-1.64
α_{FF5}	1.21	1.04	0.92	0.75	0.64	0.69	0.57	-0.13	-0.06	-0.40	-0.86	-0.22	-0.46	-0.43
t_{FF5}	4.65	4.28	4.22	3.88	3.70	3.69	3.74	-0.54	-0.45	-2.42	-3.44	-0.80	-1.67	-1.87
α_q	0.15	-0.03	0.09	0.10	0.08	0.25	0.25	0.03	-0.11	-0.13	-0.35	-0.37	0.09	0.06
t_q	0.62	-0.12	0.45	0.54	0.49	1.27	1.60	0.13	-0.75	-0.69	-1.26	-1.17	0.32	0.26
α_{CH3}	0.27	0.09	0.13	0.10	0.05	0.35	0.30	-0.47	-0.43	-0.45	-0.37	-0.41	-0.08	-0.21
t_{CH3}	1.01	0.38	0.59	0.52	0.29	1.68	1.77	-1.41	-1.47	-1.96	-1.26	-1.31	-0.28	-0.74
α_{CH4}	0.29	0.14	0.21	0.15	0.08	0.41	0.42	-0.57	-0.53	-0.38	-0.28	-0.41	-0.06	-0.27
t_{CH4}	1.08	0.53	0.91	0.72	0.44	1.88	2.42	-1.69	-1.81	-1.63	-0.94	-1.26	-0.20	-0.94
α_{Car}	1.14	0.97	0.85	0.71	0.62	0.65	0.56	-0.09	-0.11	-0.40	-0.93	-0.38	-0.39	-0.42
t_{Car}	4.80	4.29	4.07	3.81	3.71	3.57	3.82	-0.35	-0.52	-1.94	-3.51	-1.43	-1.46	-1.62
$\overline{\|\alpha_{CAPM}\|}$	0.31	0.29	0.28	0.26	0.23	0.17	0.15	0.30	0.30	0.31	0.32	0.34	0.30	0.35
$\overline{\|\alpha_{FF3}\|}$	0.33	0.28	0.23	0.22	0.20	0.21	0.19	0.17	0.16	0.24	0.28	0.26	0.23	0.28
$\overline{\|\alpha_{FF5}\|}$	0.33	0.29	0.26	0.24	0.22	0.23	0.20	0.23	0.22	0.28	0.30	0.28	0.30	0.30
$\overline{\|\alpha_q\|}$	0.10	0.08	0.07	0.09	0.09	0.24	0.23	0.09	0.11	0.05	0.14	0.15	0.24	0.13
$\overline{\|\alpha_{CH3}\|}$	0.26	0.27	0.27	0.26	0.25	0.17	0.14	0.27	0.33	0.32	0.28	0.27	0.09	0.31

$\overline{\lvert\alpha_{CH4}\rvert}$	0.24	0.25	0.25	0.23	0.22	0.12	0.12	0.28	0.31	0.29	0.25	0.24	0.06	0.29
$\overline{\lvert\alpha_{Car}\rvert}$	0.32	0.28	0.23	0.21	0.19	0.21	0.19	0.17	0.15	0.24	0.27	0.26	0.23	0.28
p_{CAPM}	0.00	0.01	0.02	0.03	0.05	0.16	0.15	0.32	0.11	0.03	0.04	0.21	0.37	0.05
p_{FF3}	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.79	0.23	0.06	0.04	0.43	0.44	0.08
p_{FF5}	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.51	0.29	0.04	0.03	0.46	0.24	0.04
p_q	0.67	0.75	0.92	0.75	0.61	0.28	0.16	0.94	0.84	0.94	0.64	0.60	0.78	0.64
p_{CH3}	0.35	0.33	0.27	0.16	0.15	0.23	0.29	0.52	0.11	0.14	0.10	0.28	0.89	0.12
p_{CH4}	0.49	0.45	0.07	0.04	0.05	0.27	0.21	0.47	0.09	0.21	0.20	0.41	0.92	0.23
p_{Car}	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.80	0.24	0.06	0.03	0.44	0.45	0.08

	Investment			Profitability						Intangibles				
#	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	dNca	dFin	dFnl	dRoe1	dRoe3	dRoe6	dRoa1	dRoa3	dRoa6	Tan^{q}12	Cta12	Ala^{q}1	Ala^{q}3	Ala^{q}6
m	-0.66	0.46	-0.38	1.02	0.68	0.54	0.96	0.67	0.52	0.63	0.71	0.83	0.86	0.81
t_m	-2.41	2.53	-2.03	3.44	2.48	2.19	3.24	2.39	2.07	2.03	2.06	2.48	2.67	2.60
α_{CAPM}	-0.68	0.50	-0.43	1.05	0.70	0.55	0.98	0.68	0.53	0.62	0.68	0.79	0.81	0.76
t_{CAPM}	-2.47	2.83	-2.33	3.57	2.56	2.23	3.33	2.43	2.10	1.96	1.96	2.36	2.55	2.47
α_{FF3}	-0.43	0.42	-0.26	1.13	0.75	0.58	1.05	0.74	0.59	0.45	0.68	0.82	0.85	0.77
t_{FF3}	-1.57	2.31	-1.41	3.72	2.63	2.27	3.42	2.57	2.28	2.14	3.07	3.36	3.68	3.46
α_{FF5}	-0.48	0.34	-0.19	1.20	0.86	0.69	1.13	0.85	0.68	0.53	0.74	0.83	0.84	0.77
t_{FF5}	-2.05	2.06	-1.21	3.88	2.93	2.60	3.61	2.88	2.54	2.51	3.57	3.54	3.90	3.62
α_q	0.03	-0.04	0.14	0.04	-0.27	-0.26	-0.10	-0.37	-0.35	-0.08	-0.15	-0.02	0.07	0.07
t_q	0.14	-0.24	0.81	0.13	-1.03	-1.08	-0.37	-1.44	-1.47	-0.31	-0.53	-0.06	0.25	0.26
α_{CH3}	-0.25	0.20	-0.11	0.45	0.11	0.01	0.29	-0.01	-0.11	0.54	0.47	0.42	0.51	0.52
t_{CH3}	-0.83	1.06	-0.54	1.39	0.36	0.03	0.93	-0.03	-0.42	1.91	1.43	1.30	1.61	1.72
α_{CH4}	-0.31	0.30	-0.18	0.53	0.22	0.13	0.41	0.10	0.00	0.46	0.34	0.33	0.41	0.43
t_{CH4}	-1.00	1.53	-0.87	1.61	0.71	0.47	1.25	0.31	-0.01	1.59	1.01	0.97	1.26	1.37
α_{Car}	-0.42	0.41	-0.25	1.09	0.72	0.56	1.00	0.71	0.56	0.42	0.65	0.79	0.82	0.74
t_{Car}	-1.54	2.28	-1.39	4.11	2.84	2.36	3.83	2.80	2.38	2.20	3.43	3.63	4.04	3.75
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.37	0.26	0.27	0.41	0.32	0.29	0.40	0.35	0.31	0.23	0.25	0.26	0.29	0.29
$\overline{\lvert\alpha_{FF3}\rvert}$	0.29	0.23	0.22	0.38	0.30	0.24	0.38	0.30	0.27	0.16	0.18	0.23	0.25	0.23
$\overline{\lvert\alpha_{FF5}\rvert}$	0.31	0.23	0.23	0.40	0.33	0.27	0.39	0.32	0.29	0.18	0.22	0.24	0.26	0.25
$\overline{\lvert\alpha_q\rvert}$	0.11	0.15	0.12	0.09	0.11	0.09	0.13	0.13	0.11	0.06	0.08	0.24	0.15	0.11
$\overline{\lvert\alpha_{CH3}\rvert}$	0.32	0.27	0.27	0.25	0.25	0.26	0.31	0.28	0.28	0.27	0.27	0.27	0.27	0.28
$\overline{\lvert\alpha_{CH4}\rvert}$	0.30	0.25	0.26	0.29	0.23	0.23	0.30	0.26	0.26	0.25	0.24	0.25	0.24	0.24

$\overline{\lvert\alpha_{Car}\rvert}$	0.28	0.23	0.22	0.36	0.28	0.22	0.36	0.29	0.26	0.15	0.17	0.22	0.25	0.23
p_{CAPM}	0.05	0.03	0.10	0.01	0.04	0.06	0.00	0.02	0.03	0.37	0.43	0.09	0.09	0.10
p_{FF3}	0.11	0.03	0.11	0.00	0.03	0.04	0.01	0.05	0.08	0.09	0.06	0.00	0.00	0.01
p_{FF5}	0.08	0.05	0.15	0.00	0.00	0.01	0.00	0.04	0.07	0.06	0.02	0.00	0.00	0.01
p_q	0.81	0.61	0.78	0.65	0.65	0.67	0.26	0.40	0.52	1.00	0.90	0.07	0.46	0.70
p_{CH3}	0.15	0.04	0.15	0.19	0.18	0.09	0.03	0.08	0.09	0.08	0.12	0.06	0.14	0.12
p_{CH4}	0.18	0.08	0.27	0.15	0.20	0.11	0.04	0.13	0.18	0.16	0.31	0.15	0.19	0.18
p_{Car}	0.11	0.02	0.09	0.00	0.02	0.02	0.00	0.02	0.03	0.04	0.02	0.00	0.00	0.00
	Intangibles		Trading frictions											
#	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Ala^{q}9	Ala^{q}12	Me	Ivch31	Svr1	β^D1	β^{PS}3	β^{PS}6	Rtv1	Rtv3	Rtv6	Rtv9	Rtv12	Pps1
m	0.76	0.76	-1.31	-0.94	-0.62	1.04	-0.49	-0.44	-1.91	-1.71	-1.60	-1.55	-1.50	-1.37
t_m	2.42	2.43	-2.27	-2.02	-1.96	2.09	-2.37	-2.17	-3.85	-3.58	-3.41	-3.35	-3.29	-2.80
α_{CAPM}	0.71	0.71	-1.23	-1.11	-0.61	0.80	-0.54	-0.49	-1.92	-1.71	-1.59	-1.53	-1.49	-1.45
t_{CAPM}	2.29	2.30	-2.15	-2.67	-1.91	1.93	-2.73	-2.51	-3.84	-3.55	-3.36	-3.29	-3.24	-2.98
α_{FF3}	0.70	0.70	-0.04	-1.59	-0.63	0.51	-0.54	-0.51	-1.00	-0.81	-0.69	-0.61	-0.55	-0.95
t_{FF3}	3.21	3.28	-0.38	-4.62	-1.95	1.23	-2.64	-2.49	-4.81	-4.11	-3.69	-3.49	-3.31	-2.44
α_{FF5}	0.71	0.72	0.02	-1.49	-0.40	0.47	-0.50	-0.46	-0.88	-0.66	-0.54	-0.46	-0.41	-0.73
t_{FF5}	3.38	3.50	0.18	-4.17	-1.23	1.11	-2.37	-2.22	-4.28	-3.50	-2.99	-2.67	-2.41	-2.16
α_q	0.02	0.05	0.13	-1.55	-0.50	0.73	-0.39	-0.35	-0.55	-0.37	-0.25	-0.19	-0.14	-2.04
t_q	0.06	0.18	0.78	-3.90	-1.40	1.59	-1.73	-1.58	-2.27	-1.63	-1.13	-0.88	-0.67	-5.00
α_{CH3}	0.47	0.48	-0.72	-0.53	-0.33	0.50	-0.54	-0.50	-1.11	-0.93	-0.83	-0.79	-0.77	-1.41
t_{CH3}	1.57	1.62	-2.86	-1.41	-0.97	1.09	-2.38	-2.23	-3.68	-3.17	-2.93	-2.87	-2.86	-2.64
α_{CH4}	0.39	0.40	-0.80	-0.08	-0.54	0.96	-0.56	-0.54	-0.92	-0.86	-0.84	-0.85	-0.86	-1.59
t_{CH4}	1.26	1.31	-3.08	-0.22	-1.59	2.16	-2.39	-2.32	-3.07	-2.90	-2.94	-3.12	-3.23	-2.90
α_{Car}	0.67	0.68	-0.03	-1.61	-0.63	0.54	-0.54	-0.50	-1.00	-0.81	-0.68	-0.60	-0.54	-1.01
t_{Car}	3.48	3.53	-0.31	-4.85	-1.94	1.35	-2.62	-2.47	-4.79	-4.08	-3.67	-3.48	-3.33	-3.05
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.28	0.28	0.57	0.40	0.27	0.40	0.17	0.16	0.83	0.78	0.74	0.71	0.68	0.33
$\overline{\lvert\alpha_{FF3}\rvert}$	0.21	0.22	0.15	0.48	0.22	0.27	0.16	0.14	0.38	0.34	0.32	0.29	0.27	0.41
$\overline{\lvert\alpha_{FF5}\rvert}$	0.24	0.24	0.14	0.48	0.21	0.30	0.18	0.17	0.38	0.35	0.32	0.30	0.29	0.39
$\overline{\lvert\alpha_q\rvert}$	0.11	0.11	0.20	0.50	0.30	0.27	0.20	0.21	0.19	0.13	0.10	0.10	0.11	0.56
$\overline{\lvert\alpha_{CH3}\rvert}$	0.28	0.28	0.42	0.27	0.21	0.31	0.18	0.16	0.56	0.53	0.51	0.49	0.47	0.35
$\overline{\lvert\alpha_{CH4}\rvert}$	0.25	0.25	0.43	0.16	0.25	0.39	0.15	0.13	0.49	0.51	0.51	0.50	0.48	0.35
$\overline{\lvert\alpha_{Car}\rvert}$	0.20	0.21	0.15	0.48	0.21	0.27	0.15	0.14	0.37	0.34	0.31	0.28	0.26	0.40

p_{CAPM}	0.16	0.14	0.01	0.00	0.04	0.01	0.14	0.23	0.00	0.00	0.00	0.00	0.00	0.00
p_{FF3}	0.02	0.02	0.03	0.00	0.05	0.03	0.12	0.20	0.00	0.00	0.00	0.00	0.00	0.00
p_{FF5}	0.01	0.01	0.01	0.00	0.09	0.02	0.22	0.31	0.00	0.00	0.00	0.00	0.00	0.00
p_q	0.72	0.53	0.05	0.00	0.05	0.06	0.31	0.37	0.04	0.16	0.34	0.32	0.20	0.00
p_{CH3}	0.11	0.08	0.00	0.14	0.34	0.15	0.17	0.25	0.00	0.00	0.00	0.00	0.00	0.00
p_{CH4}	0.20	0.16	0.00	0.25	0.15	0.08	0.21	0.30	0.00	0.00	0.00	0.00	0.00	0.00
p_{Car}	0.01	0.01	0.03	0.00	0.04	0.01	0.12	0.21	0.00	0.00	0.00	0.00	0.00	0.00

Trading frictions

#	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	Pps3	Pps6	Ami1	Ami3	Ami6	Ami9	Ami12	Ts1	Srev	Esba1	Esba3	Esba6	Esba9	Esba12
m	-1.15	-0.97	1.33	1.28	1.26	1.24	1.20	-0.63	-1.11	2.41	2.39	2.22	2.06	1.91
t_m	-2.41	-2.11	2.41	2.32	2.31	2.29	2.22	-2.10	-2.62	5.54	5.51	5.19	4.87	4.56
α_{CAPM}	-1.20	-1.00	1.28	1.22	1.20	1.18	1.13	-0.64	-1.14	2.37	2.33	2.15	1.99	1.85
t_{CAPM}	-2.53	-2.18	2.31	2.22	2.21	2.18	2.11	-2.11	-2.66	5.44	5.41	5.09	4.77	4.45
α_{FF3}	-0.71	-0.54	0.26	0.19	0.16	0.13	0.09	-0.35	-0.91	1.68	1.59	1.39	1.23	1.09
t_{FF3}	-1.98	-1.58	1.42	1.13	1.01	0.83	0.55	-1.22	-2.20	4.32	4.22	3.83	3.45	3.08
α_{FF5}	-0.50	-0.35	0.17	0.10	0.07	0.05	0.02	-0.36	-0.95	1.40	1.29	1.11	0.96	0.84
t_{FF5}	-1.61	-1.23	0.91	0.55	0.44	0.30	0.09	-1.21	-2.20	3.75	3.65	3.24	2.83	2.47
α_q	-1.83	-1.70	-0.14	-0.22	-0.25	-0.28	-0.31	-0.30	-0.92	1.96	1.82	1.54	1.32	1.13
t_q	-4.60	-4.56	-0.59	-0.98	-1.15	-1.27	-1.42	-0.94	-1.99	4.51	4.31	3.74	3.25	2.78
α_{CH3}	-1.25	-1.25	0.78	0.67	0.66	0.65	0.63	-0.65	-0.45	2.33	2.15	1.85	1.64	1.44
t_{CH3}	-2.42	-2.50	2.63	2.37	2.41	2.38	2.32	-2.11	-1.03	4.90	4.51	3.95	3.54	3.13
α_{CH4}	-1.42	-1.33	0.76	0.70	0.73	0.74	0.73	-0.44	-0.21	2.47	2.43	2.22	2.05	1.87
t_{CH4}	-2.66	-2.58	2.50	2.39	2.59	2.66	2.66	-1.41	-0.47	5.11	5.20	4.94	4.66	4.26
α_{Car}	-0.76	-0.58	0.25	0.18	0.15	0.11	0.07	-0.34	-0.93	1.68	1.58	1.38	1.22	1.08
t_{Car}	-2.56	-1.95	1.40	1.10	0.99	0.79	0.49	-1.19	-2.27	4.29	4.20	3.81	3.42	3.06
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.33	0.33	0.49	0.48	0.46	0.45	0.44	0.20	0.41	0.91	0.86	0.78	0.72	0.67
$\overline{\lvert\alpha_{FF3}\rvert}$	0.39	0.36	0.17	0.15	0.15	0.14	0.13	0.12	0.32	0.56	0.51	0.49	0.46	0.43
$\overline{\lvert\alpha_{FF5}\rvert}$	0.38	0.35	0.17	0.14	0.14	0.13	0.12	0.15	0.34	0.51	0.47	0.45	0.42	0.39
$\overline{\lvert\alpha_q\rvert}$	0.53	0.51	0.26	0.26	0.27	0.29	0.30	0.21	0.28	0.64	0.54	0.49	0.45	0.40
$\overline{\lvert\alpha_{CH3}\rvert}$	0.36	0.38	0.34	0.33	0.31	0.30	0.30	0.24	0.28	0.83	0.78	0.69	0.64	0.59
$\overline{\lvert\alpha_{CH4}\rvert}$	0.36	0.37	0.34	0.34	0.33	0.32	0.31	0.20	0.19	0.86	0.84	0.77	0.70	0.64
$\overline{\lvert\alpha_{Car}\rvert}$	0.38	0.36	0.17	0.15	0.15	0.14	0.13	0.12	0.32	0.55	0.50	0.49	0.46	0.42
p_{CAPM}	0.00	0.00	0.01	0.03	0.01	0.01	0.01	0.32	0.02	0.00	0.00	0.00	0.00	0.00

p_{FF3}	0.00	0.00	0.03	0.08	0.03	0.03	0.03	0.68	0.06	0.00	0.00	0.00	0.00	0.00
p_{FF5}	0.00	0.00	0.05	0.10	0.05	0.04	0.05	0.47	0.12	0.00	0.00	0.00	0.00	0.00
p_q	0.00	0.00	0.25	0.38	0.25	0.20	0.14	0.31	0.03	0.00	0.00	0.00	0.00	0.00
p_{CH3}	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.06	0.30	0.00	0.00	0.00	0.00	0.00
p_{CH4}	0.00	0.00	0.02	0.05	0.02	0.01	0.01	0.22	0.69	0.00	0.00	0.00	0.00	0.00
p_{Car}	0.00	0.00	0.03	0.09	0.03	0.03	0.04	0.69	0.03	0.00	0.00	0.00	0.00	0.00

	Trading frictions				
#	57	58	59	60	61
	Qsba1	Qsba3	Qsba6	Qsba9	Qsba12
m	2.84	2.68	2.45	2.23	2.07
t_m	6.17	5.92	5.49	5.11	4.77
α_{CAPM}	2.81	2.63	2.39	2.18	2.02
t_{CAPM}	6.08	5.82	5.39	5.00	4.67
α_{FF3}	2.09	1.87	1.62	1.41	1.26
t_{FF3}	5.01	4.69	4.18	3.74	3.36
α_{FF5}	1.83	1.58	1.33	1.13	1.00
t_{FF5}	4.55	4.16	3.63	3.16	2.78
α_q	2.30	2.10	1.79	1.53	1.31
t_q	4.94	4.67	4.07	3.54	3.06
α_{CH3}	2.57	2.35	2.04	1.79	1.58
t_{CH3}	5.04	4.66	4.10	3.68	3.26
α_{CH4}	2.66	2.62	2.41	2.20	2.00
t_{CH4}	5.12	5.26	5.01	4.72	4.33
α_{Car}	2.08	1.87	1.62	1.40	1.25
t_{Car}	4.98	4.66	4.15	3.71	3.34
$\overline{\lvert\alpha_{CAPM}\rvert}$	0.99	0.91	0.82	0.75	0.70
$\overline{\lvert\alpha_{FF3}\rvert}$	0.67	0.57	0.52	0.49	0.46
$\overline{\lvert\alpha_{FF5}\rvert}$	0.62	0.55	0.49	0.46	0.43
$\overline{\lvert\alpha_q\rvert}$	0.76	0.62	0.52	0.47	0.42
$\overline{\lvert\alpha_{CH3}\rvert}$	0.88	0.80	0.72	0.66	0.61
$\overline{\lvert\alpha_{CH4}\rvert}$	0.90	0.86	0.80	0.72	0.66
$\overline{\lvert\alpha_{Car}\rvert}$	0.67	0.56	0.51	0.48	0.45
p_{CAPM}	0.00	0.00	0.00	0.00	0.00
p_{FF3}	0.00	0.00	0.00	0.00	0.00

p_{FF5}	0.00	0.00	0.00	0.00	0.00
p_{q}	0.00	0.00	0.00	0.00	0.00
p_{CH3}	0.00	0.00	0.00	0.00	0.00
p_{CH4}	0.00	0.00	0.00	0.00	0.00
p_{Car}	0.00	0.00	0.00	0.00	0.00

Table A5. Factor loadings of anomaly variables with significant return spreads under different factor models: The post-2000 sample period (July 2000 to June 2019, 228 months)

For each high-minus-low quintile with significant raw return spreads, we report the factor loadings of different factor models. β_{MKT_CAPM} is the loading on the market factor in the CAPM model, and t_{MKT_CAPM} is the corresponding *t*-statistic. β_{MKT_FF3}, β_{SMB_FF3}, and β_{HML_FF3} are the loadings on the market, size, and value factors in the FF3-factor model, respectively, and t_{MKT_FF3}, t_{SMB_FF3}, *and* t_{HML_FF3} are the corresponding *t*-statistics. β_{MKT_FF5}, β_{SMB_FF5}, β_{HML_FF5}, β_{RMW_FF5}, and β_{CMA_FF5} are the loadings on the market, size, value, profitability, and investment factors in the FF5-factor model, respectively, and t_{MKT_FF5}, t_{SMB_FF5}, t_{HML_FF5}, t_{RMW_FF5}, and t_{CMA_FF5} are the corresponding *t*-statistics. β_{MKT_q}, β_{ME_q}, β_{I/A_q}, and β_{ROE_q} are the loadings on the market, size, investment, and profitability factors in the *q*-factor model, respectively, and t_{MKT_q}, t_{ME_q}, t_{I/A_q}, and t_{ROE_q} are the corresponding *t*-statistics. β_{MKT_CH3}, β_{SMB_CH3}, and β_{VMG_CH3} are the loadings on the market, size, and value factors in the CH3-factor model, respectively, and t_{MKT_CH3}, t_{SMB_CH3}, and t_{VMG_CH3} are the corresponding *t*-statistics. β_{MKT_CH4}, β_{SMB_CH4}, β_{VMG_CH4}, and β_{PMO_CH4} are the loadings on the market, size, value, and turnover factors in the CH4-factor model, respectively, and t_{MKT_CH4}, t_{SMB_CH4}, t_{VMG_CH4}, and t_{PMO_CH4} are the corresponding *t*-statistics. β_{MKT_Car}, β_{SMB_Car}, β_{HML_Car}, and β_{MOM_Car} are the loadings on the market, size, value, and momentum factors in the Carhart 4-factor model, respectively, and t_{MKT_Car}, t_{SMB_Car}, t_{HML_Car}, and t_{MOM_Car} are the corresponding *t*-statistics. Columns 1–7 report the results related to the momentum category; columns 8–13 report the results related to the value-versus-growth category; columns 14 report the results related to the investment category; columns 15–22 report the results for the profitability category; columns 23–32 report the results for the intangibles category; and columns 33–78 report the results for the trading frictions category. All of the symbols, variable definitions, and portfolio constructions are described in Online Appendix A and Table A1.

	Momentum							Value-versus-growth						Investment
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Sue1	Sue3	Sue6	Sue9	Abr9	$\epsilon^6 3$	$\epsilon^6 6$	$Ep^q 1$	Ndp	$Ndp^q 3$	$Ndp^q 6$	$Ndp^q 9$	$Ndp^q 12$	Noa
β_{MKT_CAPM}	-0.02	-0.01	-0.01	0.00	-0.08	0.00	0.00	-0.14	0.05	0.05	0.04	0.04	0.04	0.04
t_{MKT_CAPM}	-0.78	-0.36	-0.40	-0.04	-4.60	-0.06	0.00	-3.05	1.18	1.17	1.00	0.87	0.90	1.47
β_{MKT_FF3}	-0.02	0.00	0.00	0.01	-0.06	0.01	0.01	-0.10	0.04	0.03	0.03	0.02	0.02	0.03
t_{MKT_FF3}	-0.77	-0.09	0.12	0.53	-3.60	0.26	0.54	-3.40	1.46	1.17	0.97	0.86	0.97	0.97
β_{SMB_FF3}	-0.04	-0.11	-0.17	-0.17	-0.29	-0.12	-0.17	-0.67	-0.11	-0.05	-0.06	-0.08	-0.09	0.12
t_{SMB_FF3}	-0.65	-1.97	-3.38	-3.81	-8.52	-2.04	-3.33	-10.63	-2.02	-0.77	-1.01	-1.48	-1.73	1.95
β_{HML_FF3}	0.17	0.04	-0.05	-0.04	-0.14	0.03	0.03	0.62	1.07	1.12	1.15	1.14	1.15	0.26
t_{HML_FF3}	2.18	0.59	-0.84	-0.61	-3.13	0.38	0.42	7.76	15.20	14.52	16.07	16.42	16.99	3.37
β_{MKT_FF5}	0.02	0.05	0.06	0.07	-0.03	0.01	0.02	0.02	0.06	0.07	0.06	0.06	0.07	-0.01
t_{MKT_FF5}	0.70	1.77	2.48	3.28	-1.53	0.37	0.61	0.90	2.20	2.21	2.01	2.23	2.54	-0.43
β_{SMB_FF5}	0.07	-0.02	-0.08	-0.08	-0.17	-0.05	-0.13	-0.37	-0.11	-0.05	-0.04	-0.03	-0.02	0.22
t_{SMB_FF5}	0.93	-0.29	-1.34	-1.46	-4.14	-0.70	-1.92	-5.54	-1.54	-0.63	-0.63	-0.39	-0.39	3.24
β_{HML_FF5}	0.14	0.00	-0.09	-0.08	-0.11	0.04	0.03	0.63	1.02	1.06	1.11	1.11	1.11	0.40
t_{HML_FF5}	1.86	-0.03	-1.57	-1.41	-2.70	0.57	0.45	9.35	14.44	14.34	15.96	16.44	17.07	5.89
β_{RMW_FF5}	0.29	0.35	0.39	0.41	0.23	0.05	0.03	0.88	0.17	0.22	0.21	0.27	0.30	-0.24
t_{RMW_FF5}	2.85	3.80	4.90	5.76	4.08	0.45	0.38	9.83	1.78	2.27	2.26	3.00	3.43	-2.63
β_{CMA_FF5}	-0.05	0.18	0.28	0.33	-0.04	-0.16	-0.17	0.39	0.26	0.45	0.36	0.32	0.33	-0.82
t_{CMA_FF5}	-0.44	1.71	3.06	3.87	-0.63	-1.31	-1.56	3.70	2.37	3.89	3.29	3.03	3.21	-7.67
β_{MKT_q}	0.04	0.06	0.06	0.06	-0.04	0.03	0.04	0.00	0.08	0.04	0.04	0.05	0.05	0.02
t_{MKT_q}	1.56	2.38	2.64	2.89	-2.20	1.09	1.66	0.07	2.12	1.09	1.07	1.19	1.40	0.88
β_{ME_q}	0.07	0.04	0.01	-0.04	-0.10	-0.02	-0.08	-0.79	-0.71	-0.82	-0.81	-0.79	-0.79	0.03
t_{ME_q}	1.05	0.79	0.20	-0.82	-2.75	-0.38	-1.49	-11.27	-8.48	-9.73	-9.65	-9.45	-9.43	0.55

β_{I/A_q}	0.09	0.25	0.27	0.27	-0.13	-0.15	-0.14	0.23	0.27	0.35	0.28	0.25	0.26	-0.71
t_{I/A_q}	0.89	2.69	3.38	3.56	-2.13	-1.39	-1.54	1.93	1.94	2.50	2.02	1.78	1.85	-7.04
β_{ROE_q}	0.49	0.49	0.46	0.40	0.28	0.21	0.25	0.70	-0.02	-0.32	-0.28	-0.20	-0.16	-0.10
t_{ROE_q}	6.35	7.26	7.93	7.32	6.58	2.85	3.83	8.49	-0.23	-3.28	-2.80	-2.05	-1.61	-1.48
β_{MKT_CH3}	0.02	0.03	0.03	0.04	-0.04	0.03	0.03	0.05	0.14	0.14	0.14	0.14	0.14	0.05
t_{MKT_CH3}	0.69	1.17	1.35	1.74	-2.07	0.91	1.29	1.51	3.70	3.42	3.42	3.52	3.64	1.62
β_{SMB_CH3}	0.20	0.18	0.10	0.05	-0.13	-0.29	-0.27	-0.25	-0.47	-0.37	-0.44	-0.46	-0.46	-0.14
t_{SMB_CH3}	3.16	3.10	1.99	0.99	-3.38	-4.62	-4.92	-3.62	-5.53	-4.08	-4.93	-5.33	-5.35	-2.17
β_{VMG_CH3}	0.43	0.40	0.34	0.29	0.17	-0.13	-0.06	1.04	0.20	0.28	0.24	0.25	0.27	-0.18
t_{VMG_CH3}	5.32	5.50	5.31	4.79	3.63	-1.76	-0.83	12.44	1.93	2.53	2.26	2.43	2.63	-2.32
β_{MKT_CH4}	0.02	0.03	0.03	0.05	-0.04	0.02	0.02	0.05	0.11	0.11	0.10	0.11	0.11	0.05
t_{MKT_CH4}	0.69	1.14	1.28	1.89	-1.97	0.59	0.66	1.41	2.77	2.56	2.45	2.61	2.71	1.51
β_{SMB_CH4}	0.20	0.17	0.10	0.04	-0.12	-0.28	-0.26	-0.25	-0.43	-0.32	-0.38	-0.40	-0.40	-0.18
t_{SMB_CH4}	2.97	2.87	1.85	0.86	-3.00	-4.33	-4.58	-3.48	-4.96	-3.40	-4.18	-4.53	-4.56	-2.61
β_{VMG_CH4}	0.45	0.41	0.35	0.30	0.17	-0.15	-0.08	1.02	0.17	0.28	0.24	0.25	0.26	-0.23
t_{VMG_CH4}	5.16	5.29	5.07	4.57	3.32	-1.94	-1.09	11.40	1.61	2.38	2.11	2.24	2.42	-2.69
β_{PMO_CH4}	0.00	0.00	0.00	0.04	0.01	-0.05	-0.11	0.00	-0.26	-0.26	-0.29	-0.25	-0.26	0.00
t_{PMO_CH4}	-0.01	0.01	-0.05	0.74	0.20	-0.87	-2.03	0.03	-3.01	-2.84	-3.26	-2.91	-3.02	-0.03
β_{MKT_Car}	0.00	0.01	0.01	0.02	-0.04	0.03	0.04	-0.09	0.03	0.01	0.01	0.01	0.02	0.03
t_{MKT_Car}	0.13	0.57	0.58	1.06	-2.90	1.00	1.56	-3.00	1.29	0.46	0.27	0.43	0.62	1.20
β_{SMB_Car}	0.06	-0.04	-0.12	-0.13	-0.24	-0.05	-0.09	-0.62	-0.13	-0.12	-0.13	-0.12	-0.12	0.14
t_{SMB_Car}	1.08	-0.78	-2.50	-2.84	-7.20	-0.78	-1.77	-9.65	-2.21	-2.05	-2.27	-2.19	-2.27	2.30
β_{HML_Car}	0.26	0.10	-0.02	0.00	-0.09	0.09	0.10	0.66	1.05	1.05	1.09	1.11	1.12	0.28
t_{HML_Car}	3.65	1.47	-0.24	0.06	-2.22	1.27	1.62	8.18	14.73	14.00	15.58	15.82	16.40	3.60
β_{MOM_Car}	0.27	0.17	0.11	0.11	0.13	0.19	0.22	0.11	-0.04	-0.20	-0.18	-0.11	-0.08	0.07
t_{MOM_Car}	6.56	4.47	3.08	3.50	5.48	4.60	6.15	2.50	-0.96	-4.67	-4.56	-2.72	-2.14	1.50

	Profitability								Intangibles					
#	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	dRoe1	dRoe3	dRoa1	dRoa3	Ato^q1	Ato^q3	Ato^q6	Ato^q9	Adm	Rdm^q1	Rdm^q3	Rdm^q6	Rdm^q9	Rdm^q12
β_{MKT_CAPM}	-0.05	-0.05	-0.05	-0.05	-0.07	-0.05	-0.07	-0.06	-0.06	0.02	0.03	0.02	0.01	0.01
t_{MKT_CAPM}	-1.72	-1.80	-1.58	-1.77	-2.48	-1.86	-2.79	-2.45	-2.12	0.62	0.94	0.74	0.43	0.44
β_{MKT_FF3}	-0.05	-0.04	-0.05	-0.04	-0.05	-0.03	-0.05	-0.04	-0.05	0.00	0.01	0.01	0.00	0.00
t_{MKT_FF3}	-1.56	-1.45	-1.45	-1.42	-1.87	-1.04	-2.07	-1.67	-2.05	0.04	0.61	0.28	-0.18	-0.15
β_{SMB_FF3}	-0.08	-0.11	-0.06	-0.10	-0.29	-0.33	-0.30	-0.31	-0.15	0.04	0.02	0.02	0.00	0.00
t_{SMB_FF3}	-1.17	-1.99	-0.95	-1.80	-4.93	-6.25	-6.19	-6.53	-2.82	0.80	0.36	0.40	0.07	0.07
β_{HML_FF3}	0.08	-0.06	0.08	-0.10	0.09	0.05	0.05	0.05	0.30	0.93	0.97	0.98	0.98	0.94
t_{HML_FF3}	0.86	-0.86	0.91	-1.36	1.17	0.79	0.78	0.79	4.36	14.72	16.11	17.76	17.95	17.64

β_{MKT_FF5}	-0.04	-0.02	-0.04	-0.01	0.01	0.02	0.01	0.01	-0.03	0.03	0.03	0.02	0.01	0.02
t_{MKT_FF5}	-1.18	-0.73	-1.03	-0.42	0.35	0.67	0.22	0.44	-1.20	1.20	1.31	1.02	0.66	0.90
β_{SMB_FF5}	0.01	-0.07	0.02	-0.04	-0.07	-0.14	-0.09	-0.11	0.00	0.01	0.00	0.03	0.03	0.03
t_{SMB_FF5}	0.11	-1.01	0.29	-0.51	-1.04	-2.18	-1.63	-2.00	0.03	0.19	-0.03	0.47	0.61	0.52
β_{HML_FF5}	0.08	-0.09	0.08	-0.11	0.14	0.11	0.11	0.10	0.37	0.86	0.92	0.95	0.96	0.92
t_{HML_FF5}	0.92	-1.19	0.99	-1.56	1.99	1.77	1.83	1.87	5.55	13.88	15.45	17.28	17.78	17.32
β_{RMW_FF5}	0.07	0.11	0.07	0.17	0.44	0.32	0.38	0.35	0.15	0.18	0.11	0.11	0.12	0.14
t_{RMW_FF5}	0.58	1.17	0.67	1.83	4.72	3.80	5.04	4.69	1.74	2.16	1.39	1.50	1.65	2.06
β_{CMA_FF5}	-0.39	-0.07	-0.34	-0.02	-0.13	-0.26	-0.18	-0.23	-0.41	0.41	0.27	0.18	0.09	0.16
t_{CMA_FF5}	-2.95	-0.64	-2.66	-0.22	-1.19	-2.54	-1.99	-2.64	-3.92	4.28	2.88	2.06	1.10	1.96
β_{MKT_q}	0.02	0.03	0.02	0.03	0.02	0.04	0.01	0.01	0.00	0.01	0.03	0.02	0.02	0.02
t_{MKT_q}	0.80	1.28	0.79	1.18	0.92	1.51	0.48	0.68	-0.07	0.42	0.92	0.71	0.59	0.69
β_{ME_q}	0.19	0.19	0.18	0.20	-0.08	-0.14	-0.12	-0.15	-0.14	-0.60	-0.62	-0.60	-0.58	-0.56
t_{ME_q}	2.87	3.61	2.72	3.95	-1.46	-2.66	-2.53	-3.06	-2.32	-8.72	-8.86	-8.65	-8.31	-8.32
β_{I/A_q}	-0.11	0.14	-0.06	0.15	0.02	-0.10	-0.12	-0.16	-0.26	0.37	0.30	0.20	0.11	0.16
t_{I/A_q}	-0.98	1.61	-0.52	1.75	0.16	-1.18	-1.48	-2.02	-2.63	3.20	2.59	1.68	0.94	1.44
β_{ROE_q}	0.61	0.60	0.56	0.57	0.62	0.54	0.50	0.46	0.34	-0.25	-0.23	-0.21	-0.16	-0.14
t_{ROE_q}	7.64	9.45	7.10	9.11	9.31	8.74	8.97	8.26	4.85	-3.08	-2.74	-2.64	-1.99	-1.76
β_{MKT_CH3}	-0.01	-0.01	0.00	0.00	-0.01	0.01	-0.01	0.00	0.00	0.08	0.10	0.09	0.08	0.08
t_{MKT_CH3}	-0.22	-0.21	0.15	0.01	-0.33	0.47	-0.47	-0.19	0.09	2.15	2.68	2.59	2.42	2.38
β_{SMB_CH3}	0.13	0.14	0.15	0.17	0.00	-0.06	-0.07	-0.09	-0.15	-0.11	-0.19	-0.26	-0.29	-0.28
t_{SMB_CH3}	1.81	2.35	2.24	3.05	0.04	-0.96	-1.27	-1.72	-2.34	-1.49	-2.50	-3.43	-3.98	-3.88
β_{VMG_CH3}	0.37	0.35	0.41	0.39	0.43	0.38	0.33	0.30	0.24	0.29	0.26	0.20	0.19	0.19
t_{VMG_CH3}	4.15	4.79	4.90	5.53	5.44	5.23	4.96	4.51	3.18	3.15	2.76	2.23	2.12	2.15
β_{MKT_CH4}	-0.01	-0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.01	0.07	0.08	0.07	0.06	0.06
t_{MKT_CH4}	-0.30	-0.35	0.08	0.01	0.02	0.86	0.04	0.42	0.44	1.79	2.16	2.01	1.82	1.78
β_{SMB_CH4}	0.12	0.13	0.15	0.17	-0.01	-0.07	-0.08	-0.11	-0.15	-0.09	-0.16	-0.22	-0.26	-0.24
t_{SMB_CH4}	1.63	2.13	2.12	2.84	-0.08	-1.11	-1.41	-1.89	-2.34	-1.10	-2.04	-2.91	-3.41	-3.31
β_{VMG_CH4}	0.37	0.35	0.42	0.40	0.43	0.37	0.32	0.28	0.23	0.30	0.26	0.20	0.18	0.18
t_{VMG_CH4}	3.93	4.53	4.71	5.32	5.10	4.80	4.56	4.11	2.82	3.03	2.61	2.05	1.93	1.97
β_{PMO_CH4}	-0.03	-0.04	-0.02	-0.01	0.08	0.10	0.11	0.13	0.09	-0.08	-0.12	-0.13	-0.13	-0.13
t_{PMO_CH4}	-0.36	-0.58	-0.33	-0.14	1.29	1.59	1.97	2.38	1.46	-1.07	-1.56	-1.77	-1.80	-1.85
β_{MKT_Car}	-0.02	-0.02	-0.01	-0.01	-0.03	0.00	-0.03	-0.02	-0.02	-0.02	0.00	-0.01	-0.01	-0.01
t_{MKT_Car}	-0.57	-0.65	-0.43	-0.56	-1.06	-0.09	-1.27	-0.81	-0.96	-0.69	-0.08	-0.34	-0.48	-0.41
β_{SMB_Car}	0.06	-0.02	0.07	0.00	-0.20	-0.24	-0.23	-0.24	-0.04	-0.02	-0.04	-0.03	-0.02	-0.02
t_{SMB_Car}	0.98	-0.37	1.25	-0.05	-3.49	-4.76	-4.79	-5.09	-0.77	-0.46	-0.86	-0.67	-0.44	-0.38
β_{HML_Car}	0.19	0.02	0.19	-0.01	0.17	0.13	0.11	0.12	0.40	0.88	0.92	0.94	0.96	0.93
t_{HML_Car}	2.57	0.26	2.64	-0.20	2.32	2.07	1.91	1.99	6.56	14.20	15.61	17.22	17.36	17.06

β_{MOM_Car}	0.35	0.23	0.34	0.24	0.23	0.23	0.19	0.20	0.30	-0.16	-0.15	-0.12	-0.06	-0.05
t_{MOM_Car}	8.31	6.26	8.43	6.81	5.72	6.42	5.70	6.06	8.55	-4.59	-4.44	-3.88	-1.84	-1.61

	Intangibles				Trading frictions									
#	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Ala^q6	Ala^q9	R^1_a	$R^{[2,5]}_n$	Ivc1	Ivff31	Ivff33	Ivff51	Ivq1	Ivch31	Ivch41	Svr1	β^D1	Cvt1
β_{MKT_CAPM}	0.05	0.06	0.00	-0.01	0.21	0.21	0.19	0.23	0.22	0.23	0.21	-0.03	0.33	-0.08
t_{MKT_CAPM}	2.00	2.03	0.05	-0.34	5.55	5.78	5.33	6.60	5.88	6.43	5.95	-1.00	8.97	-2.63
β_{MKT_FF3}	0.07	0.07	0.02	0.02	0.19	0.18	0.17	0.21	0.20	0.21	0.19	-0.03	0.30	-0.10
t_{MKT_FF3}	2.96	3.10	0.48	0.65	5.47	5.80	6.31	6.68	5.93	6.38	5.84	-1.18	8.39	-3.32
β_{SMB_FF3}	-0.02	-0.02	-0.12	-0.29	0.34	0.41	0.45	0.41	0.33	0.31	0.37	0.08	0.39	0.24
t_{SMB_FF3}	-0.48	-0.40	-1.69	-4.19	4.60	6.09	8.06	6.17	4.69	4.49	5.32	1.33	5.07	3.61
β_{HML_FF3}	-0.58	-0.61	-0.27	-0.55	-0.27	-0.26	-0.46	-0.23	-0.30	-0.24	-0.22	-0.03	0.11	0.10
t_{HML_FF3}	-9.45	-10.23	-2.95	-6.19	-2.88	-2.99	-6.44	-2.73	-3.34	-2.69	-2.48	-0.41	1.15	1.24
β_{MKT_FF5}	0.08	0.08	0.02	0.03	0.14	0.14	0.14	0.16	0.16	0.17	0.15	-0.04	0.24	-0.10
t_{MKT_FF5}	3.77	3.62	0.47	0.81	3.71	4.16	4.75	4.98	4.54	4.76	4.23	-1.24	6.06	-2.89
β_{SMB_FF5}	0.16	0.15	0.01	-0.05	0.36	0.44	0.46	0.46	0.41	0.35	0.40	0.11	0.32	0.09
t_{SMB_FF5}	3.06	2.92	0.08	-0.63	4.10	5.38	6.53	5.80	4.97	4.05	4.80	1.47	3.31	1.15
β_{HML_FF5}	-0.49	-0.52	-0.19	-0.38	-0.17	-0.17	-0.41	-0.14	-0.19	-0.16	-0.14	0.00	0.16	0.00
t_{HML_FF5}	-9.08	-9.97	-2.08	-4.58	-1.93	-2.01	-5.70	-1.73	-2.25	-1.88	-1.60	-0.06	1.64	0.01
β_{RMW_FF5}	0.14	0.09	0.03	0.11	-0.34	-0.27	-0.18	-0.29	-0.24	-0.26	-0.27	-0.04	-0.41	-0.02
t_{RMW_FF5}	1.95	1.32	0.29	0.96	-2.88	-2.47	-1.89	-2.71	-2.17	-2.26	-2.37	-0.37	-3.18	-0.15
β_{CMA_FF5}	-0.48	-0.50	-0.46	-0.69	-0.75	-0.63	-0.30	-0.70	-0.77	-0.58	-0.61	-0.19	-0.36	0.48
t_{CMA_FF5}	-5.59	-6.03	-3.30	-5.24	-5.32	-4.80	-2.65	-5.54	-5.76	-4.27	-4.55	-1.53	-2.36	3.69
β_{MKT_q}	0.07	0.07	0.03	0.03	0.17	0.17	0.15	0.19	0.19	0.19	0.18	-0.04	0.28	-0.12
t_{MKT_q}	2.98	2.95	0.97	1.01	4.77	5.19	5.06	6.03	5.53	5.70	5.29	-1.45	7.53	-3.89
β_{ME_q}	0.44	0.46	0.17	0.18	0.51	0.59	0.74	0.58	0.58	0.47	0.53	0.10	0.32	0.01
t_{ME_q}	8.01	8.45	2.30	2.46	6.53	8.05	11.10	8.18	7.77	6.22	7.18	1.51	3.87	0.19
β_{I/A_q}	-0.45	-0.44	-0.34	-0.70	-0.50	-0.40	-0.18	-0.44	-0.54	-0.35	-0.39	-0.17	-0.17	0.46
t_{I/A_q}	-4.91	-4.88	-2.66	-5.66	-3.83	-3.28	-1.61	-3.68	-4.37	-2.73	-3.13	-1.58	-1.26	4.00
β_{ROE_q}	0.27	0.26	0.27	0.36	-0.10	-0.07	-0.03	-0.09	-0.02	-0.07	-0.07	-0.07	-0.26	-0.26
t_{ROE_q}	4.22	4.11	3.00	4.19	-1.10	-0.80	-0.40	-1.12	-0.19	-0.79	-0.77	-0.92	-2.74	-3.18
β_{MKT_CH3}	0.04	0.04	0.02	0.03	0.14	0.13	0.10	0.16	0.15	0.16	0.14	-0.05	0.29	-0.11
t_{MKT_CH3}	1.29	1.24	0.62	0.73	3.76	3.79	3.00	4.70	4.08	4.58	3.96	-1.78	7.48	-3.28
β_{SMB_CH3}	0.20	0.19	0.07	-0.14	0.02	0.13	0.27	0.11	0.06	0.00	0.06	-0.03	0.28	0.15
t_{SMB_CH3}	3.12	2.97	0.89	-1.69	0.20	1.66	3.87	1.51	0.79	0.05	0.77	-0.49	3.29	2.05
β_{VMG_CH3}	-0.01	-0.03	0.14	-0.01	-0.55	-0.50	-0.49	-0.50	-0.50	-0.53	-0.52	-0.21	-0.14	-0.02
t_{VMG_CH3}	-0.12	-0.42	1.48	-0.06	-5.59	-5.31	-5.68	-5.52	-5.22	-5.68	-5.63	-2.63	-1.36	-0.28
β_{MKT_CH4}	0.07	0.07	0.04	0.07	0.11	0.10	0.08	0.13	0.12	0.13	0.11	-0.02	0.24	-0.13

t_{MKT_CH4}	2.41	2.25	1.14	1.73	2.79	2.88	2.50	3.75	3.28	3.71	3.02	-0.80	6.32	-3.79
β_{SMB_CH4}	0.18	0.17	0.03	-0.20	0.07	0.18	0.31	0.16	0.11	0.06	0.11	-0.07	0.35	0.22
t_{SMB_CH4}	2.88	2.74	0.41	-2.47	0.85	2.37	4.22	2.17	1.37	0.72	1.45	-1.05	4.17	2.91
β_{VMG_CH4}	0.01	-0.01	0.13	-0.06	-0.52	-0.45	-0.44	-0.46	-0.47	-0.50	-0.48	-0.23	-0.08	0.04
t_{VMG_CH4}	0.12	-0.18	1.24	-0.56	-5.09	-4.66	-4.86	-4.90	-4.65	-5.11	-5.06	-2.81	-0.77	0.40
β_{PMO_CH4}	0.25	0.23	0.16	0.32	-0.29	-0.27	-0.13	-0.27	-0.23	-0.24	-0.27	0.25	-0.43	-0.18
t_{PMO_CH4}	4.12	3.72	2.06	4.00	-3.66	-3.54	-1.84	-3.62	-2.92	-3.13	-3.59	3.78	-5.30	-2.41
β_{MKT_Car}	0.10	0.10	0.05	0.05	0.21	0.21	0.18	0.23	0.23	0.24	0.21	-0.03	0.28	-0.11
t_{MKT_Car}	4.97	5.00	1.44	1.52	6.38	6.80	6.91	7.80	7.32	7.56	6.93	-1.06	7.93	-3.64
β_{SMB_Car}	0.09	0.09	-0.01	-0.19	0.43	0.50	0.51	0.50	0.45	0.42	0.46	0.09	0.30	0.20
t_{SMB_Car}	2.07	2.04	-0.13	-2.81	5.90	7.50	8.86	7.70	6.58	6.08	6.86	1.46	3.92	2.91
β_{HML_Car}	-0.49	-0.52	-0.17	-0.47	-0.19	-0.18	-0.42	-0.15	-0.20	-0.15	-0.13	-0.02	0.04	0.07
t_{HML_Car}	-9.15	-9.98	-1.99	-5.41	-2.06	-2.15	-5.81	-1.84	-2.36	-1.76	-1.57	-0.28	0.38	0.82
β_{MOM_Car}	0.29	0.27	0.28	0.26	0.24	0.23	0.14	0.24	0.30	0.26	0.25	0.03	-0.22	-0.10
t_{MOM_Car}	9.49	9.04	5.84	5.26	4.65	4.91	3.38	5.20	6.21	5.44	5.26	0.65	-4.08	-2.12

Trading frictions

#	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	Rtv1	Rtv3	Rtv6	Rtv9	Rtv12	Pps1	Pps3	Pps6	Pps9	Pps12	Mdr1	Mdr3	Ts1	Ts3
β_{MKT_CAPM}	0.00	0.00	-0.02	-0.04	-0.05	0.01	0.01	-0.02	-0.03	-0.04	0.22	0.21	-0.03	-0.02
t_{MKT_CAPM}	0.11	-0.09	-0.45	-0.93	-1.11	0.11	0.12	-0.38	-0.82	-1.04	6.32	7.39	-1.14	-1.32
β_{MKT_FF3}	0.08	0.07	0.06	0.04	0.03	0.07	0.07	0.05	0.03	0.02	0.19	0.19	0.00	0.00
t_{MKT_FF3}	4.46	3.67	3.04	2.18	2.18	1.82	2.04	1.40	0.94	0.63	5.66	7.39	-0.17	0.13
β_{SMB_FF3}	-1.05	-1.06	-1.07	-1.07	-1.08	-0.58	-0.61	-0.55	-0.54	-0.51	0.34	0.31	-0.34	-0.30
t_{SMB_FF3}	-26.25	-24.61	-25.93	-28.00	-31.51	-7.02	-7.82	-7.59	-7.97	-7.85	4.65	5.75	-6.16	-8.72
β_{HML_FF3}	0.24	0.31	0.26	0.20	0.11	-1.06	-1.13	-1.11	-1.14	-1.06	0.09	-0.15	-0.03	-0.14
t_{HML_FF3}	4.62	5.59	4.93	4.00	2.50	-10.15	-11.36	-11.97	-13.11	-12.87	0.99	-2.09	-0.41	-3.13
β_{MKT_FF5}	0.08	0.07	0.05	0.04	0.03	0.11	0.11	0.10	0.08	0.07	0.14	0.15	0.01	0.01
t_{MKT_FF5}	3.96	3.26	2.82	2.14	2.00	3.15	3.55	3.36	3.11	2.73	3.87	5.23	0.32	0.35
β_{SMB_FF5}	-1.00	-0.98	-0.99	-0.98	-1.01	-0.20	-0.24	-0.16	-0.15	-0.14	0.34	0.29	-0.23	-0.21
t_{SMB_FF5}	-19.65	-19.78	-21.18	-22.34	-24.18	-2.43	-3.16	-2.34	-2.38	-2.25	3.83	4.29	-3.26	-4.92
β_{HML_FF5}	0.27	0.37	0.32	0.26	0.16	-0.88	-0.96	-0.94	-0.96	-0.90	0.19	-0.08	0.03	-0.08
t_{HML_FF5}	5.29	7.31	6.79	5.81	3.85	-10.50	-12.36	-13.21	-14.91	-14.60	2.08	-1.19	0.42	-1.82
β_{RMW_FF5}	0.06	0.01	0.02	0.05	0.05	0.32	0.33	0.41	0.42	0.40	-0.31	-0.27	0.12	0.06
t_{RMW_FF5}	0.80	0.10	0.39	0.92	0.94	2.90	3.17	4.31	4.94	4.91	-2.61	-2.98	1.32	1.02
β_{CMA_FF5}	-0.32	-0.58	-0.57	-0.51	-0.41	-1.06	-1.01	-0.88	-0.85	-0.81	-0.56	-0.40	-0.27	-0.28
t_{CMA_FF5}	-3.87	-7.32	-7.66	-7.30	-6.21	-8.10	-8.32	-7.86	-8.34	-8.42	-3.94	-3.68	-2.48	-4.12
β_{MKT_q}	0.11	0.10	0.09	0.06	0.05	0.12	0.12	0.09	0.06	0.05	0.19	0.17	0.01	0.01
t_{MKT_q}	4.81	4.40	3.92	2.88	2.58	3.36	3.21	2.57	1.96	1.51	5.25	6.41	0.40	0.76

β_{ME_q}	-1.15	-1.17	-1.16	-1.14	-1.11	0.43	0.40	0.44	0.44	0.40	0.29	0.39	-0.24	-0.13
t_{ME_q}	-23.21	-22.66	-23.70	-24.91	-26.38	5.39	5.02	5.75	6.07	5.71	3.75	6.56	-4.00	-3.61
β_{I/A_q}	-0.42	-0.59	-0.61	-0.60	-0.53	-1.12	-1.07	-0.96	-0.97	-0.94	-0.35	-0.31	-0.34	-0.32
t_{I/A_q}	-5.03	-6.85	-7.46	-7.86	-7.54	-8.47	-7.98	-7.58	-7.95	-8.04	-2.66	-3.11	-3.38	-5.21
β_{ROE_q}	0.31	0.33	0.34	0.30	0.29	0.90	0.86	0.84	0.80	0.72	-0.14	-0.14	0.21	0.20
t_{ROE_q}	5.31	5.40	5.87	5.67	5.76	9.75	9.23	9.40	9.32	8.75	-1.49	-2.08	2.95	4.71
β_{MKT_CH3}	0.17	0.16	0.15	0.12	0.11	0.04	0.04	0.02	0.00	-0.01	0.19	0.15	0.03	0.02
t_{MKT_CH3}	6.26	5.63	5.07	4.54	4.46	0.79	0.79	0.37	0.02	-0.21	5.06	5.59	1.17	1.38
β_{SMB_CH3}	-0.99	-0.98	-0.94	-0.92	-0.90	-0.12	-0.10	-0.02	-0.01	-0.02	-0.06	0.05	-0.32	-0.26
t_{SMB_CH3}	-17.13	-15.28	-14.87	-15.52	-16.58	-1.14	-0.95	-0.17	-0.07	-0.24	-0.71	0.90	-5.53	-7.18
β_{VMG_CH3}	0.17	0.23	0.27	0.27	0.25	0.00	0.02	0.10	0.11	0.09	-0.39	-0.43	0.13	0.04
t_{VMG_CH3}	2.46	2.98	3.47	3.74	3.86	0.02	0.17	0.82	0.96	0.75	-3.99	-5.84	1.81	0.91
β_{MKT_CH4}	0.14	0.15	0.15	0.13	0.12	0.08	0.09	0.06	0.04	0.03	0.12	0.12	0.01	0.02
t_{MKT_CH4}	5.29	5.19	4.98	4.67	4.70	1.65	1.82	1.27	0.89	0.69	3.50	4.43	0.22	1.16
β_{SMB_CH4}	-1.01	-1.01	-0.99	-0.97	-0.95	-0.18	-0.16	-0.07	-0.05	-0.07	0.03	0.09	-0.29	-0.27
t_{SMB_CH4}	-17.56	-15.68	-15.45	-16.17	-17.30	-1.62	-1.53	-0.65	-0.52	-0.70	0.34	1.50	-4.96	-7.19
β_{VMG_CH4}	0.05	0.10	0.14	0.14	0.13	-0.04	-0.02	0.08	0.09	0.06	-0.35	-0.41	0.11	0.01
t_{VMG_CH4}	0.74	1.28	1.72	1.92	1.94	-0.26	-0.13	0.58	0.74	0.53	-3.80	-5.47	1.52	0.15
β_{PMO_CH4}	-0.16	-0.03	0.05	0.10	0.11	0.37	0.42	0.35	0.33	0.32	-0.55	-0.28	-0.19	-0.01
t_{PMO_CH4}	-2.83	-0.45	0.80	1.66	2.05	3.40	4.03	3.49	3.36	3.47	-7.56	-4.76	-3.32	-0.26
β_{MKT_Car}	0.09	0.09	0.07	0.05	0.04	0.13	0.13	0.10	0.08	0.06	0.20	0.19	0.00	0.01
t_{MKT_Car}	4.66	4.59	4.01	3.07	2.79	4.02	4.71	3.65	2.90	2.37	5.93	7.51	0.00	0.48
β_{SMB_Car}	-1.04	-1.00	-1.01	-1.02	-1.04	-0.37	-0.39	-0.36	-0.37	-0.35	0.38	0.33	-0.33	-0.28
t_{SMB_Car}	-24.89	-23.50	-24.92	-26.97	-30.11	-5.34	-6.36	-6.03	-6.47	-6.31	5.04	5.89	-5.64	-7.86
β_{HML_Car}	0.25	0.36	0.31	0.24	0.14	-0.88	-0.94	-0.94	-0.99	-0.93	0.13	-0.13	-0.01	-0.12
t_{HML_Car}	4.84	6.71	6.13	5.10	3.21	-10.27	-12.23	-12.69	-13.82	-13.29	1.36	-1.81	-0.21	-2.68
β_{MOM_Car}	0.04	0.15	0.15	0.13	0.09	0.54	0.56	0.50	0.44	0.40	0.10	0.05	0.04	0.05
t_{MOM_Car}	1.53	4.93	5.24	5.04	3.64	11.16	12.90	11.84	10.95	10.13	1.95	1.29	1.05	2.18

Trading frictions

#	57	58	59	60	61	62	63	64	65	66	67	68	69	70
	Isc1	Isc3	Isff31	Isq1	Isq3	Isch31	Isch33	Isch41	Isch43	Srev	Esba1	Esba3	Esba6	Esba9
β_{MKT_CAPM}	0.02	0.01	0.03	0.03	0.04	0.00	0.02	0.00	0.01	-0.01	0.01	0.04	0.06	0.08
t_{MKT_CAPM}	0.63	0.82	1.58	1.24	2.32	-0.15	1.03	0.01	0.91	-0.20	0.35	0.87	1.56	1.90
β_{MKT_FF3}	0.01	0.01	0.02	0.01	0.03	-0.03	0.00	-0.02	0.00	0.01	-0.03	-0.01	0.02	0.03
t_{MKT_FF3}	0.55	0.82	1.04	0.55	2.05	-1.31	0.10	-0.86	0.05	0.23	-0.73	-0.25	0.49	0.83
β_{SMB_FF3}	0.00	-0.03	0.15	0.20	0.09	0.28	0.19	0.23	0.18	-0.28	0.54	0.60	0.61	0.62
t_{SMB_FF3}	-0.02	-0.83	3.44	4.59	2.87	6.33	6.67	5.12	6.05	-3.18	6.91	7.96	8.11	8.37
β_{HML_FF3}	0.10	0.14	-0.02	-0.03	-0.10	0.09	-0.04	0.01	-0.05	0.22	0.14	0.10	0.16	0.23

t_{HML_FF3}	1.46	3.00	-0.43	-0.47	-2.45	1.54	-1.15	0.13	-1.29	1.99	1.37	1.03	1.69	2.43
β_{MKT_FF5}	0.02	0.01	0.03	0.00	0.00	-0.02	-0.01	-0.02	-0.01	-0.02	0.01	0.05	0.07	0.08
t_{MKT_FF5}	0.92	0.72	1.31	-0.21	-0.01	-0.82	-0.64	-0.79	-0.92	-0.47	0.30	1.25	1.97	2.12
β_{SMB_FF5}	-0.05	-0.11	0.17	0.17	-0.01	0.31	0.15	0.27	0.13	-0.36	0.57	0.62	0.58	0.56
t_{SMB_FF5}	-0.81	-2.46	3.14	3.04	-0.30	5.53	4.18	4.75	3.68	-3.26	5.82	6.77	6.55	6.37
β_{HML_FF5}	0.05	0.10	0.00	-0.02	-0.11	0.10	-0.04	0.04	-0.05	0.20	0.08	0.01	0.04	0.10
t_{HML_FF5}	0.78	2.23	-0.09	-0.37	-2.81	1.76	-1.17	0.74	-1.38	1.74	0.79	0.07	0.46	1.08
β_{RMW_FF5}	0.06	-0.01	0.06	-0.12	-0.21	0.05	-0.08	0.01	-0.10	-0.22	0.22	0.33	0.31	0.26
t_{RMW_FF5}	0.72	-0.19	0.87	-1.56	-4.10	0.69	-1.59	0.09	-2.01	-1.45	1.70	2.71	2.63	2.19
β_{CMA_FF5}	0.31	0.34	0.13	-0.07	0.09	0.12	0.13	0.04	0.14	-0.28	0.40	0.77	0.88	0.87
t_{CMA_FF5}	2.94	4.70	1.49	-0.75	1.50	1.35	2.26	0.46	2.38	-1.57	2.56	5.37	6.30	6.31
β_{MKT_q}	0.02	0.01	0.02	0.01	0.01	-0.03	0.00	-0.01	0.00	0.04	-0.04	-0.02	0.01	0.03
t_{MKT_q}	0.86	0.58	1.14	0.49	0.86	-1.29	-0.35	-0.57	-0.30	0.84	-1.08	-0.53	0.33	0.78
β_{ME_q}	-0.08	-0.18	0.19	0.25	0.10	0.22	0.18	0.28	0.20	-0.32	0.39	0.46	0.42	0.39
t_{ME_q}	-1.45	-4.68	4.18	5.15	2.83	4.57	5.91	5.74	6.25	-3.31	4.57	5.68	5.30	5.03
β_{I/A_q}	0.22	0.33	0.03	-0.01	0.14	0.08	0.16	0.06	0.21	-0.13	0.29	0.62	0.77	0.82
t_{I/A_q}	2.35	5.11	0.33	-0.09	2.48	0.97	3.15	0.69	3.87	-0.79	1.96	4.47	5.68	6.20
β_{ROE_q}	0.02	-0.09	0.01	-0.03	-0.12	-0.09	-0.08	0.01	-0.06	0.19	-0.28	-0.26	-0.26	-0.25
t_{ROE_q}	0.27	-1.96	0.17	-0.48	-2.97	-1.65	-2.08	0.10	-1.55	1.73	-2.69	-2.68	-2.69	-2.66
β_{MKT_CH3}	0.03	0.02	0.02	0.00	0.01	-0.03	-0.01	-0.02	-0.02	0.04	-0.06	-0.04	-0.01	0.01
t_{MKT_CH3}	1.07	1.19	0.85	-0.04	0.63	-1.21	-0.79	-0.87	-1.05	0.88	-1.40	-0.84	-0.14	0.23
β_{SMB_CH3}	0.06	-0.02	0.11	0.21	0.09	0.23	0.18	0.22	0.17	-0.50	0.22	0.32	0.36	0.36
t_{SMB_CH3}	0.99	-0.54	2.38	4.35	2.64	4.71	5.57	4.44	5.08	-5.32	2.45	3.57	4.03	4.10
β_{VMG_CH3}	0.18	0.07	-0.02	0.00	-0.09	0.03	-0.03	0.04	-0.05	-0.09	-0.26	-0.16	-0.11	-0.09
t_{VMG_CH3}	2.54	1.43	-0.39	-0.08	-2.11	0.45	-0.87	0.62	-1.35	-0.80	-2.35	-1.45	-1.01	-0.85
β_{MKT_CH4}	0.02	0.01	0.01	0.00	0.01	-0.02	-0.01	-0.02	-0.01	-0.02	-0.06	-0.07	-0.05	-0.04
t_{MKT_CH4}	0.63	0.73	0.40	0.03	0.78	-0.89	-0.41	-0.75	-0.55	-0.38	-1.47	-1.55	-1.17	-0.97
β_{SMB_CH4}	0.08	-0.02	0.11	0.21	0.08	0.22	0.17	0.21	0.16	-0.44	0.28	0.42	0.47	0.47
t_{SMB_CH4}	1.35	-0.42	2.33	4.10	2.19	4.29	5.12	4.04	4.52	-4.71	3.05	4.68	5.33	5.45
β_{VMG_CH4}	0.20	0.07	-0.01	0.01	-0.09	0.04	-0.02	0.05	-0.05	-0.11	-0.19	-0.06	-0.01	0.01
t_{VMG_CH4}	2.68	1.31	-0.24	0.19	-2.00	0.64	-0.53	0.76	-1.08	-0.93	-1.62	-0.51	-0.05	0.07
β_{PMO_CH4}	-0.10	-0.07	-0.08	0.00	0.02	0.04	0.03	0.01	0.05	-0.43	-0.06	-0.25	-0.34	-0.39
t_{PMO_CH4}	-1.66	-1.61	-1.74	0.07	0.57	0.87	1.06	0.15	1.58	-4.65	-0.71	-2.84	-3.95	-4.56
β_{MKT_Car}	0.00	-0.01	0.01	0.01	0.02	-0.03	0.00	-0.02	-0.01	0.02	-0.02	-0.01	0.01	0.02
t_{MKT_Car}	-0.02	-0.38	0.66	0.39	1.25	-1.34	-0.33	-0.87	-0.41	0.49	-0.55	-0.33	0.36	0.67
β_{SMB_Car}	-0.05	-0.11	0.12	0.19	0.04	0.27	0.17	0.23	0.16	-0.24	0.56	0.59	0.59	0.60
t_{SMB_Car}	-1.03	-3.15	2.70	4.16	1.38	5.98	5.77	4.86	5.11	-2.62	6.96	7.48	7.56	7.77

β_{HML_Car}	0.05	0.08	-0.05	-0.04	-0.14	0.08	-0.06	0.01	-0.07	0.26	0.16	0.09	0.15	0.21
t_{HML_Car}	0.77	1.79	-0.87	-0.64	-3.65	1.44	-1.66	0.10	-1.85	2.28	1.56	0.91	1.50	2.20
β_{MOM_Car}	-0.14	-0.20	-0.07	-0.03	-0.12	-0.01	-0.05	-0.01	-0.06	0.11	0.06	-0.03	-0.04	-0.05
t_{MOM_Car}	-3.66	-8.16	-2.36	-0.93	-5.68	-0.35	-2.68	-0.18	-2.93	1.66	1.13	-0.55	-0.82	-0.97

	Trading frictions							
#	71	72	73	74	75	76	77	78
	Esba12	Qsba1	Qsba3	Qsba6	Qsba9	Qsba12	Vpin3	Vpin6
β_{MKT_CAPM}	0.08	0.02	0.04	0.07	0.07	0.07	0.17	0.15
t_{MKT_CAPM}	1.97	0.34	0.96	1.53	1.58	1.79	4.02	3.65
β_{MKT_FF3}	0.03	-0.03	-0.01	0.02	0.01	0.02	0.17	0.15
t_{MKT_FF3}	0.86	-0.65	-0.24	0.41	0.39	0.61	4.46	4.32
β_{SMB_FF3}	0.62	0.55	0.66	0.65	0.67	0.66	0.14	0.08
t_{SMB_FF3}	8.65	6.46	8.32	8.22	8.62	8.75	1.74	1.05
β_{HML_FF3}	0.26	0.11	0.21	0.26	0.32	0.35	-0.58	-0.66
t_{HML_FF3}	2.79	0.99	2.13	2.59	3.24	3.60	-5.65	-6.90
β_{MKT_FF5}	0.07	0.01	0.05	0.06	0.06	0.06	0.14	0.14
t_{MKT_FF5}	1.96	0.23	1.12	1.48	1.45	1.53	3.44	3.70
β_{SMB_FF5}	0.53	0.56	0.64	0.56	0.57	0.53	0.31	0.28
t_{SMB_FF5}	6.20	5.20	6.61	5.88	6.08	5.84	3.28	3.08
β_{HML_FF5}	0.11	0.02	0.09	0.11	0.16	0.18	-0.40	-0.48
t_{HML_FF5}	1.32	0.19	0.93	1.13	1.74	1.98	-4.15	-5.36
β_{RMW_FF5}	0.20	0.20	0.30	0.22	0.20	0.15	-0.17	-0.03
t_{RMW_FF5}	1.72	1.39	2.30	1.70	1.62	1.27	-1.33	-0.29
β_{CMA_FF5}	0.85	0.40	0.73	0.84	0.86	0.85	-0.93	-0.75
t_{CMA_FF5}	6.34	2.35	4.80	5.56	5.86	6.00	-6.26	-5.36
β_{MKT_q}	0.03	-0.04	-0.02	0.00	0.01	0.02	0.17	0.16
t_{MKT_q}	0.96	-0.99	-0.53	0.13	0.22	0.59	4.51	4.24
β_{ME_q}	0.39	0.43	0.43	0.37	0.36	0.34	0.65	0.62
t_{ME_q}	5.14	4.58	4.96	4.39	4.31	4.25	7.73	7.43
β_{I/A_q}	0.85	0.32	0.62	0.77	0.83	0.87	-0.84	-0.70
t_{I/A_q}	6.63	2.01	4.25	5.37	5.89	6.44	-5.90	-4.96
β_{ROE_q}	-0.22	-0.28	-0.32	-0.33	-0.32	-0.29	0.20	0.25
t_{ROE_q}	-2.43	-2.44	-3.10	-3.27	-3.25	-2.99	1.98	2.54
β_{MKT_CH3}	0.01	-0.05	-0.03	0.00	0.00	0.01	0.13	0.11
t_{MKT_CH3}	0.32	-1.13	-0.74	-0.11	-0.04	0.21	2.88	2.46
β_{SMB_CH3}	0.38	0.27	0.38	0.38	0.39	0.40	0.19	0.19
t_{SMB_CH3}	4.39	2.76	3.99	3.95	4.15	4.39	1.96	2.12
β_{VMG_CH3}	-0.06	-0.17	-0.10	-0.09	-0.07	-0.03	-0.29	-0.27

t_{VMG_CH3}	-0.59	-1.38	-0.90	-0.74	-0.57	-0.29	-2.46	-2.43
β_{MKT_CH4}	-0.04	-0.06	-0.07	-0.06	-0.06	-0.05	0.15	0.15
t_{MKT_CH4}	-0.98	-1.26	-1.47	-1.25	-1.36	-1.17	3.13	3.29
β_{SMB_CH4}	0.48	0.34	0.48	0.49	0.50	0.51	0.16	0.15
t_{SMB_CH4}	5.75	3.38	5.12	5.30	5.57	5.83	1.64	1.64
β_{VMG_CH4}	0.03	-0.09	0.00	0.02	0.04	0.07	-0.29	-0.27
t_{VMG_CH4}	0.32	-0.68	0.04	0.19	0.36	0.64	-2.28	-2.32
β_{PMO_CH4}	-0.40	-0.09	-0.27	-0.39	-0.44	-0.44	0.12	0.27
t_{PMO_CH4}	-4.89	-0.87	-2.95	-4.32	-4.93	-5.18	1.23	3.00
β_{MKT_Car}	0.02	-0.02	-0.01	0.01	0.01	0.02	0.19	0.17
t_{MKT_Car}	0.70	-0.52	-0.25	0.30	0.25	0.48	4.84	4.80
β_{SMB_Car}	0.60	0.57	0.65	0.64	0.65	0.64	0.20	0.14
t_{SMB_Car}	8.02	6.42	7.94	7.70	8.04	8.17	2.37	1.86
β_{HML_Car}	0.24	0.12	0.21	0.25	0.30	0.33	-0.53	-0.61
t_{HML_Car}	2.55	1.12	2.07	2.41	3.02	3.38	-5.16	-6.35
β_{MOM_Car}	-0.05	0.05	-0.01	-0.04	-0.05	-0.04	0.14	0.16
t_{MOM_Car}	-1.03	0.81	-0.11	-0.68	-0.86	-0.82	2.45	3.00

Table A6. Factor loadings of anomaly variables with significant raw spreads under different factor models: The post-2007 subsample period (July 2008 to June 2019, 132 months)

For each high-minus-low quintile with significant raw spreads, we report the factor loadings of different factor models. β_{MKT_CAPM} is the loading on the market factor in the CAPM model, and t_{MKT_CAPM} is the corresponding *t*-statistic. β_{MKT_FF3}, β_{SMB_FF3}, and β_{HML_FF3} are the loadings on the market, size, and value factors in the FF3-factor model, respectively, and t_{MKT_FF3}, t_{SMB_FF3}, *and* t_{HML_FF3} are the corresponding *t*-statistics. β_{MKT_FF5}, β_{SMB_FF5}, β_{HML_FF5}, β_{RMW_FF5}, and β_{CMA_FF5} are the loadings on the market, size, value, profitability, and investment factors in the FF5-factor model, respectively, and t_{MKT_FF5}, t_{SMB_FF5}, t_{HML_FF5}, t_{RMW_FF5}, and t_{CMA_FF5} are the corresponding *t*-statistics. β_{MKT_q}, β_{ME_q}, β_{I/A_q}, and β_{ROE_q} are the loadings on the market, size, investment, and profitability factors in the *q*-factor model, respectively, and t_{MKT_q}, t_{ME_q}, t_{I/A_q}, *and* t_{ROE_q} are the corresponding *t*-statistics. β_{MKT_CH3}, β_{SMB_CH3}, and β_{VMG_CH3} are the loadings on the market, size, and value factors in the CH3-factor model, respectively, and t_{MKT_CH3}, t_{SMB_CH3}, *and* t_{VMG_CH3} are the corresponding *t*-statistics. β_{MKT_CH4}, β_{SMB_CH4}, β_{VMG_CH4}, and β_{PMO_CH4} are the loadings on the market, size, value, and turnover factors in the CH4-factor model, respectively, and t_{MKT_CH4}, t_{SMB_CH4}, t_{VMG_CH4}, *and* t_{PMO_CH4} are the corresponding *t*-statistics. β_{MKT_Car}, β_{SMB_Car}, β_{HML_Car}, and β_{MOM_Car} are the loadings on the market, size, value, and momentum factors in the Carhart 4-factor model, respectively, and t_{MKT_Car}, t_{SMB_Car}, t_{HML_Car}, and t_{MOM_Car} are the corresponding *t*-statistics. Columns 1–7 report the results related to the momentum category; columns 8 report the results related to the value-versus-growth category; columns 9–17 report the results related to the investment category; columns 18–23 report the results for the profitability category; columns 24–30 report the results for the intangibles category; and columns 31–61 report the results for the trading frictions category. All of the symbols, variable definitions, and portfolio constructions are described in Online Appendix A and Table A1.

	Momentum							Value-versus-growth	Investment					
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Sue1	Sue3	Sue6	Sue9	Sue12	Abr6	Abr9	Sr	I/A	dPia	Noa	dLno	Cei	dNco
β_{MKT_CAPM}	-0.05	-0.04	-0.03	-0.03	-0.03	-0.08	-0.07	-0.05	-0.02	0.00	0.09	-0.09	-0.06	0.02
t_{MKT_CAPM}	-1.44	-1.14	-1.18	-1.33	-1.36	-3.21	-3.33	-1.23	-0.52	-0.17	2.61	-2.32	-1.53	0.74
β_{MKT_FF3}	-0.02	-0.01	-0.01	-0.01	-0.01	-0.05	-0.04	0.01	0.03	0.02	0.06	-0.06	-0.02	0.05
t_{MKT_FF3}	-0.76	-0.32	-0.27	-0.38	-0.23	-2.26	-2.30	0.33	1.23	0.84	1.85	-1.80	-0.71	1.54
β_{SMB_FF3}	-0.23	-0.26	-0.26	-0.24	-0.27	-0.25	-0.23	-0.60	-0.53	-0.26	0.27	-0.25	-0.29	-0.26
t_{SMB_FF3}	-2.91	-3.48	-3.80	-4.00	-4.88	-4.39	-5.03	-7.16	-7.80	-4.08	3.15	-2.98	-3.54	-3.19
β_{HML_FF3}	-0.30	-0.28	-0.20	-0.14	-0.14	-0.23	-0.15	-0.54	-0.60	-0.16	0.10	0.25	0.07	-0.13
t_{HML_FF3}	-2.89	-2.91	-2.29	-1.78	-1.99	-3.11	-2.46	-4.99	-6.89	-1.90	0.91	2.31	0.63	-1.28
β_{MKT_FF5}	0.01	0.02	0.02	0.02	0.02	-0.05	-0.04	-0.01	-0.02	-0.03	-0.02	-0.12	-0.02	0.00
t_{MKT_FF5}	0.22	0.68	0.67	0.74	1.03	-1.89	-1.76	-0.42	-1.26	-1.09	-0.72	-3.07	-0.51	-0.05
β_{SMB_FF5}	-0.24	-0.29	-0.29	-0.26	-0.25	-0.24	-0.19	-0.36	-0.33	-0.11	0.21	-0.39	-0.18	-0.10
t_{SMB_FF5}	-2.44	-3.11	-3.54	-3.46	-3.72	-3.37	-3.31	-3.81	-6.16	-1.77	2.19	-3.73	-1.74	-1.20
β_{HML_FF5}	-0.39	-0.40	-0.31	-0.23	-0.20	-0.23	-0.12	-0.18	-0.20	0.15	0.27	0.23	0.18	0.19
t_{HML_FF5}	-3.61	-3.90	-3.43	-2.83	-2.69	-2.90	-1.89	-1.78	-3.44	2.07	2.61	1.98	1.58	1.95
β_{RMW_FF5}	0.21	0.20	0.17	0.20	0.22	0.05	0.09	0.09	-0.13	-0.13	-0.58	-0.35	0.15	-0.16
t_{RMW_FF5}	1.68	1.72	1.61	2.06	2.64	0.59	1.19	0.74	-1.96	-1.59	-4.74	-2.60	1.10	-1.41
β_{CMA_FF5}	0.19	0.25	0.19	0.17	0.13	-0.05	-0.06	-0.87	-1.19	-0.87	-0.71	-0.37	-0.20	-0.97
t_{CMA_FF5}	1.24	1.76	1.54	1.51	1.31	-0.49	-0.64	-6.12	-14.81	-9.11	-4.93	-2.34	-1.29	-7.38
β_{MKT_q}	0.07	0.08	0.06	0.05	0.05	-0.03	-0.02	-0.05	-0.02	-0.02	0.01	-0.03	-0.07	-0.01
t_{MKT_q}	2.26	3.01	2.48	2.16	2.20	-1.14	-1.05	-1.60	-0.95	-0.89	0.16	-0.90	-1.92	-0.46
β_{ME_q}	0.17	0.13	0.03	-0.03	-0.06	-0.03	-0.07	-0.30	-0.13	-0.19	0.12	-0.35	-0.44	-0.24
t_{ME_q}	3.18	2.55	0.58	-0.57	-1.58	-0.62	-1.96	-4.85	-3.75	-4.39	1.81	-4.85	-6.72	-4.33

β_{I/A_q}	0.25	0.33	0.26	0.21	0.15	-0.03	-0.03	-1.12	-1.30	-0.83	-0.53	-0.09	-0.44	-1.00
t_{I/A_q}	2.12	3.09	2.56	2.25	1.74	-0.28	-0.34	-8.49	-17.40	-9.08	-3.83	-0.59	-3.15	-8.47
β_{ROE_q}	0.76	0.74	0.59	0.50	0.47	0.32	0.28	0.14	0.28	0.03	-0.39	0.26	-0.14	-0.10
t_{ROE_q}	8.82	9.37	7.78	7.26	7.43	4.36	4.87	1.38	5.00	0.46	-3.83	2.30	-1.36	-1.10
β_{MKT_CH3}	0.01	0.02	0.03	0.03	0.03	-0.05	-0.04	0.00	0.00	0.02	0.03	-0.03	-0.02	0.03
t_{MKT_CH3}	0.19	0.79	1.06	1.11	1.32	-1.96	-1.75	0.06	-0.01	0.73	0.74	-0.88	-0.48	0.83
β_{SMB_CH3}	0.24	0.21	0.10	0.04	0.01	-0.04	-0.06	-0.25	-0.14	-0.19	0.02	-0.33	-0.47	-0.27
t_{SMB_CH3}	3.65	3.36	1.82	0.87	0.18	-0.74	-1.52	-3.04	-1.88	-3.26	0.23	-4.15	-6.60	-3.78
β_{VMG_CH3}	0.47	0.49	0.42	0.37	0.35	0.11	0.12	0.06	-0.02	-0.01	-0.36	0.12	-0.15	-0.19
t_{VMG_CH3}	5.65	6.23	5.98	5.92	6.11	1.60	2.13	0.60	-0.23	-0.09	-3.88	1.23	-1.69	-2.10
β_{MKT_CH4}	0.00	0.02	0.02	0.02	0.02	-0.07	-0.07	0.03	0.03	0.01	0.02	-0.03	-0.02	0.05
t_{MKT_CH4}	0.12	0.59	0.56	0.73	0.98	-2.37	-2.92	0.60	0.80	0.40	0.54	-0.76	-0.61	1.26
β_{SMB_CH4}	0.25	0.21	0.11	0.05	0.01	-0.02	-0.03	-0.30	-0.20	-0.21	-0.02	-0.36	-0.49	-0.32
t_{SMB_CH4}	3.54	3.22	1.81	0.87	0.18	-0.27	-0.77	-3.45	-2.66	-3.58	-0.24	-4.41	-6.63	-4.38
β_{VMG_CH4}	0.50	0.50	0.42	0.37	0.34	0.10	0.10	0.04	-0.04	-0.06	-0.40	0.07	-0.22	-0.23
t_{VMG_CH4}	5.50	5.94	5.50	5.42	5.56	1.39	1.68	0.33	-0.43	-0.74	-3.94	0.61	-2.33	-2.43
β_{PMO_CH4}	-0.01	-0.03	-0.06	-0.04	-0.03	-0.08	-0.14	0.13	0.16	-0.03	-0.02	0.02	-0.02	0.10
t_{PMO_CH4}	-0.20	-0.39	-1.05	-0.71	-0.55	-1.42	-3.13	1.46	2.09	-0.54	-0.29	0.24	-0.23	1.35
β_{MKT_Car}	0.01	0.02	0.02	0.01	0.02	-0.04	-0.03	-0.01	0.04	0.02	0.04	-0.04	-0.02	0.04
t_{MKT_Car}	0.46	0.83	0.69	0.60	0.75	-1.74	-1.76	-0.31	1.30	0.60	1.07	-1.07	-0.68	1.23
β_{SMB_Car}	-0.21	-0.25	-0.24	-0.23	-0.26	-0.24	-0.23	-0.61	-0.53	-0.26	0.25	-0.24	-0.29	-0.26
t_{SMB_Car}	-2.94	-3.54	-3.82	-4.04	-4.98	-4.35	-4.99	-7.42	-7.75	-4.11	3.12	-2.93	-3.53	-3.24
β_{HML_Car}	-0.17	-0.17	-0.11	-0.06	-0.07	-0.19	-0.11	-0.61	-0.59	-0.17	0.01	0.34	0.07	-0.16
t_{HML_Car}	-1.73	-1.81	-1.33	-0.79	-1.00	-2.55	-1.89	-5.58	-6.52	-2.06	0.09	3.06	0.61	-1.52
β_{MOM_Car}	0.32	0.28	0.21	0.19	0.17	0.09	0.08	-0.18	0.03	-0.05	-0.22	0.20	0.00	-0.07
t_{MOM_Car}	5.15	4.76	3.91	4.02	4.01	1.90	2.01	-2.56	0.46	-0.85	-3.18	2.95	0.03	-1.10

	Investment			Profitability						Intangibles				
#	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	dNca	dFin	dFnl	dRoe1	dRoe3	dRoe6	dRoa1	dRoa3	dRoa6	Tanq12	Cta12	Ala^{q}1	Ala^{q}3	Ala^{q}6
β_{MKT_CAPM}	0.03	-0.07	0.07	-0.06	-0.04	-0.02	-0.05	-0.02	-0.02	0.03	0.05	0.07	0.08	0.08
t_{MKT_CAPM}	0.92	-3.06	3.15	-1.62	-1.07	-0.66	-1.24	-0.66	-0.61	0.79	1.22	1.72	1.90	2.12
β_{MKT_FF3}	0.06	-0.08	0.09	-0.05	-0.03	-0.02	-0.04	-0.02	-0.01	0.00	0.05	0.07	0.07	0.08
t_{MKT_FF3}	1.80	-3.48	4.01	-1.40	-0.90	-0.55	-1.06	-0.48	-0.42	0.19	1.62	2.25	2.54	2.76
β_{SMB_FF3}	-0.29	0.10	-0.19	-0.09	-0.06	-0.04	-0.07	-0.07	-0.07	0.20	0.01	-0.03	-0.03	-0.01
t_{SMB_FF3}	-3.48	1.75	-3.42	-0.92	-0.64	-0.46	-0.74	-0.80	-0.88	3.20	0.18	-0.40	-0.47	-0.08
β_{HML_FF3}	-0.16	0.00	-0.15	-0.23	-0.14	-0.12	-0.20	-0.20	-0.19	-0.57	-0.88	-0.80	-0.77	-0.72
t_{HML_FF3}	-1.45	0.01	-2.09	-1.88	-1.21	-1.15	-1.63	-1.76	-1.81	-6.92	-10.01	-8.24	-8.46	-8.17

β_{MKT_FF5}	0.03	-0.02	0.03	-0.04	-0.02	-0.02	-0.03	-0.01	-0.01	0.01	0.07	0.09	0.09	0.09
t_{MKT_FF5}	0.94	-0.76	1.47	-0.91	-0.59	-0.46	-0.65	-0.18	-0.19	0.29	2.33	2.73	3.03	3.00
β_{SMB_FF5}	-0.06	0.12	-0.16	-0.14	-0.17	-0.14	-0.16	-0.19	-0.16	0.19	0.09	0.13	0.14	0.14
t_{SMB_FF5}	-0.65	2.00	-2.62	-1.18	-1.49	-1.37	-1.36	-1.72	-1.55	2.44	1.16	1.47	1.67	1.75
β_{HML_FF5}	0.20	-0.14	0.05	-0.33	-0.29	-0.23	-0.34	-0.37	-0.30	-0.57	-0.82	-0.64	-0.60	-0.56
t_{HML_FF5}	1.99	-2.04	0.80	-2.52	-2.33	-2.08	-2.56	-2.97	-2.68	-6.50	-9.45	-6.56	-6.63	-6.27
β_{RMW_FF5}	0.02	0.36	-0.30	0.06	-0.01	-0.05	0.02	-0.01	-0.01	-0.03	0.16	0.20	0.19	0.14
t_{RMW_FF5}	0.20	4.45	-3.81	0.42	-0.07	-0.38	0.14	-0.10	-0.07	-0.27	1.54	1.73	1.84	1.38
β_{CMA_FF5}	-0.93	0.56	-0.72	0.08	0.14	0.05	0.20	0.24	0.14	-0.12	-0.18	-0.34	-0.37	-0.35
t_{CMA_FF5}	-6.81	5.95	-7.79	0.45	0.81	0.31	1.13	1.45	0.89	-0.99	-1.54	-2.56	-3.00	-2.87
β_{MKT_q}	0.00	-0.03	0.03	0.05	0.07	0.07	0.07	0.09	0.08	0.02	0.06	0.10	0.10	0.10
t_{MKT_q}	0.00	-1.23	1.57	1.55	2.29	2.35	2.18	2.85	2.61	0.49	1.72	2.70	2.91	2.96
β_{ME_q}	-0.26	0.19	-0.17	0.32	0.27	0.24	0.32	0.30	0.26	0.63	0.68	0.61	0.58	0.56
t_{ME_q}	-4.43	4.53	-4.30	4.95	4.46	4.21	4.97	5.02	4.62	10.17	10.19	9.11	9.36	9.27
β_{I/A_q}	-1.05	0.45	-0.69	0.28	0.42	0.32	0.45	0.51	0.38	-0.21	-0.42	-0.43	-0.48	-0.46
t_{I/A_q}	-8.56	5.16	-8.25	2.07	3.29	2.70	3.32	4.00	3.21	-1.64	-2.96	-3.07	-3.64	-3.57
β_{ROE_q}	-0.05	0.24	-0.16	0.81	0.74	0.62	0.82	0.76	0.65	0.20	0.42	0.50	0.48	0.42
t_{ROE_q}	-0.53	3.63	-2.61	8.05	7.81	7.01	8.13	7.99	7.45	2.07	4.06	4.82	4.94	4.43
β_{MKT_CH3}	0.05	-0.07	0.08	-0.03	-0.01	0.01	-0.01	0.01	0.02	-0.06	-0.03	0.01	0.02	0.03
t_{MKT_CH3}	1.22	-2.87	3.03	-0.82	-0.17	0.19	-0.20	0.39	0.49	-1.63	-0.72	0.32	0.52	0.68
β_{SMB_CH3}	-0.29	0.17	-0.18	0.27	0.25	0.24	0.29	0.29	0.27	0.37	0.44	0.45	0.41	0.38
t_{SMB_CH3}	-3.83	3.43	-3.61	3.36	3.41	3.54	3.66	3.96	4.08	5.31	5.39	5.49	5.22	4.99
β_{VMG_CH3}	-0.16	0.13	-0.14	0.35	0.36	0.33	0.42	0.42	0.40	-0.27	-0.19	-0.04	-0.06	-0.10
t_{VMG_CH3}	-1.74	2.08	-2.18	3.45	3.85	3.89	4.19	4.48	4.72	-3.03	-1.80	-0.38	-0.60	-1.01
β_{MKT_CH4}	0.06	-0.10	0.10	-0.05	-0.02	-0.01	-0.03	0.00	0.00	-0.04	0.00	0.04	0.05	0.05
t_{MKT_CH4}	1.52	-3.73	3.55	-1.06	-0.59	-0.33	-0.61	-0.02	-0.01	-1.04	0.03	0.88	1.06	1.20
β_{SMB_CH4}	-0.33	0.22	-0.22	0.28	0.26	0.24	0.31	0.30	0.28	0.38	0.44	0.45	0.41	0.37
t_{SMB_CH4}	-4.24	4.44	-4.35	3.33	3.38	3.46	3.69	3.89	4.01	5.21	5.17	5.20	4.98	4.74
β_{VMG_CH4}	-0.21	0.15	-0.16	0.37	0.37	0.33	0.44	0.44	0.41	-0.20	-0.10	0.04	0.01	-0.03
t_{VMG_CH4}	-2.03	2.35	-2.46	3.35	3.66	3.63	4.04	4.29	4.50	-2.11	-0.92	0.34	0.12	-0.28
β_{PMO_CH4}	0.08	-0.13	0.10	-0.07	-0.09	-0.09	-0.10	-0.08	-0.08	0.07	0.13	0.11	0.11	0.10
t_{PMO_CH4}	1.09	-2.62	1.90	-0.83	-1.15	-1.32	-1.16	-1.02	-1.20	1.00	1.57	1.31	1.30	1.31
β_{MKT_Car}	0.05	-0.07	0.08	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.09	0.11	0.12	0.12
t_{MKT_Car}	1.43	-3.07	3.46	0.03	0.51	0.64	0.49	1.04	0.83	1.36	3.53	3.85	4.33	4.45
β_{SMB_Car}	-0.30	0.10	-0.20	-0.06	-0.03	-0.02	-0.04	-0.05	-0.05	0.22	0.03	-0.01	-0.02	0.01
t_{SMB_Car}	-3.55	1.81	-3.53	-0.76	-0.44	-0.27	-0.55	-0.62	-0.72	3.67	0.52	-0.18	-0.25	0.18
β_{HML_Car}	-0.19	0.02	-0.19	-0.05	0.03	0.01	-0.01	-0.03	-0.06	-0.47	-0.74	-0.67	-0.64	-0.60
t_{HML_Car}	-1.74	0.33	-2.51	-0.43	0.25	0.07	-0.07	-0.30	-0.58	-6.00	-9.52	-7.42	-7.69	-7.36

β_{MOM_Car}	-0.09	0.06	-0.09	0.44	0.40	0.30	0.46	0.42	0.32	0.24	0.34	0.33	0.33	0.30
t_{MOM_Car}	-1.31	1.24	-1.85	6.39	6.10	4.95	6.81	6.37	5.18	4.74	6.91	5.73	6.23	5.88

	Intangibles		Trading frictions											
#	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Ala^q9	Ala^q12	Me	Ivch31	Svr1	β^D1	$\beta^{PS}3$	$\beta^{PS}6$	Rtv1	Rtv3	Rtv6	Rtv9	Rtv12	Pps1
β_{MKT_CAPM}	0.09	0.09	-0.14	0.30	-0.02	0.41	0.09	0.09	0.01	-0.01	-0.02	-0.03	-0.03	0.13
t_{MKT_CAPM}	2.22	2.28	-1.95	5.69	-0.48	7.77	3.60	3.45	0.21	-0.11	-0.38	-0.52	-0.55	2.11
β_{MKT_FF3}	0.08	0.08	0.01	0.24	-0.02	0.37	0.09	0.08	0.13	0.11	0.09	0.08	0.08	0.18
t_{MKT_FF3}	2.89	3.02	0.51	5.58	-0.60	7.10	3.47	3.28	4.87	4.26	3.81	3.83	3.99	3.62
β_{SMB_FF3}	0.02	0.01	-1.38	0.55	0.03	0.33	0.00	0.02	-1.06	-1.04	-1.05	-1.07	-1.09	-0.56
t_{SMB_FF3}	0.23	0.22	-43.62	5.21	0.27	2.59	0.06	0.29	-16.59	-17.25	-18.24	-20.01	-21.30	-4.68
β_{HML_FF3}	-0.72	-0.73	0.05	-0.16	-0.23	0.12	0.05	0.07	0.15	0.11	0.09	0.03	-0.01	-1.40
t_{HML_FF3}	-8.38	-8.61	1.32	-1.18	-1.79	0.70	0.61	0.82	1.76	1.42	1.17	0.38	-0.20	-9.02
β_{MKT_FF5}	0.09	0.09	-0.01	0.22	-0.08	0.34	0.07	0.07	0.06	0.03	0.02	0.01	0.01	0.14
t_{MKT_FF5}	3.12	3.13	-0.74	4.42	-1.90	5.72	2.48	2.43	2.20	1.27	0.63	0.53	0.63	2.90
β_{SMB_FF5}	0.16	0.15	-1.42	0.45	-0.19	0.41	-0.07	-0.06	-1.14	-1.14	-1.15	-1.17	-1.18	-0.45
t_{SMB_FF5}	2.00	1.95	-29.51	3.35	-1.54	2.52	-0.87	-0.80	-14.56	-15.83	-16.79	-17.72	-18.20	-3.47
β_{HML_FF5}	-0.57	-0.57	0.04	-0.18	-0.29	0.30	0.02	0.02	0.23	0.19	0.17	0.10	0.06	-1.13
t_{HML_FF5}	-6.49	-6.66	0.78	-1.23	-2.18	1.72	0.19	0.19	2.68	2.41	2.18	1.42	0.86	-7.90
β_{RMW_FF5}	0.13	0.11	0.05	-0.28	-0.49	-0.22	-0.15	-0.14	-0.27	-0.33	-0.34	-0.32	-0.31	-0.11
t_{RMW_FF5}	1.31	1.08	0.85	-1.58	-3.11	-1.06	-1.50	-1.38	-2.70	-3.52	-3.88	-3.82	-3.68	-0.65
β_{CMA_FF5}	-0.35	-0.37	0.04	-0.18	-0.30	-0.48	0.03	0.07	-0.45	-0.48	-0.47	-0.42	-0.38	-1.12
t_{CMA_FF5}	-2.90	-3.18	0.57	-0.89	-1.65	-2.00	0.28	0.62	-3.78	-4.36	-4.50	-4.22	-3.91	-5.75
β_{MKT_q}	0.09	0.09	-0.01	0.23	-0.06	0.36	0.08	0.07	0.09	0.07	0.05	0.03	0.03	0.18
t_{MKT_q}	2.96	2.92	-0.69	4.65	-1.41	6.29	2.72	2.60	2.98	2.30	1.66	1.29	1.13	3.45
β_{ME_q}	0.58	0.58	-1.49	0.61	0.12	0.26	-0.08	-0.08	-1.26	-1.22	-1.21	-1.20	-1.19	0.52
t_{ME_q}	9.65	9.66	-38.10	6.59	1.39	2.44	-1.54	-1.55	-22.19	-22.66	-23.33	-24.05	-24.33	5.47
β_{I/A_q}	-0.46	-0.48	-0.06	-0.10	-0.25	-0.21	0.10	0.14	-0.37	-0.38	-0.39	-0.38	-0.38	-1.39
t_{I/A_q}	-3.61	-3.81	-0.76	-0.50	-1.43	-0.94	0.93	1.26	-3.05	-3.34	-3.51	-3.64	-3.69	-6.83
β_{ROE_q}	0.39	0.37	0.28	-0.22	-0.18	-0.16	-0.15	-0.16	0.11	0.10	0.08	0.06	0.04	0.86
t_{ROE_q}	4.20	3.98	4.51	-1.52	-1.35	-0.98	-1.87	-2.00	1.18	1.16	0.95	0.71	0.51	5.76
β_{MKT_CH3}	0.03	0.03	0.10	0.16	-0.09	0.39	0.09	0.09	0.19	0.16	0.14	0.13	0.13	0.06
t_{MKT_CH3}	0.72	0.75	3.27	3.43	-2.17	6.74	3.27	3.17	4.97	4.30	3.94	3.81	3.83	0.91
β_{SMB_CH3}	0.38	0.38	-1.13	0.19	0.05	0.35	0.00	0.00	-1.05	-1.01	-0.99	-0.98	-0.97	0.24
t_{SMB_CH3}	5.12	5.11	-18.06	1.98	0.58	3.02	0.02	0.04	-13.90	-13.67	-13.94	-14.26	-14.37	1.82
β_{VMG_CH3}	-0.11	-0.12	0.53	-0.72	-0.33	0.06	0.02	0.03	0.17	0.16	0.17	0.17	0.18	-0.25
t_{VMG_CH3}	-1.15	-1.24	6.61	-5.98	-3.09	0.44	0.31	0.44	1.79	1.73	1.83	1.92	2.09	-1.47
β_{MKT_CH4}	0.05	0.05	0.11	0.06	-0.04	0.29	0.10	0.10	0.14	0.14	0.14	0.14	0.15	0.11

t_{MKT_CH4}	1.18	1.20	3.15	1.33	-0.90	4.91	3.07	3.12	3.58	3.54	3.67	3.88	4.09	1.44
β_{SMB_CH4}	0.38	0.38	-1.18	0.28	0.00	0.44	0.01	0.00	-1.08	-1.05	-1.06	-1.05	-1.03	0.21
t_{SMB_CH4}	4.88	4.88	-17.82	3.19	-0.02	3.91	0.10	0.03	-14.17	-14.02	-14.55	-15.03	-15.19	1.53
β_{VMG_CH4}	-0.04	-0.05	0.39	-0.76	-0.30	0.04	0.03	0.04	-0.02	0.00	0.02	0.03	0.05	-0.19
t_{VMG_CH4}	-0.42	-0.50	4.47	-6.53	-2.65	0.27	0.38	0.53	-0.16	-0.02	0.18	0.36	0.58	-1.04
β_{PMO_CH4}	0.09	0.09	0.06	-0.48	0.24	-0.47	0.01	0.03	-0.19	-0.07	0.02	0.08	0.10	0.20
t_{PMO_CH4}	1.16	1.15	0.89	-5.41	2.82	-4.20	0.20	0.55	-2.47	-0.87	0.28	1.10	1.54	1.47
β_{MKT_Car}	0.12	0.12	-0.01	0.28	-0.03	0.33	0.08	0.08	0.13	0.10	0.08	0.07	0.07	0.26
t_{MKT_Car}	4.60	4.67	-0.43	6.38	-0.61	6.32	3.08	2.90	4.58	3.96	3.40	3.28	3.29	5.94
β_{SMB_Car}	0.03	0.03	-1.39	0.56	0.03	0.31	0.00	0.01	-1.06	-1.05	-1.05	-1.08	-1.09	-0.53
t_{SMB_Car}	0.53	0.51	-46.00	5.53	0.26	2.53	0.01	0.24	-16.54	-17.22	-18.32	-20.28	-21.94	-5.21
β_{HML_Car}	-0.60	-0.62	0.01	-0.05	-0.23	-0.03	0.02	0.04	0.13	0.10	0.06	-0.01	-0.06	-1.14
t_{HML_Car}	-7.58	-7.81	0.35	-0.36	-1.77	-0.16	0.28	0.49	1.57	1.20	0.81	-0.12	-0.90	-8.45
β_{MOM_Car}	0.30	0.28	-0.10	0.27	-0.01	-0.35	-0.06	-0.06	-0.03	-0.03	-0.06	-0.09	-0.12	0.62
t_{MOM_Car}	5.88	5.70	-3.82	3.18	-0.15	-3.38	-1.17	-1.17	-0.51	-0.63	-1.24	-1.91	-2.74	7.26

Trading frictions

#	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	Pps3	Pps6	Ami1	Ami3	Ami6	Ami9	Ami12	Ts1	Srev	Esba1	Esba3	Esba6	Esba9	Esba12
β_{MKT_CAPM}	0.10	0.06	0.09	0.10	0.10	0.11	0.11	0.01	0.04	0.08	0.10	0.12	0.12	0.11
t_{MKT_CAPM}	1.57	1.07	1.30	1.36	1.48	1.61	1.60	0.35	0.75	1.39	1.86	2.24	2.18	2.07
β_{MKT_FF3}	0.14	0.11	-0.04	-0.03	-0.03	-0.02	-0.02	0.05	0.07	0.00	0.02	0.03	0.03	0.02
t_{MKT_FF3}	3.13	2.48	-1.56	-1.60	-1.38	-1.03	-1.05	1.37	1.33	-0.06	0.34	0.73	0.64	0.52
β_{SMB_FF3}	-0.56	-0.52	1.18	1.20	1.20	1.21	1.21	-0.34	-0.26	0.79	0.85	0.87	0.88	0.87
t_{SMB_FF3}	-5.05	-4.99	20.70	22.64	24.37	24.67	24.56	-3.85	-2.02	6.59	7.41	7.83	7.99	7.96
β_{HML_FF3}	-1.46	-1.43	-0.22	-0.20	-0.17	-0.14	-0.13	-0.02	0.20	0.56	0.68	0.78	0.83	0.84
t_{HML_FF3}	-10.21	-10.52	-3.01	-2.99	-2.68	-2.25	-2.07	-0.14	1.24	3.60	4.58	5.42	5.89	5.96
β_{MKT_FF5}	0.11	0.08	0.02	0.02	0.02	0.03	0.03	0.06	0.09	0.12	0.16	0.18	0.17	0.16
t_{MKT_FF5}	2.65	2.14	0.62	0.74	0.96	1.17	1.09	1.39	1.57	2.42	3.17	3.72	3.60	3.37
β_{SMB_FF5}	-0.45	-0.39	1.25	1.27	1.26	1.26	1.25	-0.28	-0.27	0.91	0.97	0.95	0.93	0.91
t_{SMB_FF5}	-3.83	-3.62	17.20	18.72	19.55	19.23	18.80	-2.54	-1.65	6.46	7.18	7.35	7.23	7.00
β_{HML_FF5}	-1.22	-1.19	-0.28	-0.25	-0.23	-0.20	-0.20	0.03	0.11	0.33	0.41	0.46	0.50	0.50
t_{HML_FF5}	-9.47	-9.93	-3.45	-3.35	-3.15	-2.80	-2.69	0.26	0.63	2.10	2.74	3.24	3.52	3.49
β_{RMW_FF5}	-0.04	0.01	0.17	0.18	0.16	0.14	0.13	0.13	0.17	0.71	0.77	0.77	0.75	0.71
t_{RMW_FF5}	-0.27	0.07	1.87	2.04	1.90	1.68	1.54	0.91	0.80	3.92	4.46	4.62	4.51	4.28
β_{CMA_FF5}	-0.98	-0.96	0.27	0.26	0.25	0.23	0.23	-0.14	0.29	1.06	1.16	1.21	1.20	1.18
t_{CMA_FF5}	-5.56	-5.87	2.47	2.50	2.58	2.36	2.27	-0.85	1.15	4.94	5.70	6.17	6.14	6.01
β_{MKT_q}	0.14	0.11	-0.01	0.00	0.01	0.02	0.02	0.04	0.09	0.02	0.06	0.10	0.10	0.11
t_{MKT_q}	2.75	2.32	-0.25	-0.07	0.31	0.70	0.72	1.12	1.53	0.35	1.08	1.87	2.06	2.12

β_{ME_q}	0.55	0.58	1.42	1.43	1.41	1.41	1.40	-0.35	-0.38	0.40	0.40	0.38	0.36	0.36
t_{ME_q}	5.93	6.67	25.70	27.19	28.01	27.61	26.95	-4.73	-3.57	3.91	4.04	3.94	3.79	3.82
β_{I/A_q}	-1.32	-1.27	0.14	0.16	0.19	0.20	0.21	-0.14	0.28	0.72	0.91	1.07	1.14	1.17
t_{I/A_q}	-6.70	-6.85	1.17	1.40	1.74	1.86	1.87	-0.91	1.24	3.32	4.37	5.27	5.63	5.83
β_{ROE_q}	0.83	0.85	-0.13	-0.12	-0.11	-0.10	-0.10	0.10	0.09	-0.41	-0.38	-0.29	-0.22	-0.17
t_{ROE_q}	5.70	6.24	-1.54	-1.47	-1.44	-1.28	-1.21	0.89	0.54	-2.58	-2.43	-1.93	-1.50	-1.15
β_{MKT_CH3}	0.03	0.01	-0.13	-0.13	-0.12	-0.11	-0.11	0.09	0.09	0.02	0.06	0.09	0.10	0.09
t_{MKT_CH3}	0.41	0.11	-3.53	-3.55	-3.42	-3.21	-3.24	2.33	1.69	0.32	1.02	1.59	1.64	1.61
β_{SMB_CH3}	0.29	0.36	1.05	1.08	1.07	1.06	1.05	-0.24	-0.56	0.25	0.28	0.31	0.31	0.33
t_{SMB_CH3}	2.23	2.87	14.21	15.10	15.53	15.63	15.48	-3.07	-5.14	2.06	2.35	2.64	2.70	2.88
β_{VMG_CH3}	-0.21	-0.08	-0.47	-0.45	-0.44	-0.45	-0.46	0.24	-0.16	-0.19	-0.06	0.04	0.08	0.12
t_{VMG_CH3}	-1.26	-0.52	-5.04	-4.94	-5.10	-5.17	-5.32	2.45	-1.12	-1.23	-0.42	0.24	0.55	0.83
β_{MKT_CH4}	0.07	0.03	-0.12	-0.12	-0.12	-0.12	-0.12	0.04	0.02	-0.03	-0.02	0.00	-0.01	-0.01
t_{MKT_CH4}	0.98	0.49	-2.94	-3.15	-3.28	-3.24	-3.37	0.91	0.33	-0.39	-0.31	-0.06	-0.14	-0.18
β_{SMB_CH4}	0.26	0.34	1.10	1.12	1.12	1.12	1.10	-0.20	-0.49	0.35	0.42	0.46	0.46	0.47
t_{SMB_CH4}	1.90	2.57	14.13	15.04	15.57	15.77	15.71	-2.48	-4.26	2.81	3.55	4.02	4.10	4.26
β_{VMG_CH4}	-0.15	-0.03	-0.32	-0.30	-0.31	-0.31	-0.33	0.18	-0.25	-0.14	-0.03	0.05	0.09	0.12
t_{VMG_CH4}	-0.83	-0.16	-3.19	-3.09	-3.29	-3.40	-3.59	1.73	-1.66	-0.89	-0.21	0.36	0.59	0.86
β_{PMO_CH4}	0.20	0.12	0.03	-0.01	-0.05	-0.08	-0.09	-0.24	-0.33	-0.22	-0.39	-0.47	-0.50	-0.50
t_{PMO_CH4}	1.45	0.92	0.38	-0.12	-0.75	-1.11	-1.33	-3.11	-2.94	-1.81	-3.31	-4.14	-4.50	-4.54
β_{MKT_Car}	0.22	0.17	-0.02	-0.01	-0.01	0.00	0.01	0.04	0.09	0.00	0.02	0.04	0.04	0.04
t_{MKT_Car}	5.58	4.30	-0.69	-0.67	-0.33	0.18	0.27	1.03	1.76	0.08	0.41	0.90	0.88	0.82
β_{SMB_Car}	-0.53	-0.50	1.19	1.20	1.21	1.22	1.22	-0.34	-0.25	0.79	0.86	0.88	0.88	0.87
t_{SMB_Car}	-5.74	-5.40	21.79	24.04	26.32	27.25	27.64	-3.91	-1.95	6.59	7.39	7.84	8.03	8.03
β_{HML_Car}	-1.21	-1.23	-0.15	-0.14	-0.10	-0.06	-0.05	-0.05	0.29	0.58	0.70	0.81	0.87	0.89
t_{HML_Car}	-9.92	-9.98	-2.11	-2.04	-1.62	-1.05	-0.77	-0.44	1.69	3.61	4.50	5.43	5.96	6.10
β_{MOM_Car}	0.60	0.49	0.17	0.17	0.18	0.20	0.21	-0.09	0.20	0.06	0.03	0.07	0.10	0.12
t_{MOM_Car}	7.73	6.32	3.62	3.92	4.51	5.18	5.69	-1.20	1.88	0.55	0.33	0.77	1.03	1.28

	Trading frictions				
#	57	58	59	60	61
	Qsba1	Qsba3	Qsba6	Qsba9	Qsba12
β_{MKT_CAPM}	0.06	0.08	0.10	0.09	0.09
t_{MKT_CAPM}	0.94	1.41	1.76	1.66	1.56
β_{MKT_FF3}	-0.03	-0.01	0.01	0.01	0.00
t_{MKT_FF3}	-0.53	-0.12	0.24	0.11	0.00
β_{SMB_FF3}	0.83	0.87	0.88	0.88	0.87
t_{SMB_FF3}	6.45	7.10	7.41	7.57	7.53

β_{HML_FF3}	0.61	0.73	0.85	0.87	0.89
t_{HML_FF3}	3.71	4.63	5.49	5.82	5.94
β_{MKT_FF5}	0.12	0.15	0.17	0.16	0.15
t_{MKT_FF5}	2.12	2.80	3.39	3.23	3.03
β_{SMB_FF5}	0.91	0.97	0.97	0.94	0.92
t_{SMB_FF5}	5.93	6.71	6.96	6.92	6.71
β_{HML_FF5}	0.29	0.41	0.48	0.51	0.51
t_{HML_FF5}	1.71	2.55	3.16	3.38	3.41
β_{RMW_FF5}	0.80	0.85	0.87	0.84	0.80
t_{RMW_FF5}	4.05	4.56	4.90	4.79	4.59
β_{CMA_FF5}	1.18	1.23	1.32	1.29	1.28
t_{CMA_FF5}	5.12	5.63	6.28	6.26	6.18
β_{MKT_q}	0.01	0.04	0.08	0.08	0.09
t_{MKT_q}	0.15	0.74	1.44	1.55	1.65
β_{ME_q}	0.41	0.38	0.34	0.33	0.33
t_{ME_q}	3.76	3.63	3.33	3.30	3.30
β_{I/A_q}	0.87	1.00	1.15	1.19	1.24
t_{I/A_q}	3.78	4.48	5.29	5.59	5.83
β_{ROE_q}	-0.37	-0.37	-0.30	-0.23	-0.17
t_{ROE_q}	-2.18	-2.23	-1.84	-1.47	-1.09
β_{MKT_CH3}	0.01	0.05	0.08	0.08	0.08
t_{MKT_CH3}	0.16	0.79	1.33	1.30	1.30
β_{SMB_CH3}	0.31	0.30	0.30	0.31	0.32
t_{SMB_CH3}	2.41	2.37	2.40	2.50	2.65
β_{VMG_CH3}	-0.05	0.02	0.09	0.12	0.17
t_{VMG_CH3}	-0.28	0.11	0.60	0.79	1.08
β_{MKT_CH4}	-0.03	-0.03	-0.02	-0.02	-0.03
t_{MKT_CH4}	-0.37	-0.43	-0.24	-0.40	-0.43
β_{SMB_CH4}	0.41	0.44	0.45	0.46	0.47
t_{SMB_CH4}	3.11	3.50	3.72	3.83	3.98
β_{VMG_CH4}	0.02	0.06	0.11	0.13	0.17
t_{VMG_CH4}	0.10	0.34	0.71	0.84	1.12
β_{PMO_CH4}	-0.18	-0.38	-0.48	-0.51	-0.51
t_{PMO_CH4}	-1.40	-3.05	-3.94	-4.28	-4.36
β_{MKT_Car}	-0.02	0.00	0.02	0.02	0.02

t_{MKT_Car}	-0.31	-0.03	0.41	0.37	0.33
β_{SMB_Car}	0.83	0.87	0.89	0.89	0.88
t_{SMB_Car}	6.47	7.09	7.42	7.61	7.61
β_{HML_Car}	0.65	0.75	0.88	0.92	0.94
t_{HML_Car}	3.79	4.54	5.49	5.91	6.11
β_{MOM_Car}	0.09	0.04	0.07	0.11	0.13
t_{MOM_Car}	0.81	0.35	0.73	1.07	1.35

Table A7. Number of significant anomaly variables and overall performance of different factor models under six different portfolio construction procedures

This table reports the number of significant anomaly variables and overall performance of different factor models under six different portfolio construction procedures (Mainboard-VW, All-VW, Mainboard-EW, All-EW, Shanghai Mainboard-VW, Mainboard-VW Non-microcaps). We report the results in two different sample periods: (i) the whole sample period (July 2000 to June 2019) and (ii) the post-2007 subsample period (July 2008 to June 2019). The first column reports the total number of anomaly variables under each procedure. For each sample period, we report the number of anomaly variables with significant raw return spreads, CAPM alphas, FF3-factor alphas, FF5-factor alphas, q-factor alphas, CH3-factor alphas, CH4-factor alphas, and Carhart 4-factor alphas in column (1) through column (8), respectively. Panel A reports the results from traditional single hypothesis testing (SHT) at the 5% significance level with absolute t-statistic above 1.96, and Panel B reports the results of multiple hypothesis testing (MHT) at the 5% significance level with absolute t-statistic above 2.78.

		The whole sample period: 2000/07-2019/06								The post-2007 subsample period: 2008/07-2019/06							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: SHT ($\|t\| \geq 1.96$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	q Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	q Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Mainboard-VW	469	78	74	61	66	58	36	41	67	61	58	44	44	16	27	28	43
All-VW	469	79	74	59	63	57	36	41	67	58	57	44	44	16	25	28	44
Mainboard-EW	469	220	215	147	193	195	168	170	179	169	161	118	132	118	123	118	121
All-EW	469	223	217	151	195	203	170	171	184	167	163	117	127	122	127	115	120
Shanghai Mainboard-VW	469	79	73	60	64	59	39	43	66	59	53	42	43	14	27	28	43
Mainboard-VW Non-microcaps	469	61	57	51	56	42	28	27	52	49	45	41	39	13	21	23	42
Panel B: MHT ($\|t\| \geq 2.78$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	q Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	q Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Mainboard-VW	469	29	27	22	25	21	17	18	27	22	22	20	16	11	15	16	21
All-VW	469	27	25	23	24	18	13	16	24	23	23	21	18	9	15	15	21
Mainboard-EW	469	139	124	91	111	122	93	105	99	105	100	73	72	72	68	59	75
All-EW	469	142	128	89	113	124	94	110	100	103	100	69	75	69	64	59	72
Shanghai Mainboard-VW	469	32	30	25	26	22	20	22	27	21	21	20	16	10	15	15	20
Mainboard-VW Non-microcaps	469	21	21	15	17	14	14	15	18	21	21	17	13	9	11	10	17

Table A8. Number of significant anomaly variables and overall performance of different factor models for the Non-microcaps subsample with Mainboard-VW procedure

This table reports the number of significant anomaly variables and overall performance of different factor models for the Non-microcaps subsample, with the Mainboard-VW procedure (Mainboard breakpoints and value-weighted returns in portfolio sorts). At the portfolio formation, we follow HXZ (2020) to use the 20th percentile of the Mainboard size breakpoint to define micro stocks in the Chinese A-shares. Then we exclude microcaps after forming quintiles but before calculating value-weighted quintile returns. We report the results in two different sample periods: (i) the whole sample period (July 2000 to June 2019) and (ii) the post-2007 subsample period (July 2008 to June 2019). The first column reports the total number in the corresponding category. For each period, we report the number of anomaly variables with significant raw return spreads, CAPM alphas, FF3-factor alphas, FF5-factor alphas, *q*-factor alphas, CH3-factor alphas, CH4-factor alphas, and Carhart 4-factor alphas in column (1) through column (8), respectively. Panel A reports the results from traditional single hypothesis testing (SHT) at the 5% significance level with absolute *t*-statistic above 1.96, and Panel B reports the results of multiple hypothesis testing (MHT) at the 5% significance level with absolute *t*-statistic above 2.78.

Mainboard-VW Non-microcaps		The whole sample period: 2000/07-2019/06								The post-2007 subsample period: 2008/07-2019/06							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: SHT ($\|t\| \geq 1.96$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	6	6	6	6	1	2	2	5	8	8	8	8	1	3	3	8
Value-versus-growth	68	2	1	1	1	2	1	1	1	0	0	0	0	0	0	0	0
Investment	36	1	1	1	1	0	0	0	1	6	6	2	3	0	0	0	2
Profitability	94	9	9	9	9	4	0	1	7	6	6	6	6	0	0	0	6
Intangibles	83	4	3	3	3	2	0	0	3	6	5	6	6	0	0	0	6
Trading frictions	143	39	37	31	36	33	25	23	35	23	20	19	16	12	18	20	20
Total	469	61	57	51	56	42	28	27	52	49	45	41	39	13	21	23	42
Panel B: MHT ($\|t\| \geq 2.78$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	2	2	2	2	0	0	0	1	3	3	3	3	0	0	0	3
Value-versus-growth	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investment	36	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Profitability	94	2	2	2	2	0	0	0	1	2	2	2	2	0	0	0	2
Intangibles	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trading frictions	143	17	17	11	13	14	14	15	16	15	15	12	8	9	11	10	12
Total	469	21	21	15	17	14	14	15	18	21	21	17	13	9	11	10	17

Table A9. Number of significant anomaly variables and overall performance of different factor models under the Shanghai Mainboard-VW procedure

This table reports the number of significant anomaly variables and overall performance of different factor models under the Shanghai Mainboard-VW procedure (Shanghai Mainboard breakpoints and value-weighted returns in portfolio sorts). We report the results in two different sample periods: (i) the whole sample period (July 2000 to June 2019) and (ii) the post-2007 subsample period (July 2008 to June 2019). The first column reports the total number in the corresponding category. For each period, we report the number of anomaly variables with significant raw return spreads, CAPM alpha, FF3-factor alpha, FF5-factor alpha, *q*-factor alpha, CH3-factor alpha, CH4-factor alpha, and Carhart 4-factor alpha in column (1) through column (8), respectively. Panel A reports the results of traditional from single hypothesis testing at the 5% significance level with absolute *t*-statistic above 1.96, and Panel B reports the results of multiple hypothesis testing at the 5% significance level with absolute *t*-statistic above 2.78.

Shanghai Mainboard-VW		The whole sample period: 2000/07-2019/06								The post-2007 subsample period: 2008/07-2019/06							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: SHT ($\|t\| \geq 1.96$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	6	6	6	6	2	2	2	5	5	5	5	5	0	0	0	5
Value-versus-growth	68	7	5	1	1	7	3	5	3	2	0	0	0	0	0	1	0
Investment	36	3	2	1	1	1	0	0	1	7	7	2	3	0	0	0	2
Profitability	94	7	7	7	7	3	1	1	7	6	6	6	6	0	0	0	6
Intangibles	83	10	8	6	6	6	1	2	6	10	7	9	10	0	2	1	9
Trading frictions	143	46	45	39	43	40	32	33	44	29	28	20	19	14	25	26	21
Total	469	79	73	60	64	59	39	43	66	59	53	42	43	14	27	28	43
Panel B: MHT ($\|t\| \geq 2.78$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	2	2	2	2	1	0	0	2	3	3	3	3	0	0	0	3
Value-versus-growth	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investment	36	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Profitability	94	4	4	4	4	0	0	0	3	2	2	2	2	0	0	0	2
Intangibles	83	2	2	1	1	2	0	0	1	0	0	0	0	0	0	0	0
Trading frictions	143	24	22	18	19	19	20	22	21	15	15	15	11	10	15	15	15
Total	469	32	30	25	26	22	20	22	27	21	21	20	16	10	15	15	20

Table A10. Number of significant anomaly variables and overall performance of different factor models under the All-VW procedure

This table reports the number of significant anomaly variables and overall performance of different factor models under the All-VW procedure (all A-share breakpoints and value-weighted returns in portfolio sorts). We report the results in two different sample periods: (i) the whole sample period (July 2000 to June 2019) and (ii) the post-2007 subsample period (July 2008 to June 2019). The first column reports the total number in the corresponding category. For each period, we report the number of anomaly variables with significant raw return spreads, CAPM alpha, FF3-factor alpha, FF5-factor alpha, *q*-factor alpha, CH3-factor alpha, CH4-factor alpha, and Carhart 4-factor alpha in column (1) through column (8), respectively. Panel A reports the results of traditional from single hypothesis testing at the 5% significance level with absolute *t*-statistic above 1.96, and Panel B reports the results of multiple hypothesis testing at the 5% significance level with absolute *t*-statistic above 2.78.

All-VW		The whole sample period: 2000/07-2019/06								The post-2007 subsample period: 2008/07-2019/06							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: SHT (|*t*| ≥ 1.96)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	7	7	7	7	3	2	2	7	6	6	6	6	0	0	1	6
Value-versus-growth	68	4	2	1	1	4	2	3	1	1	1	0	0	0	0	1	0
Investment	36	4	4	1	2	1	0	1	2	8	8	4	5	0	0	0	3
Profitability	94	6	6	6	6	2	0	1	6	6	6	6	6	0	0	0	6
Intangibles	83	10	9	5	5	7	2	3	7	7	7	7	7	1	1	1	7
Trading frictions	143	48	46	39	42	40	30	31	44	30	29	21	20	15	24	25	22
Total	469	79	74	59	63	57	36	41	67	58	57	44	44	16	25	28	44
Panel B: MHT (|*t*| ≥ 2.78)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	2	2	2	2	1	0	0	2	2	2	2	2	0	0	0	2
Value-versus-growth	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investment	36	1	1	1	1	0	0	0	1	2	2	0	0	0	0	0	0
Profitability	94	4	4	4	4	0	0	0	4	2	2	2	2	0	0	0	2
Intangibles	83	1	1	1	1	1	0	0	0	2	2	2	2	0	0	0	2
Trading frictions	143	19	17	15	16	16	13	16	17	15	15	15	12	9	15	15	15
Total	469	27	25	23	24	18	13	16	24	23	23	21	18	9	15	15	21

Table A11. Number of significant anomaly variables and overall performance of different factor models under the Mainboard-EW procedure

This table reports the number of significant anomaly variables and overall performance of different factor models under the Mainboard-EW procedure (Mainboard breakpoints and equal-weighted returns in portfolio sorts). We report the results in two different sample periods: (i) the whole sample period (July 2000 to June 2019) and (ii) the post-2007 subsample period (July 2008 to June 2019). The first column reports the total number in the corresponding category. For each period, we report the number of anomaly variables with significant raw return spreads, CAPM alpha, FF3-factor alpha, FF5-factor alpha, *q*-factor alpha, CH3-factor alpha, CH4-factor alpha, and Carhart 4-factor alpha in column (1) through column (8), respectively. Panel A reports the results of traditional from single hypothesis testing at the 5% significance level with absolute *t*-statistic above 1.96, and Panel B reports the results of multiple hypothesis testing at the 5% significance level with absolute *t*-statistic above 2.78.

Mainboard-EW		2000/07-2019/06								2008/07-2019/06							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: SHT ($\|t\| \geq 1.96$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	8	7	8	8	2	3	3	6	9	8	8	8	2	2	3	8
Value-versus-growth	68	46	45	33	42	46	37	39	41	14	12	13	13	9	4	7	13
Investment	36	22	22	4	17	16	15	14	12	23	23	12	14	9	10	6	12
Profitability	94	37	34	7	27	33	31	31	21	40	35	11	22	32	34	34	13
Intangibles	83	15	15	7	12	13	14	15	11	17	17	11	13	9	14	14	12
Trading frictions	143	92	92	88	87	85	68	68	88	66	66	63	62	57	59	54	63
Total	469	220	215	147	193	195	168	170	179	169	161	118	132	118	123	118	121
Panel B: MHT ($\|t\| \geq 2.78$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	2	2	2	2	1	0	0	2	3	3	3	3	0	1	1	3
Value-versus-growth	68	36	30	20	28	35	9	22	29	9	9	6	1	2	0	0	7
Investment	36	8	8	1	5	7	7	7	0	8	8	2	5	3	4	2	2
Profitability	94	19	12	4	12	17	15	16	4	19	15	4	10	14	11	8	4
Intangibles	83	11	9	7	7	10	9	9	7	11	10	6	6	6	7	7	6
Trading frictions	143	63	63	57	57	52	53	51	57	55	55	52	47	47	45	41	53
Total	469	139	124	91	111	122	93	105	99	105	100	73	72	72	68	59	75

Table A12. Number of significant anomaly variables and overall performance of different factor models under the All-EW procedure

This table reports the number of significant anomaly variables and overall performance of different factor models under the EW-All procedure (all A-share breakpoints and equal-weighted returns in portfolio sorts). We report the results in two different sample periods: (i) the whole sample period (July 2000 to June 2019) and (ii) the post-2007 subsample period (July 2008 to June 2019). The first column reports the total number in the corresponding category. For each period, we report the number of anomaly variables with significant raw return spreads, CAPM alpha, FF3-factor alpha, FF5-factor alpha, *q*-factor alpha, CH3-factor alpha, CH4-factor alpha, and Carhart 4-factor alpha in column (1) through column (8), respectively. Panel A reports the results of traditional from single hypothesis testing at the 5% significance level with absolute *t*-statistic above 1.96, and Panel B reports the results of multiple hypothesis testing at the 5% significance level with absolute *t*-statistic above 2.78.

All-EW		The whole sample period: 2000/07-2019/06								The post-2007 subsample period: 2008/07-2019/06							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: SHT ($\|t\| \geq 1.96$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	8	7	8	8	2	3	3	7	7	7	7	7	1	1	1	7
Value-versus-growth	68	47	47	33	43	47	38	40	42	13	13	12	10	8	6	6	12
Investment	36	22	21	4	16	17	15	14	12	23	22	12	13	9	13	7	12
Profitability	94	35	32	6	26	31	30	30	21	38	35	11	21	31	32	32	13
Intangibles	83	16	15	10	12	15	14	15	11	19	19	11	12	12	15	15	12
Trading frictions	143	95	95	90	90	91	70	69	91	67	67	64	64	61	60	54	64
Total	469	223	217	151	195	203	170	171	184	167	163	117	127	122	127	115	120
Panel B: MHT ($\|t\| \geq 2.78$)	Total	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha	Raw Spread	CAPM Alpha	FF3 Alpha	FF5 Alpha	*q* Alpha	CH3 Alpha	CH4 Alpha	Car4 Alpha
Momentum	45	2	2	2	2	1	0	0	2	3	3	3	3	0	0	1	3
Value-versus-growth	68	37	32	19	28	36	11	24	28	9	9	5	2	2	0	0	6
Investment	36	11	11	2	9	9	7	8	2	11	11	4	8	4	5	2	5
Profitability	94	18	12	4	11	16	14	16	4	19	16	4	10	13	12	11	4
Intangibles	83	11	9	7	7	10	9	10	7	9	9	6	6	6	7	7	6
Trading frictions	143	63	62	55	56	52	53	52	57	52	52	47	46	44	40	38	48
Total	469	142	128	89	113	124	94	110	100	103	100	69	75	69	64	59	72

Table A13. Overall performance of different factor models (including CH3 and CH4 factor models constructed using Liu et al.'s (2019) data filters and sorting procedures)

This table reports the overall performance of different factor models in explaining the significant anomaly variables based on high-minus-low quintile return spreads. For each factor model and each anomaly category, $\overline{|\alpha_{H-L}|}$ is the average absolute magnitude of the high-minus-low quintile alphas, $\#|t| \geq 1.96$ is the number of high-minus-low quintile alphas with $|t| \geq 1.96$ (i.e., single hypothesis testing at the 5% significance level), $\overline{|\alpha|}$ is the mean absolute alpha across all anomaly quintiles in a given category, and $\#p < 5\%$ is the number of sets of quintiles within a given category, with which the factor model is rejected by the GRS test at the 5% level. We report the results for the CAPM, FF3-factor, FF5-factor, *q*-factor, Carhart 4-factor (Car4), Liu–Stambaugh–Yuan CH3-factor (CH3-LSY) and CH4-factor (CH4-LSY), and our constructed CH3-factor (CH3-Our) and CH4-factor (CH4-Our) models. We strictly follow Liu et al. (2019) and use their data filters and sorting procedures to construct the CH3 and CH4 factors (CH3-Our and CH4-Our). Other factor models are constructed using our data filters and Mainboard-VW procedure. Generally, statistics reported in this table are the same with Table 5, except for the newly added CH3-Our and CH4-Our rows. Panel A reports the results over the whole sample period (July 2000 to June 2019, 228 months), and Panel B reports the results in the post-2007 subsample period (July 2008 to June 2019, 132 months).

Panel A: The whole sample period (2000/07–2019/06), Mainboard-VW																
	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$
	All (78)				Momentum (7)				Value-versus-Growth (6)				Investment (1)			
CAPM	0.85	74	0.39	65	0.63	7	0.32	4	0.72	4	0.32	5	0.53	1	0.34	1
FF3	0.70	61	0.33	67	0.73	7	0.27	6	0.44	1	0.21	1	0.70	1	0.24	1
FF5	0.71	66	0.32	62	0.69	7	0.26	6	0.37	1	0.22	1	0.80	1	0.28	1
q	0.83	58	0.30	53	0.38	3	0.18	0	1.26	6	0.38	6	0.29	0	0.18	0
CH3-LSY	0.64	36	0.39	53	0.37	2	0.36	1	0.59	3	0.34	4	0.20	0	0.37	1
CH4-LSY	0.67	41	0.43	58	0.38	2	0.37	2	0.73	5	0.43	6	0.16	0	0.44	1
CH3-Our	0.57	35	0.37	58	0.42	3	0.34	4	0.32	0	0.26	2	0.25	0	0.32	1
CH4-Our	0.64	31	0.44	67	0.43	2	0.38	4	0.49	0	0.40	6	0.24	0	0.44	1
Car4	0.72	67	0.30	61	0.59	7	0.22	5	0.50	2	0.23	2	0.74	1	0.26	1
					Profitability (8)				Intangibles (10)				Frictions (46)			
CAPM					0.75	8	0.36	8	0.60	9	0.33	8	0.97	45	0.44	39
FF3					0.85	8	0.33	8	0.44	5	0.27	9	0.77	39	0.37	42
FF5					0.78	8	0.32	8	0.41	5	0.25	5	0.80	44	0.36	41
q					0.36	3	0.19	3	0.77	7	0.26	8	0.95	39	0.34	36
CH3-LSY					0.21	1	0.39	7	0.46	0	0.34	8	0.80	30	0.42	32
CH4-LSY					0.20	1	0.42	7	0.45	3	0.37	9	0.85	30	0.45	33
CH3-Our					0.33	2	0.36	7	0.40	3	0.33	8	0.72	27	0.41	36
CH4-Our					0.25	1	0.43	8	0.36	0	0.38	9	0.83	28	0.47	39
Car4					0.65	8	0.27	8	0.42	6	0.21	5	0.85	43	0.34	40
Panel B: The post-2007 subsample period (2008/07–2019/06), Mainboard-VW																
	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$	$\overline{\lvert\alpha_{H-L}\rvert}$	$\#\lvert t\rvert\geq1.96$	$\overline{\lvert\alpha\rvert}$	$\#p<5\%$
	All (61)				Momentum (7)				Value-versus-Growth (1)				Investment (9)			
CAPM	1.10	58	0.43	40	0.59	7	0.24	4	0.63	1	0.30	0	0.60	8	0.31	3

FF3	0.76	44	0.29	44	0.80	7	0.24	7	0.11	0	0.17	0	0.42	3	0.25	2
FF5	0.69	44	0.30	45	0.83	7	0.25	7	0.13	0	0.23	0	0.38	4	0.27	3
q	0.56	16	0.24	18	0.14	0	0.13	0	0.03	0	0.09	0	0.15	0	0.13	0
CH3-LSY	0.73	27	0.37	26	0.19	0	0.23	0	0.47	0	0.27	0	0.28	0	0.27	1
CH4-LSY	0.80	28	0.36	26	0.24	1	0.21	1	0.57	0	0.28	0	0.30	0	0.25	0
CH3-Our	0.78	32	0.38	30	0.26	0	0.22	0	0.39	0	0.25	0	0.32	1	0.27	0
CH4-Our	0.84	29	0.40	32	0.31	2	0.22	3	0.49	0	0.30	0	0.36	0	0.29	1
Car4	0.75	43	0.29	49	0.78	7	0.23	7	0.09	0	0.17	0	0.41	2	0.24	2
					Profitability (6)				Intangibles (7)				Frictions (31)			
CAPM					0.75	6	0.35	5	0.73	7	0.27	0	1.52	29	0.57	28
FF3					0.81	6	0.31	4	0.71	7	0.21	5	0.87	21	0.34	26
FF5					0.90	6	0.34	5	0.73	7	0.23	6	0.71	20	0.33	24
q					0.23	0	0.11	0	0.06	0	0.12	0	0.97	16	0.36	18
CH3-LSY					0.16	0	0.27	1	0.49	0	0.27	0	1.15	27	0.47	24
CH4-LSY					0.23	0	0.26	1	0.39	0	0.25	0	1.27	27	0.48	24
CH3-Our					0.27	0	0.28	1	0.64	6	0.30	5	1.18	25	0.49	24
CH4-Our					0.34	0	0.30	2	0.53	1	0.29	1	1.28	26	0.51	25
Car4					0.77	6	0.30	6	0.68	7	0.20	7	0.87	21	0.33	27

Table A14. Replication results of HXZ's 187 anomalies from the U.S. market over the last 20 years

This table reports the replication results of 187 anomalies from the U.S. market with the same sample period as ours using the data as posted by HXZ. They first include the 158 anomalies with significant (|t| ≥ 1.96) raw return spreads during their original sample period from January 1967 to December 2016 in HXZ (2020). They also incorporate 14 anomalies that have become significant in their extended period, which includes 11 anomalies from the extension through December 2018 (HMXZ, 2021), one through December 2019, and two through December 2020. In addition, they add the expected growth anomalies with 1-, 6-, and 12-month holding horizons in HMXZ (2021). Finally, they also incorporate 12 important and popular anomalies in the empirical asset pricing literature (with insignificant raw return spreads), which includes standardized unexpected earnings at 6-month holding horizon (Sue6), long-term reversal at 1-month holding horizon (Rev1), dividend yield (Dp), payout yield (Op), total accruals (Ta), operating profits to equity (Ope), market equity (Me), idiosyncratic volatility per the Fama–French 3-factor model at 1-month holding horizon (Ivff1), idiosyncratic volatility per the *q*-factor model at 1-month holding horizon (Ivq1), total volatility at 1-month holding horizon (Tv1), market beta at 1-month holding horizon (β1), and short-term reversal (Srev).We use the same anomaly variable names as those in HXZ (2020). For each anomaly variable, this table reports the average return (*m*, in %) and its *t*-statistic (t_m) for the high-minus-low decile spread. Panel A reports the replication results over the sample period from July 2000 to June 2019. Panel B reports the replication results over the sample period from July 2008 to June 2019. Columns 1–41 report the results related to the momentum category; columns 42–73 report the results related to the value-versus-growth category; columns 74–102 report the results related to the investment category; columns 103–147 report the results for the profitability category; columns 148–177 report the results for the intangibles category; and columns 178–187 report the results for the trading frictions category. For the variable definitions and portfolio constructions, please refer to the Online Appendix of HXZ (2020).

Panel A: Results from the U.S. market in the 2000/07-2019/06 sample period

	Momentum													
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Abr1	Abr6	Abr12	Cim1	Cim6	Cim12	Cm1	Cm12	dEf1	dEf6	dEf12	Ile1	Ilr1	Ilr6
m	0.29	0.19	0.05	0.23	0.33	0.17	0.41	0.06	0.04	-0.08	-0.10	0.33	0.13	0.31
t_m	1.24	1.16	0.41	0.59	1.71	1.12	1.20	0.56	0.12	-0.34	-0.51	1.13	0.32	1.65

	Momentum													
#	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	Ilr12	Im1	Im6	Im12	Nei1	52w6	52w12	$R^{6}1$	$R^{6}6$	$R^{6}12$	$R^{11}1$	$R^{11}6$	$R^{11}12$	Re1
m	0.19	0.56	0.34	0.21	0.20	0.13	0.07	0.07	0.10	-0.07	0.27	-0.06	-0.15	0.44
t_m	1.25	1.21	0.92	0.68	1.16	0.24	0.15	0.12	0.25	-0.22	0.47	-0.13	-0.39	1.10

	Momentum													
#	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Re6	$\epsilon^{6}6$	$\epsilon^{6}12$	$\epsilon^{11}1$	$\epsilon^{11}6$	$\epsilon^{11}12$	Rs1	Sim1	Sim12	Sm1	Sm12	Sue1	Sue6	Bm
m	0.33	0.15	0.04	-0.02	-0.04	-0.09	0.34	-0.10	0.02	-0.36	-0.02	0.19	-0.07	0.35
t_m	0.99	0.78	0.29	-0.09	-0.19	-0.55	1.59	-0.25	0.17	-0.98	-0.19	0.84	-0.41	1.15

	Value-versus-growth													
#	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	Bmj	$Bm^{q}12$	Cp	$Cp^{q}1$	$Cp^{q}6$	$Cp^{q}12$	Dp	Dur	Ebp	Em	$Em^{q}1$	$Em^{q}6$	$Em^{q}12$	Ep
m	0.28	0.42	0.29	0.53	0.40	0.29	0.80	-0.14	0.20	-0.51	-0.66	-0.39	-0.42	0.34

t_m	0.87	1.25	0.94	1.58	1.33	1.04	2.37	-0.51	0.59	-1.71	-2.37	-1.48	-1.68	1.11
	Value-versus-growth													
#	57	58	59	60	61	62	63	64	65	66	67	68	69	70
	$Ep^{q}1$	$Ep^{q}6$	$Ep^{q}12$	Ir	Nop	Ocp	$Ocp^{q}1$	Op	Rev1	Rev6	Rev12	Sp	$Sp^{q}1$	$Sp^{q}6$
m	0.78	0.47	0.40	-0.08	0.51	0.56	0.96	0.28	-0.17	-0.29	-0.22	0.46	0.88	0.84
t_m	2.52	1.68	1.52	-0.27	1.95	1.70	2.76	1.01	-0.49	-0.94	-0.77	1.55	2.29	2.41
	Value-versus-growth			Investment										
#	71	72	73	74	75	76	77	78	79	80	81	82	83	84
	$Sp^{q}12$	Vfp	Vhp	Aci	Cei	Dac	dBe	dCoa	dFin	dFnl	dIi	dLno	dNca	dNco
m	0.68	0.62	0.25	-0.02	-0.63	-0.33	-0.38	-0.18	0.02	-0.10	-0.24	-0.03	-0.20	-0.27
t_m	2.19	1.82	0.83	-0.11	-2.59	-1.54	-1.60	-0.76	0.08	-0.54	-1.12	-0.13	-1.08	-1.47
	Investment													
#	85	86	87	88	89	90	91	92	93	94	95	96	97	98
	dNoa	dPia	dWc	I/A	$Ia^{q}6$	$Ia^{q}12$	Ig	2Ig	Ivc	Ivg	Ndf	Noa	Nsi	Oa
m	-0.31	-0.24	-0.37	-0.30	-0.19	-0.21	-0.44	-0.11	-0.15	-0.05	-0.23	-0.62	-0.54	-0.10
t_m	-1.51	-1.13	-1.95	-1.23	-0.75	-0.88	-1.98	-0.48	-0.72	-0.23	-1.16	-3.25	-2.55	-0.49
	Investment				Profitability									
#	99	100	101	102	103	104	105	106	107	108	109	110	111	112
	Pda	Poa	Pta	Ta	Ato	$Ato^{q}1$	$Ato^{q}6$	$Ato^{q}12$	Cla	$Cla^{q}1$	$Cla^{q}6$	$Cla^{q}12$	Cop	Cto
m	-0.51	-0.48	-0.30	-0.09	0.49	0.80	0.79	0.70	0.63	0.36	0.28	0.26	0.68	0.46
t_m	-2.30	-2.68	-1.44	-0.48	1.90	3.49	3.56	3.15	2.33	1.51	1.47	1.52	2.37	2.10
	Profitability													
#	113	114	115	116	117	118	119	120	121	122	123	124	125	126
	$Cto^{q}1$	$Cto^{q}6$	$Cto^{q}12$	dRoa1	dRoa6	dRoe1	dRoe6	dRoe12	Eg1	Eg6	Eg12	$Fp^{m}6$	$F^{q}1$	$F^{q}6$
m	0.61	0.60	0.56	0.19	0.09	0.34	0.09	0.13	0.71	0.56	0.51	-0.55	0.37	0.36
t_m	2.51	2.56	2.44	0.82	0.51	1.58	0.56	0.98	2.48	2.02	1.93	-1.01	1.19	1.41
	Profitability													
#	127	128	129	130	131	132	133	134	135	136	137	138	139	140
	$F^{q}12$	$Gla^{q}1$	$Gla^{q}6$	$Gla^{q}12$	Gpa	$Ola^{q}1$	$Ola^{q}6$	$Ola^{q}12$	$Ole^{q}1$	$Ole^{q}6$	Opa	Ope	$O^{q}1$	$Rna^{q}1$
m	0.24	0.65	0.36	0.27	0.36	0.98	0.62	0.57	0.75	0.48	0.68	0.41	-0.25	0.64
t_m	1.05	3.02	1.79	1.41	1.75	3.19	2.20	2.14	2.12	1.43	2.43	1.27	-0.84	1.91
	Profitability							Intangibles						
#	141	142	143	144	145	146	147	148	149	150	151	152	153	154
	$Rna^{q}6$	Roa1	Roe1	Roe6	$Sg^{q}1$	$Tbi^{q}6$	$Tbi^{q}12$	Adm	$Alm^{q}1$	$Alm^{q}6$	$Alm^{q}12$	Eprd	Etl	Etr
m	0.47	0.45	0.56	0.51	0.23	0.15	0.16	0.47	0.59	0.51	0.40	-0.27	0.25	0.18
t_m	1.49	1.30	1.55	1.50	0.82	0.99	1.17	1.27	1.99	1.86	1.49	-0.96	1.33	0.89
	Intangibles													

#	155	156	157	158	159	160	161	162	163	164	165	166	167	168
	Hs	Ioca	Oca	Ol	Ol^{q}1	Ol^{q}6	Ol^{q}12	R_a^1	R_n^1	$R_a^{[2,5]}$	$R_n^{[2,5]}$	$R_a^{[6,10]}$	$R_n^{[6,10]}$	$R_a^{[11,15]}$
m	-0.08	0.59	0.75	0.51	0.65	0.61	0.57	-0.14	0.08	0.42	-0.10	0.77	-0.82	0.21
t_m	-0.32	2.29	2.21	2.05	2.59	2.50	2.35	-0.43	0.14	1.60	-0.31	2.86	-2.55	0.87
	Intangibles									Trading frictions				
#	169	170	171	172	173	174	175	176	177	178	179	180	181	182
	$R_a^{[16,20]}$	Rca	Rdm	Rdm^{q}1	Rdm^{q}6	Rdm^{q}12	Rds^{q}6	Rds^{q}12	Rer	β1	Dtv12	Isff1	Isq1	Ivff1
m	0.73	0.09	0.73	1.23	0.91	0.93	0.10	0.10	0.30	-0.25	-0.53	0.23	0.14	-0.46
t_m	2.33	0.33	2.16	2.90	2.56	2.87	0.40	0.37	1.27	-0.45	-2.39	1.40	0.95	-0.89
	Trading frictions													
#	183	184	185	186	187									
	Ivq1	Me	Srev	Sv1	Tv1									
m	-0.41	-0.31	-0.23	0.07	-0.41									
t_m	-0.80	-1.10	-0.59	0.24	-0.71									
Panel B: Results from the U.S. market in the 2008/07-2019/06 sample period														
	Momentum													
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Abr1	Abr6	Abr12	Cim1	Cim6	Cim12	Cm1	Cm12	dEf1	dEf6	dEf12	Ile1	Ilr1	Ilr6
m	0.37	0.26	0.16	0.37	0.15	0.07	0.28	0.00	-0.18	-0.07	-0.13	0.22	0.06	0.11
t_m	1.21	1.15	0.95	0.87	0.78	0.45	0.75	-0.01	-0.43	-0.25	-0.57	0.60	0.12	0.45
	Momentum													
#	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	Ilr12	Im1	Im6	Im12	Nei1	52w6	52w12	$R^6$1	$R^6$6	$R^6$12	R^{11}1	R^{11}6	R^{11}12	Re1
m	0.09	0.09	-0.03	0.08	0.20	-0.38	-0.25	-0.27	-0.27	-0.22	-0.02	-0.32	-0.15	0.14
t_m	0.46	0.16	-0.06	0.20	0.91	-0.55	-0.43	-0.37	-0.49	-0.54	-0.02	-0.52	-0.31	0.32
	Momentum													
#	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	Re6	$\epsilon^6$6	$\epsilon^6$12	ϵ^{11}1	ϵ^{11}6	ϵ^{11}12	Rs1	Sim1	Sim12	Sm1	Sm12	Sue1	Sue6	Bm
m	-0.07	-0.21	-0.25	-0.44	-0.37	-0.30	0.72	0.20	0.06	-0.03	-0.02	0.27	-0.07	-0.39
t_m	-0.18	-0.95	-1.37	-1.40	-1.58	-1.49	2.85	0.57	0.52	-0.06	-0.19	1.16	-0.37	-1.03
	Value-versus-growth													
#	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	Bmj	Bm^{q}12	Cp	Cp^{q}1	Cp^{q}6	Cp^{q}12	Dp	Dur	Ebp	Em	Em^{q}1	Em^{q}6	Em^{q}12	Ep
m	-0.43	-0.13	-0.49	-0.16	-0.23	-0.43	0.43	0.76	-0.54	0.60	0.28	0.53	0.57	-0.59
t_m	-1.06	-0.27	-1.35	-0.35	-0.59	-1.27	1.12	2.30	-1.14	1.84	0.87	1.70	2.12	-1.75
	Value-versus-growth													
#	57	58	59	60	61	62	63	64	65	66	67	68	69	70

	Ep^{q}1	Ep^{q}6	Ep^{q}12	Ir	Nop	Ocp	Ocp^{q}1	Op	Rev1	Rev6	Rev12	Sp	Sp^{q}1	Sp^{q}6
m	-0.01	-0.28	-0.46	0.50	0.13	-0.26	0.79	0.21	0.13	-0.15	-0.04	-0.04	0.56	0.46
t_m	-0.02	-1.00	-1.88	1.19	0.45	-0.63	1.81	0.68	0.27	-0.34	-0.11	-0.12	1.18	1.06
	Value-versus-growth			Investment										
#	71	72	73	74	75	76	77	78	79	80	81	82	83	84
	Sp^{q}12	Vfp	Vhp	Aci	Cei	Dac	dBe	dCoa	dFin	dFnl	dIi	dLno	dNca	dNco
m	0.19	-0.46	-0.53	-0.17	-0.34	-0.82	-0.20	0.05	0.25	0.31	0.08	-0.02	-0.27	-0.33
t_m	0.51	-1.23	-1.62	-0.64	-1.33	-2.93	-0.89	0.18	1.21	1.50	0.38	-0.08	-1.28	-1.42
	Investment													
#	85	86	87	88	89	90	91	92	93	94	95	96	97	98
	dNoa	dPia	dWc	I/A	Ia^{q}6	Ia^{q}12	Ig	2Ig	Ivc	Ivg	Ndf	Noa	Nsi	Oa
m	-0.16	-0.26	-0.45	0.03	0.04	0.10	-0.40	0.07	-0.38	0.28	0.27	-0.75	-0.33	-0.14
t_m	-0.73	-0.89	-1.89	0.10	0.14	0.38	-1.49	0.24	-1.39	1.18	1.58	-3.13	-1.33	-0.52
	Investment				Profitability									
#	99	100	101	102	103	104	105	106	107	108	109	110	111	112
	Pda	Poa	Pta	Ta	Ato	Ato^{q}1	Ato^{q}6	Ato^{q}12	Cla	Cla^{q}1	Cla^{q}6	Cla^{q}12	Cop	Cto
m	-0.64	-0.28	-0.42	-0.22	0.88	0.97	0.98	0.95	0.74	0.35	0.38	0.41	0.62	0.59
t_m	-2.21	-1.29	-1.72	-0.96	2.98	3.19	3.30	3.25	1.99	1.23	1.65	1.90	1.68	2.30
	Profitability													
#	113	114	115	116	117	118	119	120	121	122	123	124	125	126
	Cto^{q}1	Cto^{q}6	Cto^{q}12	dRoa1	dRoa6	dRoe1	dRoe6	dRoe12	Eg1	Eg6	Eg12	Fp^{m}6	F^{q}1	F^{q}6
m	0.55	0.56	0.55	0.23	-0.03	0.38	-0.02	-0.04	0.71	0.66	0.60	0.00	-0.10	-0.10
t_m	1.99	2.08	2.10	0.82	-0.13	1.38	-0.12	-0.23	2.00	1.88	1.78	0.00	-0.26	-0.33
	Profitability													
#	127	128	129	130	131	132	133	134	135	136	137	138	139	140
	F^{q}12	Gla^{q}1	Gla^{q}6	Gla^{q}12	Gpa	Ola^{q}1	Ola^{q}6	Ola^{q}12	Ole^{q}1	Ole^{q}6	Opa	Ope	O^{q}1	Rna^{q}1
m	-0.16	0.68	0.47	0.50	0.45	0.80	0.50	0.51	0.18	-0.04	0.80	-0.05	-0.03	0.45
t_m	-0.67	2.54	1.95	2.12	1.94	2.16	1.44	1.61	0.54	-0.13	2.18	-0.15	-0.08	1.21
	Profitability							Intangibles						
#	141	142	143	144	145	146	147	148	149	150	151	152	153	154
	Rna^{q}6	Roa1	Roe1	Roe6	Sg^{q}1	Tbi^{q}6	Tbi^{q}12	Adm	Alm^{q}1	Alm^{q}6	Alm^{q}12	Eprd	Etl	Etr
m	0.22	0.11	0.14	0.12	0.44	-0.23	-0.11	0.20	-0.13	-0.24	-0.32	-0.62	0.06	-0.21
t_m	0.61	0.28	0.36	0.35	1.36	-1.16	-0.60	0.39	-0.34	-0.68	-0.95	-1.58	0.34	-0.94
	Intangibles													
#	155	156	157	158	159	160	161	162	163	164	165	166	167	168
	Hs	Ioca	Oca	Ol	Ol^{q}1	Ol^{q}6	Ol^{q}12	R_a^1	R_n^1	$R_a^{[2,5]}$	$R_n^{[2,5]}$	$R_a^{[6,10]}$	$R_n^{[6,10]}$	$R_a^{[11,15]}$
m	0.13	0.21	1.07	0.38	0.56	0.50	0.49	0.09	-0.16	0.00	0.30	1.00	-0.26	0.32

t_m	0.42	0.75	2.62	1.39	2.10	1.86	1.83	0.25	-0.21	0.01	0.71	3.11	-0.89	1.31
	Intangibles									Trading frictions				
#	169	170	171	172	173	174	175	176	177	178	179	180	181	182
	$R_a^{[16,20]}$	Rca	Rdm	Rdm^q1	Rdm^q6	Rdm^q12	Rds^q6	Rds^q12	Rer	β1	Dtv12	Isff1	Isq1	Ivff1
m	0.76	0.86	1.22	1.07	0.89	0.88	0.61	0.69	0.28	0.29	0.01	0.06	0.09	-0.34
t_m	2.42	2.47	3.37	2.61	2.38	2.53	1.93	2.16	1.13	0.41	0.03	0.29	0.54	-0.59
	Trading frictions													
#	183	184	185	186	187									
	Ivq1	Me	Srev	Sv1	Tv1									
m	-0.26	0.19	-0.22	0.55	-0.18									
t_m	-0.46	0.54	-0.50	1.44	-0.27									

Table A15. Number of SOE and non-SOE firms in each year

For each year between 2003 and 2018 inclusively, this table reports the number of SOE and non-SOE firms in our sample. The ownership property data in the CSMAR database is only available since December 31, 2003. At the end of each year, we also report the proportion of SOE (SOE Ratio) and non-SOE (non-SOE Ratio) firms in the Chinese A-share markets.

Year	#SOE	#non-SOE	SOE ratio	non-SOE ratio
2003	824	281	74.57%	25.43%
2004	847	343	71.18%	28.82%
2005	724	295	71.05%	28.95%
2006	739	365	66.94%	33.06%
2007	792	450	63.77%	36.23%
2008	839	524	61.56%	38.44%
2009	843	613	57.90%	42.10%
2010	879	896	49.52%	50.48%
2011	884	1,170	43.04%	56.96%
2012	914	1,338	40.59%	59.41%
2013	923	1,341	40.77%	59.23%
2014	902	1,422	38.81%	61.19%
2015	892	1,607	35.69%	64.31%
2016	914	1,834	33.26%	66.74%
2017	931	2,225	29.50%	70.50%
2018	994	2,363	29.61%	70.39%

Table A16. Overall performance of different factor models: SOEs versus non-SOEs subsamples

A total of 53 (65) and 75 (99) variables have significant return spreads in the SOEs and non-SOEs subsamples, respectively, across the whole sample period (post-2007 subsample period). The ownership property data in the CSMAR database is only available since 2003. Therefore, we can only use post-2003 data when we discuss anomaly replication and digestion results in the SOEs and non-SOEs subsamples. In this table, we report the overall performance of different factor models in SOEs and non-SOEs subsamples. For each model, $\overline{|\alpha_{H-L}|}$ is the average magnitude of the high-minus-low alphas, #|t| ≥ 1.96 is the number of high-minus-low alphas with |t| ≥ 1.96, $\overline{|\alpha|}$ is the mean absolute alpha across the anomaly quintiles in a given category, and #p < 5% is the number of sets of quintiles within a given category, with which the factor model is rejected by the GRS test at the 5% level. We report the results for the CAPM, FF3-factor, FF5-factor, q-factor, Liu–Stambaugh–Yuan CH3-factor and CH4-factor, and Carhart 4-factor (Car4) models. Panel A and Panel B report the results for the SOEs and non-SOEs subsample over the whole sample period (July 2004 to June 2019, 180 months). Panel C and Panel D report the results for the SOEs and non-SOEs subsample in the post-2007 subsample period (July 2008 to June 2019, 132 months).

Panel A: The whole sample period (2004/07-2019/06), SOEs subsample

	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%
	All (44)				Momentum (5)				Value-versus-Growth (1)				Investment (2)			
CAPM	1.22	40	0.53	38	0.75	5	0.34	5	0.62	1	0.34	0	0.75	1	0.31	0
FF3	0.99	33	0.45	41	0.84	5	0.31	5	0.28	0	0.24	0	0.60	1	0.24	1
FF5	1.00	36	0.45	41	0.79	5	0.32	5	0.45	0	0.27	0	0.67	1	0.24	1
q	0.97	24	0.46	28	0.31	1	0.31	1	0.63	1	0.31	0	0.44	0	0.25	1
CH3	0.95	20	0.51	22	0.13	0	0.37	0	0.67	1	0.38	1	0.50	0	0.30	0
CH4	1.05	24	0.58	24	0.19	0	0.42	0	1.05	1	0.50	1	0.57	1	0.40	0
Car4	1.03	39	0.44	42	0.73	5	0.29	5	0.38	0	0.25	0	0.66	1	0.23	1
					Profitability (4)				Intangibles (5)				Frictions (27)			
CAPM					0.99	4	0.39	4	0.65	3	0.29	2	1.51	26	0.65	27
FF3					1.01	4	0.39	4	0.84	5	0.28	5	1.10	18	0.53	26
FF5					0.99	4	0.39	4	0.75	5	0.29	5	1.14	21	0.54	26
q					0.45	2	0.29	1	0.31	0	0.30	2	1.35	20	0.57	23
CH3					0.29	0	0.35	0	0.55	0	0.36	0	1.31	19	0.62	21
CH4					0.39	0	0.41	1	0.35	0	0.38	0	1.48	22	0.69	22
Car4					0.80	3	0.35	4	0.67	5	0.27	5	1.24	25	0.54	27

Panel B: The whole sample period (2004/07-2019/06), non-SOEs subsample

	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%	$\overline{\|\alpha_{H-L}\|}$	#|t|≥1.96	$\overline{\|\alpha\|}$	#p<5%
	All (90)				Momentum (3)				Value-versus-Growth (27)				Investment (2)			
CAPM	1.01	73	0.69	73	0.71	3	0.46	1	0.82	17	0.65	22	0.64	1	0.55	0
FF3	0.79	57	0.44	72	0.92	3	0.35	2	0.61	10	0.40	19	0.56	1	0.33	1
FF5	0.80	56	0.44	71	0.95	3	0.35	2	0.62	9	0.38	19	0.56	1	0.39	1

q	1.00	73	0.35	57	0.47	0	0.28	0	1.11	27	0.36	20	0.29	0	0.21	1
CH3	0.83	49	0.60	70	1.08	3	0.51	2	0.54	5	0.56	24	0.33	0	0.58	1
CH4	0.91	52	0.60	66	0.97	2	0.47	2	0.72	10	0.58	21	0.35	0	0.59	1
Car4	0.85	74	0.37	70	0.76	3	0.28	1	0.75	19	0.34	19	0.46	1	0.30	0
					Profitability (13)				Intangibles (9)				Frictions (36)			
CAPM					0.79	7	0.69	6	1.07	9	0.65	8	1.25	36	0.75	36
FF3					0.57	6	0.35	6	0.96	8	0.44	8	0.96	29	0.51	36
FF5					0.52	6	0.41	6	0.99	8	0.45	8	0.99	29	0.50	35
q					0.50	5	0.21	0	0.96	8	0.34	7	1.19	33	0.41	29
CH3					0.87	8	0.61	10	0.93	8	0.56	7	1.01	25	0.63	26
CH4					0.96	8	0.64	9	1.04	8	0.57	8	1.02	24	0.62	25
Car4					0.42	6	0.28	6	1.01	9	0.38	8	1.06	36	0.44	36

Panel C: The post-2007 subsample period (2008/07-2019/06), SOEs subsample

	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$
	All (44)				Momentum (5)				Value-versus-Growth (0)				Investment (5)			
CAPM	1.33	40	0.48	28	0.71	5	0.23	1	N/A	0	N/A	0	0.67	5	0.30	0
FF3	0.96	31	0.40	35	0.98	5	0.28	5	N/A	0	N/A	0	0.49	2	0.27	1
FF5	0.87	29	0.39	34	1.00	5	0.29	5	N/A	0	N/A	0	0.46	2	0.28	1
q	0.78	14	0.32	15	0.08	0	0.10	0	N/A	0	N/A	0	0.15	0	0.13	0
CH3	0.89	16	0.40	19	0.10	0	0.20	0	N/A	0	N/A	0	0.33	0	0.25	0
CH4	1.01	20	0.41	18	0.22	0	0.17	0	N/A	0	N/A	0	0.38	0	0.22	0
Car4	0.96	32	0.39	36	0.96	5	0.27	5	N/A	0	N/A	0	0.49	2	0.27	1
					Profitability (4)				Intangibles (7)				Frictions (23)			
CAPM					0.87	4	0.37	3	0.76	6	0.24	3	1.86	20	0.67	21
FF3					0.96	4	0.38	3	0.85	6	0.28	6	1.10	14	0.49	20
FF5					1.04	4	0.39	3	0.83	6	0.28	6	0.91	12	0.46	19
q					0.28	0	0.17	0	0.20	0	0.16	0	1.33	14	0.48	15
CH3					0.17	0	0.23	0	0.46	0	0.24	0	1.43	16	0.56	19
CH4					0.30	0	0.24	0	0.39	0	0.21	0	1.63	20	0.59	18
Car4					0.92	4	0.37	3	0.84	6	0.27	6	1.11	15	0.49	21

Panel D: The post-2007 subsample period (2008/07-2019/06), non-SOEs subsample

	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$	$\overline{\vert\alpha_{H-L}\vert}$	$\#\vert t\vert\geq1.96$	$\overline{\vert\alpha\vert}$	$\#p<5\%$
	All (107)				Momentum (5)				Value-versus-Growth (14)				Investment (11)			

CAPM	0.96	102	0.60	88	0.67	5	0.46	3	0.78	12	0.60	14	0.55	8	0.55	3
FF3	0.79	76	0.31	74	0.80	5	0.27	4	0.53	6	0.27	7	0.40	3	0.27	3
FF5	0.71	74	0.35	75	0.87	5	0.31	4	0.43	4	0.32	4	0.42	4	0.34	4
q	0.81	69	0.41	62	0.35	0	0.41	1	0.91	10	0.39	8	0.18	0	0.32	2
CH3	0.77	71	0.41	79	0.69	3	0.33	2	0.61	6	0.39	12	0.46	4	0.40	9
CH4	0.71	57	0.38	66	0.62	2	0.29	2	0.64	8	0.38	12	0.49	4	0.38	9
Car4	0.79	81	0.30	79	0.77	5	0.26	5	0.53	8	0.26	7	0.40	3	0.25	2
					Profitability (4)				Intangibles (9)				Frictions (64)			
CAPM					0.84	4	0.54	3	0.89	9	0.55	7	1.11	64	0.63	58
FF3					0.89	4	0.30	2	0.85	8	0.30	6	0.89	50	0.34	52
FF5					0.99	4	0.36	4	0.82	8	0.33	7	0.78	49	0.36	52
q					0.32	1	0.36	1	0.83	6	0.40	7	0.96	52	0.43	43
CH3					0.70	3	0.37	2	0.69	7	0.37	8	0.88	48	0.43	46
CH4					0.69	2	0.34	2	0.65	6	0.35	8	0.77	35	0.39	33
Car4					0.86	4	0.29	4	0.85	8	0.29	8	0.90	53	0.33	53

Table A17. Anomaly variables with significant raw return spreads from the value-versus-growth category (SOEs versus non-SOEs subsample results)

This table reports anomaly variables with significant raw return spreads from the value-versus-growth category in the SOEs and non-SOEs subsamples. The ownership property data in the CSMAR database is only available since 2003. Therefore, we can only use post-2003 data when we construct this table. For each anomaly variable, this table reports the average return (*m*, in %) and its *t*-statistic (t_m) for the high-minus-low quintile spread. Panel A reports the results over the sample period from July 2004 to June 2019. Panel B reports the results over the sample period from July 2008 to June 2019. Online Appendix Table A1 describes the symbols and Appendix A and B detail the variable definitions and portfolio constructions.

	SOEs subsamples	Non-SOEs subsample													
	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Panel A: 2004/07-2019/06	Sg	Bmj	Bm^{q}1	Bm^{q}3	Bm^{q}12	Dm^{q}1	Dm^{q}3	Am^{q}1	Am^{q}3	Am^{q}9	Am^{q}12	Rev1	Rev3	Rev6	Rev9
m	-0.69	0.91	0.98	0.74	0.73	0.93	0.80	0.96	0.84	0.85	0.84	-1.12	-0.93	-0.90	-0.90
t_m	-2.35	2.24	2.72	2.04	1.99	2.15	1.97	2.28	2.03	2.05	2.03	-3.53	-2.90	-2.85	-2.83
		15	16	17	18	19	20	21	22	23	24	25	26	27	
		Rev12	Ep^{q}1	Ep^{q}3	Cp^{q}1	Sp	Sp^{q}1	Sp^{q}3	Sp^{q}6	Sp^{q}9	Sp^{q}12	Ndp^{q}1	Ndp^{q}3	Ndp^{q}9	
		-0.90	0.91	0.88	0.95	0.82	1.21	1.14	1.04	1.00	0.93	1.03	0.83	0.77	
		-2.78	2.33	2.24	2.54	2.35	3.55	3.33	3.10	3.01	2.82	2.59	2.14	2.03	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Panel B: 2008/07-2019/06	N/A	Bm	Bmj	Bm^{q}1	Bm^{q}3	Bm^{q}6	Bm^{q}9	Bm^{q}12	Rev1	Rev3	Rev6	Rev9	Rev12	Ep^{q}1	Sp^{q}1
m	N/A	0.62	0.78	0.92	0.84	0.74	0.70	0.70	-1.00	-0.92	-0.92	-0.91	-0.98	0.95	0.68
t_m	N/A	2.04	2.60	2.58	2.34	2.14	2.11	2.23	-3.81	-3.54	-3.52	-3.61	-3.88	2.32	2.01

Table A18. Factor spanning tests of the *q*-factor, Fama–French five-factor, and CH4-factor models

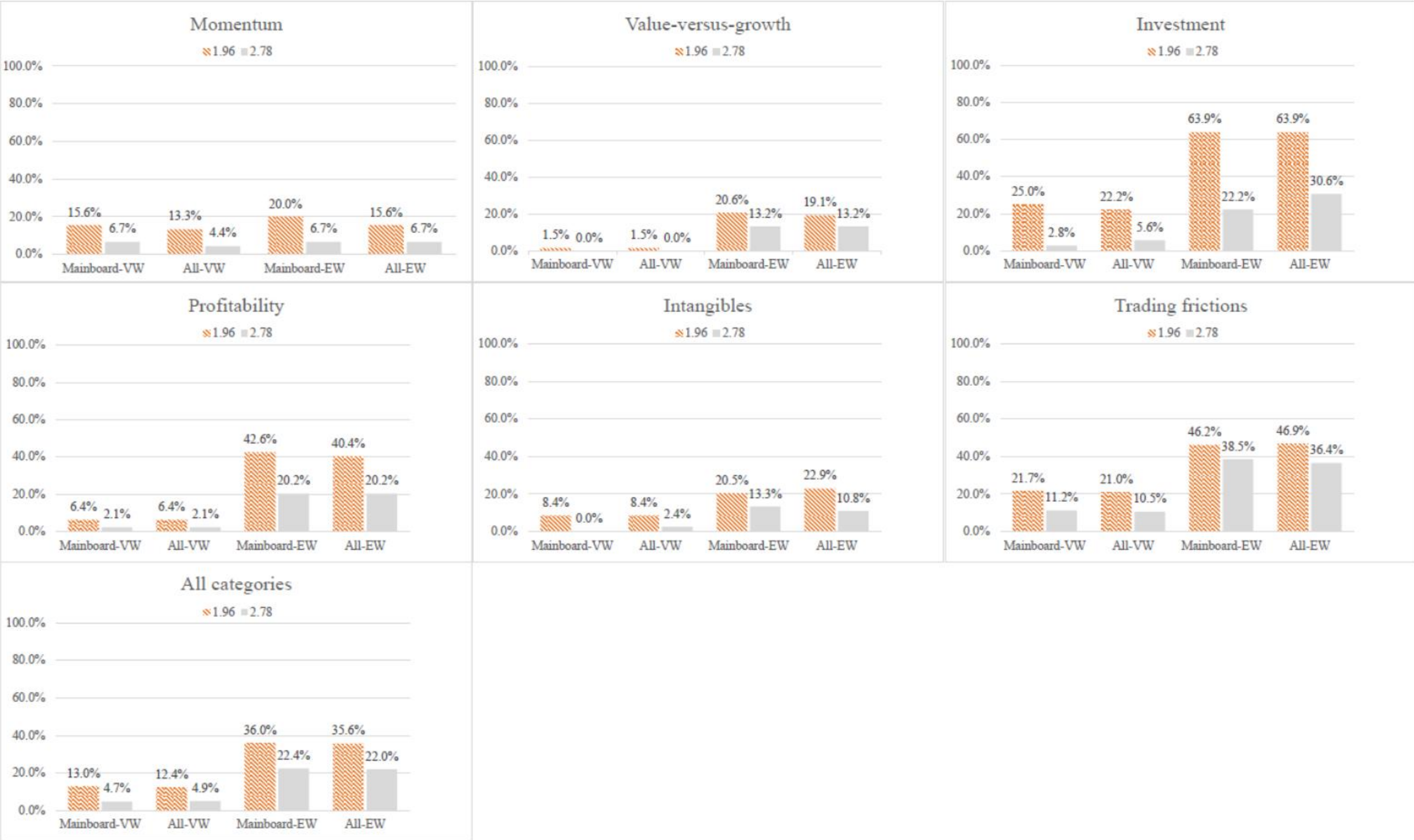
This table provides the results of factor spanning tests to test the ability of a particular asset pricing model in explaning other models' factor returns. Panel A reports the results over the whole sample period (July 2000 to June 2019, 228 months) and Panel B reports the results in the post-2007 subsample period (July 2008 to June 2019, 132 months).

Panel A: The whole sample period (July 2000 to June 2019, 228 months)														
CH4			*q*-factor model to explain CH4				CH4				FF5 to explain CH4			
	α(in %)	β_{MKT}	β_{ME}	$\beta_{I/A}$	β_{ROE}	R^2		α(in %)	β_{MKT}	$\beta_{SMB\ FF5}$	β_{HML}	β_{RMW}	β_{CMA}	R^2
$r_{MKT\ CH4}$	-0.06	0.95	-0.06	-0.19	0.05	0.98	$r_{MKT\ CH4}$	-0.12	0.96	-0.02	0.03	0.07	-0.13	0.98
$t_{MKT\ CH4}$	-0.82	109.99	-3.07	-5.98	2.18		$t_{MKT\ CH4}$	-1.71	103.15	-1.03	1.43	2.49	-3.53	
$r_{SMB\ CH4}$	-0.16	0.07	0.87	0.39	-0.24	0.75	$r_{SMB\ CH4}$	-0.04	0.07	0.80	-0.09	-0.11	0.19	0.79
$t_{SMB\ CH4}$	-1.00	3.30	19.54	5.24	-4.64		$t_{SMB\ CH4}$	-0.25	3.36	16.76	-1.89	-1.78	2.45	
r_{VMG}	1.19	-0.06	-0.34	0.00	0.58	0.63	r_{VMG}	1.42	-0.05	-0.26	0.15	0.53	0.08	0.62
t_{VMG}	7.12	-2.76	-7.55	-0.03	11.06		t_{VMG}	8.68	-2.26	-4.89	2.86	7.46	0.97	
r_{PMO}	0.94	-0.12	0.12	-0.10	-0.01	0.09	r_{PMO}	1.08	-0.10	0.03	-0.24	0.02	-0.14	0.14
t_{PMO}	3.86	-4.01	1.88	-0.88	-0.08		t_{PMO}	4.74	-3.34	0.35	-3.17	0.17	-1.22	
q			CH4 to explain *q*-factor model				*q*				FF5 to explain *q*-factor model			
	α(in %)	$\beta_{MKT\ CH4}$	$\beta_{SMB\ CH4}$	β_{VMG}	β_{PMO}	R^2		α(in %)	β_{MKT}	$\beta_{SMB\ FF5}$	β_{HML}	β_{RMW}	β_{CMA}	R^2
r_{MKT}	0.07	1.02	0.18	0.02	-0.04	0.99								
t_{MKT}	0.97	119.11	9.48	0.83	-2.04									
r_{ME}	0.51	-0.04	0.64	-0.06	0.02	0.67	r_{ME}	0.21	-0.01	0.89	-0.03	0.01	-0.21	0.95
t_{ME}	2.96	-1.96	14.53	-1.15	0.45		t_{ME}	3.54	-0.92	46.05	-1.74	0.45	-6.66	
$r_{I/A}$	0.21	-0.03	0.15	0.06	-0.07	0.08	$r_{I/A}$	0.27	0.01	-0.02	-0.02	0.10	0.87	0.78
$t_{I/A}$	1.36	-1.61	3.83	1.10	-1.64		$t_{I/A}$	3.96	0.82	-0.92	-0.69	3.37	24.41	
r_{ROE}	-0.08	-0.05	-0.08	0.57	0.01	0.54	r_{ROE}	0.88	-0.02	-0.24	-0.17	0.59	-0.01	0.62
t_{ROE}	-0.44	-2.18	-1.69	9.46	0.20		t_{ROE}	5.87	-1.12	-5.04	-3.36	9.09	-0.08	
FF5			CH4 to explain FF5				FF5				*q*-factor model to explain FF5			
	α(in %)	$\beta_{MKT\ CH4}$	$\beta_{SMB\ CH4}$	β_{VMG}	β_{PMO}	R^2		α(in %)	β_{MKT}	β_{ME}	$\beta_{I/A}$	β_{ROE}		R^2
r_{MKT}	0.07	1.02	0.18	0.02	-0.04	0.99								
t_{MKT}	0.97	119.11	9.48	0.83	-2.04									
$r_{SMB\ FF5}$	0.48	-0.05	0.72	-0.15	0.01	0.76	$r_{SMB\ FF5}$	0.00	-0.01	0.99	0.15	-0.23		0.97
$t_{SMB\ FF5}$	2.98	-2.45	17.42	-2.91	0.21		$t_{SMB\ FF5}$	-0.07	-1.93	66.53	5.86	-13.20		
r_{HML}	0.49	0.06	-0.26	0.20	-0.21	0.31	r_{HML}	0.88	0.03	-0.58	0.10	-0.11		0.34
t_{HML}	2.09	2.26	-4.37	2.65	-3.56		t_{HML}	4.28	1.17	-10.37	1.06	-1.73		

r_{RMW}	-0.59	-0.07	-0.22	0.43	0.08	0.57	r_{RMW}	-0.11	-0.08	-0.20	-0.45	0.56		0.71
t_{RMW}	-3.21	-3.14	-4.69	7.45	1.67		t_{RMW}	-0.79	-5.13	-5.51	-7.28	13.10		
r_{CMA}	0.21	-0.04	0.15	-0.09	-0.11	0.17	r_{CMA}	-0.06	-0.02	-0.02	0.92	-0.22		0.85
t_{CMA}	1.25	-2.20	3.41	-1.72	-2.65		t_{CMA}	-0.94	-2.27	-1.20	30.77	-10.72		
Panel B: The post-2007 subsample period (July 2008 to June 2019, 132 months)														
CH4			*q*-factor model to explain CH4				CH4			FF5 to explain CH4				
	α(in %)	β_{MKT}	β_{ME}	$\beta_{I/A}$	β_{ROE}	R^2		α(in %)	β_{MKT}	$\beta_{SMB\ FF5}$	β_{HML}	β_{RMW}	β_{CMA}	R^2
$r_{MKT\ CH4}$	-0.07	0.95	-0.05	-0.11	-0.04	0.99	$r_{MKT\ CH4}$	-0.16	0.96	-0.03	-0.03	0.04	0.02	0.99
$t_{MKT\ CH4}$	-0.96	106.29	-3.19	-3.14	-1.65		$t_{MKT\ CH4}$	-2.37	100.01	-1.27	-1.08	1.07	0.42	
$r_{SMB\ CH4}$	-0.40	0.10	1.00	0.25	-0.01	0.86	$r_{SMB\ CH4}$	0.00	0.07	0.81	-0.11	-0.10	-0.01	0.85
$t_{SMB\ CH4}$	-2.36	4.78	24.93	2.89	-0.10		$t_{SMB\ CH4}$	0.01	2.97	12.93	-1.60	-1.24	-0.15	
r_{VMG}	0.77	-0.04	-0.35	0.28	0.68	0.68	r_{VMG}	0.16	-0.06	-0.18	0.25	0.60	0.18	0.65
t_{VMG}	3.69	-1.57	-7.15	2.72	8.86		t_{VMG}	5.65	-2.24	-2.26	2.96	5.95	1.51	
r_{PMO}	0.95	-0.19	0.18	-0.16	-0.15	0.17	r_{PMO}	1.05	-0.20	-0.06	-0.25	-0.35	-0.19	0.21
t_{PMO}	2.73	-4.30	2.26	-0.92	-1.18		t_{PMO}	3.31	-4.54	-0.46	-1.86	-2.25	-1.07	
q			CH4 to explain *q*-factor model				*q*			FF5 to explain *q*-factor model				
	α(in %)	$\beta_{MKT\ CH4}$	$\beta_{SMB\ CH4}$	β_{VMG}	β_{PMO}	R^2		α(in %)	β_{MKT}	$\beta_{SMB\ FF5}$	β_{HML}	β_{RMW}	β_{CMA}	R^2
r_{MKT}	0.00	1.04	0.12	0.11	0.02	0.99								
t_{MKT}	0.01	113.58	6.72	4.64	1.17									
r_{ME}	0.56	-0.08	0.80	-0.10	-0.02	0.84	r_{ME}	0.29	-0.02	0.87	-0.06	-0.01	-0.14	0.97
t_{ME}	3.32	-3.57	18.67	-1.87	-0.38		t_{ME}	4.49	-1.97	35.99	-2.34	-0.29	-3.78	
$r_{I/A}$	0.28	-0.04	0.06	0.11	-0.04	0.07	$r_{I/A}$	0.28	-0.02	-0.03	-0.03	0.06	0.87	0.85
$t_{I/A}$	1.54	-1.61	1.23	1.86	-0.96		$t_{I/A}$	4.19	-1.69	-1.29	-0.99	1.94	22.50	
r_{ROE}	0.11	-0.06	0.06	0.55	-0.01	0.54	r_{ROE}	0.99	-0.06	-0.23	-0.16	0.43	-0.11	0.56
t_{ROE}	0.54	-2.42	1.11	8.20	-0.16		t_{ROE}	5.56	-2.58	-3.42	-2.11	4.99	-1.10	
FF5			CH4 to explain FF5				FF5			*q*-factor model to explain FF5				
	α(in %)	$\beta_{MKT\ CH4}$	$\beta_{SMB\ CH4}$	β_{VMG}	β_{PMO}	R^2		α(in %)	β_{MKT}	β_{ME}	$\beta_{I/A}$	β_{ROE}		R^2
r_{MKT}	0.00	1.04	0.12	0.11	0.02	0.99								
t_{MKT}	0.01	113.58	6.72	4.64	1.17									
$r_{SMB\ FF5}$	0.55	-0.08	0.81	-0.23	-0.03	0.85	$r_{SMB\ FF5}$	-0.02	-0.01	1.01	0.07	-0.22		0.98
$t_{SMB\ FF5}$	3.12	-3.33	18.02	-3.90	-0.71		$t_{SMB\ FF5}$	-0.36	-0.88	72.72	2.37	-10.30		
r_{HML}	0.31	0.09	-0.45	0.22	-0.08	0.52	r_{HML}	0.81	0.03	-0.70	0.34	-0.17		0.63
t_{HML}	1.18	2.56	-6.74	2.58	-1.21		t_{HML}	3.63	0.99	-13.34	3.10	-2.04		

r_{RMW}	-0.34	-0.08	-0.14	0.36	-0.03	0.51	r_{RMW}	-0.03	-0.08	-0.24	-0.43	0.50		0.66
t_{RMW}	-1.56	-2.69	-2.62	5.04	-0.58		t_{RMW}	-0.17	-3.88	-5.76	-4.97	7.83		
r_{CMA}	0.26	-0.03	0.00	-0.03	-0.05	0.01	r_{CMA}	-0.03	0.00	-0.03	0.97	-0.22		0.90
t_{CMA}	1.24	-0.95	-0.09	-0.51	-0.87		t_{CMA}	-0.43	-0.59	-1.91	30.40	-9.17		

Panel A. Significant rates of Raw Spread for each category under four different procedures (July 2008 to June 2019, 132 months)



Panel B. Significant rates of CAPM Alpha for each category under four different procedures (July 2008 to June 2019, 132 months)

Panel C. **Significant rates of Fama–French 3-factor Alpha for each category under four different procedures (July 2008 to June 2019, 132 months)**

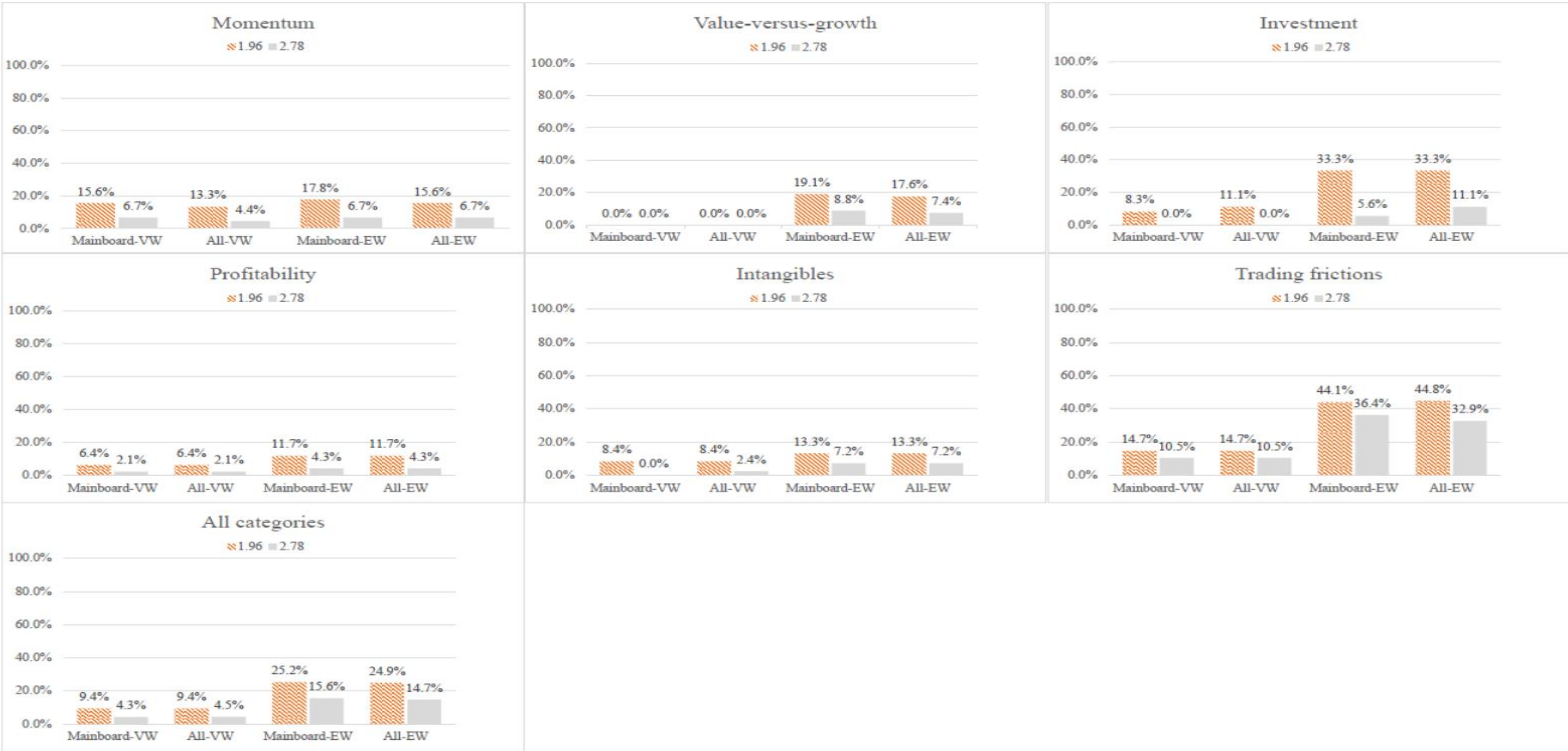


Figure A1. **Significant rates for each category under four different procedures (July 2008 to June 2019, 132 months)**
Panels A, B, and C plot the significant rates of raw spread, CAPM alpha, and Fama–French 3-factor alpha for each category under 4 different procedures. "Mainboard-VW" and "Mainboard-EW" denote Mainboard breakpoints with value- and equal-weighted returns; "All-VW" and "All-EW" denote all A-share breakpoints with value- and equal-weighted returns, respectively, in portfolio sorts. We apply the absolute *t*-statistics cutoff of 1.96 from single hypothesis testing at the 5% significance level (in red) and 2.78 for multiple hypothesis testing at the 5% level (in grey). For each category, the bars report the fractions of anomalies that are significant with *t*-statistics above the cutoffs. We have 45, 68, 36, 94, 83, and 143 anomalies in the momentum, value-versus-growth, investment, profitability, intangibles, and trading frictions categories, respectively. The total number of anomalies is 469 in the "All categories".

Appendix: Data Manual

We retrieve data regarding stock returns and accounting information from the China Stock Market and Accounting Research (CSMAR) database, which follows the standards of international databases such as CRSP and Compustat. The CSMAR database has been developed to meet the needs for financial analysis and research in China and is the only Chinese database available on the Wharton Research Data Services (WRDS) website. We obtain transaction data from CSMAR's China Stock Market Trading Database, which includes stock returns and market returns with cash dividends reinvested, number of shares outstanding, and closing prices. Accounting data are from CSMAR's China Stock Market Financial Statements Database, which covers the annual and quarterly consolidated financial statements of listed firms. We focus only on the Chinese A-share market, which is available for domestic investors in *yuan* or RMB. We treat China's 3-month RMB deposit rate as risk-free rate, which we obtain from the People's Bank of China website[1]. We obtain the annualized deposit rate and convert it into monthly risk-free rate. Our sample covers all Chinese A-shares with available accounting and stock market information, including listed firms on the two Mainboards, the SME board, and the GEM board. Our A-share benchmark return is the market return from the CSMAR database, a circulation market cap-weighted return using all available A-shares.

To ensure the quality of the data, we apply the following standard screening procedures used in previous studies. First, we exclude firms with negative book equity. Second, we exclude financial firms based on the CSRC industry classification. Third, we exclude firms marked as "ST" (special treatment) or "PT" (particular transfer) or that have any other abnormal trading status, as they could be distressed or illiquid because of additional restrictions on trading. Finally, we exclude penny stocks with share price below 5 *yuan* after forming quintiles but before calculating quintile returns because of microstructure concerns and the lack of trading activity.

Our sample covers annual and quarterly financial statement data from 1999 to 2018 and stock return data from July 2000 to June 2019, a total of 228 months. We focus on the post-2000 period in our main body of analysis for three reasons. First, during the earlier period, the number of listed stocks is relatively small. When we form anomaly quintile portfolios, if the number of stocks in each portfolio is not sufficient, a major concern is that the sorted portfolios may not be well diversified. This would reduce the power of our tests. Second, the price limit rule in the Chinese stock market began on December 16, 1996, which helps rein in extreme stock returns. We choose the post-1997 period to ensure uniformity in the trading data. Third, it is important to note that although the Chinese A-share market opened for trading in December

[1] See http://www.pbc.gov.cn/zhengcehuobisi/125207/125213/125440/125838/125888/2968982/index.html. The risk-free rate in the CSMAR is the one-year fixed-term deposit rate or the one-year Treasury note issued by the Chinese government. We choose the 3-month deposit rate following previous studies of the Chinese capital market.

1990, accounting information that is sufficiently reliable for use in analysis was only available from the late 1990s onwards.[2] Therefore, we choose the post-2000 period to ensure uniformity in the accounting data. Our analysis starts with all listed firms' 1999 annual financial reports to reflect the implementation of the new accounting standards.

When constructing testing quintiles, we always use the Chinese A share's Mainboard breakpoints to split all the A share's Mainboard, SME, and GEM stocks into quintiles based on the anomaly variables, and we then calculate value-weighted quintile returns (Mainboard-VW procedure). We also replicate our anomaly tests using five alternative sorting and weighting procedures, including All-VW, Mainboard-EW, All-EW, Shanghai Mainboard-VW, and Mainboard-VW with non-microcaps procedures. We examine a total of 469 anomaly variables for the Chinese A share market in this paper, most of which are constructed following the methods of Hou, Xue, and Zhang (2020).

The Chinese stock market has undergone many reforms since its establishment in 1990. Two of these are of particular importance, especially for asset-pricing studies: (i) the completion of the split-share structure reform at the end of 2007 and (ii) the implementation of the new Accounting Standard for Business Enterprises (ASBE) as of January 1, 2007. Therefore, the post-2007 subsample represents a cleaner sample for asset-pricing tests in the Chinese stock market. We conduct our analysis over the whole sample period from July 2000 to June 2019, and the post-2007 subsample period from July 2008 to June 2019.

Since the objective of SOEs is not strictly profit maximization in China (e.g., Carpenter et al. 2021), we therefore also split our whole sample into SOEs and non-SOEs and redo all of the anomaly tests and factor model comparison tests in these two subsamples. We obtain the ownership property (i.e., SOE or non-SOE) of each firm from the China Listed Firm's Equity of Nature Research Database in CSMAR. This ownership property data have been available since December 31, 2003. Therefore, we can only study anomaly replication and digestion for the period after 2003. We have reported the number of SOE and non-SOE firms year by year in the online Appendix Table A15[3].

Our anomaly variables contain annually and monthly sorted variables. For monthly sorted variables, we examine five different holding periods (1, 3, 6, 9, and 12 months). This implementation is inspired by

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[2] The MOF promulgated seven specific sets of standards in 1998, including the "Standards for Cash Flow Statement," "Standards for Post Balance Sheet Events," "Standards for Debt Restructuring," "Standards for Revenue," "Standards for Investments," "Standards for Construction Contracts," and "Standards for Changes in Accounting Policies and Accounting Estimates and Correction of Accounting Errors." These standards have been implemented since January 1, 1999, after which the regulations on accounting treatment and information disclosure began to gradually improve. Moreover, the MOF issued an indispensable additional regulation in 1999, requiring all listed companies to adopt the retrospective method in handling changes in accounting policies and the allowance method in handling losses resulting from non-performing accounts. It also required firms to set up four reserves in accordance with the new standards. These changes played a significant role in strengthening the reliability of listed firms' accounting information.

[3] An important China-specific characteristic is that the ownership property of a firm varies from year to year in the CSMAR database because the controlling shareholder or the ultimate controller may change over time. Firms with missing ownership property data are not included when we summarize Table A15. For example, there are 1,077 SOE firms and 2,472 non-SOE firms at the end of 2018.

the momentum test in different holding periods from Chan, Jegadeesh, and Lakonishok (1996). There are 104 unique annually 73 unique monthly sorted variables with five holding periods, yielding a total of 469 anomaly variables. Of these, 45 are in the momentum panel, 68 in the value-versus-growth panel, 36 in the investment panel, 94 in the profitability panel, 83 in the intangibles panel, and 143 in the trading frictions panel.

However, given the differences in accounting variables between China and the U.S., we make some appropriate adjustments when constructing anomaly variables for the Chinese A-share market. For example, quarterly variables from the income statement are calculated as the quarterly change in the year-to-date corresponding variables from the CSMAR database. To make readers easier to compare the results from the Chinese market with those from the U.S. market, we use the same or similar names, definitions, descriptions, and constructions of anomaly variables studied by Hou, Xue, and Zhang (2020) and their variants without strictly following the common practice of using "quotations". Details about variable definitions and portfolio constructions are as follows.

Appendix A: Variable Definitions

List of sections for variable definitions

A.1 Momentum panel: 45 variables
A.2 Value-versus-growth panel: 68 variables
A.3 Investment panel: 36 variables
A.4 Profitability panel: 94 variables
A.5 Intangibles panel: 83 variables
A.6 Trading frictions panel: 143 variables

A.1 Momentum (45 variables)

A.1.1 Sue1, Sue3, Sue6, Sue9, and Sue12: Standardized Unexpected Earnings

Following Foster, Olsen, and Shevlin (1984), we calculate the standardized unexpected earnings (abbreviated to Sue) as the change of the quarterly earnings (calculated using CSMAR item B002000000) per share relative to its value four quarters ago, scaled by the standard deviation of this change over the past eight quarters. We require at least six quarters' observations when calculating the standard deviation of the change in quarterly earnings. At the beginning of each month *t*, all A share stocks, including Mainboard, SME, and GEM stocks, are sorted into quintiles based on their most recent past Sue. We use Sue computed with the quarterly earnings from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent Sue is no more than six months before forming portfolios to exclude dated information on earnings, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (Sue1) and from month *t* to *t*+*N*-1 (Sue*N*, *N* = 3, 6, 9, and 12). For the Sue*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Sue*N* quintile.

A.1.2 Abr1, Abr3, Abr6, Abr9, and Abr12: Cumulative Abnormal Returns around Earnings Announcement Dates

Following Chan, Jegadeesh, and Lakonishok (1996), we compute the cumulative abnormal stock return (Abr) with the daily abnormal returns around the latest quarterly earnings announcement date (CSMAR item Annodt):

$$Abr_i = \sum_{d=-2}^{+1} (r_{id} - r_{md}), \tag{A1}$$

where the earnings announcement date is denoted as day 0, r_{id} as stock *i*'s return on day *d*, and r_{md} as the value-weighted market return on day *d*. Taking into account of the delayed reaction to earnings news, we include one (trading) day after the announcement date when cumulating daily returns. At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past Abr. We require that the fiscal quarter end corresponding to this most recent Abr is no more than six months before forming portfolios to exclude dated information on earnings, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (Abr1) and from month *t* to *t*+*N*-1 (Abr*N*, *N* = 3, 6, 9, and 12). For the Abr*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Abr*N* quintile.

A.1.3 $R^6$1, $R^6$3, $R^6$6, $R^6$9, and $R^6$12: Previous Six-month Returns

The price momentum (R^6) defined as the past six-month returns (skipping the latest month) is measured in accordance with Jegadeesh and Titman (1993). Stocks are sorted into quintiles based on their past six-month returns from month *t*-7 to *t*-2 at the beginning of each month *t*. Skipping month *t*-1, we separately calculate monthly portfolio returns, for the current month *t* ($R^6$1) and from month *t* to *t*+*N*-1 (R^6N, *N* = 3, 6, 9, and 12). For the R^6N quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this R^6N quintile.

A.1.4 R^{11}1, R^{11}3, R^{11}6, R^{11}9, and R^{11}12: Previous 11-month Returns

The price momentum (R^{11}) defined as the past 11-month returns (skipping the latest month) is measured in accordance with Fama and French (1996). Stocks are sorted into quintiles based on their past 11-month returns from month *t*-12 to *t*-2 at the beginning of each month *t*. Skipping month *t*-1, we separately calculate monthly portfolio returns, for the current month *t* (R^{11}1) and from month *t* to *t*+*N*-1 ($R^{11}N$, *N* = 3, 6, 9, and 12). For the $R^{11}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $R^{11}N$ quintile.

A.1.5 Rs1, Rs3, Rs6, Rs9, and Rs12: Revenue Surprises

Following Jegadeesh and Livnat (2006), we calculate the revenue surprises (Rs) as the change of the quarterly revenue (calculated using CSMAR item B001100000) per share relative to its value four quarters ago scaled by the standard deviation of this change over the past eight quarters. We require at least six quarters' observations when calculating the standard deviation of the fluctuation in quarterly revenue per share. At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past Rs. We use Rs computed with the quarterly revenue from the most recent quarterly earnings announcement dates (CSMAR item Annodt). Jegadeesh and Livnat (2006) find that the quarterly revenue data are generally available when earnings are announced. We require that the fiscal quarter end corresponding to this most recent Rs is no more than six months before forming portfolios to exclude dated information on revenue, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (Rs1) and from month *t* to *t*+*N*-1 (Rs*N*, *N* = 3, 6, 9, and 12). For the Rs*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Rs*N* quintile.

A.1.6 Tes1, Tes3, Tes6, Tes9, and Tes12: Tax Expense Surprises

Following Thomas and Zhang (2011), we calculate the tax expense surprises (Tes) as the change of tax expense (calculated using CSMAR item B002100000) per share relative to its value four quarters ago scaled by the assets per share four quarters ago. At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past Tes. We exclude firms with zero Tes considering that most of these firms pay no taxes. We separately calculate monthly portfolio returns, for the current month *t* (Tes1) and from month *t* to *t*+*N*-1 (Tes*N*, *N* = 3, 6, 9, and 12). For the Tes*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Tes*N* quintile.

A.1.7 52w1, 52w3, 52w6, 52w9, and 52w12: 52-week High

We calculate the 52-week high in keeping with George and Hwang (2004). Stocks are sorted into quintiles based on their 52w at the beginning of each month *t*, which is measured as a stock's daily price (CSMAR item Clsprc) at the end of month *t*-1 divided by its highest daily price during the past 12 months from month *t*-12 to month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (52w1) and from month *t* to *t*+*N*-1 (52w*N*, *N* = 3, 6, 9, and 12). For the 52w*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this 52w*N* quintile.

A.1.8 $\epsilon^6 1$, $\epsilon^6 3$, $\epsilon^6 6$, $\epsilon^6 9$, and $\epsilon^6 12$: Six-month Residual Momentum

The six-month residual momentum (ϵ^6) is measured in accordance with Blitz, Huij, and Martens (2011). At the beginning of each month *t*, stocks are sorted into quintiles based on the average of residual returns during the past six months from month *t*-7 to *t*-2 scaled by their standard deviation over the same period. The residual returns for month *t* are estimated from regressing stocks' excess returns on the Fama–French three factors each month over a prior 36-month period from month *t*-36 to month *t*-1. We require a minimum of 15 valid observations of the prior 36 months' historical returns for the estimation. Skipping month *t*-1, we separately calculate monthly portfolio returns, for the current month *t* ($\epsilon^6 1$) and from month *t* to *t*+*N*-1 ($\epsilon^6 N$, *N* = 3, 6, 9, and 12). For the $\epsilon^6 N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\epsilon^6 N$ quintile.

A.1.9 $\epsilon^{11} 1$, $\epsilon^{11} 3$, $\epsilon^{11} 6$, $\epsilon^{11} 9$, and $\epsilon^{11} 12$: 11-month Residual Momentum

The 11-month residual momentum (ϵ^{11}) is measured in accordance with Blitz, Huij, and Martens (2011). At the beginning of each month *t*, stocks are sorted into quintiles based on the average of residual returns during the past 11 months from month *t*-12 to *t*-2 scaled by their standard deviation over the same period. The residual returns for month *t* are estimated from regressing stocks' excess returns on the Fama–French three factors each month over a prior 36-month period from month *t*-36 to month *t*-1. We require a minimum of 15 valid observations of the prior 36 months' historical returns for the estimation. Skipping month *t*-1, we separately calculate monthly portfolio returns, for the current month *t* ($\epsilon^{11} 1$) and from month *t* to *t*+*N*-1 ($\epsilon^{11} N$, *N* = 3, 6, 9, and 12). For the $\epsilon^{11} N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\epsilon^{11} N$ quintile.

A.2 Value-versus-growth (68 variables)

A.2.1 Bm: Book-to-market Equity

We follow Rosenberg, Reid, and Lanstein (1985) to calculate the book-to-market equity (Bm). At the end of June of each year *t*, stocks are sorted into quintiles based on their Bm, which is the ratio of book equity for the fiscal year ending in calendar year *t*-1 to market equity at the end of calendar year *t*-1. The book equity is measured as the stockholders' book equity (CSMAR item A003000000). We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.2 Bmj: Book-to-June-end Market Equity

We calculate the book-to-June-end market equity ratio (Bmj) following Asness and Frazzini (2013). At the end of June of each year *t*, stocks are sorted into quintiles based on the Bmj, which is the ratio of the book equity per share for the fiscal year ending in calendar year *t*-1 to the share price at the end of June of calendar year *t*. We measure the book equity per share as the stockholders' book equity (CSMAR item A003000000) divided by the number of shares outstanding. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.3 Bm^q1, Bm^q3, Bm^q6, Bm^q9, and Bm^q12: Quarterly Book-to-market Equity

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly book-to-market equity (Bm^q), which is the ratio of book equity for the latest fiscal quarter end (at least four months prior) to market equity at the end of month *t*-1. We measure the book equity as the stockholders' book equity (CSMAR item A003000000), and require that the fiscal quarter end corresponding to this latest book equity is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Bm^q1) and from month *t* to *t*+*N*-1 (Bm^qN, *N* = 3, 6, 9, and 12). For the Bm^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Bm^qN quintile.

A.2.4 Dm: Debt-to-market Equity

We follow Bhandari (1988) to calculate the debt-to-market equity ratio (Dm). At the end of June of each year *t*, stocks are sorted into quintiles based on the Dm, which is the ratio of total debt for the fiscal year ending in calendar year *t*-1 to the market equity at the end of calendar year *t*-1. Total debt is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). Firms with a total debt of zero are excluded. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.5 Dm^q1, Dm^q3, Dm^q6, Dm^q9, and Dm^q12: Quarterly Debt-to-market Equity

At the beginning of each month *t*, stocks are sorted into quintiles based on their quarterly debt-to-market equity (Dm^q), which is the ratio of the total debt for the latest fiscal quarter to the market equity at the end of month *t*-1. Total debt is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). We require that the fiscal quarter end corresponding to this latest total debt is at least four months prior to forming portfolios. Firms with a total debt of zero are excluded. We separately calculate monthly portfolio returns, for the current month *t* (Dm^q1) and from month *t* to *t*+*N*-1 (Dm^qN, *N* = 3, 6, 9, and 12). For the Dm^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Dm^qN quintile.

A.2.6 Am: Assets-to-market Equity

We follow Fama and French (1992) to calculate assets-to-market equity (Am). At the end of June of each year *t*, stocks are sorted into quintiles based on Am, which is measured as the ratio of the total assets (CSMAR item A001000000) for the fiscal year ending in calendar year *t*-1 to the market equity at the end of calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.7 Am^q1, Am^q3, Am^q6, Am^q9, and Am^q12: Quarterly Assets-to-market

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly asset-to-market equity (Am^q), which is measured as the ratio of total assets (CSMAR item A001000000) for the latest fiscal quarter to the market equity at the end of month *t*-1. We require that the fiscal quarter end corresponding to the latest total assets is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Am^q1) and from month *t* to *t*+*N*-1 (Am^qN, *N* = 3, 6, 9, and 12). For the Am^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\mathrm{Am}^{q}N$ quintile.

A.2.8 Rev1, Rev3, Rev6, Rev9, and Rev12: Reversal

We follow De Bondt and Thaler (1985) to measure the long-term reversal (Rev) effect. Stocks are sorted into quintiles based on their past returns over the period from month *t*-60 to *t*-13 at the beginning of each month *t*. We separately calculate monthly portfolio returns, for the current month *t* (Rev1) and from month *t* to *t*+*N*-1 (Rev*N*, *N* = 3, 6, 9, and 12). For the Rev*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Rev*N* quintile.

A.2.9 Ep: Earnings-to-price

We follow Basu (1983) to calculate the earnings-to-price ratio (Ep). At the end of June of each year *t*, stocks are sorted into quintiles based on Ep, which is the ratio of the income before extraordinary items (CSMAR item B002000000) for the fiscal year ending in calendar year *t*-1 to the market equity at the end of calendar year *t*-1. Only firms with positive earnings are included. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.10 $\mathrm{Ep}^{q}1$, $\mathrm{Ep}^{q}3$, $\mathrm{Ep}^{q}6$, $\mathrm{Ep}^{q}9$, and $\mathrm{Ep}^{q}12$: Quarterly Earnings-to-price

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly earnings-to-price ratio (Ep^{q}), which is the ratio of the income before extraordinary items (calculated using CSMAR item B002000000) to the market equity at the end of month *t*-1. We use quarterly earnings from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to the most recent quarterly earnings is no more than six months before forming portfolios to exclude dated information on earnings, but precedes the earnings announcement date to eliminate potential errors in records. Only firms with positive earnings are included. We separately calculate monthly portfolio returns, for the current month *t* ($\mathrm{Ep}^{q}1$) and from month *t* to *t*+*N*-1 ($\mathrm{Ep}^{q}N$, *N* = 3, 6, 9, and 12). For the $\mathrm{Ep}^{q}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\mathrm{Ep}^{q}N$ quintile.

A.2.11 Cp: Cash Flow-to-price

We follow Lakonishok, Shleifer, and Vishny (1994) to calculate the cash flow-to-price ratio (Cp). At the end of June of each year *t*, stocks are sorted into quintiles based on Cp, which is the ratio of the cash flow for the fiscal year ending in calendar year *t*-1 to the market equity at the end of calendar year *t*-1. The cash flow is computed as the income before extraordinary items (CSMAR item B002000000) plus the depreciation (CSMAR item D000103000). Only firms with positive cash flows are included. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.12 $\mathrm{Cp}^{q}1$, $\mathrm{Cp}^{q}3$, $\mathrm{Cp}^{q}6$, $\mathrm{Cp}^{q}9$, and $\mathrm{Cp}^{q}12$: Quarterly Cash Flow-to-price

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly cash flow-to-price ratio (Cp^{q}), which is the ratio of the cash flow for the latest fiscal quarter to the market equity at the end of month *t*-1. We require that the fiscal quarter end corresponding to this latest cash flow is at least four months prior to forming portfolios. The quarterly cash flow is computed as the sum of income before extraordinary items (CSMAR item B002000000) and the depreciation (CSMAR item D000103000). We keep only firms with positive cash flows. We separately calculate monthly portfolio returns, for the current month *t* (Cp^q1) and from month *t* to *t*+*N*-1 (Cp^qN, *N* = 3, 6, 9, and 12). For the Cp^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Cp^qN quintile.

A.2.13 Sr: Five-year Sales Growth Rank

We calculate the five-year sales growth rank (Sr) in accordance with Lakonishok, Shleifer, and Vishny (1994). The Sr in June of year *t* is computed as the weighted average of the annual sales growth ranks for the past five years:

$$Sr_i = \sum_{j=1}^{5} (6-j) \times Rank(t-j), \tag{A2}$$

where sales growth for year *t-j* is the growth rate in sales (CSMAR item B001100000) from the fiscal year ending in calendar year *t-j*-1 to the fiscal year ending in calendar year *t-j*. We keep only firms with positive sales, and request full data of five prior years when assigning firms' annual sales growth ranks. For each year from *t*-5 to *t*-1, we sort all firms into quintiles based on their annual sales growth, and then assign each firm the rank of the quintile it is located. At the end of June of each year *t*, stocks are sorted into quintiles based on the Sr. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.14 Sg: Sales Growth

We follow Lakonishok, Shleifer, and Vishny (1994) to calculate the sales growth (Sg). At the end of June of each year *t*, stocks are sorted into quintiles based on their Sg, which is the growth in annual sales (CSMAR item B001100000) from the fiscal year ending in calendar year *t*-2 to the fiscal year ending in calendar year *t*-1. Only firms with positive sales are kept. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.15 Em: Enterprise Multiple

We follow Loughran and Wellman (2011) to calculate the enterprise multiple (Em). The enterprise multiple (Em), is the ratio of the enterprise value to the operating income (CSMAR item B001300000) before depreciation (CSMAR item D000103000). The enterprise value is computed as market equity plus total debt, plus the book value of preferred stocks (CSMAR item A003112101, zero if missing), and minus cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Total debt is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). Stocks are sorted into quintiles based on the Em for the fiscal year ending in calendar year *t*-1 at the end of June of each year *t*. The market equity is measured at the end of calendar year *t*-1. Only firms with positive enterprise value as well as operating income before depreciation are included for the portfolio formation. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.16 Em^q1, Em^q3, Em^q6, Em^q9, and Em^q12: Quarterly Enterprise Multiple

We calculate the quarterly enterprise multiple (Em^q) as the ratio of the enterprise value scaled by the operating income (calculated using CSMAR item B001300000) before depreciation (CSMAR item D000103000). The enterprise value is computed as market equity plus total debt, plus the book value of preferred stocks (CSMAR item A003112101, zero if missing), and minus cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Total debt is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). At the beginning of each month *t*, stocks are sorted into quintiles based on the Em^q for the latest fiscal quarter. We require that the fiscal quarter end corresponding to this latest Em^q is at least four months prior to forming portfolios. The market equity is measured at the end of month *t*-1. Only firms with positive enterprise value as well as operating income before depreciation are included for the portfolio formation. We separately calculate monthly portfolio returns, for the current month *t* (Em^q1) and from month *t* to *t*+*N*-1 (Em^qN, *N* = 3, 6, 9, and 12). For the Em^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Em^qN quintile.

A.2.17 Sp: Sales-to-price

We follow the method of Barbee, Mukherji, and Raines (1996) to calculate the sales-to-price ratio (Sp). At the end of June of each year *t*, stocks are sorted into quintiles based on the sales-to-price ratio (Sp), which is the ratio of sales (CSMAR item B001100000) for the fiscal year ending in calendar year *t*-1 to the market equity at the end of calendar year *t*-1. Only firms with positive sales are included for the portfolio formation. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.18 Sp^q1, Sp^q3, Sp^q6, Sp^q9, and Sp^q12: Quarterly Sales-to-price

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly sales-to-price ratio (Sp^q), which is the ratio of quarterly sales (calculated using CSMAR item B001100000) to the market equity at the end of month *t*-1.We use the quarterly sales from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to the most recent quarterly sales is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. Only firms with positive sales are included for the portfolio formation. We separately calculate monthly portfolio returns, for the current month *t* (Sp^q1) and from month *t* to *t*+*N*-1 (Sp^qN, *N* = 3, 6, 9, and 12). For the Sp^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Sp^qN quintile.

A.2.19 Ocp: Operating Cash Flow-to-price

We follow the method of Desai, Rajgopal, and Venkatachalam (2004) to calculate the operating cash flow-to-price ratio (Ocp). At the end of June of each year *t*, stocks are sorted into quintiles based on Ocp, which is the ratio of operating cash flows (CSMAR item C001000000) for the fiscal year ending in calendar year *t*-1 to the market equity at the end of calendar year *t*-1. Operating cash flows are measured as cash flows from the operating activities in the CSMAR Cash Flow Statement (Direct). Only firms with positive operating cash flows are included for the portfolio formation. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.20 Ocp^q1, Ocp^q3, Ocp^q6, Ocp^q9, and Ocp^q12: Quarterly Operating Cash Flow-to-price

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly operating cash flow-to-price (Ocp^q), which is the ratio of the quarterly operating cash flow (calculated using CSMAR item

C001000000) for the latest fiscal quarter to the market equity at the end of month *t*-1. We require that the fiscal quarter end corresponding to this latest operating cash flow is at least four months prior to forming portfolios. The operating cash flow is computed as the quarterly change in year-to-date net cash flow from the operating activities. Only firms with positive operating cash flows are included. We separately calculate monthly portfolio returns, for the current month *t* (Ocp^q1) and from month *t* to *t*+*N*-1 (Ocp^qN, $N = 3, 6, 9$, and 12). For the Ocp^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ocp^qN quintile.

A.2.21 Ebp and Ndp: Enterprise Book-to-price and Net Debt-to-price

We calculate the enterprise book-to-price (Ebp) ratio and the net debt-to-price ratio (Ndp) following Penman, Richardson, and Tuna (2007). Ebp is the ratio of the book value of net operating assets (net debt plus book equity) to the market value of net operating assets (net debt plus market equity). Ndp is the ratio of net debt to market equity. Net debt is financial liabilities minus financial assets. Financial liabilities include long-term debt (CSMAR item A002206000), debt in current liabilities (CSMAR item A002101000+A002125000), and the carrying value of preferred stock (CSMAR item A003112101). Financial assets are measured as the sum of cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. The market equity is computed as the number of common shares outstanding multiplied by the share price. At the end of June of each year *t*, stocks are sorted into quintiles based on the Ebp and the Ndp for the fiscal year ending in calendar year *t*-1 separately. Market equity is measured at the end of calendar year *t*-1. Only firms with positive book and market values of net operating assets are included for the Ebp portfolios. Only firms with positive net debt are included for the Ndp portfolios. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.2.22 Ebp^q1, Ebp^q3, Ebp^q6, Ebp^q9, Ebp^q12, Ndp^q1, Ndp^q3, Ndp^q6, Ndp^q9, and Ndp^q12: Quarterly Enterprise Book-to-price and Quarterly Net Debt-to-price

At the beginning of each month *t*, stocks are sorted into quintiles based on the quarterly enterprise book-to-price (Ebp^q) and the quarterly net debt-to-price (Ndp^q) for the latest fiscal quarter separately. We measure Ebp^q as the ratio of the book value of net operating assets (net debt plus book equity, CSMAR item A003000000) to the market value of net operating assets (net debt plus market equity), and Ndp^q as the ratio of net debt to market equity. Net debt is financial liabilities minus financial assets. Financial liabilities include long-term debt (CSMAR item A002206000), debt in current liabilities (CSMAR item A002101000+A002125000), and the carrying value of preferred stock (CSMAR item A003112101). Financial assets are measured as the sum of cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. The market equity is computed as the number of common shares outstanding multiplied by the share price. We require that the fiscal quarter end corresponding to these latest net operating assets and net debt is at least four months prior to forming portfolios. The market equity is measured at the end of month *t*-1. Only firms with positive book and market values of net operating assets are included for the Ebp^q portfolios. Only firms with positive net debt are included for the Ndp^q portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Ebp^q1 and Ndp^q1) and from month *t* to *t*+*N*-1 (Ebp^qN and Ndp^qN, $N = 3, 6, 9$, and 12). For the Ebp^qN or Ndp^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ebp^{q}N or Ndp^{q}N quintile.

A.3 Investment (36 variables)

A.3.1 Aci: Abnormal Corporate Investment

We measure the abnormal corporate investment (Aci) following the method of Titman, Wei, and Xie (2004). At the end of June of year t, we calculate the Aci_t as:

$$Aci_t = \frac{Ce_{t-1}}{(Ce_{t-2} + Ce_{t-3} + Ce_{t-4})/3} - 1, \tag{A3}$$

where Ce_{t-j} is the ratio of capital expenditures (CSMAR item C002007000) to sales (CSMAR item B001100000) for the fiscal year ending in calendar year t-j. We regard the average of past three years' capital expenditures as the benchmark investment in the portfolio formation year. At the end of June of each year t, stocks are sorted into quintiles based on the Aci. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.2 I/A: Investment-to-assets

We calculate the investment-to-assets (I/A) variable following the method of Cooper, Gulen, and Schill (2008). At the end of June of each year t, stocks are sorted into quintiles based on the I/A, which is measured as the growth in the total assets, namely the ratio of the total assets (CSMAR item A001000000) for the fiscal year ending in calendar year t-1 to the total assets for the fiscal year ending in calendar year t-2 minus one. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.3 Ia^{q}1, Ia^{q}3, Ia^{q}6, Ia^{q}9, and Ia^{q}12: Quarterly Investment-to-assets

The quarterly investment-to-assets (Ia^{q}) variable, is computed as the ratio of quarterly total assets (CSMAR item A001000000) to its four-quarter-lagged value minus one. At the beginning of each month t, stocks are sorted into quintiles based on the Ia^{q} for the latest fiscal quarter. We require that the fiscal quarter end corresponding to these latest total assets is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month t (Ia^{q}1) and from month t to $t+N$-1 (Ia^{q}N, N = 3, 6, 9, and 12). For the Ia^{q}N quintiles that are set to be held for N months before being rebalanced, there are N portfolios formed at different months within the prior N-month holding period per quintile per month. In each month, we compute the average monthly return of the N portfolios for a given quintile, and regard it as the monthly return of this Ia^{q}N quintile.

A.3.4 dPia: Changes in PPE and Inventory-to-assets

We follow Lyandres, Sun, and Zhang (2008) to calculate the changes in PPE and inventory-to-assets (dPia). The dPia is computed as the annual change in gross property, plant, and equipment (CSMAR item A001212000) plus the annual change in inventory (CSMAR item A001123000) scaled by one-year-lagged total assets (CSMAR item A001000000). At the end of June of each year t, stocks are sorted into quintiles based on the dPia for the fiscal year ending in calendar year t-1. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.5 Noa: Net Operating Assets

We follow Hirshleifer, Hou, Teoh, and Zhang (2004) to measure net operating assets (Noa) as operating assets minus operating liabilities. Operating assets are total assets (CSMAR item A001000000) minus cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Operating liabilities are total assets (CSMAR item

A001000000) subtracted by debt in current liabilities (CSMAR item A002101000+A002125000), long-term debt (CSMAR item A002206000), preferred stocks (CSMAR item A003112101, zero if missing), and common equity (CSMAR item A003000000). Noa is the ratio of net operating assets to one-year-lagged total assets (CSMAR item A001000000). At the end of June of each year *t*, stocks are sorted into quintiles based on the Noa for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.6 dLno: Changes in Long-term Net Operating Assets
Following the method of Fairfield, Whisenant, and Yohn (2003), we measure the changes in long-term net operating assets as the annual change in net PPE (CSMAR item A001212000), plus the change in intangibles (CSMAR item A001218000), plus the change in other long-term assets (CSMAR item A001223000), minus the change in other long-term liabilities (CSMAR item A002209000), and plus depreciation (CSMAR item D000103000) and amortization expenses (CSMAR item D000104000). The dLno is the ratio of the change in long-term net operating assets to the average of total assets from the current and previous years. At the end of June of each year *t*, stocks are sorted into quintiles based on the dLno for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.7 Ig: Investment Growth
We follow Xing (2008) to measure the investment growth (Ig) variable. At the end of June of each year *t*, stocks are sorted into quintiles based on Ig, which is the growth rate in capital expenditures (CSMAR item C002007000) from the fiscal year ending in calendar year *t*-2 to the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.8 2Ig: Two-year Investment Growth
We follow Anderson and Garcia-Feijoo (2006) to measure the two-year investment growth (2Ig) variable. At the end of June of each year *t*, stocks are sorted into quintiles based on 2Ig, which is the growth rate in capital expenditures (CSMAR item C002007000) from the fiscal year ending in calendar year *t*-3 to the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.9 3Ig: Three-year Investment Growth
We follow Anderson and Garcia-Feijoo (2006) to compute the three-year investment growth (3Ig) variable. At the end of June of each year *t*, stocks are sorted into quintiles based on 3Ig, which is the growth rate in capital expenditures (CSMAR item C002007000) from the fiscal year ending in calendar year *t*-4 to the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.10 Nsi: Net Stock Issues
We follow Pontiff and Woodgate (2008) to measure net stock issues (Nsi). At the end of June of year *t*, stocks are sorted into quintiles based on Nsi, which is computed as the natural log of the ratio of the shares outstanding from the fiscal year ending in calendar year *t*-1 to the shares outstanding from the fiscal year ending in calendar year *t*-2. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.11 dIi: Percentage Change in Investment Relative to Industry
We measure the percentage change in investment relative to industry (dIi) in accordance with Abarbanell

and Bushee (1998), which is the percentage change in firm investment from its prior two-year average value minus the percentage change in industry investment from its prior two-year average value. For example, %d(Investment) = [Investment(t)−E[Investment(t)]]/E[Investment(t)], in which E[Investment(t)] = [Investment($t-1$) + Investment($t-2$)]/2. dIi is defined as %d(Investment) − %d(Industry investment). Firm investment is capital expenditures (CSMAR item C002007000), and industry investment is the aggregate investment across all firms sharing the same industry code (CSMAR item Nnindcd). We require a positive prior two-year average value for firms to be included and at least two firms in each industry. At the end of June of each year t, stocks are sorted into quintiles based on dIi for the fiscal year ending in calendar year $t-1$. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.12 Cei: Composite Equity Issuance

We measure composite equity issuance (Cei) following Daniel and Titman (2006). At the end of June of each year t, stocks are sorted into quintiles based on Cei, which is defined as the log growth rate in the market equity minus the stock return:

$$Cei_i = log(ME_t/ME_{t-5}) - r(t-5, t), \quad \text{(A4)}$$

where $r(t\text{-}5, t)$ is the cumulative log stock return over the past five years from the end of June in year t-5 to the end of June in year t, and ME_t is the market equity at the end of June in year t. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.13 Cdi: Composite Debt Issuance

We measure composite debt issuance (Cdi) following the method of Lyandres, Sun, and Zhang (2008). At the end of June of each year t, stocks are sorted into quintiles based on Cdi, which is defined as the log growth rate of the book value of total debt from the fiscal year ending in calendar year t-6 to the fiscal year ending in calendar year t-1. Total debt is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.14 Ivg: Inventory Growth

We calculate inventory growth (Ivg) following the method of Belo and Lin (2011). At the end of June of each year t, stocks are sorted into quintiles based on Ivg, which is defined as the annual growth rate in inventory (CSMAR item A001123000) from the fiscal year ending in calendar year t-2 to the fiscal year ending in calendar year t-1. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.15 Ivc: Inventory Changes

We calculate the inventory change (Ivc) following the method of Thomas and Zhang (2002). At the end of June of each year t, stocks are sorted into quintiles based on Ivc, which is defined as the ratio of the annual change in inventory (CSMAR item A001123000) to the average of total assets (CSMAR item A001000000) for the fiscal years ending in calendar year t-2 and t-1. Firms with no inventory for the past two fiscal years are excluded. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.3.16 Oa: Operating Accruals

In accordance with Hribar and Collins (2002), we measure operating accruals (Oa) as net income (CSMAR item B002000000) minus net cash flows from operations (CSMAR item C001000000). In China, data from the statement of cash flows are not available until 1998. At the end of June of each year *t*, stocks are sorted into quintiles based on the ratio of Oa for the fiscal year ending in calendar year *t*-1 to total assets (CSMAR item A001000000) for the fiscal year ending in calendar year *t*-2. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.17 Ta: Total Accruals

We use the cash flow approach to measure total accruals (Ta). Ta is computed as net income (CSMAR item B002000000) minus the sum of total operating (CSMAR item C001000000), investing (CSMAR item C002000000), and financing (CSMAR item C003000000) cash flows. In China, data from the statement of cash flows are not available until 1998. At the end of June of each year *t*, stocks are sorted into quintiles based on the ratio of Ta for the fiscal year ending in calendar year *t*-1 to the total assets for the fiscal year ending in calendar year *t*-2. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.18 dWc, dCoa, and dCol: Changes in Net Non-cash Working Capital, in Current Operating Assets, and in Current Operating Liabilities

Richardson, Sloan, Soliman, and Tuna (2005, Table 10) show that several components of total accruals also forecast returns in the cross-section. dWc is the change in net non-cash working capital (Wc), which is defined as current operating assets (Coa) minus current operating liabilities (Col). Coa refers to current assets (CSMAR item A001100000) minus cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Col is current liabilities (CSMAR item A002100000) minus debt in current liabilities (CSMAR item A002101000+A002125000). dCoa (dCol) is the annual change in Coa (dCol). Missing changes in debt when calculating current liabilities are set to zero. At the end of June of each year *t*, stocks are sorted into quintiles based, separately, on dWc, dCoa, and dCol for the fiscal year ending in calendar year *t*-1, all scaled by total assets for the fiscal year ending in calendar year *t*-2. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.19 dNco, dNca, and dNcl: Changes in Net Non-current Operating Assets, in Non-current Operating Assets, and in Non-current Operating Liabilities

We follow the method of Richardson, Sloan, Soliman, and Tuna (2005) to calculate dNco, dNca, and dNcl. dNco is the change in net non-current operating assets (Nco) and Nco is defined as non-current operating assets (Nca) minus non-current operating liabilities (Ncl). Nca refers to total assets (CSMAR item A001000000) minus the sum of current assets (CSMAR item A001100000) and long-term investments. Long-term investment is the sum of net held-to-maturity investment (CSMAR item A001203000), net financial assets available for sale (CSMAR item A001202000), net long-term equity investment (CSMAR item A001205000), net investment property (CSMAR item A001211000), net long-term receivables (CSMAR item A001204000), and net long-term debt investment (CSMAR item A001206000, this measure is no longer used under the new accounting rule since 2007)[4]. Ncl is total liabilities minus the sum of current liabilities and long-term debt (CSMAR item A002000000 minus A002100000 minus A002206000). dNca (dNcl) is the change in Nca (Ncl). Missing changes in long-term investments and long-term debt are set to zero. At the end of June of each year *t*, stocks are sorted into quintiles based, separately, on dNco, dNca, and dNcl for the fiscal year ending in calendar year *t*-1, all scaled by the total assets for the fiscal year ending in calendar year *t*-2. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

[4] We have net long-term investment item(CSMAR item A001207000) before 2007. However, this measure is no longer used under the new accounting rule since 2007.

A.3.20 dFin, dLti, dFnl, and dBe: Changes in Net Financial Assets, in Long-term Investments, in Financial Liabilities, and in Book Equity

We also follow the method of Richardson, Sloan, Soliman, and Tuna (2005) to calculate dFin, dLti, dFnl, and dBe. dFin is the change in net financial assets (Fin), which is defined as financial assets (Fna) minus financial liabilities (Fnl). Fna is computed as the sum of short-term investments and long-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Long-term investment is the sum of net held-to-maturity investment (CSMAR item A001203000), net financial assets available for sale (CSMAR item A001202000), net long-term equity investment(CSMAR item A001205000), net investment property (CSMAR item A001211000), net long-term receivables (CSMAR item A001204000), and net long-term debt investment (CSMAR item A001206000, this measure is no longer used under the new accounting rule since 2007). Fnl is the sum of long-term debt (CSMAR item A002206000), debt in current liabilities (CSMAR item A002101000+A002125000), and preferred stock (CSMAR item A003112101, zero if missing). dLti (dFnl) is the change in long-term investments (Fnl). dBe is the change in book equity (CSMAR item A003000000). We set missing values in the changes in debt including current liabilities, long-term investments, long-term debt, and preferred stocks (CSMAR item A003112101) to zero, but require at least one change has to be non-missing when constructing variables, and exclude firms that have no long-term investments in the past two fiscal years when constructing dLti. At the end of June of each year *t*, stocks are sorted into quintiles based, separately, on dFin, dLti, dFnl, and dBe for the fiscal year ending in calendar year *t*-1, all scaled by total assets for the fiscal year ending in calendar year *t*-2. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.21 Dac: Discretionary Accruals

We obtain the discretionary accruals (Dac, CSMAR item DisAcc) variable for each firm from the CSMAR database. Dac is calculated following the method of Dechow, Sloan, and Sweeney (1995) in CSMAR. At the end of June of each year *t*, stocks are sorted into quintiles based on Dac for the fiscal year ending in calendar year *t*−1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.22 Poa: Percent Operating Accruals

Following the method of Hafzalla, Lundholm, and Van Winkle (2011), we define percent operating accruals (Poa) as operating accruals (Oa) scaled by the absolute value of earnings. At the end of June of each year *t*, stocks are sorted into quintiles based on Poa, which is measured as operating accruals (Oa, see Appendix A.3.16 for the measurement) scaled by the absolute value of net income (CSMAR item B002000000) for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.23 Pta: Percent Total Accruals

We follow the method of Hafzalla, Lundholm, and Van Winkle (2011) to calculate percent total accruals (Pta). At the end of June of each year *t*, stocks are sorted into quintiles based on Pta, which is measured as total accruals (Ta, see Appendix A.3.17 for the measurement) scaled by the absolute value of net income (CSMAR item B002000000) for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.24 Pda: Percent Discretionary Accruals

Percent discretionary accruals (Pda) is computed as discretionary accruals (Dac, see Appendix A.3.21 for the measurement) for the fiscal year ending in calendar year *t*−1 multiplied by total assets (CSMAR item A001000000) for the fiscal year ending in calendar year *t*−2 scaled by the absolute value of net income (CSMAR item B002000000) for the fiscal year ending in calendar year *t*−1. At the end of June of each year *t*, stocks are sorted into quintiles based on Pda. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.3.25 Nxf: Net External Financing

We follow Bradshaw, Richardson, and Sloan (2006) and Chen, Kim, Yao, and Yu (2010) to define net external financing (Nxf) as the sum of net equity financing (Nef) and net debt financing (Ndf). Nef is the sum of the change in common stock (CSMAR item A003101000) and the change in capital surplus (CSMAR item A003102000). Ndf is the sum of the change in long-term debt (CSMAR item A002206000) and the change in long-term note (CSMAR item A002203000), then minus the change in total short-term debt (CSMAR item A002101000+A002125000). At the end of June of each year *t*, stocks are sorted into quintiles based on Nxf for the fiscal year ending in calendar year *t*-1 scaled by the average of the total assets (CSMAR item A001000000) for the fiscal years ending in calendar year *t*-2 and *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4 Profitability (94 variables)

A.4.1 Roe, Roe^{q}1, Roe^{q}3, Roe^{q}6, Roe^{q}9, and Roe^{q}12: Return on Equity

We have one annually rebalanced variable and five monthly rebalanced variables for return on equity (Roe). For the annual variable, Roe is the ratio of annual income before extraordinary items (CSMAR item B002000000) to book equity. Book equity is measured as shareholders' equity (CSMAR item A003000000). At the end of June of each year *t*, stocks are sorted into quintiles based on the annual Roe for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1. For the monthly rebalanced variables, Roe^q is computed as quarterly income before extraordinary items divided by one-quarter-lagged book equity (Hou, Xue, and Zhang, 2015). At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past Roe^q. We use Roe^q computed with quarterly earnings from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent Roe^q is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (Roe^{q}1) and from month *t* to *t*+*N*-1 (Roe^q*N*, *N* = 3, 6, 9, and 12). For the Roe^q*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Roe^q*N* quintile.

A.4.2 dRoe1, dRoe3, dRoe6, dRoe9, and dRoe12: Changes in the Return on Equity

We measure the change in return on equity (dRoe) as the return on equity (Roe, see Appendix A.4.1 for the measurement) minus its value from four quarters prior. At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past dRoe. We use dRoe computed with quarterly earnings from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent dRoe is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (dRoe1) and from month *t* to *t*+*N*-1 (dRoe*N*, *N* = 3, 6, 9, and 12). For the dRoe*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this dRoe*N* quintile.

A.4.3 Roa, Roa^{q}1, Roa^{q}3, Roa^{q}6, Roa^{q}9, and Roa^{q}12: Return on Assets

We have one annually rebalanced variable and five monthly rebalanced variables for return on assets (Roa). For the annual variable, Roa is the ratio of annual income before extraordinary items (CSMAR item B002000000) to total assets (CSMAR item A001000000). At the end of June of each year *t*, stocks are sorted into quintiles based on the annual Roa for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1. We follow the method of Balakrishnan, Bartov, and Faurel (2010) to calculate the monthly rebalanced Roa variables: Roa^{q}1, Roa^{q}3, Roa^{q}6, Roa^{q}9, and Roa^{q}12. For these monthly rebalanced variables, Roa^q is computed as income before extraordinary items (calculated using CSMAR item B002000000) divided by one-quarter-lagged total assets (CSMAR item A001000000). At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past Roa^q. We use Roa^q computed with quarterly earnings from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent Roa^q is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (Roa^{q}1) and from month *t* to *t*+*N*-1 (Roa^q*N*, *N* = 3, 6, 9, and 12). For the Roa^q*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Roa^q*N* quintile.

A.4.4 dRoa1, dRoa3, dRoa6, dRoa9, and dRoa12: Changes in the Return on Assets

We measure the changes in return on assets (dRoa) as return on assets (Roa, see Appendix A.4.3 for the measurement) minus its value from four quarters prior. At the beginning of each month *t*, stocks are sorted into quintiles based on their most recent past dRoa. We use dRoa computed with quarterly earnings from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent dRoa is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (dRoa1) and from month *t* to *t*+*N*-1 (dRoa*N*, *N* = 3, 6, 9, and 12). For the dRoa*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this dRoa*N* quintile.

A.4.5 Rna, Pm, and Ato: Return on Net Operating Assets, Profit Margin, and Asset Turnover

We measure net operating assets (Rna), profit margin (Pm), and asset turnover (Ato) following Soliman (2008) and Hou, Xue and Zhang (2020). We measure Rna as the ratio of operating income after depreciation (CSMAR item B001300000) for the fiscal year ending in calendar year *t*-1 to net operating assets (Noa) for the fiscal year ending in calendar year *t*-2, where Noa is defined as the operating assets minus operating liabilities. Operating assets are total assets (CSMAR item A001000000) minus the sum of cash (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Operating liabilities are total assets (CSMAR item A001000000) minus the sum of debt in current liabilities (CSMAR item A002101000+A002125000, zero if missing), long-term debt (CSMAR item A002206000, zero if missing), preferred stocks (CSMAR item A003112101, zero if missing), and common equity (CSMAR item A003000000). Pm is computed as operating income after depreciation (CSMAR item B001300000) scaled by sales (CSMAR item B001100000) for the fiscal year ending in calendar year *t*-1. Ato is the ratio of sales (CSMAR item B001100000) for the fiscal year ending in calendar year *t*-1 to Noa for the fiscal year ending in calendar year *t*-2. Only firms with positive Noa for the fiscal year ending in calendar year *t*-2 are included for the formation the Rna and the Ato portfolios. At the end of June of year *t*, stocks are sorted into quintiles based on their Rna, Pm, and Ato separately to form portfolios. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.6 Cto: Capital Turnover

We calculate capital turnover (Cto) following the method of Haugen and Baker (1996). Cto is computed as the ratio of sales (CSMAR item B001100000) for the fiscal year ending in calendar year *t*-1 to total assets (CSMAR item A001000000) for the fiscal year ending in calendar year *t*-2. At the end of June of each year *t*, stocks are sorted into quintiles based on their Cto. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.7 $\text{Rna}^{q}1$, $\text{Rna}^{q}3$, $\text{Rna}^{q}6$, $\text{Rna}^{q}9$, $\text{Rna}^{q}12$, $\text{Pm}^{q}1$, $\text{Pm}^{q}3$, $\text{Pm}^{q}6$, $\text{Pm}^{q}9$, $\text{Pm}^{q}12$, $\text{Ato}^{q}1$, $\text{Ato}^{q}3$, $\text{Ato}^{q}6$, $\text{Ato}^{q}9$, and $\text{Ato}^{q}12$: Quarterly Return on Net Operating Assets, Quarterly Profit Margin, and Quarterly Asset Turnover

We calculate quarterly return on the net operating assets (Rna^{q}) as the ratio of quarterly operating income after depreciation (calculated using CSMAR item B001300000) to one-quarter-lagged net operating assets (Noa, see Appendix A.3.5 for the measurement). Quarterly profit margin (Pm^{q}), is computed as the ratio of quarterly operating income after depreciation (calculated using CSMAR item B001300000) to quarterly sales (calculated using CSMAR item B001100000). Quarterly asset turnover (Ato^{q}) is computed as the ratio of quarterly sales (calculated using CSMAR item B001100000) to one-quarter-lagged net operating assets (Noa, see Appendix A.3.5 for the measurement). At the beginning of each month *t*, stocks are sorted separately into quintiles based on Rna^{q} and the Pm^{q} for the latest fiscal quarter, and Ato^{q} computed with quarterly sales from the most recent earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent Ato^{q} is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* ($\text{Rna}^{q}1$, $\text{Pm}^{q}1$, and $\text{Ato}^{q}1$) and from month *t* to *t*+*N*-1 ($\text{Rna}^{q}N$, $\text{Pm}^{q}N$, and $\text{Ato}^{q}N$, $N = 3$, 6, 9, and 12). For the $\text{Rna}^{q}N$, $\text{Pm}^{q}N$, and $\text{Ato}^{q}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\text{Rna}^{q}N$, $\text{Pm}^{q}N$, or $\text{Ato}^{q}N$ quintile.

A.4.8 $\text{Cto}^{q}1$, $\text{Cto}^{q}3$, $\text{Cto}^{q}6$, $\text{Cto}^{q}9$, and $\text{Cto}^{q}12$: Quarterly Capital Turnover

Quarterly capital turnover (Cto^{q}) is computed as quarterly sales (calculated using CSMAR item B001100000) scaled by one-quarter-lagged total assets (CSMAR item A001000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Cto^{q} computed with quarterly sales from the most recent earnings announcement dates (CSMAR item Annodt). Sales are generally announced with earnings during quarterly earnings announcements in China. We require that the fiscal quarter end corresponding to this most recent Cto^{q} is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* ($\text{Cto}^{q}1$) and from month *t* to *t*+*N*-1 ($\text{Cto}^{q}N$, $N =$ 3, 6, 9, and 12). For the $\text{Cto}^{q}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\text{Cto}^{q}N$ quintile.

A.4.9 Gpa: Gross Profits-to-assets

Following the method of Novy-Marx (2013), we measure the gross profits-to-assets ratio (Gpa) as total revenue (CSMAR item B001101000) minus cost of goods sold (CSMAR item B001201000) and scaled by total assets (CSMAR item A001000000, the current rather than lagged total assets). At the end of June of each year *t*, stocks are sorted into quintiles based on Gpa for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.10 Gla: Gross Profits-to-lagged assets

The gross profits-to-lagged assets ratio (Gla) is measured as total revenue (CSMAR item B001101000) minus cost of goods sold (CSMAR item B001201000) and scaled by one-year-lagged total assets (CSMAR item A001000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Gla for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.11 Gla^q1, Gla^q3, Gla^q6, Gla^q9, and Gla^q12: Quarterly Gross Profits-to-lagged Assets

We measure quarterly gross profits-to-lagged assets (Gla^q) as quarterly total revenue (calculated using CSMAR item B001101000) minus cost of goods sold (calculated using CSMAR item B001201000) and divided by one-quarter-lagged total assets (CSMAR item A001000000). At the beginning of each month *t*, stocks are sorted into quintiles based on the Gla^q for the fiscal quarter. We require that the fiscal quarter end corresponding to these latest Gla^q is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Gla^q1) and from month *t* to *t*+*N*-1 (Gla^qN, *N* = 3, 6, 9, and 12). For the Gla^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Gla^qN quintile.

A.4.12 Ope: Operating Profits to Equity

Following the method of Fama and French (2015), we directly measure operating profit to equity (Ope) as the ratio of operating income (CSMAR item B001300000) to book equity (the current rather than lagged book equity). Book equity is stockholders' book equity (CSMAR item A003000000). At the end of June of each year *t*, stocks are sorted into quintiles based on the Ope for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.13 Ole: Operating Profits-to-lagged Equity

The operating profits-to-lagged equity ratio (Ole) is measured as the ratio of operating income (CSMAR item B001300000) to one-year-lagged book equity (CSMAR item A003000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Ole for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.14 Ole^q1, Ole^q3, Ole^q6, Ole^q9, and Ole^q12: Quarterly Operating Profits-to-lagged Equity

We measure quarterly operating profits-to-lagged equity (Ole^q), as the ratio of quarterly operating income (calculated using CSMAR item B001300000) to one-quarter-lagged book equity (CSMAR item A003000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Ole^q for the latest fiscal quarter. We require that the fiscal quarter end corresponding to these latest Ole^q is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* ($\text{Ole}^{q}1$) and from month *t* to *t*+*N*-1 ($\text{Ole}^{q}N$, *N* = 3, 6, 9, and 12). For the $\text{Ole}^{q}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\text{Ole}^{q}N$ quintile.

A.4.15 Opa: Operating Profits-to-assets

We compute the operating profits-to-assets ratio (Opa) following Ball, Gerakos, Linnainmaa, and Nikolaev (2015). Opa is defined as the ratio of the operating income (CSMAR item B001300000) to by the book assets (CSMAR item A001000000, the current rather than lagged total assets). At the end of June of each year *t*, stocks are sorted into quintiles based on Opa for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.16 Ola: Operating Profits-to-lagged Assets

The operating profits-to-lagged assets (Ola) variable is computed as the ratio of operating income (CSMAR item B001300000) to one-year-lagged book assets (CSMAR item A001000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Ola for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.17 $\text{Ola}^{q}1$, $\text{Ola}^{q}3$, $\text{Ola}^{q}6$, $\text{Ola}^{q}9$, and $\text{Ola}^{q}12$: Quarterly Operating Profits-to-lagged Assets

The quarterly operating profits-to-lagged assets (Ola^{q}) variable is computed as the ratio of quarterly operating income (calculated using CSMAR item B001300000) to one-quarter-lagged book assets (CSMAR item A001000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Ola^{q} for the fiscal quarter. We require that the fiscal quarter end corresponding to these latest Ola^{q} is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* ($\text{Ola}^{q}1$) and from month *t* to *t*+*N*-1 ($\text{Ola}^{q}N$, *N* = 3, 6, 9, and 12). For the $\text{Ola}^{q}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\text{Ola}^{q}N$ quintile.

A.4.18 Cop: Cash-based Operating Profitability

We follow Ball, Gerakos, Linnainmaa, and Nikolaev (2016) to calculate cash-based operating profitability (Cop). Cop is total operating income (CSMAR item B001300000) minus operating accruals (Oa, see Appendix A.3.16 for the measurement, net income minus net cash flow from operations, CSMAR item B002000000 minus C001000000) and scaled by book assets (CSMAR item A001000000, the current rather than lagged total assets). At the end of June of each year *t*, stocks are sorted into quintiles based on Cop for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.19 Cla: Cash-based Operating Profits-to-lagged Assets

The cash-based operating profits-to-lagged assets (Cla) is calculated as total operating income (CSMAR item B001300000) minus operating accruals (Oa, see Appendix A.3.16 for the measurement, net income minus net cash flow from operations, CSMAR item B002000000 minus C001000000) and scaled by one-year-lagged book assets (CSMAR item A001000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Cla for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.20 Cla^q1, Cla^q3, Cla^q6, Cla^q9, and Cla^q12: Quarterly Cash-based Operating Profits-to-lagged Assets

The quarterly cash-based operating profits-to-lagged assets (Cla^q) is calculated as quarterly total operating income (calculated using CSMAR item B001300000) minus operating accruals (net income minus net cash flow from operations, CSMAR item B002000000 minus C001000000) and scaled by one-quarter-lagged book assets (CSMAR item A001000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Cla^q for the fiscal quarter. We require that the fiscal quarter end corresponding to these latest Cla^q is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Cla^q1) and from month *t* to *t*+*N*-1 (Cla^qN, *N* = 3, 6, 9, and 12). For the Cla^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Cla^qN quintile.

A.4.21 Cbe: Cash-based Operating Profits-to-book equity

Following the method of Fama and French (2018), we measure cash-based operating profits-to-book equity (Cbe) as total operating income (CSMAR item B001300000) minus operating accruals (net income minus net cash flow from operations, CSMAR item B002000000 minus C001000000) and scaled by book equity (the current rather than lagged book equity). We measure book equity as stockholders' book equity (CSMAR item A003000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Cbe for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.22 O: Ohlson's O-score

We construct the O-score (Dichev, 1998) by following the method of Ohlson (1980, Model One in Table 4) as follows:

$$O\text{-}score = -1.32 - 0.407log(TA) + 6.03TLTA - 1.43WCTA + 0.076CLCA \\ -1.72OENEG - 2.37NITA - 1.83FUTL + 0.285INTWO - 0.521CHIN, \tag{A5}$$

where TA is total assets (CSMAR item A001000000). TLTA is the leverage ratio defined as the ratio of total debt to total assets (CSMAR item A001000000). Total debt is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). WCTA is the ratio of working capital (current assets minus current liabilities, CSMAR item A001100000 minus A002100000) to total assets (CSMAR item A001000000). CLCA is the ratio of current liabilities (CSMAR item A002100000) to current assets (CSMAR item A001100000). OENEG is a dummy variable that equals one if total liabilities (CSMAR item A002000000) exceed total assets (CSMAR item A001000000) and zero otherwise. NITA is the ratio of net income (CSMAR item B002000000) to total assets. FUTL is the fund provided by operations (the sum of net income, tax expenses, and depreciation, the sum of CSMAR item B002000000, B002100000, and D000103000) scaled by total liabilities (CSMAR item A002000000). INTWO is a dummy variable that equals one if net income (CSMAR item B002000000) is negative over the last two years and zero otherwise. CHIN is computed as the difference between NI_s and NI_{s-1}, divided by the sum of their absolute values, where NI_s (NI_{s-1}) is net income (CSMAR item B002000000) for the current (prior) year. At the end of June of each year *t*, stocks are sorted into quintiles based on the O-score for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.23 Z: Altman's Z-score

We follow the method of Altman (1968) to construct the Z-score (Dichev, 1998):

$$Z\text{-}score = 1.2WCTA + 1.4ReTA + 3.3EBITTA + 0.6METL + SALETA, \quad \text{(A6)}$$

where WCTA is the ratio of working capital computed as current assets (CSMAR item A001100000) minus current liabilities (CSMAR item A002100000), divided by total assets (CSMAR item A001000000), RETA is the ratio of retained earnings (CSMAR item A003103000 plus A003105000) to total assets, EBITTA is the ratio of earnings before interest and taxes (CSMAR item B001300000) to total assets, METL is the ratio of market equity (at the fiscal year end) to total liabilities (CSMAR item A002000000), and SALETA is the ratio of sales (CSMAR item B001100000) to total assets. These variables on the right-hand side of equation (A6) are all winsorized at the 1st and 99th percentiles of their distributions each year. At the end of June of each year *t*, stocks are sorted into quintiles based on the Z-score for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.24 Tbi: Taxable Income-to-book Income

Following the method of Green, Hand, and Zhang (2013), we calculate taxable income-to-book income (Tbi) as the ratio of pretax income (net income plus tax expenses, CSMAR item B002000000 plus B002100000) to net income (CSMAR item B002000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Tbi for the fiscal year ending in calendar year *t*-1. Only firms with positive pretax income and net income are included when forming portfolios. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.25 Tbi^q1, Tbi^q3, Tbi^q6, Tbi^q9, and Tbi^q12: Quarterly Taxable Income-to-book Income

The quarterly taxable income-to-book income ratio (Tbi^q) is calculated as quarterly pretax income (net income plus tax expenses, the sum of CSMAR item B002000000 and B002100000) scaled by net income (CSMAR item B002000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Tbi^q calculated with the accounting data from the latest fiscal quarter. We require that the fiscal quarter end corresponding to the latest Tbi^q is at least four months prior to forming portfolios. Only firms with positive pretax income and net income are included. We separately calculate monthly portfolio returns, for the current month *t* (Tbi^q1) and from month *t* to *t*+*N*-1 (Tbi^qN, *N* = 3, 6, 9, and 12). For the Tbi^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Tbi^qN quintile.

A.4.26 Bl: Book Leverage

Following the method of Fama and French (1992), we measure book leverage (Bl) as the ratio of total assets (CSMAR item A001000000) to book equity (CSMAR item A003000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Bl for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.4.27 Bl^q1, Bl^q3, Bl^q6, Bl^q9, and Bl^q12: Quarterly Book Leverage

Quarterly book leverage (Bl^q) is calculated as the ratio of quarterly total assets (CSMAR item A001000000) to book equity (CSMAR item A003000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Bl^q for the fiscal quarter. We require that the fiscal quarter end corresponding to the latest Bl^q is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Bl^q1) and from month *t* to *t*+*N*-1 (Bl^qN, *N* = 3, 6, 9, and 12). For the Bl^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Bl^qN quintile.

A.4.28 Sg^q1, Sg^q3, Sg^q6, Sg^q9, and Sg^q12: Quarterly Sales Growth

The quarterly sales growth (Sg^q) is calculated as quarterly sales (calculated using CSMAR item B001100000) scaled by its value four quarters ago. At the beginning of each month *t*, stocks are sorted into quintiles based on the latest Sg^q. We use Sg^q from the most recent quarterly earnings announcement dates (CSMAR item Annodt). We require that the fiscal quarter end corresponding to this most recent Sg^q is no more than six months before forming portfolios to exclude dated information, but precedes the earnings announcement date to eliminate potential errors in records. We separately calculate monthly portfolio returns, for the current month *t* (Sg^q1) and from month *t* to *t*+*N*-1 (Sg^qN, N = 3, 6, 9, and 12). For the Sg^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Sg^qN quintile.

A.5 Intangibles (83 variables)

A.5.1 Adm: Advertising Expenses-to-market

The advertising expenses-to-market ratio (Adm) is measured as advertising expenses (CSMAR item B001209000) scaled by market equity. At the end of June of each year *t*, stocks are sorted into quintiles based on Adm, computed as advertising expenses for the fiscal year ending in calendar year *t*-1 divided by market equity at the end of calendar year *t*-1. Given that the advertising expenses data are not available in our CSMAR database, we follow the method of Chen, Kim, Yao, and Yu (2010) using the sales expenses data (CSMAR item B001209000) instead. Only firms with positive advertising expenses are included for the formation of portfolios. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.2 gAd: Growth in Advertising Expenses

At the end of June of each year *t*, stocks are sorted into quintiles based on the growth in advertising expenses (gAd). We measure gAd as the growth rate of advertising expenses from the fiscal year ending in calendar year *t*-2 to the fiscal year ending in calendar year *t*-1. Given that the advertising expenses data are not available in our CSMAR database, we follow the method of Chen, Kim, Yao, and Yu (2010) using the sales expenses data (CSMAR item B001209000) instead. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.3 Rdm: R&D Expenses-to-market

We calculate the R&D expenses-to-market ratio (Rdm) following the method of Chan, Lakonishok, and Sougiannis (2001). Rdm is measured as the ratio of R&D expenses for the fiscal year ending in calendar year *t*-1 to market equity at the end of calendar year *t*-1. At the end of June of each year *t*, stocks are sorted into quintiles based on Rdm. The R&D expenses variable (CSMAR item “RDSpendSum”) is retrieved from the CSMAR R&D investment statement, which starts from December 31, 2007. Only firms with positive R&D expenses are included for the formation of portfolios. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.4 Rdm^q1, Rdm^q3, Rdm^q6, Rdm^q9, and Rdm^q12: Quarterly R&D Expenses-to-market

Quarterly R&D expenses-to-market (Rdm^q) is defined as the ratio of quarterly R&D expenses for the latest fiscal quarter to market equity at the end of last calendar year. At the beginning of each month *t*, stocks are sorted into quintiles based on Rdm^q. We require that the fiscal quarter end corresponding to these latest

Rdm^q is at least four months prior to forming portfolios. The R&D expenses defined in Appendix A.5.3 (CSMAR item "RDSpendSum" retrieved from the CSMAR R&D investment statement) are released annually. For the quarterly R&D expenses variable, we follow the method of Chen, Kim, Yao, and Yu (2010) using the CSMAR item B001210000 (Management Fees) to represent the R&D expenses. Only firms with positive R&D expenses are included for the formation of portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Rdm^q1) and from month *t* to *t*+*N*-1 (Rdm^qN, *N* = 3, 6, 9, and 12). For the Rdm^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Rdm^qN quintile.

A.5.5 Rds: R&D Expenses-to-sales

We calculate the R&D expenses-to-sales (Rds) variables following the method of Chan, Lakonishok, and Sougiannis (2001). At the end of June of each year *t*, stocks are sorted into quintiles based on Rds, which is defined as R&D expenses scaled by sales (CSMAR item B001100000) for the fiscal year ending in calendar year *t*-1. The R&D expenses variable (CSMAR item "RDSpendSum") is retrieved from the CSMAR R&D investment statement, which starts from December 31, 2007. Only firms with positive R&D expenses are included for the formation of portfolios. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.6 Rds^q1, Rds^q3, Rds^q6, Rds^q9, and Rds^q12: Quarterly R&D Expenses-to-sales

We measure quarterly R&D expenses-to-sales (Rds^q) as quarterly R&D expenses scaled by sales (CSMAR item B001100000) for the latest fiscal quarter. At the beginning of each month *t*, stocks are sorted into quintiles based on Rds^q. We require that the fiscal quarter end corresponding to these latest Rds^q is at least four months prior to forming portfolios. The R&D expenses defined in Appendix A.5.3 (CSMAR item "RDSpendSum" retrieved from the CSMAR R&D investment statement) are released annually. For the quarterly R&D expenses variable, we follow the method of Chen, Kim, Yao, and Yu (2010) using the CSMAR item B001210000 (Management Fees) to represent the R&D expenses. Only firms with positive R&D expenses are included for the formation of portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Rds^q1) and from month *t* to *t*+*N*-1 (Rds^qN, *N* = 3, 6, 9, and 12). For the Rds^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Rds^qN quintile.

A.5.7 Ol: Operating Leverage

Following the method of Novy-Marx (2011), we measure operating leverage (Ol) as the ratio of operating costs to the total assets (CSMAR item A001000000, the current rather than lagged total assets). Operating costs are computed as cost of goods sold (CSMAR item B001201000) plus selling, general, and administrative expenses (the sum of CSMAR item B001210000 and B001209000). At the end of June of year *t*, stocks are sorted into quintiles based on Ol for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.8 Ol^q1, Ol^q3, Ol^q6, Ol^q9, and Ol^q12: Quarterly Operating Leverage

Quarterly operating leverage (Ol^q) is computed as the ratio of quarterly operating costs to total assets (CSMAR item A001000000) for the fiscal quarter. At the beginning of each month *t*, stocks are sorted into quintiles based on Ol^q. We require that the fiscal quarter end corresponding to the latest Ol^q is at least four months prior to forming portfolios. Operating costs are computed as cost of goods sold (calculated using

CSMAR item B001201000) plus selling, general, and administrative expenses (the sum of CSMAR item B001210000 and B001209000). We separately calculate monthly portfolio returns, for the current month *t* (Ol^q1) and from month *t* to *t*+*N*-1 (Ol^qN, *N* = 3, 6, 9, and 12). For the Ol^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ol^qN quintile.

A.5.9 Hn: Hiring Rate

We follow Belo, Lin, and Bazdresch (2014) to measure the hiring rate (Hn). Hn is defined as the difference between N_{t-1} and N_{t-2}, scaled by their simple average, where N_{t-j} is the number of employees (CSMAR item Y0601b, starting from December 31, 1999) from the fiscal year ending in calendar year *t-j*. At the end of June of year *t*, stocks are sorted into quintiles based on Hn. Firms with zero Hn are excluded when forming portfolios in case of stale information on firm employment. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.10 Rca: R&D Capital-to-assets

The R&D Capital-to-assets ratio is defined as the ratio of the R&D capital (Rc) to total assets (CSMAR item A001000000) for the fiscal year ending in calendar year *t*-1. Rc is calculated following the method of Li (2011) as accumulating annual R&D expenses over the past five years with a linear depreciation rate of 20%:

$$Rc_{it} = XRD_{it} + 0.8XRD_{it-1} + 0.6XRD_{it-2} + 0.4XRD_{it-3} + 0.2XRD_{it-4}, \qquad \text{(A7)}$$

where XRD_{it-j} is firm *i*'s R&D expenses in year *t-j*. R&D expenses are not directly available in the financial statement of the Chinese firms. The calculation of this measure needs annual R&D expenses over the past five years. However, the R&D expenses variable from the CSMAR R&D investment statement (CSMAR item "RDSpendSum") starts from December 31, 2007. To have more available Rc measure for the portfolio formation, we follow the method of Chen, Kim, Yao, and Yu (2010) using the CSMAR item B001210000 (Management Fees) as a proxy for R&D expenses. Only firms with non-missing R&D expenses for the latest fiscal year are included for the formation of portfolios. At the end of June of each year *t*, stocks are sorted into Rca. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.11 Fop: Forecast Optimism

We obtain the forecast optimism (Fop) variable for each firm from the CSMAR database (China Listed Company Financial Database – Analyst Forecasts). At the end of June of each year *t*, stocks are sorted into quintiles based on Fop. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.12 Parc: Patent-to-R&D Capital

We follow Hirshleifer, Hsu, and Li (2013) to measure the patent-to-R&D capital ratio (Parc) in year *t*, as the ratio of firm *i*'s patents granted in year *t*, $Patents_{it}$, scaled by its R&D capital (Rc, see Appendix A.5.10 for the measurement) for the fiscal year ending in calendar year *t*-2,

$$Parc_{i,t} = \frac{Patent_{i,t}}{(XRD_{it-2} + 0.8XRD_{it-3} + 0.6XRD_{it-4} + 0.4XRD_{it-5} + 0.2XRD_{it-6})}, \qquad \text{(A8)}$$

where XRD_{it-j} is firm *i*'s R&D expenses for the fiscal year ending in calendar year *t-j*. We require non-missing R&D expenses for the fiscal year ending in *t*-2 but set missing values to zero for other years (*t*-6 to *t*-3). We obtain the Chinese patent data from CSMAR database. Following Tan, Tian, Zhang, and Zhao (2015), we keep only patents in terms of invention and utility model given that design patents involve limited technological advancements. At the end of June of each year *t*, stocks are sorted into quintiles based on Parc for year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.13 Age1, Age3, Age6, Age9, and age12: Firm Age

We measure the firm age (Age) as the time span in months from a firm's appearing in the CSMAR database to being assigned to a portfolio, following the method of Jiang, Lee, and Zhang (2005). At the beginning of each month *t*, stocks are sorted into quintiles based on Age at the end of month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Age1) and from month *t* to *t*+*N*-1 (Age*N*, *N* = 3, 6, 9, and 12). For the Age*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Age*N* quintile.

A.5.14 D1, D2, and D3: Price Delay

Price delay (D) measures are calculate in accordance with Hou and Moskowitz (2005). At the end of June of each year, we regress each stock's weekly returns over the prior year on the contemporaneous and four weeks of lagged market returns as follows:

$$r_{i,t} = \alpha_i + \beta_i r_{M,t} + \sum_{k=1}^{4} \delta_i^{(-k)} r_{M,t-k} + \varepsilon_{i,t}, \quad \text{(A9)}$$

where $r_{i,t}$ and $r_{M,t}$ are the returns on stock *i* and the value-weighted market index in week *t*. We require a minimum of 15 valid observations for this regression. Weekly returns are obtained directly from the CSMAR database. Three price delay measures are computed as follows:

$$D_{1i} \equiv 1 - \frac{R^2_{\delta_i^{(-4)}=\delta_i^{(-3)}=\delta_i^{(-3)}=\delta_i^{(-1)}=0}}{R^2}, \quad \text{(A10)}$$

where the numerator denotes the R^2 from regression equation (A9) with no lagged market returns in the right-hand side, and the denominator denotes the raw R^2 from regression equation (A9) without other restrictions. Moreover,

$$D_{2i} \equiv \frac{\sum_{k=1}^{4} k\delta_i^{(-k)}}{\beta_i + \sum_{k=1}^{4} \delta_i^{(-k)}}, \quad \text{(A11)}$$

$$D_{3i} \equiv \frac{\sum_{k=1}^{4} \frac{k\delta_i^{(-k)}}{se\left(\delta_i^{(-k)}\right)}}{\frac{\beta_i}{se(\beta_i)} + \sum_{k=1}^{4} \frac{\delta_i^{(-k)}}{se(\delta_i^{(-k)})}}, \quad \text{(A12)}$$

where *se*(.) is the standard error of the point estimate in the parenthesis. At the end of June of year *t*, stocks are sorted into quintiles based on D_1, D_2, and D_3 separately. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.15 dSi: Percentage Change in Sales minus Percentage Change in Inventory

We follow Abarbanell and Bushee (1998) to measure the percentage change in sales minus percentage change in inventory (dSi). dSi is the percentage change in sales from its prior two-year average value minus the percentage change in the inventory from its prior two-year average value, where sales are net sales (CSMAR item B001101000). For example, %d(Sales) = [Sales(*t*) – E[Sales(*t*)]]/E[Sales(*t*)], in which E[Sales(*t*)] = [Sales(*t*-1) + Sales(*t*-2)]/2. The dSi is calculated as %d(Sales) - %d(Inventory). At the end of June of each year *t*, stocks are sorted into quintiles based on dSi for the fiscal year ending in calendar year *t*-1. Only firms with positive average sales and inventory for the past two years are included. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of

June of year *t*+1.

A.5.16 dSa: Percentage Change in Sales minus Percentage Change in Accounts Receivable

We measure the percentage change in sales minus percentage change in accounts receivable (dSa) in accordance with Abarbanell and Bushee (1998). dSa is the percentage change in sales from its prior two-year average value minus the percentage change in the accounts receivable from its prior two-year average value, where sales are the net sales (CSMAR item B001101000) and the accounts receivable are total receivables (CSMAR item A001111000). For example, %d(Sales) = [Sales(*t*) – E[Sales(*t*)]]/E[Sales(*t*)], in which E[Sales(*t*)] = [Sales(*t*-1) + Sales(*t*-2)]/2. The dSa is calculated as the %d(Sales) - %d(Accounts receivable). At the end of June of each year *t*, stocks are sorted into quintiles based on dSa for the fiscal year ending in calendar year *t*-1. Only firms with nonnegative average sales and receivables for the past two years are included. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.17 dGs: Percentage Change in Gross Margin minus Percentage Change in Sales

We follow Abarbanell and Bushee (1998) to measure the percentage change in gross margin minus percentage change in sales (dGs). dGs is the percentage change in the gross margin from its prior two-year average value minus the percentage change in sales from its prior two-year average value, where sales are the net sales (CSMAR item B001101000) and the gross margin is sales minus cost of goods sold (CSMAR item B001201000). For example, the %d(Sales) = [Sales(*t*) – E[Sales(*t*)]]/E[Sales(*t*)], in which E[Sales(*t*)] = [Sales(*t*-1) + Sales(*t*-2)]/2. The dGs is calculated as the %d(Gross margin) - %d(Sales). At the end of June of each year *t*, stocks are sorted into quintiles based on dGs for the fiscal year ending in calendar year *t*-1. Only firms with nonnegative average gross margin and sales for the past two years are included. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.18 dSs: Percentage Change in Sales minus Percentage Change in SG&A

We measure the percentage change in sales minus percentage change in SG&A (dSs) following Abarbanell and Bushee (1998). dSs is the percentage change in sales from its prior two-year average value minus the percentage change in SG&A from its prior two-year average value, where sales are the net sales (CSMAR item B001101000) and SG&A represents selling, general, and administrative expenses (the sum of CSMAR item B001210000 and B001209000). For example, the %d(Sales) = [Sales(*t*) – E[Sales(*t*)]]/E[Sales(*t*)], in which the E[Sales(*t*)] = [Sales(*t*-1) + Sales(*t*-2)]/2. The dSs is calculated as the %d(Sales)-%d(SG&A). At the end of June of each year *t*, stocks are sorted into quintiles based on dSs for the fiscal year ending in calendar year *t*-1. Only firms with nonnegative average gross sales and SG&A for the past two years are included. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.19 Etr: Effective Tax Rate

We follow Abarbanell and Bushee (1998) to calculate the effective tax rate (Etr) as follows:

$$Etr(t) = \left[\frac{TaxExpense(t)}{EBT(t)} - \frac{1}{3}\sum_{i=1}^{3}\frac{TaxExpense(t-i)}{EBT(t-i)}\right] \times dEPS(t), \tag{A13}$$

where TaxExpense(*t*) is total income tax paid in year *t* (CSMAR item B002100000), EBT(*t*) is the sum of pretax income (net income plus tax expenses, CSMAR item B002000000 plus B002100000) and the amortization of intangibles (CSMAR item D000104000), and dEPS is the ratio of the change in the earnings per share (net income divided by shares) between the years *t*-1 and *t* to the stock price at the end of *t*-1. At the end of June of each year *t*, stocks are sorted into quintiles based on Etr for the fiscal year ending in calendar year *t*-1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.20 Lfe: Labor Force Efficiency

We follow Abarbanell and Bushee (1998) to calculate the labor force efficiency (Lfe) as follows:

$$Lfe(t) = \left[\frac{Sales(t)}{Employees(t)} - \frac{Sales(t-1)}{Employees(t-1)}\right] / \frac{Sales(t-1)}{Employees(t-1)}), \quad \text{(A14)}$$

where Sales(t) are net sales (CSMAR item B001101000) in year t, and Employees(t) is the number of employees (CSMAR item Y0601b, starting from December 31, 1999). At the end of June of each year t, stocks are sorted into quintiles based on the Lfe for the fiscal year ending in calendar year t-1. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.21 Ana: Analyst Coverage Attention

We obtain analyst coverage attention (Ana, CSMAR item AnaAttention, zero if missing) for each firm from the CSMAR database (China Listed Company Financial Database – Analyst Forecasts sub-database) starting from December 31, 2001. At the end of June of each year t, stocks are sorted into quintiles based on Ana for the fiscal year ending in calendar year t-1. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.22 Rep: Analyst Report Attention

We obtain analyst report attention (Rep, CSMAR item ReportAttention, zero if missing) for each firm from the CSMAR database (China Listed Company Financial Database – Analyst Forecasts sub-database) starting from December 31, 2001. At the end of June of each year t, stocks are sorted into quintiles based on Rep for the fiscal year ending in calendar year t-1. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.23 Tan: Tangibility

We measure the tangibility (Tan) in accordance with Hahn and Lee (2009) as: cash holdings + 0.715×accounts receivables + 0.547×inventory + 0.535×PPE, all scaled by total assets. Cash holding is the sum of cash and cash equivalents (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Accounts receivables is CSMAR item A001111000. Inventory is CSMAR item A001123000. PPE is the CSMAR item A001212000[5]. Total assets are represented by the CSMAR item A001000000. At the end of June of each year t, stocks are sorted into quintiles based on Tan for the fiscal year ending in calendar year t-1. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.24 Tan^q1, Tan^q3, Tan^q6, Tan^q9, and Tan^q12: Quarterly Tangibility

The quarterly tangibility (Tan^q) is measured as: quarterly cash holdings + 0.715×accounts receivables + 0.547×inventory + 0.535×PPE, all scaled by total assets. Cash holding is the sum of cash and cash equivalents (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Accounts receivables is represented by CSMAR item A001111000. Inventory is CSMAR item A001123000. PPE is CSMAR item A001212000. Total assets are represented by CSMAR item A001000000. At the beginning of each month t, stocks are

[5] We don't have gross PPE measure in the CSMAR database. The CSMAR item A001212000 is net PPE.

sorted into quintiles based on Tan^q for the latest fiscal quarter. We require that the fiscal quarter end corresponding to the latest Tan^q is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Tan^q1) and from month *t* to *t*+*N*-1 (Tan^qN, *N* = 3, 6, 9, and 12). For the Tan^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Tan^qN quintile.

A.5.25 Kz: Financial Constraints (the Kaplan-Zingales index)

We compute the Kaplan-Zingales index (Kz_{it}) to capture the level of financial constraints following Lamont, Polk, and Saaá-Requejo (2001) as follows:

$$Kz_{it} = -1.002 \times CF_{it}/K_{it-1} + 0.283 \times Q_t - 1.315\, Cash_{it}/K_{it-1} + 3.139 \times Debt_{it}/TotalCapital_{it} - 39.368 \times Dividends_{it}/K_{it-1}. \quad \text{(A15)}$$

CF_{it} denotes firm *i*'s cash flows in year *t*, measured as income before extraordinary items (CSMAR item B002000000) plus depreciation (CSMAR item D000103000) and amortization (CSMAR item D000104000). K_{it-1} is net property, plant, and equipment (CSMAR item A001212000) at the end of year *t*−1. Q_{it} is Tobin's *Q*, measured as the ratio of total assets (CSMAR item A001000000) plus the December-end market equity minus book equity (CSMAR item A003000000), to total assets (CSMAR item A001000000). $Debt_{it}$ is the sum of short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). Total $Capital_{it}$ is measured as stockholders' equity (CSMAR item A003000000) plus short-term debt (CSMAR item A002101000+A002125000) and long-term debt (CSMAR item A002206000). $Dividends_{it}$ is total cash dividends. $Cash_{it}$ is cash holdings (CSMAR item C006000000). At the end of June of each year *t*, stocks are sorted into quintiles based on Kz for the fiscal year ending in calendar year *t*−1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.26 Sa: Financial Constraints (the SA index)

We follow Hadlock and Pierce (2010) to compute the SA index (SA_{it}) to capture the level of financial constraints as follows:

$$SA = -0.737 \times Size + 0.043 \times Size^2 - 0.040 \times Age, \quad \text{(A16)}$$

where Size is the natural logarithm of total assets (CSMAR item A001000000), and Age denotes the years since the firm is listed with a non-missing trading record on the CSMAR database. At the end of June of each year *t*, stocks are sorted into quintiles based on Sa for the fiscal year ending in calendar year *t*−1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.27 Vcf1, Vcf3, Vcf6, Vcf9, and Vcf12: Cash Flow Volatility

We follow the method of Huang (2009) and measure the cash flow volatility (Vcf) as the standard deviation of the ratio of operating cash flows to sales during the past 16 quarters. We require at least eight quarters with non-missing value. Operating cash flows is computed as the sum of income before extraordinary items (CSMAR item B002000000), depreciation (CSMAR item D000103000), amortization (CSMAR item D000104000), and the change in working capital (current assets minus current liabilities, CSMAR item A001100000 minus A002100000) from the last quarter. At the beginning of each month *t*, stocks are sorted into quintiles based on Vcf for the latest fiscal quarter. We require that the fiscal quarter end corresponding to the latest Vcf is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Vcf1) and from month *t* to *t*+*N*-1 (Vcf*N*, *N* = 3, 6, 9, and 12). For the Vcf*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Vcf*N* quintile.

A.5.28 Cta1, Cta3, Cta6, Cta9, and Cta12: Cash-to-assets

We follow Palazzo (2012) to measure the cash-to-assets (Cta) as the ratio of cash holdings to total assets (CSMAR item A001000000). Cash holding is the sum of cash and cash equivalents (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. At the beginning of each month *t*, stocks are sorted into quintiles based on Cta from the latest fiscal quarter. We require that the fiscal quarter end corresponding to the latest Cta is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Cta1) and from month *t* to *t*+*N*-1 (Cta*N*, *N* = 3, 6, 9, and 12). For the Cta*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Cta*N* quintile.

A.5.29 Gov: Corporate governance index

Following the previous literature for the Chinese market, we construct the corporate governance index (Gov) using the Principal Component Analysis (PCA) method. We do the principal component analysis based on a battery of data including the total salary of the management team (CSMAR item SumSalary), the shareholding ratio of senior executives (CSMAR item Mngmhldn), the proportion of independent directors (CSMAR item IndDirectorRatio), the size of the board (CSMAR item Boardsize), the institutional shareholding ratio (CSMAR item InsInvestorProp), CEO duality (CSMAR item ConcurrentPosition), and shares balance (CSMAR item SharesBalance). Gov is measured as the first principal component of these seven variables. These seven variables are retrieved from the CSMAR (China Listed Firm's Business Distress Research sub-database). At the end of June of each year *t*, stocks are sorted into quintiles based on Gov for the fiscal year ending in calendar year *t*−1. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.30 Eper and Eprd: Earnings Persistence and Earnings Predictability

We follow the method of Francis, Lafond, Olsson, and Schipper (2004) and estimate the earnings persistence (Eper) and the earnings predictability (Eprd) by a first-order autoregression model. At the end of June of each year *t*, we estimate the autoregressive model of earnings for each stock in the eight-year rolling window up to the fiscal year ending in calendar year *t*-1, where only firms with a full data history of eight years are included. Earnings are measured as the earnings per share, computed as net income divided by total shares. Eper is measured as the slope coefficient and Eprd is measured as the volatility of residuals. Stocks are sorted into quintiles based on Eper and Eprd separately. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.5.31 Esm: Earnings Smoothness

We follow Francis, Lafond, Olsson, and Schipper (2004) to measure earnings smoothness (Esm). Esm is defined as the ratio of the standard deviation of earnings (CSMAR item B002000000) scaled by one-year-lagged total assets to the standard deviation of cash flows from operations (CSMAR item C001000000) scaled by one-year-lagged total assets. At the end of June of each year *t*, stocks are sorted into quintiles based on Esm, calculated over a rolling window of eight years up to the fiscal year ending in calendar year *t*-1. Only firms with full historical data of eight years are included for the portfolio formation. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of

June of year t+1.

A.5.32 Evr: Value Relevance of Earnings

We measure the value relevance of earnings (Evr) following Francis, Lafond, Olsson, and Schipper (2004). Evr is defined as the R^2 from the estimation of the following regression:

$$R_{it} = \alpha_{i0} + \delta_{i1} EARN_{it} + \delta_{i2} dEARN_{it} + \varepsilon_{it}, \tag{A17}$$

where R_{it} is the stock return of firm i over a period of 15 months ending three months after the end of the fiscal year ending in calendar year t, $EARN_{it}$ is earnings (CSMAR item B002000000) for the fiscal year ending in calendar year t, scaled by market equity at the end of the contemporaneous fiscal year, and $dEARN_{it}$ is the annual change in earnings scaled by market equity for the fiscal year ending in calendar year t. At the end of June of each year t, stocks are sorted into quintiles based on Evr calculated over a rolling window of eight years up to the fiscal year ending in calendar year t-1. Only firms with full historical data of eight years are included for the portfolio formation. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.33 Etl and Ecs: Earnings Timeliness and Earnings Conservatism

We follow the method of Francis, Lafond, Olsson, and Schipper (2004) and compute the earnings timeliness (Etl) and the earnings conservatism (Ecs) from the estimation of the following regression:

$$EARN_{it} = \alpha_{i0} + \alpha_{i1} NEG_{it} + \beta_{i1} R_{it} + \beta_{i2} NEG_{it} \times R_{it} + \varepsilon_{it}, \tag{A18}$$

where $EARN_{it}$ is earnings (CSMAR item B002000000) for the fiscal year ending in calendar year t, scaled by market equity at the end of the contemporaneous fiscal year. R_{it} is the stock return of firm i over a period of 15 months ending three months after the end of the fiscal year ending in calendar year t. NEG_{it} is a dummy variable that equals one if the R_{it} is negative, and zero otherwise. We measure Etl as the R^2 and the Ecs as $(\beta_{i1} + \beta_{i2})/\beta_{i1}$ from the estimation of the regression in (A18). At the end of June of each year t, stocks are sorted into quintiles based on Etl and Ecs separately, both of which are calculated over a rolling window of eight years up to the fiscal year ending in calendar year t-1. Only firms with full historical data of eight years are included for the portfolio formation. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.34 Ala and Alm: Asset Liquidity

We follow Ortiz-Molina and Phillips (2014) and measure asset liquidity as: cash + 0.75×noncash current assets + 0.50×tangible fixed assets. Cash is the sum of cash and cash equivalents (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Noncash current assets are current assets (CSMAR item A001100000) minus cash. Tangible fixed assets are total assets (CSMAR item A001000000) minus current assets, goodwill (CSMAR item A001220000, zero if missing), and intangibles (CSMAR item A001218000, zero if missing). Ala is asset liquidity scaled by one-year-lagged total assets (CSMAR item A001000000). Alm is asset liquidity scaled by the one-year-lagged market value of assets. The market value of assets is total assets (CSMAR item A001000000) plus market equity minus book equity (CSMAR item A003000000). At the end of June of each year t, stocks are sorted into quintiles based on Ala and Alm for the fiscal year ending in calendar year t-1separately. We calculate monthly portfolio returns from July of year t to June of year t+1, and rebalance the quintiles at the end of June of year t+1.

A.5.35 Ala^q1, Ala^q3, Ala^q6, Ala^q9, Ala^q12, Alm^q1, Alm^q3, Alm^q6, Alm^q9, and Alm^q12: Quarterly Asset Liquidity

Following Ortiz-Molina and Phillips (2014), we measure quarterly asset liquidity as: cash h + 0.75×noncash current assets + 0.50×tangible fixed assets. Cash is the sum of cash and cash equivalents (CSMAR item C006000000) and short-term investments. Before 2007, short-term investment is measured as net short-term investment (CSMAR item A001109000). However, this measure is no longer used under the new accounting rule since 2007. We use trading financial assets (CSMAR item A001107000) instead to proxy for short-term investment in the post-2007 period. Noncash current assets are current assets (CSMAR item A001100000) minus cash. Tangible fixed assets are total assets (CSMAR item A001000000) minus current assets, goodwill (CSMAR item A001220000, zero if missing), and intangibles (CSMAR item A001218000, zero if missing). Ala^q is quarterly asset liquidity scaled by one-quarter-lagged total assets (CSMAR item A001000000). Alm^q is quarterly asset liquidity scaled by the one-quarter-lagged market value of assets. The market value of assets is total assets (CSMAR item A001000000) plus market equity minus book equity (CSMAR item A003000000). At the beginning of each month *t*, stocks are sorted into quintiles based on Ala^q and Alm^q for the latest fiscal quarter separately. We require that the fiscal quarter end corresponding to these latest Ala^q and Alm^q is at least four months prior to forming portfolios. We separately calculate monthly portfolio returns, for the current month *t* (Ala^q1 and Alm^q1) and from month *t* to *t*+*N*-1 (Ala^qN and Alm^qN, *N* = 3, 6, 9, and 12). For the Ala^qN and Alm^qN quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ala^qN or Alm^qN quintile.

A.5.36 R_a^1, R_n^1, $R_a^{[2,5]}$, $R_n^{[2,5]}$, $R_a^{[6,10]}$, and $R_n^{[6,10]}$: Seasonality

We follow the method of Heston and Sadka (2008) to calculate seasonality measures. At the beginning of each month *t*, stocks are sorted into quintiles based on the past returns over different time periods, including the return in month *t*-12 (R_a^1), the average return from month *t*-11 to *t*-1 (R_n^1), the average return across months *t*-24, *t*-36, *t*-48, and *t*-60 ($R_a^{[2,5]}$), the average return from month *t*-60 to *t*-13 skipping lags 24, 36, 48, and 60 ($R_n^{[2,5]}$), the average return across months *t*-72, *t*-84, *t*-96, *t*-108, and *t*-120 ($R_a^{[6,10]}$), and the average return from month *t*-120 to *t*-61 skipping lags 72, 84, 96, 108, and 120 ($R_n^{[6,10]}$). We calculate monthly portfolio returns for the current month *t*, and rebalance the quintiles at the beginning of month *t*+1.

A.6 Trading frictions (143 variables)

A.6.1 Me: Market Equity

We measure the size effect following Banz (1981). Market equity (Me) is the price multiplied by the shares outstanding from CSMAR. At the end of June of each year *t*, stocks are sorted into quintiles based on the current Me. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.6.2 Iv: Idiosyncratic Volatility

We follow the method of Ali, Hwang, and Trombley (2003) to compute idiosyncratic volatility (Iv). Iv is the volatility of residuals from regressing a stock's daily excess returns on the market excess returns over the period from July of year *t*-1 to June of year *t*. We require a minimum of 100 trading days over the previous year when estimating Iv. At the end of June of each year *t*, stocks are sorted into quintiles based on Iv. We calculate monthly portfolio returns from July of year *t* to June of year *t*+1, and rebalance the quintiles at the end of June of year *t*+1.

A.6.3 Ivc1, Ivc3, Ivc6, Ivc9, and Ivc12: Idiosyncratic Volatility per the CAPM

We calculate the idiosyncratic volatility per the CAPM (Ivc), as the volatility of residuals from regressing a stock's daily excess returns on the value-weighted market excess returns over a month. Ivc is estimated with daily returns from month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Ivc estimated from month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Ivc1) and from month *t* to *t*+*N*-1 (Ivc*N*, *N* = 3, 6, 9, and 12). For the Ivc*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ivc*N* quintile.

A.6.4 Ivff31, Ivff33, Ivff36, Ivff39, and Ivff312: Idiosyncratic Volatility per the Fama and French (1993) 3-factor model

We calculate the idiosyncratic volatility per the Fama–French 3-factor model (Ivff3), as the volatility of residuals from regressing a stock's daily excess returns on the Fama–French three factors over a month. Ivff3 is estimated with daily returns from month *t*−1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Ivff3 estimated from month *t*−1. We separately calculate monthly portfolio returns, for the current month *t* (Ivff31) and from month *t* to *t*+*N*-1 (Ivff3*N*, *N* = 3, 6, 9, and 12). For the Ivff3*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ivff3*N* quintile.

A.6.5 Ivff51, Ivff53, Ivff56, Ivff59, and Ivff512: Idiosyncratic Volatility per the Fama and French (2015) 5-factor model

We calculate the idiosyncratic volatility per the Fama–French 5-factor model (Ivff5), as the volatility of residuals from regressing a stock's daily excess returns on the Fama–French five factors over a month. Ivff5 is estimated with daily returns from month *t*−1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Ivff5 estimated from month *t*−1. We separately calculate monthly portfolio returns, for the current month *t* (Ivff51) and from month *t* to *t*+*N*-1 (Ivff5*N*, *N* = 3, 6, 9, and 12). For the Ivff5*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ivff5*N* quintile.

A.6.6 Ivq1, Ivq3, Ivq6, Ivq9, and Ivq12: Idiosyncratic Volatility per the *q*-factor model (Hou, Xue, and Zhang, 2015)

We calculate the idiosyncratic volatility per the *q*-factor model (Ivq), as the volatility of residuals from regressing a stock's daily excess returns on the Hou-Xue-Zhang *q* factors over a month. Ivq is estimated with daily returns from month *t*−1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Ivq estimated from month *t*−1. We separately calculate monthly portfolio returns, for the current month *t* (Ivq1) and from month *t* to *t*+*N*-1 (Ivq*N*, *N* = 3, 6, 9, and 12). For the Ivq*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ivq*N* quintile.

A.6.7 Ivch31, Ivch33, Ivch36, Ivch39, and Ivch312: Idiosyncratic Volatility per the CH3-factor model (Liu, Stambaugh, and Yuan, 2019)

We calculate the idiosyncratic volatility per the CH3-factor model (Ivch3), as the volatility of residuals from regressing a stock's daily excess returns on the CH3 factors over a month. Ivch3 is estimated with daily returns from month *t*−1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. The data for the CH3 factors are from Professor Robert Stambaugh's website. At the beginning of each month *t*, stocks are sorted into quintiles based on Ivch3. We separately calculate monthly portfolio returns, for the current month *t* (Ivch31) and from month *t* to *t*+*N*-1 (Ivch3*N*, *N* = 3, 6, 9, and 12). For the Ivch3*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ivch3*N* quintile.

A.6.8 Ivch41, Ivch43, Ivch46, Ivch49, and Ivch412: Idiosyncratic Volatility per the CH4-factor model (Liu, Stambaugh, and Yuan, 2019)

We calculate the idiosyncratic volatility per the CH4-factor model (Ivch4), as the volatility of residuals from regressing a stock's daily excess returns on the CH4 factors over a month with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. The data for the CH4 factors are from Professor Robert Stambaugh's website. At the beginning of each month *t*, stocks are sorted into quintiles based on Ivch4 estimated from month *t*−1. We separately calculate monthly portfolio returns, for the current month *t* (Ivch41) and from month *t* to *t*+*N*-1 (Ivch4*N*, *N* = 3, 6, 9, and 12). For the Ivch4*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ivch4*N* quintile.

A.6.9 Tv1, Tv3, Tv6, Tv9, and Tv12: Total Volatility

We measure the total volatility (Tv) following the methods of Ang, Hodrick, Xing, and Zhang (2006). Tv is computed as the volatility of a stock's daily returns from month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Tv. We separately calculate monthly portfolio returns, for the current month *t* (Tv1) and from month *t* to *t*+*N*-1 (Tv*N*, *N* = 3, 6, 9, and 12). For the Tv*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Tv*N* quintile.

A.6.10 Svr1, Svr3, Svr6, Svr9, and Svr12: Systematic Volatility Risk

We follow Ang, Hodrick, Xing, and Zhang (2006) to measure the systematic volatility risk (Svr) by the bivariate regression as follows:

$$r_{i,d} = \beta_{i,0} + \beta_{i,MKT} MKT_d + \beta_{i,dVXO} dVXO_d + \varepsilon_{i,d}, \tag{A19}$$

where $r_{i,d}$ is stock *i*'s excess return on day *d*, MKT_d is the market factor return, and $dVXO_d$ is the aggregate volatility shock measured as the daily change in the Chicago Board Options Exchange S&P 100 volatility index (VXO).[6] $\beta_{i,dVXO}$ is estimated with the daily returns from month *t*−1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. Svr is measured as the slope coefficient $\beta_{i,dVXO}$. At the beginning of each month *t*, stocks are sorted into quintiles based on $\beta_{i,dVXO}$ estimated from month *t*−1. We separately calculate monthly portfolio returns, for the current month *t* (Svr1) and from month *t* to *t*+*N*-1 (Svr*N*, *N* = 3, 6, 9, and 12). For the Svr*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Svr*N* quintile.

A.6.11 β1, β3, β6, β9, and β12: Market Beta

We follow the method of Fama and Macbeth (1973) to calculate the market beta (β), which is estimated with monthly returns over the previous 60 months from month *t*-60 to *t*-1. We require that at least 24 monthly returns are available for the estimation. At the beginning of each month *t*, stocks are sorted into quintiles based on their market beta (β). We separately calculate monthly portfolio returns, for the current month *t* (β1) and from month *t* to *t*+*N*-1 (β*N*, *N* = 3, 6, 9, and 12). For the β*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this β*N* quintile.

A.6.12 β^D1, β^D3, β^D6, β^D9, and β^D12: The Dimson Beta

We follow the method of Dimson (1979) to compute the Dimson beta (β^D). The lead and the lag of the market returns are included in the right-hand side of equation (A20) along with the current market return as follows:

$$r_{id} - r_{fd} = \alpha_i + \beta_{i1}(r_{md-1} - r_{fd-1}) + \beta_{i2}(r_{md} - r_{fd}) + \beta_{i3}(r_{md+1} - r_{fd+1}) + \varepsilon_{id}, \tag{A20}$$

where r_{id}, r_{md}, and r_{fd} denote stock *i*'s return, the market return, and the risk-free rate on day *d*. β^D is calculated as the sum of β_{i1}, β_{i2}, and β_{i3} and is estimated from the daily returns from month *t*-1. We require the lead market return r_{md+1} to be within month *t*-1 to avoid look-ahead bias and a minimum of 10 valid daily observations for the regression. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February

[6] For daily VXO data, please refer to https://fred.stlouisfed.org/series/VXOCLS.

observations may be dropped[7]. At the beginning of each month *t*, stocks are sorted into quintiles based on β^D. We separately calculate monthly portfolio returns, for the current month *t* (β^D1) and from month *t* to *t*+*N*-1 ($\beta^D N$, N = 3, 6, 9, and 12). For the $\beta^D N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\beta^D N$ quintile.

A.6.13 Tur1, Tur3, Tur6, Tur9, and Tur12: Share Turnover

We follow the method of Datar, Naik, and Radcliffe (1998), and compute a stock's share turnover (Tur) as its average daily share turnover over the previous six months. The daily share turnover is defined as the ratio of the number of shares traded within a day to the number of shares outstanding that day. We require that at least 50 daily observations are available when taking the average. At the beginning of each month *t*, stocks are sorted into quintiles based on Tur over a six-month period from month *t*-6 to month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Tur1) and from month *t* to *t*+*N*-1 (Tur*N*, *N* = 3, 6, 9, and 12). For the Tur*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Tur*N* quintile.

A.6.14 Cvt1, Cvt3, Cvt6, Cvt9, and Cvt12: Coefficient of Variation of Share Turnover

We follow the method of Chordia, Subrahmanyam, and Anshuman (2001) and calculate a stock's coefficient of variation for its daily share turnover (Cvt) as the standard deviation of its daily share turnover scaled by the mean over the previous six months. The daily share turnover is defined as the ratio of the number of shares traded within a day to the number of shares outstanding that day. We require that at least 50 daily observations are available for the estimation. At the beginning of each month *t*, stocks are sorted into quintiles based on Cvt over a six-month period from month *t*-6 to *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Cvt1) and from month *t* to *t*+*N*-1 (Cvt*N*, *N* = 3, 6, 9, and 12). For the Cvt*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Cvt*N* quintile.

A.6.15 Rtv1, Rtv3, Rtv6, Rtv9, and Rtv12: RMB Trading Volume

We follow the method of Brennan, Chordia, and Subrahmanyam (1998) and calculate the RMB trading volume (Rtv, yuan-denominated), which is the average daily RMB trading volume over a six-month period from month *t*-6 to *t*-1. We require that at least 50 daily observations are available for the estimation. At the beginning of each month *t*, stocks are sorted into quintiles based on their Rtv. We separately calculate monthly portfolio returns, for the current month *t* (Rtv1) and from month *t* to *t*+*N*-1 (Rtv*N*, *N* = 3, 6, 9, and 12). For the Rtv*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Rtv*N* quintile.

A.6.16 Cvd1, Cvd3, Cvd6, Cvd9, and Cvd12: Coefficient of Variation of RMB Trading Volume

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[7] It is noted that our data in February 2002 cannot meet the requirements when we calculate the Dimson beta (β^D) although we have relaxed the criteria. According to the trading arrangement during holidays in 2002 issued by CSRC, February 8th is the last trading day before spring festival holidays, and February 25th is the first trading day after, which leads to only 10 trading days left in this month. When we also require the lead market return to be within the sorting month, no firms can finish portfolio formation in this month because only 9 trading day meet this requirement.

We follow the method of Chordia, Subrahmanyam, and Anshuman (2001) and calculate a stock's coefficient of variation for its daily RMB trading volume (Cvd) as the standard deviation of its daily RMB trading volume scaled by the mean over the previous six months. We require that at least 50 daily observations are available for the estimation. At the beginning of each month *t*, stocks are sorted into quintiles based on Cvd over a six-month period from month *t*-6 to *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Cvd1) and from month *t* to *t*+*N*-1 (Cvd*N*, *N* = 3, 6, 9, and 12). For the Cvd*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Cvd*N* quintile.

A.6.17 Pps1, Pps3, Pps6, Pps9, and Pps12: Share Price

We follow the method of Miller and Scholes (1982) to measure the share price (Pps, CSMAR item Mclsprc). At the beginning of each month *t*, stocks are sorted into quintiles based on Pps at the end of month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Pps1) and from month *t* to *t*+*N*-1 (Pps*N*, *N* = 3, 6, 9, and 12). For the Pps*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Pps*N* quintile.

A.6.18 Ami1, Ami3, Ami6, Ami9, and Ami12: Absolute Return-to-volume

Following Amihud (2002), we compute the Amihud illiquidity measure (Ami) as the six-month average of ratio of the absolute daily stock return to the daily RMB trading volume. We require that at least 50 daily observations are available for the estimation. At the beginning of each month *t*, stocks are sorted into quintiles based on the Ami over a six-month period from month *t*-6 to *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Ami1) and from month *t* to *t*+*N*-1 (Ami*N*, *N* = 3, 6, 9, and 12). For the Ami*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ami*N* quintile.

A.6.19 Mdr1, Mdr3, Mdr6, Mdr9, and Mdr12: Maximum Daily Return

Following the method of Bali, Cakici, and Whitelaw (2011), we define the maximum daily return (Mdr) as the maximum value of daily returns over a month, in which we require a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Mdr in month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Mdr1) and from month *t* to *t*+*N*-1 (Mdr*N*, *N* = 3, 6, 9, and 12). For the Mdr*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Mdr*N* quintile.

A.6.20 Ts1, Ts3, Ts6, Ts9, and Ts12: Total Skewness

We follow the method of Bali, Engle, and Murray (2016) to calculate total skewness (Ts). Ts is computed with the daily returns from month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Ts. We separately calculate monthly portfolio returns, for the current month *t* (Ts1) and from month *t* to *t*+*N*-1 (Ts*N*, *N* = 3, 6, 9, and 12). For the Ts*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Ts*N* quintile.

A.6.21 Isc1, Isc3, Isc6, Isc9, and Isc12: Idiosyncratic Skewness per the CAPM

The idiosyncratic skewness per the CAPM (Isc) is defined as the skewness of the residuals from regressing a stock's daily excess return on the market excess return over month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles on Isc. We separately calculate monthly portfolio returns, for the current month *t* (Isc1) and from month *t* to *t*+*N*-1 (Isc*N*, *N* = 3, 6, 9, and 12). For the Isc*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Isc*N* quintile.

A.6.22 Isff31, Isff33, Isff36, Isff39, and Isff312: Idiosyncratic Skewness per the Fama and French (1993) 3-factor model

The Fama–French 3-factor model (Isff3) is defined as the skewness of the residuals from regressing a stock's daily excess return on the Fama–French three factors over month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles on Isff3. We separately calculate monthly portfolio returns, for the current month *t* (Isff31) and from month *t* to *t*+*N*-1 (Isff3*N*, *N* = 3, 6, 9, and 12). For the Isff3*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Isff3*N* quintile.

A.6.23 Isff51, Isff53, Isff56, Isff59, and Isff512: Idiosyncratic Skewness per the Fama and French (2015) 5-factor model

The Fama–French 5-factor model (Isff5) is defined as the skewness of the residuals from regressing a stock's daily excess return on the Fama–French five factors over month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Isff5. We separately calculate monthly portfolio returns, for the current month *t* (Isff51) and from month *t* to *t*+*N*-1 (Isff5*N*, *N* =

3, 6, 9, and 12). For the Isff5*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Isff5*N* quintile.

A.6.24 Isq1, Isq3, Isq6, Isq9, and Isq12: Idiosyncratic Skewness per the *q*-factor model (Hou, Xue, and Zhang, 2015)

The idiosyncratic skewness per the *q*-factor model (Isq) is defined as the skewness of the residuals from regressing a stock's daily excess return on the Hou-Xue-Zhang *q* factors over month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. At the beginning of each month *t*, stocks are sorted into quintiles based on Isq. We separately calculate monthly portfolio returns, for the current month *t* (Isq1) and from month *t* to *t*+*N*-1 (Isq*N*, *N* = 3, 6, 9, and 12). For the Isq*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Isq*N* quintile.

A.6.25 Isch31, Isch33, Isch36, Isch39, and Isch312: Idiosyncratic Skewness per the CH3-factor model (Liu, Stambaugh, and Yuan, 2019)

The idiosyncratic skewness per the CH3-factor model (Isch3) is defined as the skewness of the residuals from regressing a stock's daily excess return on the CH3 factors over month *t*-1, with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. The data for the CH3 factors are from Professor Robert Stambaugh's website. At the beginning of each month *t*, stocks are sorted into quintiles based on Isch3. We separately calculate monthly portfolio returns, for the current month *t* (Isch31) and from month *t* to *t*+*N*-1 (Isch3*N*, *N* = 3, 6, 9, and 12). For the Isch3*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Isch3*N* quintile.

A.6.26 Isch41, Isch43, Isch46, Isch49, and Isch412: Idiosyncratic Skewness per the CH4-factor model (Liu, Stambaugh, and Yuan, 2019)

The idiosyncratic skewness per the CH4-factor model (Isch4) is defined as the skewness of the residuals from regressing a stock's daily excess returns on the CH4 factors over month *t*-1 with a minimum of 10 valid daily returns. Given that the Chinese stock market is shuttered for a week or more during the Spring Festival holidays at the end of January or the beginning of February, we require at least 10 valid observations each month for calculation. It is different from the 15-trading-days requirement in Liu, Stambaugh, and Yuan (2019) and HXZ (2020), because otherwise a large majority of January or February observations may be dropped. The data for the CH4 factors are from Professor Robert Stambaugh's website. At the beginning of each month *t*, stocks are sorted into quintiles based on Isch4. We separately calculate monthly portfolio returns, for the current month *t* (Isch41) and from month *t* to *t*+*N*-1 (Isch4*N*, *N* = 3, 6, 9, and 12). For the Isch4*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Isch4*N* quintile.

A.6.27 Srev: Short-term Reversal

We calculate the short-term reversal (Srev) variable following the method of Jegadeesh (1990) as the return over the last month. At the beginning of each month *t*, stocks are sorted into quintiles based on the return in month *t*-1 (Srev). Only firms with a valid return for month *t*-1 are included for the portfolio formation in month *t*. We calculate monthly portfolio returns for the current month *t*, and rebalance the quintiles at the beginning of month *t*+1.

A.6.28 Esba1, Esba3, Esba6, Esba9, Esba12: Effective bid-ask spread

We calculate the effective bid-ask spread (Esba) variable as the monthly average of the daily stock-level effective bid-ask spreads. The daily stock-level effective bid-ask spread data are retrieved from the CSMAR (Realized Index Research sub-database) starting from January 2, 2003. At the beginning of each month *t*, stocks are sorted into quintiles based on Esba in month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Esba1) and from month *t* to *t*+*N*-1 (Esba*N*, *N* = 3, 6, 9, and 12). For the Esba*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Esba*N* quintile.

A.6.29 Qsba1, Qsba3, Qsba6, Qsba9, Qsba12: Quoted bid-ask spread

We calculate the quoted bid-ask spread (Qsba) variable as the monthly average of the daily stock-level quoted bid-ask spreads. The daily stock-level quoted bid-ask spread data are retrieved from the CSMAR (Realized Index Research sub-database) starting from January 2, 2003. At the beginning of each month *t*, stocks are sorted into quintiles based on Qsba in month *t*-1. We separately calculate monthly portfolio returns, for the current month *t* (Qsba1) and from month *t* to *t*+*N*-1 (Qsba*N*, *N* = 3, 6, 9, and 12). For the Qsba*N* quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this Qsba*N* quintile.

A.6.30 β^{PS}1, β^{PS}3, β^{PS}6, β^{PS}9, and β^{PS}12: The Pastor-Stambaugh Beta

We measure the liquidity risk beta (β^{PS}) as the estimated slope coefficient of the innovations in aggregated liquidity ($\beta_{i,PS}$) from the following regression:

$$r_{i,t} - r_{f,t} = \beta_{i,0} + \beta_{i,PS}L_t + \beta_{i,M}MKT_t + \beta_{i,S}SMB_t + \beta_{i,H}HML_t + \varepsilon_{i,t}, \quad \text{(A21)}$$

where r_{it} and r_{ft} in the left-hand side are the returns of stock *i* and the risk-free rate in month *t*, L_t is the innovations in aggregated liquidity, and the other elements in the right-hand side of equation (A21) are the Fama–French three factors. We retrieve data for the innovations in aggregated liquidity from the CSMAR database. β^{PS} is computed with monthly returns from month *t*−60 to *t*−1, with a minimum of 24 valid monthly returns. At the beginning of each month *t*, stocks are sorted into quintiles on their β^{PS}. We separately calculate monthly portfolio returns, for the current month *t* (β^{PS}1) and from month *t* to *t*+*N*-1 ($\beta^{PS}N$, *N* = 3, 6, 9, and 12). For the $\beta^{PS}N$ quintiles that are set to be held for *N* months before being rebalanced, there are *N* portfolios formed at different months within the prior *N*-month holding period per quintile per month. In each month, we compute the average monthly return of the *N* portfolios for a given quintile, and regard it as the monthly return of this $\beta^{PS}N$ quintile.

A.6.31 Vpin1, Vpin3, Vpin6, Vpin9, Vpin12: Volume-synchronized Probability of Informed Trading

The volume-synchronized probability of informed trading (Vpin) variable is calculated as the monthly average of the daily stock-level volume-synchronized probability of informed trading. Vpin is retrieved from the CSMAR (Realized Index Research sub-database) starting from January 2, 2003. At the beginning of each month t, stocks are sorted into quintiles based on Vpin in month t-1. We separately calculate monthly portfolio returns, for the current month t (Vpin1) and from month t to $t+N$-1 (Vpin$N$, N = 3, 6, 9, and 12). For the Vpin$N$ quintiles that are set to be held for N months before being rebalanced, there are N portfolios formed at different months within the prior N-month holding period per quintile per month. In each month, we compute the average monthly return of the N portfolios for a given quintile, and regard it as the monthly return of this Vpin$N$ quintile.

Appendix B: Factor construction

B.1 Factor construction procedures

In this section, we describe in detail how we construct the eleven factors discussed in the main text: market (MKT), size-1 (SMB-FF3), size-2 (SMB-FF5), size-3 (ME), value-1 (HML-FF3), value-2 (HML-FF5), investment-1 (CMA), investment-2 (I/A), profitability-1 (RMW), profitability-2 (ROE), and momentum (MOM). These eleven factors have been used in four factor models: the Fama–French three-factor model (MKT, SMB-FF3, and HML-FF3), the Carhart four-factor model (MKT, SMB-FF3, HML-FF3, and MOM), the HXZ *q*-factor model (MKT, ME, I/A, and ROE), and the Fama–French five-factor model (MKT, SMB-FF5, HML-FF5, RMW, and CMA).

We follow Carhart (1997), Fama and French (1993), Fama and French (2015), and HXZ (2015) to construct factors for the Chinese A-share market. All of the factors use the A-share Mainboard to decide breakpoints. We then calculate the value-weighted returns. We construct the monthly return of the market factor (MKT) as the value-weighted market return from CSMAR minus China's 3-month RMB deposit rate.[8] We obtain the annualized deposit rate and convert it into the monthly risk-free rate.

We strictly follow Fama and French (2015) in constructing the Fama–French factors (2×3 sorts), SMB-FF5 (small minus big size), HML-FF5 (high minus low value), RMW (robust minus weak profitability), and CMA (conservative minus aggressive investment) for the Chinese A-share market as follows. At the end of June each year, we measure size, B/M, operating profitability, and investment variables for each stock. Size is measured as the circulation market equity value (market price per share times share outstanding) at the end of June of year *t*.[9] The B/M ratio is measured as the book value of equity in the annual report of year *t*-1, divided by the December-end market equity (stock price per share times shares outstanding) in year *t*-1. Operating profitability is measured as the operating profit in the year *t*-1 annual report divided by the book value of equity in the same year. Annual investment is calculated as the change in total assets from the fiscal year ending in year *t*-2 to the fiscal year ending in year *t*-1, divided by total assets in the year *t*-2 annual report.

We then independently sort all A-share stocks into two size groups and three B/M groups. We use the median market equity (price times outstanding shares) of the Mainboard A-shares as the size breakpoint and the 30th and 70th percentiles of the B/M ratio of the Mainboard A-shares as the B/M breakpoints.

[8] We regard China's 3-month RMB deposit rate as risk-free rate, which is available on the People's Bank of China website. Reference can be made to http://www.pbc.gov.cn/zhengcehuobisi/125207/125213/125440/125838/125888/2968982/index.html. The risk-free rate in the CSMAR database is based on the one-year fixed-term deposit rate or the one-year Treasury note issued by the Chinese government. We choose the 3-month deposit rate following previous studies on the Chinese capital market.

[9] We use the circulation market capitalization as proxy for size in the analysis of this paper, which includes only the A-shares that are tradable. If we use the total market capitalization as proxy for size, which includes the tradable and non-tradable shares in the China market, our results remain robust.

Similarly, we independently sort stocks into 2×3 size and operating profitability portfolios and 2×3 size and investment portfolios.

The intersections of size and B/M groups produce six value-weighted Size-B/M portfolios (SL, SN, SH, BL, BN, and BH) that are held from the beginning of July of year *t* until the end of next June. The SMB_{BM} factor is the average of the three smallest available stock portfolio returns minus the average of the three biggest available stock portfolio returns. Similarly, the size-operating profitability portfolios and size-investment portfolios generate SMB_{OP} and SMB_{Inv}. The SMB-FF5 factor is defined as the average of $SMB_{B/M}$, SMB_{OP}, and SMB_{Inv}. The HML-FF5 factor is the average of the two highest available B/M portfolio returns minus the average of the two lowest available B/M portfolio returns. RMW and CMA are constructed in the same way as HML except that the second sorting variable is operating profitability or investment. We also strictly follow Fama and French (1993) using the same way to construct SMB-FF3 (small minus big size) and HML-FF3 (high minus low value) factors.

We strictly follow Carhart (1997) to construct a momentum factor, MOM (winners minus losers). At the end of month *t*-1, we measure the prior 11-month returns from month *t*-12 to *t*-2 for each stock, which is called Prior 2–12. We then sort all of the A-share stocks into three groups (Loser, Neutral, and Winner) using the 30^{th} and 70^{th} percentiles of Prior 2–12 of the Mainboard A-shares as the breakpoints. Next, we interact the three Prior 2–12 groups with the two size groups to generate the MOM factor, similar to HML. The MOM factor is updated monthly.

We also strictly follow HXZ (2015) to construct the *q*-factors (ME, ROE, and I/A) for the Chinese A-share market as follows. In June of year *t*, firm size is measured as the circulation market value at the end of June of year *t* and annual investment (I/A) in year *t*-1 is the change in annual total assets from year *t*-2 to year *t*-1, divided by total assets in year *t*-2. Profitability (ROE) is measured as quarterly net income divided by one-quarter-lagged book equity.[10] We use the quarterly net income data in the months immediately after the most recent public quarterly earnings announcement dates. We impose a restriction to exclude stale earnings. Specifically, to enter the factor construction, a firm should have its most recently announced quarterly net income within the six months before the portfolio formation. We also require that the fiscal quarter end to be before the quarterly earnings announcement date to eliminate potential errors in records.

A triple 2×3×3 sort on size, I/A, and ROE is used to construct the *q*-factors. At the end of June of year *t*, we split all of the A-share stocks into two size groups (Small and Big) using the median market equity of Mainboard A-shares as the size breakpoint. Furthermore, we independently sort them into three

[10] Chinese A-share listed firms have issued quarterly financial reports since January 1, 2002. Therefore, if quarterly net income data are not available before 2002, we use the net income data from the most recent available semi-annual or annual reports and convert these data to quarterly frequency instead.

I/A groups (Low, Neutral, and High) using the 30th and 70th percentiles of investments in year *t*-1 of the Mainboard A-shares as the breakpoints. At the beginning of each month, we also independently split all of the A-share stocks into three ROE groups based on the Mainboard A-share breakpoints for the low 30%, middle 40%, and high 30% of the ranked ROE values.

The intersections of the two size, three I/A, and three ROE groups produce 18 portfolios. We hold these portfolios for one month and calculate the monthly value-weighted portfolio returns using the circulation market value of each stock as the weight. We rebalance the three ROE portfolios at the beginning of each month (i.e., monthly) and rebalance the size and I/A portfolios at the end of each June (i.e., annually). The size factor ME (small minus big) is the average of the nine small size portfolio returns minus the average of the nine big size portfolio returns. The investment factor I/A (low minus high) is the average of the six low investment portfolio returns minus the average of the six high investment portfolio returns. Finally, the profitability factor ROE (high minus low) is the average of the six high ROE portfolio returns minus the average of the six low ROE portfolio returns.

We also obtain the CH3 and CH4 factors (Liu, Stambaugh, and Yuan, 2019) from Professor Robert Stambaugh's website.[11] The CH3 factors consist of the market (MKT-CH), adjusted size (SMB-CH3), and adjusted value (VMG) factors, where VMG (value minus growth) is based on earnings to price (EP). The CH4-factor model is the CH3-factor model augmented by a turnover factor, PMO (pessimistic minus optimistic), based on abnormal turnover.

B.2 Empirical properties of factors

Due to space limitation, we mainly use the HXZ *q*-factor model (MKT, ME, I/A, and ROE), the Fama–French five-factor model (MKT, SMB-FF5, HML-FF5, RMW, and CMA), the CH3-factor model (MKT-CH, SMB-CH3, and VMG) and the CH4-factor model (MKT-CH, SMB-CH4, VMG, and PMO) in the factor model performance comparison section in the main text. The summary statistics and correlation matrix of these factors are reported in Table 1 of our main text. Panels B and C report the means, standard deviations, and *t*-statistics of the monthly factor returns for the whole period (July 2000 to June 2019) and the post-2007 period (July 2008 to June 2019), respectively. In this section, we discuss more details about the properties of these factors.

We have several findings about the properties of these factors. First, the market factor (MKT) is not significantly different from zero. Although the mean return of the market is larger than the risk free rate (0.62% per month), the *t*-statistic of the market factor is only 1.15 due to the large standard deviation (8.18% per month). The market factor has the largest standard deviation among all of the factors. China is an

[11] Please refer to http://finance.wharton.upenn.edu/~stambaug/

emerging market with high growth and a lot of speculation and frictions, which may lead to high volatilities. Second, SMB-FF5 is the only significant factor among the five Fama–French factors. The mean return of SMB-FF5 is 0.68% per month, which is statistically significant at the 5% level (*t*-stat = 2.42) based on the single hypothesis testing (SHT). In addition, the mean returns of the three remaining factors are 0.42% (HML-FF5), -0.14% (RMW), and 0.05% (CMA) per month, which are all small in magnitudes and statistically insignificant.

In addition, the mean return of the size factor (SMB-CH3) in the CH3 model is 0.73% per month, which is statistically significant at the 5% level based on the single hypothesis testing (SHT). However, the size factor (SMB-CH4) in the CH4 model is only marginal significant. The mean returns of the value factor (VMG) and the turnover factor (PMG) are 1.20% and 0.93% per month, which are all statistically significant at the 1% level (*t*-stat = 4.82 and 3.98) based on SHT.

Finally, the *q*-factors all have significant average monthly returns at the 5% level based on SHT except for the market factor as in the Fama–French five factor model. The size factor ME has an average monthly return of 0.78% per month, which demonstrates the largest *t*-statistic (3.12) of all of the *q*-factors. The investment factor I/A and the profitability factor ROE have significantly positive mean returns of 0.29% (*t*-stat = 2.10) and 0.54% (*t*-stat = 2.36) per month, respectively. Surprisingly, although the investment factor I/A and the profitability factor ROE in the *q*-factor model capture the same firm characteristics as the CMA and RMW factors in the Fama–French factor model, we find that only the former are significant but not the latter. This suggests that the *q*-factor model may be more suitable for the Chinese A-share market.

We propose two possible reasons for the investment and profitability factor spreads' differences between the *q*-factor model and the Fama–French factor model. First, the return predictability of investment and profitability factors is conditional on each other. In the data, investment and profitability tend to correlate positively but predict returns in the opposite directions[12]. Thus, when forming the investment and profitability factors, sorting on investment and profitability measures jointly (e.g., the *q*-factor model) may be more intuitive. In contrast, the Fama–French factor model does not sort investment and profitability measures jointly. It independently sorts the investment and profitability measures with size to form the CMA and RMW factors. Second, in the theoretical model, it is expected profitability that predicts returns (HXZ, 2015; Fama and French, 2015) and we are simply using realized profitability as a proxy. Hence, it is beneficial to use more updated quarterly profitability (e.g., the *q*-factor model) than annual profitability (e.g., the Fama–French model).

The post-2007 subsample results are similar, as reported in Panel C of Table 1. The market factor is the most volatile factor with the largest standard deviation (7.84% per month) of all of the factors. The

[12] In the untabulated results (available upon request), we show that return on equity (Roe) and return on assets (Roa) are significantly correlated with investment-to-assets (I/A), both annually and quarterly.

SMB-FF5 is the only significant factor in the Fama–French factor model. The ME, I/A, and ROE factors in the *q*-factor model are all significant in the post-2007 subsample period, of which the size factor ME is the most significant with *t*-statistic equals 2.99. The magnitudes of ME, I/A, and ROE (1.06%, 0.38%, and 0.62% per month, respectively) in the *q*-factor model are all larger in the post-2007 subsample period than in the whole sample period. The *q*-factors are pretty strong in the Chinese market, compared with the evidence from the U.S. market. In the U.S., the mean factor returns are only 0.03% and 0.11% for the I/A and ROE factors from July 2008 to June 2019 (0.22% and 0.34% from July 2000 to June 2019).[13] This may be related to the fact that the Chinese economy has a very high growth rate and the large fraction of this high growth is attributed to fixed asset investment during our sample period. The mean returns of the CH3 size factor (SMB-CH3), the CH4 size factor (SMB-CH4), the value factor (VMG), and the turnover factor (PMG) from the CH3 and CH4 factor models are 0.98%, 0.80%, 0.91%, and 0.88% per month, which are all statistically significant (*t*-stat = 2.56, 2.04, 2.85, and 2.71) under SHT.

Panels D and E of Table 1 report the factor correlation matrix and *p*-values for the whole sample and the post-2007 subsample periods, respectively. In the whole sample period, the ME factor has a high and significant correlation of 0.96, 0.81 and 0.81 with the SMB-FF5, SMB-CH3 and SMB-CH4 factors. The investment factor I/A has a significant correlation of 0.87 with the CMA factor. The profitability factor ROE has a significant correlation of 0.76 with the RMW factor; a significant correlation of -0.56 with the SMB-FF5 factor. The correlation of the investment factor I/A and the profitability factor ROE in the *q*-factor model are small and insignificant because we use triple independent sort to orthogonalize these two factors. The value factor VMG from the CH4 model has a significant correlation of 0.40 with the value factor HML-FF5 from the Fama–French factor model. The turnover factor PMO from the CH4 model has significantly negative correlations of -0.26 and -0.26 with market factors MKT and MKT-CH, because the PMO factor is defined as pessimistic (low abnormal turnover stocks) minus optimistic (high abnormal turnover stocks).

In the post-2007 subsample period, the factor correlation matrix is similar. The ME factor has a high and significant correlation of 0.98, 0.91 and 0.91 with the SMB-FF5, SMB-CH3 and the SMB-CH4 factors. The investment factor I/A has a significant correlation of 0.90 with the CMA factor. The profitability factor ROE has a significant correlation of 0.71 with the RMW factor; a significant correlation of -0.49 with the SMB-FF5 factor. The correlation between the investment factor I/A and the profitability factor ROE in the *q*-factor model is insignificant. The Chinese stock market is more market-oriented since the completion of the split-share structure reform by the end of 2007 and the implementation of the new Accounting Standard for Business Enterprises (ASBEs) from January 1, 2007. This suggests that it is more likely true that

[13] We obtain the *q*-factors from HXZ's website and then calculate the factor spreads in the 2000-2019 and 2008-2019 sample periods. For *q*-factors in the U.S. market, please refer to http://global-q.org/factors.html.

investment (I/A) equals marginal *q* in the post-2007 sample period. Therefore, I/A and CMA factors have a 5% significant correlation of 0.28 and 0.27 with the HML-FF5 factor in the post-2007 subsample period. The value factor VMG from the CH4 model has a significant correlation of 0.54 with the value factor HML-FF5 from the Fama–French factor model. The turnover factor PMO from the CH4 model has significantly negative correlations of -0.31 and -0.32 with market factors MKT and MKT-CH.

We also follow Barillas and Shanken (2017) to conduct the the spanning regression tests to examine the ability of a particular factor model in explaining the average retruns of factors in other factor models. We compare the *q*-factor, FF5-factor, and CH4-factor models and the results are displayed in Table A18. Panel A reports the results over the whole sample period (July 2000 to June 2019, 228 months), and Panel B reports the results in the post-2007 subsample period (July 2008 to June 2019, 132 months). We find that neither the *q*-factor model nor the FF5-factor model can capture the average returns of VMG and PMO factor returns in the CH4-factor model in both sample periods. We also find that the FF5-factor model cannot explain the average returns of the size, investment, and ROE factors in the *q*-factor model in both periods. Specifically, the FF5-factor alphas are all positive and highly significant. The CH4 model cannot explain the average return of the size factor in the *q*-factor model in both periods. The CH4-factor alphas are positive and highly significant. The CH4-factor model cannot explain average returns of the HML and RMW factor in the FF5-factor model in the whole sample period with significant CH4-factor alphas of 0.49% and -0.59% per month. Moreover, the CH4-factor model cannot explain the average returns of the SMB factor in the FF5-factor model either in both periods. The CH4-factor alphas are positive and highly significant. In sum, the spanning test indicates that among the three factor models we examine, we do not find any particular factor model that can fully explain all of the average factor returns in other factor models.

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