

Online Appendix for
“Trading costs, short sale constraints, and the performance of stock market anomalies in Emerging Europe”

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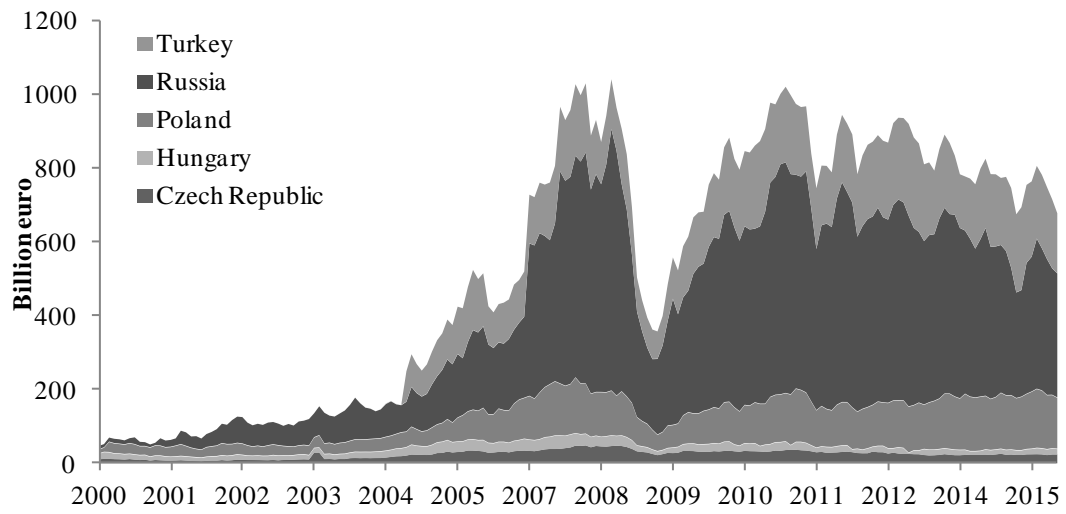
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Abstract

Figure A1 presents the basic composition of the research sample. Table A1 provides details about the implementation of anomalies examined in this study. Tables A2 and A4 show the returns on monthly-rebalanced and annually-rebalanced zero-investment portfolios formed on stock market anomalies, respectively. Table A3 displays the Pair-wise correlation coefficients between the returns on the groups of anomalies. Tables A5 and A6 depict the returns on monthly-rebalanced and annually-rebalanced zero-investment portfolios formed on stock market anomalies adjusted for trading costs. Tables A7 demonstrates the excess returns on annually-rebalanced long-only portfolios formed on stock market anomalies. Table A8 presents the returns on monthly-rebalanced long-only portfolios formed on stock market anomalies adjusted for trading costs. Finally, Table A9 shows the returns on annually-rebalanced long-only portfolios formed on stock market anomalies adjusted for trading costs.

Figure A1. Total stock market capitalisation of the companies in the sample.



Note. The figure provides an overview of the geographical composition of the research sample, i.e., the aggregation of their total stock market capitalisations.

Table A1. *Computation of anomalies in the cross-section of expected equity returns*

No.	Abbr.	Name	Description	Key references	Implementation details
<i>Group 1: Value vs growth</i>					
1	EP	Earnings-to-price	Stocks of firms with low price-to-earnings ratio outperform firms with high price-to-earnings ratio.	Basu (1983)	We rank firms on their ratios of trailing four-quarter net profit to total firm capitalisation in month $t-4$. We go long (short) the firms with the high (low) ratio.
2	BM	Book-to-market	Stocks of firms with high book-to-market ratio outperform firms with low book-to-market ratio.	Rosenberg <i>et al.</i> (1985)	We rank firms on their book-to-firm ratios in month $t-4$. We go long (short) the firms with the high (low) ratio.
3	CFP	Cash flow-to-price	Stocks of firms with low price-to-cash flow ratio outperform firms with high price-to-cash flow ratio.	Lakonishok <i>et al.</i> (1994), Desai <i>et al.</i> (2004)	We rank firms on their ratios of trailing four-quarter cash flow from operations to total stock firm capitalisation in month $t-4$. We go long (short) the firms with the high (low) ratio.
4	SP	Sales-to-price	Stocks of firms with low price-to-sales ratio outperform firms with high price-to-sales ratio	Barbee <i>et al.</i> (1996), Lewellen (2015)	We rank firms on their ratios of trailing four-quarter sales to total capitalisation in month $t-4$. We go long (short) the firms with the high (low) ratio.
5	EBEV	EBITDA-to-EV	Firms with low EV-to-EBITDA ratio outperform firms with high EV-to-EBITDA ratio.	Loughran and Wellman (2011)	We rank firms on their ratios of trailing four-quarter EBITDA to the enterprise value (EV) of a stock firm in month $t-4$. We go long (short) the firms with the high (low) ratio.
6	SEV	Sales-to-EV	Stocks of firms with low EV-to-sales ratio outperform firms with high EV-to-sales ratio	Toniato <i>et al.</i> (2013)	We rank firms on their ratios of trailing four-quarter sales to the enterprise value of a stock firm in month $t-4$. We go long (short) the firms with the high (low) ratio.
7	EBP	EBITDA-to-price	Firms with low price-to-EBITDA ratio outperform firms with high price-to-EBITDA ratio	Mesale (2008)	We rank firms on their ratios of trailing four-quarter EBITDA to total capitalisation in month $t-4$. We go long (short) the firms with the high (low) ratio.
8	DY	Dividend yield	Stocks of firms with high dividend yield outperform firms with low dividend yield.	Litzenberger and Ramaswamy (1979)	We rank firms on their dividend yield, calculated as the sum of all the dividend paid in months $t-12$ to $t-1$, to the total capitalisation in month $t-1$. We go long (short) the firms with the high (low) yield.
9	SG	Sales growth	Stocks of firms with low sales growth outperform firms with high sales growth.	Lakonishok <i>et al.</i> (1994)	We rank firms on their average sales growth over past 5 years. We go long (short) the firms with the low (high) growth.
10	DYCh	Change in dividend yield	The change in dividend yield positively predicts returns.	Lev and Thiagarajan (1993), Abarbanell and Bushee (1998)	We rank firms on change in the dividend yield in the $t-13$ to $t-1$ period. We go long (short) the firms with the high (low) change.

11	BMCap	Size-enhanced book-to-market ratio	The book-to-market effect is stronger among the small firms.	Loughran (1997), Griffin and Lemmon (2002)	Firstly, we sort stocks on the distance to the 52-weeks high, as characterized in anomaly (63), and determine the median. We rank firms on their book-to-firm ratios in month $t-4$. We go long (short) the firms with the high (low) ratio.
12	BMGPA	Gross profitability-enhanced book-to-market ratio	The book-to-market is enhanced by additional sort on the gross profits-to-asset ratio.	Novy-Marx (2013)	We rank stocks separately on GPA and BM ratio. Then, we form portfolios based on the averaged rank. We go long (short) the stocks with high (low) GPA and BM ratio.

Group 2: Profitability

13	ROA	Return on assets	Firms with high return on assets outperform firms with low return on assets.	Balakrishnan <i>et al.</i> (2010), Kogan and Papanikolaou (2013)	We sort firms on the ratio of trailing four-quarter net profit to total assets in month $t-4$. We go long (short) the firms with the high (low) ratio.
14	ROE	Return on equity	Firms with high return on equity outperform firms with low return on equity.	Haugen and Baker (1996), Chen <i>et al.</i> (2011), Wang and Yu (2013)	We sort firms on the ratio of trailing four-quarter net profit to common equity in month $t-4$. We go long (short) the firms with the high (low) ratio.
15	GM	Gross margin	Companies with high gross margin outperform companies with low gross margin.	Lev and Thiagarajan (1993), Abarbanell and Bushee (1997), Witkowska (2006)	We sort firms on their ratio of trailing four-quarter gross profit to trailing four-quarter sales in month $t-4$.
16	AT	Asset turnover	Stocks of firms with high asset turnover outperform firms with low asset turnover.	Haugen and Baker (1996)	We rank firms on the ratio of trailing four-quarter sales to assets in month $t-4$. We go long (short) the firms with the high (low) ratio.
17	GPA	Gross profitability	Stocks of firms with high gross profitability outperform firms with low gross profitability.	Novy-Marx (2013)	We rank firms on the ratio of trailing four-quarter gross profit to total assets in month $t-4$. We go long (short) the firms with the high (low) ratio.
18	SGIG	Sales growth-to-inventory growth	The difference between sales change and inventory change positively predicts returns.	Lev and Thiagarajan (1993), Abarbanell and Bushee (1998)	We rank firms on the difference between sales growth and inventory growth in the period from $t-16$ to $t-4$. We go long (short) the firms with the high (low) difference.
19	GMCh	Change in gross margin	Change in gross margin positively predicts returns	Piotroski (2000)	We rank firms on the change in gross margin from $t-16$ to $t-4$. We go long (short) the firms with the high (low) change.

Group 3: Credit risk

20	DM	Leverage	Stocks of firms with high debt-to-market equity ratio outperform firms with low debt-to-market equity ratio.	Bhandari (1988)	We rank the firms on the ratio of the balance sheet value of total debt to the stock market value of equity (capitalisation) in month $t-4$. We go long (short) the firms with the high (low) ratio.
21	LevCh	Change in leverage	Change in leverage negatively predicts returns	Piotroski (2000)	We rank firms on the change of the ratio of total debt to total assets in the period from $t-16$ to $t-4$. We go long (short) the firms with the low (high) change.
22	CH	Cash holdings	The level of cash holdings positively predict returns.	Palazzo (2012)	We rank firms on the ratio of short-term investment to total assets. We go long (short) the firms with the high (low) ratio.

Group 4: Investment

23	AG	Asset growth	Stocks of firms with low asset growth outperform firms with high asset growth.	Cooper <i>et al.</i> (2008)	We rank firms on their total percentage asset growth from in the $t-16$ to $t-4$ period. We go long (short) the firms with the low (high) asset growth.
24	IG	Investment growth	Stocks of firms with low investment growth outperform firms with high investment growth.	Xing (2008)	We rank firms on their total percentage asset in the $t-16$ to $t-4$ period. We go long (short) the firms with the low (high) asset growth.
25	InG	Inventory growth	Stocks of firms with low inventory growth outperform firms with high inventory growth.	Belo and Lin (2011)	We rank firms on the inventory growth from month $t-16$ to $t-4$. We go long (short) the firms with the low (high) growth.
26	InC	Inventory change	Stocks of firms with low change of the inventory to assets ratio outperform firms with high change the inventory to assets ratio	Thomas and Zhang (2002)	We rank firms on the change of the inventory to assets ratio from month $t-16$ to $t-4$. We go long (short) the firms with the low (high) change.
27	HR	Hiring rate	Stocks of firms with low hiring rate outperform firms with high hiring rate.	Belo <i>et al.</i> (2014)	We rank firms on the 12-month change in the number of employees in month $t-4$. We go long (short) the firms with the low (high) change.
28	OL	Operating leverage	Stocks of firms with high operating leverage outperform firms with low operating leverage.	Novy-Marx (2011)	We rank firms on their operating leverage, i.e., the trailing four-quarter operating costs to total sales. We go long (short) the firms with the high (low) leverage.
29	NOAg	Net operating assets growth	Growth in net operating assets negatively predicts returns.	Fairfield (2003)	We rank firms on the change in net operating assets $t-16$ to $t-4$. We drop the firms with the negative operating assets in $t-16$. We go long (short) the firms with the low (high) change.
30	NOAc	Net operating assets change	Growth in net operating assets scaled by total assets negatively predicts returns.	Hirshleifer <i>et al.</i> (2004)	We rank firms on the change in net operating assets scaled by total assets $t-16$ to $t-4$. We go long (short) the firms with the low (high) change.
31	CIA	Capital investments	Capital investments scaled by total assets negatively predicts returns.'	Titman <i>et al.</i> (2004)	We rank firms on aggregated capital expenditures in the $t-16$ to $t-4$ period scaled by balance sheet total assets in $t-4$. We go long (short) the firms with the low (high) value of capital expenditures.

Group 5: Issuance

32	CEI	Composite equity issuance	Stocks of firms with low composite equity issuance over past 5 years outperform firms with high composite equity issuance over past 5 years.	Daniel and Titman (2006)	We rank firms the difference between the natural logarithm of total market capitalisation in month $t-60$ divided by the total market capitalisation in month $t-1$ and the cumulative stock price appreciation in months $t-60$ to $t-1$ (in logarithmic terms). We go long (short) the firms with the low (high) value of this difference.
33	NSI	Net stock issuance	Stocks of firms with low net stock issuance over last year outperform firms with high net stock issuance over last year.	Pontiff and Woodgate (2008)	We rank firms on the growth of the share capital from month $t-16$ to $t-4$. We go long (short) the firms with the low (high) growth.
34	Age	Age	Young public companies tend to underperform the older counterparts.	Jiang <i>et al.</i> (2005)	We rank stocks on the time that since first Bloomberg coverage. We long (short) the stocks with old (young) stocks.
<i>Group 6: Accruals</i>					
35	OA	Operating accruals	Stocks of firms with low level of operating accruals outperform firms with high level of operating accruals.	Sloan (1996), Hafzalla <i>et al.</i> (2011)	We rank the firms on the cumulative operating accruals for the 12 months ending $t-4$ scaled by net operating assets. We go long (short) the firms with the low (high) accruals.
36	TA	Total accruals	Stocks of firms with low level of total accruals outperform firms with high level of total accruals.	Richardson <i>et al.</i> (2005), Hafzalla <i>et al.</i> (2011)	We rank the firms on the cumulative total accruals for the 12 months ending $t-4$ scaled by net operating assets. We go long (short) the firms with the low (high) accruals.
37	AcIvol	Idiosyncratic volatility-enhanced accruals	The accruals anomaly is stronger within the stocks of firms with high idiosyncratic volatility.	Mashruwala <i>et al.</i> (2006)	Firstly, we sort stocks on idiosyncratic volatility as characterized in anomaly (44) and determine the median. Secondly, we rank the above-median stocks on their operating accruals, defined as in the anomaly (35). We go long (short) the stocks with the low (high) accruals.
<i>Group 7: Liquidity</i>					
38	Turn	Turnover	Stocks of firms with low turnover outperform firms with high turnover.	Brennan <i>et al.</i> (1998)	We rank firms on the average turnover (i.e., dollar trading volume) over past 6 months. We go long (short) the firms with the low (high) turnover.
39	TR	Turnover ratio	Stocks of firms with low turnover ratio outperform firms with high turnover ratio.	Datar <i>et al.</i> (1998)	We rank the firms on the ratio of daily turnover to total market capitalisation averaged over last 6 months. We go long (short) the firms with the low (high) turnover ratio.
40	TRV	Turnover ratio variability	The variability of turnover ratio negatively predicts returns.	Chordia <i>et al.</i> (2001)	We rank firms on variance of monthly turnover ratios calculated based on the $t-36$ to $t-1$ period. We go long (short) the firms with the low (high) variance.
41	TurnV	Turnover variability	The variability of turnover negatively predicts returns.	Chordia <i>et al.</i> (2001)	We rank firms on variance of monthly turnover calculated based on the $t-36$ to $t-1$ period. We go long (short) the firms with the low (high) variance.
<i>Group 8: Low volatility</i>					

42	Beta	Beta	Stocks with low beta outperform stocks with high beta.	Frazzini and Pedersen (2014)	We rank stocks on the coefficient of regression of their returns on returns of the market portfolio, <i>i.e.</i> , capitalisation-weighted portfolio of all the stocks, calculated for months $t-24$ to $t-1$. We go long (short) the stocks with the low (high) coefficient.
43	SD	Volatility	Stocks with low return volatility outperform markets with high volatility.	Baker <i>et al.</i> (2011)	We rank stocks on the standard deviation of the monthly returns in months $t-24$ to $t-1$. We go long (short) the stocks with the low (high) volatility.
44	Ivol	Idiosyncratic volatility	Stocks with low idiosyncratic volatility outperform firms with high idiosyncratic volatility.	Merton (1987), Malkiel and Xu (2004), Ang <i>et al.</i> (2006a, 2009)	We rank stocks on the idiosyncratic volatility from the CAPM model, as characterized in the section on portfolio evaluation, calculated for months $t-24$ to $t-1$. We go long (short) the stocks with the low (high) idiosyncratic risk.

Group 9: Extreme and downside risk

45	DownVol	Downside volatility	Stocks with high downside risk outperform stocks with low downside risk.	Ang <i>et al.</i> (2006b)	We rank stocks on the downside deviation of the monthly returns in months $t-24$ to $t-1$. We go long (short) the stocks with the high (low) downside volatility
46	VaR	Value at risk	Stocks with high value at risk outperform stocks with low value at risk.	Bali and Cakici (2004)	We rank stocks on their 5% VaR, <i>i.e.</i> , absolute value of the 5th percentile of returns in months $t-24$ to $t-1$. We go long (short) the stocks with the high (low) VaR.
47	Skew	Skewness	Stocks with low skewness of returns outperform stocks with high skewness of returns.	Harvey and Siddique (2000), Amaya <i>et al.</i> (2015)	We rank markets on the skewness of monthly returns in $t-24$ to $t-1$ period (min. 20 observations). We go long (short) the markets with the high (low) past return.
48	Kurt	Kurtosis	Stocks with high kurtosis of returns outperform stocks with low kurtosis of returns.	Dittmar (2002), Amaya <i>et al.</i> (2015)	We rank markets on the kurtosis of monthly returns in $t-24$ to $t-1$ period (min. 20 observations). We go long (short) the markets with the high (low) past return..

Group 10: Long-term reversal

49	LtRev	Long-term reversal	Firms with high (low) returns in the previous 3 to 5 years exhibit return reversal.	DeBondt and Thaler (1985)	We rank stocks based on their cumulative return in months $t-61$ to $t-13$. We go long (short) the stocks with the low (high) return.
50	LtRevIvol	Idiosyncratic volatility-enhanced long-term reversal	Long-term reversal is stronger across firms with high idiosyncratic volatility.	McLean (2010)	Firstly, we sort stocks on idiosyncratic volatility as characterized in anomaly (44) and determine the median. Secondly, we rank the above-median stocks on their cumulative returns in months $t-61$ to $t-13$. We go long (short) the stocks with the low (high) return.

Group 11: Momentum

51	StMom	Short-term momentum	Stocks of firms that outperformed over past 6 months continue to outperform over the next month.	Jegadeesh and Titman (1993)	We rank stocks based on their cumulative return in months $t-1$ to $t-6$. We go long (short) the stocks with the high (low) return.
52	LtMom	Long-term momentum	Past-year winners outperform past-year losers	Fama and French (1996)	We rank stocks based on their cumulative return in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.
53	IntMom	Intermediate momentum	Intermediate returns (<i>i.e.</i> , in months $t-12$ to $t-7$) cause momentum.	Novy-Marx (2012)	We rank stocks based on their cumulative return in months $t-12$ to $t-7$. We go long (short) the stocks with the high (low) return.
54	MomAge	Age-enhanced momentum	Momentum is stronger among young companies.	Zhang (2006)	Firstly, we sort stocks on their age as characterized in anomaly (34) and determine the median. Secondly, we rank the below-median stocks on their cumulative returns in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.
55	MomIvol	Idiosyncratic volatility-enhanced momentum	Momentum is stronger among stocks with high idiosyncratic volatility.	Jiang <i>et al.</i> (2005)	Firstly, we sort stocks on the idiosyncratic volatility as characterized in anomaly (44) and determine the median. Secondly, we rank the above-median stocks on their cumulative returns in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.
56	MomSmall	Size-enhanced momentum	Momentum is stronger among small firms.	Jegadeesh and Titman (1993), Hong <i>et al.</i> (2000), Zhang (2006)	Firstly, we sort stocks on the size as characterized in anomaly (66) and determine the median. Secondly, we rank the below-median stocks on their cumulative returns in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.
57	MomBM	Book-to-market ratio-enhanced momentum	Momentum is stronger among companies with high book-to-market ratios.	Asness (1997), Daniel and Titman (1999), Sagi and Seasholes (2007)	Firstly, we sort stocks on the book-to-market ratio as characterized in anomaly (2) and determine the median. Secondly, we rank the above-median stocks on their cumulative returns in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.
58	MomTR	Liquidity-enhanced momentum	Momentum is stronger across liquid stocks.	Lee and Swaminathan (2000)	Firstly, we sort stocks on the turnover ratio as characterized in anomaly (xxx) and determine the median. Secondly, we rank the above-median stocks on their cumulative returns in months $t-12$ to $t-2$.
59	Mom52H	52-week high-enhanced momentum	Momentum is stronger among the firms near their 52-weeks high.	George and Hwang (2004)	Firstly, we sort stocks on the distance to the 52-weeks high, as characterized in anomaly (63), and determine the median. Secondly, we rank the above-median stocks on their cumulative returns in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.
60	MomNeg	Analyst coverage-enhanced momentum	Momentum is stronger among the neglected companies.	Hong <i>et al.</i> (2000)	Firstly, we discard the stocks followed by at least one analyst. Secondly, we rank the stocks on their cumulative returns in months $t-12$ to $t-2$. We go long (short) the stocks with the high (low) return.

Group 12: Technical analysis

61	MA200	200-day moving average	The ratio of current price to the 200-trading day moving average positively predicts returns.	Huddart <i>et al.</i> (2009), Han <i>et al.</i> (2013)	We sort stocks on the relation of price in month $t-1$ to the mean price in months $t-20$ to $t-1$. We go long (short) the stocks with the high (low) ratio.
62	MA250	250-day moving average	The ratio of current price to the 250-trading day moving average positively predicts returns.	Huddart <i>et al.</i> (2009), Han <i>et al.</i> (2013)	We sort stocks on the relation of price in month $t-1$ to the mean price in months $t-24$ to $t-1$. We go long (short) the stocks with the high (low) ratio.
63	52H	52-week high	Companies near their 52-weeks high outperform the market.	George and Hwang (2004)	We rank firms on the ratio of the price at the end of $t-1$ to the maximum price in months $t-12$ to $t-1$. We go long (short) the stocks with the high (low) value of the ratio.

Group 13: Seasonalities

64	SeasMom	Seasonality momentum	Stocks tend to have high (low) returns in the same calendar month in consecutive years.	Heston and Sadka (2008)	We rank stocks on the average return in months $t-60$, $t-48$, $t-36$, $t-24$ and $t-12$, <i>i.e.</i> in analogous calendar months over last 5 years. We go long (short) the stocks with the high (low) mean return.
65	OtherJan	The other January effect	Performance in January positively predicts performance during rest of the year.	Cooper <i>et al.</i> (2006)	We rank stocks on their past return in the most recent January. We go long (short) the stocks with the high (low) past return.

Group 14: Market frictions

66	Cap	Total market capitalisation	Firms with low total market capitalisation outperform firms with high total market capitalisation.	Banz (1981)	We rank firms based on their total market capitalisation at $t-1$. We go long (short) the firms with the low (high) capitalisation.
67	LP	Price	Stocks of firms with low price outperform firms with high price	Bhardwaj and Brooks (1992)	We rank firms their prices at the end of month $t-1$. We go long (short) the firms with the low (high) price.
68	StRev	Short-term reversal	Firms with the highest (lowest) returns in the previous month exhibit return reversal.	Lehmann (1990), Jegadeesh (1990)	We rank stocks based on their raw return in month $t-1$. We go long (short) the stocks with the low (high) return.
69	Spread	Bid-ask spread	Stocks of firms with wide bid-ask spread tend to outperform stocks of firms with tight bid-ask spread.	Amihud and Mendelson (1986)	We rank firms on the bid-ask spread in $t-1$. We go long (short) the stocks with the wide (tight) spread.
70	Neg	Analyst coverage	Neglected firms tend to outperform the market.	Arbel and Strebel (1982)	We rank the securities based on the number of analysts that covers them. We go long (short) the markets with the low (high) coverage.

Note. The table provides detailed information on anomalies examined in this study. *No.* is the running number used to identify the anomalies in the text, and *Abbr.* is the symbol of an anomaly utilized in the study.

Table A2. Returns on monthly-rebalanced zero-investment portfolios formed on stock market anomalies.

No.	Anomaly	Panel A: Equal-weighted portfolios						Panel B: Capitalisation-weighted portfolios					
		Raw return		SD	SR	Intercept		Raw return		SD	SR	Intercept	
		Mean	<i>t</i> -stat			Value	<i>t</i> -stat	Mean	<i>t</i> -stat			Value	<i>t</i> -stat
<i>Group 1: Value vs. growth</i>													
1	EP	1.87***	5.53	4.67	1.39	1.82***	5.54	1.43**	2.57	7.62	0.65	1.33**	2.52
2	BM	1.26***	3.44	4.98	0.88	1.24***	3.41	0.11	0.25	6.10	0.06	0.10	0.23
3	CFP	0.65*	1.67	5.43	0.41	0.61	1.55	0.50	0.93	7.37	0.24	0.46	0.86
4	SP	0.80**	2.12	5.22	0.53	0.75**	2.02	0.63	1.25	6.68	0.33	0.65	1.33
5	EBEV	1.84***	5.14	4.87	1.31	1.83***	5.15	1.59***	2.66	8.03	0.68	1.55***	2.66
6	SEV	1.00***	3.82	3.56	0.98	0.98***	3.81	0.77	1.63	6.30	0.42	0.79*	1.71
7	EBP	1.68***	3.89	5.89	0.99	1.63***	3.85	1.04*	1.87	7.56	0.48	0.96*	1.80
8	DY	0.70*	1.93	5.07	0.48	0.72**	1.96	-0.03	-0.03	7.32	-0.02	0.03	0.06
9	SG	0.96*	1.93	6.88	0.48	1.02**	2.02	0.14	0.23	7.84	0.06	0.25	0.47
10	DYCh	-0.12	-0.35	4.44	-0.10	-0.16	-0.49	-0.46	-0.90	6.77	-0.24	-0.50	-1.01
11	BMSmall	0.55	0.68	10.99	0.17	0.50	0.63	-0.41	-0.26	18.37	-0.08	-0.47	-0.35
12	BMGPA	1.39***	3.45	5.50	0.87	1.38***	3.43	1.33**	2.48	7.23	0.64	1.34**	2.53
<i>Group 2: Profitability</i>													
13	ROA	1.45***	4.67	4.26	1.18	1.47***	4.75	1.17**	1.97	8.13	0.50	1.13*	1.91
14	ROE	1.39***	4.22	4.49	1.07	1.39***	4.24	1.31**	2.24	7.89	0.57	1.27**	2.22
15	GM	1.07***	3.15	4.68	0.79	1.10***	3.26	0.95	1.59	8.02	0.41	0.94	1.60
16	AT	0.78**	2.21	4.85	0.55	0.78**	2.20	0.63*	1.66	5.29	0.41	0.66*	1.72
17	GPA	1.25***	3.72	4.60	0.94	1.27***	3.78	1.42**	2.29	8.40	0.59	1.39**	2.27
18	SGIG	-0.43*	-1.84	3.19	-0.47	-0.43*	-1.86	0.08	0.19	5.02	0.06	0.06	0.16
19	GMCh	1.24***	3.91	4.34	0.99	1.24***	3.92	1.06*	1.84	8.02	0.46	1.08*	1.83
<i>Group 3: Credit risk</i>													
20	DM	-1.18*	-1.88	8.61	-0.47	-1.22*	-1.95	-0.51	-0.83	8.79	-0.20	-0.61	-1.00
21	LevCh	0.00	0.01	3.48	0.00	-0.01	-0.02	0.64	1.15	7.37	0.30	0.63	1.17
22	CH	-0.04	-0.11	4.31	-0.03	-0.07	-0.21	0.43	0.81	6.89	0.22	0.36	0.73
<i>Group 4: Investment and intangibles</i>													
23	AG	-0.43	-1.19	5.12	-0.29	-0.40	-1.08	-1.22**	-2.24	7.31	-0.58	-1.11**	-2.23

24 IG	-0.64**	-1.96	4.40	-0.50	-0.62*	-1.94	-0.92*	-1.81	6.96	-0.46	-0.88*	-1.75
25 InG	-0.39	-1.29	4.35	-0.31	-0.37	-1.19	-1.35***	-2.73	6.65	-0.71	-1.30***	-2.72
26 InC	-0.07	-0.22	3.74	-0.06	-0.08	-0.30	-0.13	-0.35	5.43	-0.08	-0.12	-0.31
27 HR	-0.62	-1.35	6.33	-0.34	-0.58	-1.27	-1.03**	-2.00	7.14	-0.50	-1.01*	-1.93
28 OL	0.32	0.92	4.70	0.24	0.38	1.18	0.11	0.25	6.60	0.06	0.16	0.33
29 NOAg	-0.32	-0.92	4.91	-0.23	-0.31	-0.86	-0.61	-0.95	8.53	-0.25	-0.57	-0.91
30 NOAc	0.06	0.18	4.38	0.05	0.07	0.21	-0.75	-1.45	7.24	-0.36	-0.73	-1.38
31 CIA	0.33	1.14	4.02	0.29	0.30	1.04	-0.06	-0.14	8.21	-0.03	-0.08	-0.13
<i>Group 5: Issuance</i>												
32 CEI	1.03**	2.09	6.90	0.52	1.03**	2.03	0.60	0.92	8.49	0.24	0.62	1.00
33 NSI	1.53***	3.38	6.28	0.84	1.57***	3.47	1.36**	2.13	8.64	0.55	1.40**	2.22
34 Age	0.62*	1.81	4.69	0.46	0.65*	1.90	-0.04	-0.06	8.61	-0.02	0.02	0.03
<i>Group 6: Accruals</i>												
35 OA	-0.39	-0.98	5.32	-0.26	-0.38	-0.98	-2.41**	-2.23	14.86	-0.56	-2.35**	-2.17
36 TA	-0.24	-0.72	4.70	-0.18	-0.23	-0.67	-0.78	-1.37	8.03	-0.34	-0.72	-1.24
37 AcIvol	0.88	1.07	11.33	0.27	0.92	1.11	0.45	0.56	11.13	0.14	0.52	0.64
<i>Group 7: Liquidity</i>												
38 Turn	0.51	1.53	5.37	0.33	0.60	1.63	0.46	1.03	6.35	0.25	0.58	1.40
39 TR	0.00	0.05	7.61	0.00	0.08	0.15	-1.14	-1.55	9.84	-0.40	-1.09	-1.53
40 TRV	0.67	1.23	7.47	0.31	0.72	1.33	-0.45	-0.71	9.17	-0.17	-0.42	-0.63
41 TurnV	0.90**	2.51	4.88	0.64	0.97***	2.85	0.92**	2.00	6.44	0.50	1.03**	2.39
<i>Group 8: Low-volatility</i>												
42 Beta	-0.78	-1.71	6.34	-0.42	-0.65	-1.59	-0.40	-0.61	8.54	-0.16	-0.23	-0.41
43 SD	0.07	0.25	4.67	0.05	0.15	0.47	-0.45	-0.79	7.45	-0.21	-0.38	-0.71
44 Ivol	0.27	0.89	4.01	0.24	0.32	1.14	0.01	0.07	6.68	0.01	0.03	0.06
<i>Group 9: Extreme and downside risk</i>												
45 DownVol	0.14	0.32	5.19	0.09	0.05	0.15	0.57	1.12	7.24	0.27	0.51	0.99
46 VaR	-0.46	-1.05	5.76	-0.28	-0.57	-1.52	-0.48	-0.69	9.34	-0.18	-0.58	-0.88
47 Skew	0.55**	2.03	3.64	0.53	0.51**	1.99	0.03	0.07	6.50	0.01	0.00	-0.01
48 Kurt	-0.12	-0.48	3.12	-0.13	-0.10	-0.44	-0.28	-0.68	5.94	-0.17	-0.28	-0.64
<i>Group 10: Long-term reversal</i>												
49 LtRev	-0.04	-0.05	6.20	-0.02	-0.09	-0.19	0.06	0.15	7.57	0.03	0.07	0.13

50 LtRevIvol	-0.18	-0.29	9.82	-0.07	-0.19	-0.27	-1.27	-1.54	11.05	-0.40	-1.27	-1.58
<i>Group 11: Momentum</i>												
51 StMom	1.53***	3.15	6.62	0.80	1.60***	3.41	-0.08	-0.06	11.84	-0.02	0.04	0.05
52 LtMom	1.23***	2.63	6.43	0.66	1.28***	2.75	0.03	0.02	10.48	0.01	0.08	0.10
53 IntMom	0.70*	1.83	5.20	0.46	0.72*	1.90	0.52	0.81	8.94	0.20	0.51	0.78
54 MomYoung	1.59***	3.18	6.77	0.81	1.63***	3.32	-0.55	-0.64	11.65	-0.16	-0.56	-0.66
55 MomIvol	1.40**	2.19	8.89	0.55	1.46**	2.26	1.07	1.19	12.01	0.31	1.11	1.27
56 MomSmall	1.65***	3.12	7.16	0.80	1.68***	3.23	1.70***	3.03	7.59	0.78	1.74***	3.17
57 MomBM	1.38***	2.85	6.54	0.73	1.42***	2.99	0.19	0.23	11.18	0.06	0.21	0.25
58 MomTR	1.67***	3.20	7.13	0.81	1.71***	3.31	0.27	0.31	11.39	0.08	0.33	0.40
59 Mom52H	1.29***	3.53	5.01	0.89	1.28***	3.49	1.09*	1.87	7.92	0.48	1.10*	1.91
60 MomNeg	1.20**	2.31	7.00	0.60	1.25**	2.48	0.61	0.84	9.62	0.22	0.70	1.01
<i>Group 12: Technical analysis</i>												
61 MA200	1.40***	2.81	6.74	0.72	1.48***	3.13	-0.70	-0.81	11.56	-0.21	-0.60	-0.72
62 MA250	1.54***	3.09	6.86	0.77	1.61***	3.31	-0.26	-0.29	11.51	-0.08	-0.16	-0.20
63 52H	1.57***	3.12	6.90	0.79	1.66***	3.47	-0.58	-0.68	11.60	-0.17	-0.47	-0.57
<i>Group 13: Seasonalities</i>												
64 SeasMom	-0.26	-0.60	5.76	-0.16	-0.25	-0.60	-0.70	-1.28	7.49	-0.33	-0.73	-1.34
65 OtherJan	0.48	1.32	5.03	0.33	0.46	1.24	-0.26	-0.49	6.90	-0.13	-0.27	-0.54
<i>Group 14: Market frictions</i>												
66 Cap	-0.05	-0.15	4.65	-0.04	-0.01	-0.04	0.00	0.04	6.12	0.00	0.09	0.20
67 LP	-0.40	-1.04	5.29	-0.26	-0.51	-1.53	-0.51	-1.15	6.00	-0.29	-0.62	-1.62
68 StRev	-0.16	-0.41	5.21	-0.11	-0.19	-0.49	-0.24	-0.45	7.56	-0.11	-0.25	-0.45
69 Spread	-0.36	-1.00	4.97	-0.25	-0.29	-0.85	-0.15	-0.25	6.70	-0.08	-0.01	-0.01
70 Neg	0.00	0.02	4.06	0.00	0.08	0.30	0.37	0.89	5.64	0.22	0.49	1.38

Note. The table reports monthly log returns on the monthly-rebalanced zero-investment portfolios formed on stock market anomalies. The list of the anomalies along with the portfolio formation procedures are included in Table A1 in the Online Appendix. All the results are based on the monthly returns and data sourced from Bloomberg. "SD" and "SR" are standard deviations and Sharpe ratios, respectively, and "*t*-stat" are *t*-statistics. "Intercept" is an intercept from the CAPM model. Excess returns, standard deviations, and intercepts are expressed as percentage. Asterisks *, ** and *** indicate values significantly different from 0 at 10%, 5% and 1%, respectively. Values significantly higher than 0 at 5% level are presented in bold.

Table A3. Pair-wise correlation coefficients between the returns on the groups of anomalies.

	Group 1: Value vs growth	Group 2: Profitability	Group 5: Issuance	Group 7: Liquidity	Group 9: Extreme and downside risk	Group 11: Momentum
<i>Panel B: Equal-weighted portfolios</i>						
Group 2: Profitability	-0.19					
Group 5: Issuance	0.30	-0.18				
Group 7: Liquidity	-0.04	0.17	-0.27			
Group 9: Extreme and downside risk	0.31	-0.14	0.41	-0.42		
Group 11: Momentum	-0.41	0.39	0.01	0.09	-0.04	
Group 12: Technical analysis	-0.48	0.44	0.00	0.18	-0.15	0.80
<i>Panel B: Capitalisation-weighted portfolios</i>						
Group 2: Profitability	-0.04					
Group 5: Issuance	0.20	0.05				
Group 7: Liquidity	0.02	0.11	0.18			
Group 9: Extreme and downside risk	0.30	0.10	0.14	-0.22		
Group 11: Momentum	-0.42	0.27	-0.03	0.21	-0.14	
Group 12: Technical analysis	-0.48	0.24	-0.12	0.22	-0.23	0.80

Note. The table presents pair-wise Pearson's correlation coefficients between the arithmetically averaged log excess returns on the sets of anomalies. The calculations rely on monthly-rebalanced zero-investment portfolios formed on anomalies described in Table A1. The list of 33 anomalies grouped into categories used in these computations is showed in Table A4.

Table A4. Returns on annually-rebalanced zero-investment portfolios formed on stock market anomalies.

No.	Anomaly	Equal-weighted portfolios						Capitalisation-weighted portfolios					
		Raw return		SD	SR	Intercept		Raw return		SD	SR	Intercept	
		Mean	<i>t</i> -stat			Value	<i>t</i> -stat	Mean	<i>t</i> -stat			Value	<i>t</i> -stat
<i>Group 1: Value vs growth</i>													
1	EP	1.18***	3.38	4.80	0.85	1.14***	3.34	0.00	0.04	6.48	0.00	-0.04	-0.09
2	BM	1.07***	3.10	4.67	0.79	1.05***	3.10	0.88*	1.91	6.30	0.48	0.90**	1.96
4	SP	0.61*	1.76	4.66	0.45	0.57*	1.73	1.45***	2.82	7.18	0.70	1.47***	2.80
5	EBEV	1.31***	3.60	4.93	0.92	1.31***	3.63	0.91*	1.70	7.50	0.42	0.88	1.62
6	SEV	0.49***	3.82	4.17	0.40	0.47	1.56	0.41	0.87	6.62	0.22	0.43	0.89
7	EBP	1.46***	3.67	5.38	0.94	1.42***	3.71	0.66	1.33	6.63	0.35	0.62	1.31
8	DY	0.60*	1.74	4.79	0.44	0.63*	1.83	-0.09	-0.14	7.60	-0.04	-0.01	-0.01
9	SG	0.60	1.23	6.58	0.32	0.61	1.25	0.42	0.75	8.09	0.18	0.44	0.72
12	BMGPA	0.88**	2.38	4.94	0.62	0.88**	2.44	0.27	0.59	6.32	0.15	0.28	0.60
<i>Group 2: Profitability</i>													
13	ROA	0.80**	2.14	5.12	0.54	0.83**	2.27	0.05	0.07	6.84	0.03	0.06	0.12
14	ROE	0.59	1.51	5.44	0.38	0.62	1.58	-0.05	-0.07	6.52	-0.03	-0.04	-0.07
15	GM	0.59*	1.68	4.98	0.41	0.61*	1.69	-0.55	-1.06	6.82	-0.28	-0.54	-1.08
16	AT	0.71**	2.06	4.81	0.51	0.73**	2.09	0.97***	2.83	4.73	0.71	0.99***	2.90
17	GPA	1.01***	3.08	4.53	0.77	1.02***	3.09	0.05	0.12	6.85	0.03	0.04	0.08
19	GMCh	0.44	1.27	4.69	0.32	0.46	1.35	0.03	0.12	5.32	0.02	0.05	0.13
<i>Group 5: Issuance</i>													
32	CEI	1.20**	2.20	7.40	0.56	1.21**	2.23	0.97*	1.69	8.17	0.41	1.00*	1.70
33	NSI	0.69*	1.79	5.16	0.46	0.71*	1.90	-0.04	-0.04	7.11	-0.02	-0.01	-0.03
34	Age	0.74**	2.15	4.72	0.55	0.75**	2.17	0.03	0.06	8.76	0.01	0.06	0.10
<i>Group 7: Liquidity</i>													
41	TurnV	0.63*	1.71	5.07	0.43	0.67*	1.87	0.49	1.04	6.22	0.27	0.57	1.36
<i>Group 9: Extreme and downside risk</i>													
47	Skew	0.33	1.24	3.69	0.31	0.31	1.16	0.03	0.07	6.59	0.01	0.03	0.06

<i>Group 11: Momentum</i>												
51 StMom	1.14***	2.81	5.59	0.71	1.17***	2.89	0.10	0.09	9.92	0.03	0.10	0.14
52 LtMom	0.02	0.05	5.89	0.01	0.04	0.09	-0.36	-0.67	7.98	-0.16	-0.35	-0.60
53 IntMom	-0.43	-1.18	5.20	-0.29	-0.41	-1.09	-0.41	-0.77	6.96	-0.20	-0.40	-0.79
54 MomAge	-0.09	-0.20	6.01	-0.05	-0.07	-0.17	-1.04	-1.40	10.01	-0.36	-1.09	-1.50
55 MomIvol	-0.51	-0.71	10.44	-0.17	-0.50	-0.66	-1.22	-0.93	18.01	-0.23	-1.19	-0.91
56 MomSmall	0.02	0.07	7.77	0.01	0.06	0.10	0.06	0.13	7.91	0.03	0.10	0.18
57 MomBM	0.13	0.26	6.30	0.07	0.14	0.31	-0.40	-0.61	8.88	-0.15	-0.41	-0.63
58 MomTR	0.45	0.92	6.93	0.22	0.46	0.92	-0.34	-0.47	10.11	-0.12	-0.32	-0.44
59 Mom52H	-0.29	-0.70	5.67	-0.18	-0.30	-0.72	-0.78	-1.42	7.54	-0.36	-0.78	-1.42
60 MomNeg	0.07	0.18	7.09	0.03	0.10	0.20	-0.53	-0.77	10.19	-0.18	-0.47	-0.64
<i>Group 12: Technical analysis</i>												
61 MA200	1.00**	2.40	5.66	0.61	1.03**	2.56	0.23	0.37	9.51	0.08	0.23	0.34
62 MA250	1.00**	2.31	5.79	0.60	1.03**	2.49	0.23	0.32	9.08	0.09	0.23	0.34
63 52H	1.08**	2.53	5.76	0.65	1.14***	2.85	0.31	0.50	9.07	0.12	0.34	0.51

Note. The table reports the monthly log returns on the annually-rebalance zero-investment portfolios formed on stock market anomalies. The list of the anomalies along with the portfolio formation procedures is described in Table A1 in the Online Appendix. All the results are based on monthly returns and data sourced from Bloomberg. "SD" and "SR" are standard deviations and Sharpe ratios, respectively, and "*t*-stat" are *t*-statistics. "Intercept" is an intercept from the CAPM model. Excess returns, standard deviations, and intercepts are expressed as percentages. *, **, and *** indicate values significantly different from 0 at the 10%, 5% and 1% levels respectively. Values significantly higher than 0 at the 5% level are in bold.

Table A5. Returns on monthly-rebalanced zero-investment portfolios formed on stock market anomalies adjusted for trading costs.

No.	Anomaly	Equal-weighted portfolios				Capitalisation-weighted portfolios			
		Spread		Spread & commissions		Spread		Spread & commissions	
		R	Int	R	Int	R	Int	R	Int
<i>Group 1: Value vs growth</i>									
1	EP	0.20	0.16	0.03	-0.01	0.56	0.49	0.38	0.31
2	BM	-0.10	-0.13	-0.24	-0.26	-0.47	-0.48	-0.58	-0.59
4	SP	-0.41	-0.45	-0.53	-0.56	-0.06	-0.05	-0.18	-0.17
5	EBEV	0.51	0.50	0.34	0.34	0.47	0.44	0.26	0.24
6	SEV	-0.28	-0.30	-0.42	-0.44	-0.04	-0.03	-0.19	-0.17
7	EBP	0.41	0.38	0.26	0.23	0.23	0.17	0.06	0.01
8	DY	-0.48	-0.46	-0.60	-0.59	-0.45	-0.41	-0.58	-0.54
9	SG	-0.69	-0.65	-0.83	-0.79	-1.53**	-1.43**	-1.69***	-1.60***
12	BMGPA	-0.16	-0.17	-0.33	-0.33	0.71	0.72	0.56	0.56
<i>Group 2: Profitability</i>									
13	ROA	0.13	0.14	0.01	0.02	0.48	0.45	0.37	0.34
14	ROE	0.11	0.11	-0.01	-0.01	0.72	0.69	0.60	0.58
15	GM	-0.17	-0.14	-0.27	-0.25	0.32	0.30	0.23	0.22
16	AT	-0.26	-0.26	-0.35	-0.36	0.19	0.21	0.11	0.13
17	GPA	-0.08	-0.07	-0.19	-0.18	0.48	0.45	0.37	0.34
19	GMCh	-0.49	-0.50	-0.68*	-0.69*	0.02	0.03	-0.16	-0.16
<i>Group 5: Issuance</i>									
32	CEI	0.07	0.07	-0.06	-0.06	-0.22	-0.21	-0.38	-0.36
33	NSI	-0.13	-0.09	-0.30	-0.27	0.54	0.56	0.36	0.39
34	Age	-0.33	-0.31	-0.41	-0.40	-0.33	-0.29	-0.39	-0.35
<i>Group 7: Liquidity</i>									
41	TurnV	-0.50	-0.45	-0.59	-0.55	-0.54	-0.46	-0.63	-0.56
<i>Group 9: Extreme and downside risk</i>									
47	Skew	-0.80***	-0.83***	-0.95***	-0.97***	-0.81*	-0.83*	-1.00**	-1.02**
<i>Group 11: Momentum</i>									
51	StMom	-1.11**	-1.06**	-1.38***	-1.33***	-1.55*	-1.46*	-1.90**	-1.81**
52	LtMom	-0.82*	-0.79*	-1.04**	-1.00**	-1.20	-1.16	-1.48*	-1.45*
53	IntMom	-1.76***	-1.74***	-2.03***	-2.01***	-0.85	-0.85	-1.19*	-1.19*
54	MomYoung	-0.70	-0.67	-0.91*	-0.89*	-2.04**	-2.06**	-2.35***	-2.36***
55	MomIvol	-1.66**	-1.62**	-1.93***	-1.89***	-1.13	-1.11	-1.44	-1.41
56	MomSmall	-0.84	-0.82	-1.10**	-1.08**	-0.53	-0.51	-0.79	-0.76
57	MomBM	-1.05**	-1.02**	-1.30***	-1.27***	-1.32	-1.30	-1.64**	-1.63**
58	MomTR	-0.04	-0.01	-0.27	-0.24	-0.81	-0.76	-1.13	-1.09
59	Mom52H	-1.44***	-1.45***	-1.80***	-1.81***	-0.28	-0.28	-0.68	-0.67
60	MomNeg	-1.45***	-1.41***	-1.69***	-1.65***	-2.29***	-2.22***	-2.57***	-2.50***
<i>Group 12: Technical analysis</i>									
61	MA200	-0.94*	-0.88*	-1.18**	-1.12**	-2.11**	-2.04**	-2.45***	-2.38***
62	MA250	-0.71	-0.66	-0.93*	-0.89*	-1.65*	-1.58*	-1.96**	-1.89**
63	52H	-0.68	-0.61	-0.95*	-0.89*	-2.03**	-1.94**	-2.38***	-2.30***

Note. The table reports the monthly log returns on monthly-rebalance zero-investment portfolios formed on stock market anomalies adjusted for trading costs, *i.e.*, bid-ask spreads (columns "Spread") and both big-asks spreads and commissions (columns "Spread & commissions"). The list of the anomalies along with the portfolio formation

procedures is described in Table A1 in the Online Appendix. All the results are based on monthly returns and data sourced from Bloomberg. "R" and "Int" are mean monthly returns and intercepts from the CAPM model, respectively. All values are expressed as percentages. *, **, and *** indicate values significantly different from 0 at the 10%, 5% and 1% levels respectively. Values significantly higher than 0 at the 5% level are in bold.

Table A6. Returns on annually-rebalanced zero-investment portfolios formed on stock market anomalies adjusted for trading costs.

No.	Anomaly	Equal-weighted portfolios				Capitalisation-weighted portfolios			
		Spread		Spread & commissions		Spread		Spread & commissions	
		R	Int	R	Int	R	Int	R	Int
<i>Group 1: Value vs growth</i>									
1	EP	0.40	0.38	0.31	0.28	-0.43	-0.47	-0.51	-0.54
2	BM	0.45	0.44	0.38	0.36	0.65	0.67	0.60	0.61
4	SP	0.10	0.07	0.02	0.00	1.25**	1.26**	1.19**	1.20**
5	EBEV	0.71*	0.71*	0.63	0.63	0.46	0.44	0.39	0.37
6	SEV	0.03	0.02	-0.04	-0.05	0.18	0.20	0.13	0.14
7	EBP	0.89**	0.86**	0.80**	0.77**	0.34	0.31	0.28	0.25
8	DY	0.07	0.09	-0.01	0.01	-0.29	-0.23	-0.35	-0.30
9	SG	-0.02	-0.01	-0.09	-0.09	-0.14	-0.13	-0.21	-0.21
12	BMGPA	0.29	0.29	0.20	0.21	0.07	0.07	0.01	0.01
<i>Group 2: Profitability</i>									
13	ROA	0.25	0.27	0.17	0.19	-0.26	-0.26	-0.33	-0.32
14	ROE	0.02	0.04	-0.06	-0.04	-0.34	-0.33	-0.41	-0.40
15	GM	0.01	0.03	-0.06	-0.04	-0.84*	-0.84*	-0.89*	-0.89*
16	AT	0.23	0.25	0.17	0.18	0.78**	0.79**	0.73**	0.74**
17	GPA	0.33	0.34	0.25	0.26	-0.43	-0.44	-0.50	-0.50
19	GMCh	-0.32	-0.30	-0.42	-0.40	-0.54	-0.52	-0.62	-0.61
<i>Group 5: Issuance</i>									
32	CEI	0.76	0.77	0.69	0.70	0.71	0.73	0.65	0.67
33	NSI	0.06	0.08	-0.02	-0.01	-0.52	-0.50	-0.60	-0.58
34	Age	0.23	0.24	0.17	0.17	-0.12	-0.09	-0.17	-0.14
<i>Group 7: Liquidity</i>									
41	TurnV	-0.20	-0.16	-0.27	-0.23	-0.26	-0.20	-0.32	-0.27
<i>Group 9: Extreme and downside risk</i>									
47	Skew	-0.34	-0.35	-0.42	-0.43	-0.22	-0.22	-0.29	-0.29
<i>Group 11: Momentum</i>									
51	StMom	0.40	0.42	0.31	0.32	-0.28	-0.28	-0.37	-0.37
52	LtMom	-0.71	-0.69	-0.80*	-0.79*	-0.75	-0.74	-0.84	-0.83
53	IntMom	-1.15***	-1.13***	-1.25***	-1.23***	-0.82	-0.82	-0.90*	-0.90*
54	MomAge	-0.90**	-0.89**	-1.00**	-1.00**	-1.40*	-1.43**	-1.49**	-1.52**
55	MomIvol	-1.60**	-1.59**	-1.73**	-1.72**	-1.99	-1.98	-2.11	-2.10
56	MomSmall	-0.89	-0.86	-1.00*	-0.97*	-0.70	-0.67	-0.81	-0.78
57	MomBM	-0.74	-0.73	-0.85*	-0.84*	-0.86	-0.87	-0.97	-0.98
58	MomTR	-0.03	-0.02	-0.14	-0.13	-0.58	-0.57	-0.68	-0.68
59	Mom52H	-0.97**	-0.97**	-1.12***	-1.12***	-1.11**	-1.11**	-1.24**	-1.24**
60	MomNeg	-0.95*	-0.92*	-1.06**	-1.04**	-1.45*	-1.39*	-1.56*	-1.51*
<i>Group 12: Technical analysis</i>									
61	MA200	0.26	0.29	0.16	0.19	-0.16	-0.16	-0.25	-0.25
62	MA250	0.20	0.23	0.11	0.13	-0.15	-0.16	-0.24	-0.25
63	52H	0.35	0.39	0.26	0.30	-0.03	-0.01	-0.12	-0.10

Note. The table reports the monthly log returns on annually-rebalance zero-investment portfolios formed on stock market anomalies adjusted for trading costs, *i.e.*, bid-ask spreads (columns "Spread") and both bid-asks spreads and commissions (columns "Spread & commissions"). The list of the anomalies along with the portfolio formation

procedures is described in Table A1 in the Online Appendix. All the results are based on monthly returns and data sourced from Bloomberg. "R" and "Int" are mean monthly returns and intercepts from the CAPM model, respectively. All values are expressed as percentages. *, **, and *** indicate values significantly different from 0 at the 10%, 5% and 1% levels respectively. Values significantly higher than 0 at the 5% level are in bold.

Table A7. Excess returns on monthly-rebalanced long-only portfolios formed on stock market anomalies.

No.	Anomaly	Equal-weighted portfolios						Capitalisation-weighted portfolios					
		Raw return		SD	SR	Intercept		Raw return		SD	SR	Intercept	
		Mean	<i>t</i> -stat			Value	<i>t</i> -stat	Mean	<i>t</i> -stat			Value	<i>t</i> -stat
<i>Group 1: Value vs. growth</i>													
1	EP	1.58***	2.70	8.00	0.68	1.31***	3.71	0.89	1.32	9.21	0.34	0.58	1.48
2	BM	1.49**	2.50	8.15	0.63	1.24***	3.04	0.92	1.56	8.05	0.40	0.65*	1.83
4	SP	0.94	1.44	8.91	0.36	0.66	1.50	0.68	1.08	8.52	0.27	0.40	1.00
5	EBEV	1.62***	2.78	7.97	0.70	1.36***	3.58	1.37**	2.20	8.55	0.56	1.10***	2.76
6	SEV	1.01*	1.70	8.11	0.43	0.74**	1.99	0.79	1.36	7.90	0.34	0.53	1.44
7	EBP	1.60**	2.51	8.71	0.64	1.34***	3.03	0.66	1.00	9.04	0.25	0.36	0.90
8	DY	1.35***	2.62	7.02	0.66	1.11***	3.56	0.24	0.42	7.88	0.11	-0.02	-0.05
9	SG	0.55	0.88	8.45	0.22	0.39	0.73	0.54	0.98	7.50	0.25	0.42	0.85
12	BMGPA	1.73***	3.13	7.56	0.79	1.51***	3.86	1.33**	2.26	8.06	0.57	1.07***	2.90
<i>Group 2: Profitability</i>													
13	ROA	1.54***	3.07	6.83	0.78	1.30***	4.48	1.30**	1.98	8.98	0.50	0.99***	2.64
14	ROE	1.42***	2.72	7.13	0.69	1.18***	3.82	1.38**	2.17	8.73	0.55	1.08***	2.96
15	GM	1.14**	2.23	7.00	0.57	0.92***	2.82	1.08*	1.70	8.68	0.43	0.81*	1.88
16	AT	1.15**	2.05	7.69	0.52	0.91**	2.41	0.96*	1.67	7.90	0.42	0.71*	1.91
17	GPA	1.31**	2.57	6.97	0.65	1.08***	3.44	1.64**	2.51	8.92	0.63	1.37***	3.01
19	GMCh	1.28**	2.27	7.70	0.58	1.04***	2.78	1.78***	2.60	9.36	0.66	1.50***	3.13
<i>Group 5: Issuance</i>													
32	CEI	0.88	1.35	8.88	0.34	0.86	1.00	0.99	1.36	9.93	0.35	0.94	1.00
33	NSI	1.58***	2.75	7.87	0.70	1.37***	3.13	1.72**	2.44	9.61	0.62	1.46***	2.69
34	Age	0.84	1.49	7.77	0.38	0.61	1.55	0.52	0.78	9.09	0.20	0.25	0.52
<i>Group 7: Liquidity</i>													
41	TurnV	1.18**	2.48	6.51	0.63	0.98***	3.02	1.23**	2.40	7.00	0.61	1.04***	2.63
<i>Group 9: Extreme and downside risk</i>													
47	Skew	0.74	1.32	7.69	0.33	0.48	1.42	0.34	0.58	8.13	0.15	0.05	0.16

Group 11: Momentum

51 StMom	1.62***	3.24	6.84	0.82	1.40***	4.38	0.65	1.14	7.81	0.29	0.38	1.15
52 LtMom	1.25**	2.41	7.11	0.61	1.02***	3.05	0.57	0.94	8.28	0.24	0.28	0.84
53 IntMom	0.87*	1.65	7.24	0.42	0.64*	1.92	0.67	1.10	8.33	0.28	0.37	1.18
54 MomAge	1.28**	2.30	7.60	0.58	1.04***	2.86	0.45	0.65	9.52	0.16	0.13	0.31
55 MomIvol	1.17*	1.93	8.30	0.49	0.93**	2.13	0.53	0.72	10.09	0.18	0.23	0.44
56 MomSmall	1.23**	2.14	7.88	0.54	1.01**	2.36	1.45**	2.47	8.02	0.63	1.23***	2.78
57 MomBM	1.64***	3.06	7.33	0.77	1.39***	4.27	0.78	1.22	8.67	0.31	0.46	1.41
58 MomTR	1.33**	2.27	8.01	0.57	1.08***	2.69	0.40	0.63	8.75	0.16	0.11	0.28
59 Mom52H	1.82***	3.41	7.30	0.87	1.60***	4.35	0.93	1.45	8.80	0.37	0.66	1.52
60 MomNeg	1.24**	2.38	7.12	0.60	1.04***	2.66	0.74	1.42	7.15	0.36	0.57	1.33
<i>Group 12: Technical analysis</i>												
61 MA200	1.66***	3.40	6.67	0.86	1.44***	4.60	0.41	0.73	7.59	0.19	0.14	0.46
62 MA250	1.69***	3.44	6.73	0.87	1.47***	4.65	0.65	1.17	7.63	0.30	0.38	1.27
63 52H	1.63***	3.51	6.35	0.89	1.43***	4.74	0.49	0.90	7.45	0.23	0.22	0.79

Note. The table reports monthly log excess returns on the monthly-rebalanced long-only portfolios formed on the stock market anomalies. The list of the anomalies along with the portfolio formation procedures are included in Table A1 in the Online Appendix. All the results are based on monthly returns and the data sourced from Bloomberg. "SD" and "SR" are standard deviations and Sharpe ratios, respectively. "t-stat" are *t*-statistics. "Intercept" means the intercept from the CAPM model. Excess returns, standard deviations, and intercepts are expressed in per cent. Asterisks *, ** and *** indicate values significantly different from 0 at the 10%, 5% and 1% level, respectively. Values significantly higher than 0 at the 5% level are in bold type.

Table A8. Excess returns on annually-rebalanced long-only portfolios formed on stock market anomalies.

No.	Anomaly	Equal-weighted portfolios						Capitalisation-weighted portfolios					
		Raw return		SD	SR	Intercept		Raw return		SD	SR	Intercept	
		Value	<i>t</i> -stat			Value	<i>t</i> -stat	Value	<i>t</i> -stat			Value	<i>t</i> -stat
<i>Group 1: Value vs growth</i>													
1	EP	1.24**	2.07	8.19	0.53	1.05***	2.75	0.01	0.01	8.12	0.00	-0.20	-0.62
2	BM	1.07*	1.82	8.04	0.46	0.88**	2.33	0.89*	1.68	7.27	0.43	0.72**	2.20
4	SP	0.60	0.92	8.83	0.23	0.39	0.93	0.86	1.33	8.82	0.34	0.65	1.59
5	EBEV	1.22**	2.10	7.96	0.53	1.04***	2.77	0.80	1.29	8.51	0.33	0.60	1.53
6	SEV	0.68	1.10	8.44	0.28	0.48	1.18	0.63	1.03	8.39	0.26	0.44	1.09
7	EBP	1.43**	2.27	8.63	0.57	1.23***	3.04	0.38	0.67	7.71	0.17	0.18	0.57
8	DY	1.16**	2.31	6.88	0.58	0.99***	3.29	0.46	0.86	7.41	0.22	0.30	0.81
9	SG	0.34	0.53	8.89	0.13	0.21	0.39	0.21	0.32	9.17	0.08	0.06	0.12
12	BMGPA	1.26**	2.37	7.29	0.60	1.10***	3.02	0.60	1.12	7.30	0.28	0.42	1.31
<i>Group 2: Profitability</i>													
13	ROA	1.08**	2.15	6.87	0.54	0.91***	3.06	0.43	0.77	7.66	0.19	0.23	0.82
14	ROE	0.82	1.56	7.18	0.39	0.65*	1.95	0.36	0.68	7.21	0.17	0.17	0.62
15	GM	0.85	1.59	7.29	0.40	0.67**	2.01	0.00	-0.01	7.72	0.00	-0.19	-0.53
16	AT	1.04*	1.83	7.76	0.46	0.86**	2.24	1.05*	1.85	7.74	0.47	0.86**	2.53
17	GPA	1.10**	2.15	7.02	0.54	0.93***	2.97	0.47	0.91	7.00	0.23	0.29	1.00
19	GMCh	0.92*	1.66	7.63	0.42	0.76*	1.93	0.59	1.00	8.10	0.25	0.41	1.04
<i>Group 5: Issuance</i>													
32	CEI	0.75	1.14	8.99	0.29	0.80	1.00	1.12	1.63	9.38	0.41	1.17	1.00
33	NSI	0.70	1.18	8.08	0.30	0.52	1.28	0.62	1.16	7.33	0.29	0.44	1.35
34	Age	0.84	1.41	8.10	0.36	0.66	1.62	0.53	0.80	9.12	0.20	0.34	0.72
<i>Group 7: Liquidity</i>													
41	TurnV	1.04**	2.08	6.88	0.53	0.90**	2.54	0.91*	1.79	6.95	0.45	0.77**	1.99
<i>Group 9: Extreme and downside risk</i>													
47	Skew	0.72	1.28	7.69	0.32	0.53	1.57	0.32	0.56	7.78	0.14	0.12	0.41

Group 11: Momentum

51 StMom	1.22**	2.31	7.21	0.58	1.04***	3.25	0.63	1.10	7.86	0.28	0.42	1.54
52 LtMom	0.57	1.10	7.13	0.28	0.40	1.30	0.18	0.30	8.06	0.08	-0.03	-0.11
53 IntMom	0.22	0.42	7.25	0.11	0.05	0.15	0.08	0.14	7.62	0.03	-0.12	-0.43
54 MomAge	0.53	0.97	7.48	0.25	0.35	1.09	0.05	0.06	9.64	0.02	-0.20	-0.50
55 MomIvol	0.38	0.60	8.57	0.15	0.19	0.44	0.48	0.61	10.73	0.15	0.25	0.44
56 MomSmall	0.64	1.16	7.48	0.29	0.48	1.19	0.75	1.36	7.56	0.34	0.60	1.45
57 MomBM	0.86*	1.65	7.11	0.42	0.68**	2.31	0.47	0.77	8.29	0.20	0.25	0.78
58 MomTR	0.44	0.71	8.47	0.18	0.24	0.60	0.10	0.16	9.24	0.04	-0.12	-0.29
59 Mom52H	1.18**	2.23	7.26	0.57	1.03***	2.73	0.42	0.67	8.57	0.17	0.23	0.54
60 MomNeg	0.55	1.06	7.08	0.27	0.40	1.05	0.39	0.77	6.97	0.19	0.26	0.65
<i>Group 12: Technical analysis</i>												
61 MA200	0.97*	1.84	7.18	0.47	0.80**	2.47	0.34	0.54	8.54	0.14	0.12	0.35
62 MA250	1.01*	1.92	7.20	0.49	0.83***	2.61	0.23	0.35	8.71	0.09	0.00	-0.01
63 52H	1.15**	2.36	6.66	0.60	0.99***	3.18	0.42	0.68	8.48	0.17	0.20	0.61

Note. The table reports the monthly log excess returns on the annually-rebalanced long-only portfolios formed on stock market anomalies. The list of the anomalies along with the portfolio formation procedures is described in Table A1 in the Online Appendix. All the results are based on monthly returns and data sourced from Bloomberg. "SD" and "SR" are standard deviations and Sharpe ratios, respectively, and "t-stat" are *t*-statistics. "Intercept" is an intercept from the CAPM model. Excess returns, standard deviations, and intercepts are expressed as percentages. *, **, and *** indicate values significantly different from 0 at the 10%, 5% and 1% levels respectively. Values significantly higher than 0 at the 5% level are in bold.

Table A9. Returns on monthly-rebalanced long-only portfolios formed on stock market anomalies adjusted for trading costs.

No.	Anomaly	Equal-weighted portfolios				Capitalisation-weighted portfolios			
		Spread		Spread & commissions		Spread		Spread & commissions	
		R	Int.	R	Int.	R	Int.	R	Int.
<i>Group 1: Value vs growth</i>									
1 EP		0.61	0.41	0.52	0.33	0.49	0.25	0.40	0.19
2 BM		0.55	0.37	0.48	0.30	0.58	0.38	0.51	0.33
4 SP		0.23	0.02	0.16	-0.03	0.14	-0.06	0.07	-0.12
5 EBEV		0.82	0.64	0.73	0.56	0.68	0.48	0.58	0.39
6 SEV		0.20	0.01	0.13	-0.05	0.16	-0.03	0.08	-0.09
7 EBP		0.88	0.68	0.79	0.61	0.27	0.05	0.19	-0.01
8 DY		0.71	0.54*	0.65	0.49	-0.01	-0.20	-0.07	-0.25
9 SG		-0.70	-0.85	-0.78	-0.92	-0.67	-0.78	-0.75	-0.86
12 BMGPA		0.77	0.61	0.68	0.53	1.02*	0.82**	0.94	0.76**
<i>Group 2: Profitability</i>									
13 ROA		0.95*	0.77***	0.89*	0.73**	1.06	0.84**	1.02	0.81**
14 ROE		0.82	0.64**	0.77	0.60*	1.16*	0.94**	1.11*	0.90**
15 GM		0.48	0.31	0.43	0.27	0.80	0.60	0.76	0.58
16 AT		0.72	0.54	0.67	0.50	0.70	0.52	0.66	0.49
17 GPA		0.71	0.54*	0.66	0.50	1.27*	1.07**	1.22*	1.04**
19 GMCh		0.49	0.31	0.40	0.23	1.22*	1.02**	1.13	0.93*
<i>Group 5: Issuance</i>									
32 CEI		0.27	0.31	0.18	0.24	0.35	0.38	0.24	0.28
33 NSI		0.63	0.47	0.54	0.39	1.21*	1.02*	1.12	0.95*
34 Age		0.55	0.38	0.51	0.35	0.40	0.21	0.38	0.20
<i>Group 7: Liquidity</i>									
41 TurnV		-0.07	-0.22	-0.14	-0.28	-0.21	-0.35	-0.28	-0.41
<i>Group 9: Extreme and downside risk</i>									
47 Skew		0.23	0.04	0.16	-0.02	0.07	-0.14	-0.02	-0.22
<i>Group 11: Momentum</i>									
51 StMom		0.49	0.32	0.36	0.21	0.04	-0.16	-0.11	-0.30
52 LtMom		0.33	0.17	0.23	0.08	0.04	-0.17	-0.08	-0.28
53 IntMom		-0.25	-0.42	-0.38	-0.54	0.18	-0.04	0.03	-0.18
54 MomYoung		0.21	0.03	0.11	-0.06	-0.17	-0.41	-0.31	-0.53
55 MomIvol		-0.27	-0.45	-0.40	-0.56	-0.36	-0.59	-0.50	-0.71
56 MomSmall		0.10	-0.06	-0.02	-0.18	0.41	0.25	0.29	0.14
57 MomBM		0.56	0.38	0.43	0.27	0.19	-0.03	0.04	-0.17
58 MomTR		0.54	0.36	0.43	0.26	-0.01	-0.22	-0.15	-0.35
59 Mom52H		0.87	0.71*	0.74	0.59	0.35	0.15	0.20	0.01
60 MomNeg		0.08	-0.07	-0.04	-0.17	-0.48	-0.62	-0.60	-0.72
<i>Group 12: Technical analysis</i>									
61 MA200		0.70	0.54*	0.58	0.43	-0.21	-0.40	-0.36	-0.54*
62 MA250		0.74	0.58*	0.63	0.48	0.04	-0.16	-0.10	-0.29

6352H	0.45	0.30	0.28	0.14	-0.14	-0.34	-0.33	-0.51*
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Note. The table reports the monthly log returns on monthly-rebalanced long-only portfolios formed on stock market anomalies adjusted for trading costs, *i.e.*, bid-ask spreads (columns "Spread") and both bid-asks spreads and commissions (columns "Spread & commissions"). The list of the anomalies along with the portfolio formation procedures is described in Table A1 in the Online Appendix. All the results are based on monthly returns and data sourced from Bloomberg. "R" and "Int" are mean monthly returns and intercepts from the CAPM model, respectively. All values are expressed as percentages. *, **, and *** indicate values significantly different from 0 at the 10%, 5% and 1% levels respectively. Values significantly higher than 0 at the 5% level are in bold.

Table A10. Returns on annually-rebalanced long-only portfolios formed on stock market anomalies adjusted for trading costs.

No.	Anomaly	Equal-weighted portfolios				Capitalisation-weighted portfolios			
		Spread		Spread & commissions		Spread		Spread & commissions	
		R	Int.	R	Int.	R	Int.	R	Int.
<i>Group 1: Value vs growth</i>									
1	EP	0.86	0.71*	0.82	0.68*	-0.16	-0.32	-0.19	-0.34
2	BM	0.69	0.54	0.64	0.51	0.78	0.64**	0.75	0.63*
4	SP	0.32	0.17	0.28	0.14	0.72	0.56	0.69	0.54
5	EBEV	0.86	0.72*	0.82	0.69*	0.51	0.35	0.47	0.33
6	SEV	0.43	0.28	0.39	0.26	0.47	0.32	0.44	0.31
7	EBP	1.08*	0.92**	1.03	0.89**	0.18	0.03	0.15	0.01
8	DY	0.87*	0.74**	0.83*	0.72**	0.35	0.22	0.32	0.20
9	SG	-0.08	-0.20	-0.13	-0.23	-0.15	-0.28	-0.20	-0.31
12	BMGPA	0.90*	0.78**	0.86	0.75**	0.52	0.38	0.49	0.37
<i>Group 2: Profitability</i>									
13	ROA	0.78	0.65**	0.75	0.63**	0.31	0.16	0.29	0.15
14	ROE	0.51	0.38	0.48	0.36	0.26	0.12	0.23	0.10
15	GM	0.50	0.37	0.47	0.35	-0.14	-0.28	-0.16	-0.29
16	AT	0.82	0.69*	0.79	0.67*	0.92	0.78**	0.90	0.77**
17	GPA	0.78	0.65**	0.74	0.63*	0.30	0.16	0.27	0.15
19	GMCh	0.59	0.47	0.55	0.43	0.38	0.24	0.34	0.21
<i>Group 5: Issuance</i>									
32	CEI	0.48	0.58	0.44	0.55	0.92	1.01	0.88	0.99
33	NSI	0.36	0.22	0.31	0.19	0.43	0.30	0.40	0.27
34	Age	0.71	0.57	0.68	0.56	0.48	0.33	0.46	0.33
<i>Group 7: Liquidity</i>									
41	TurnV	0.34	0.23	0.29	0.19	0.18	0.08	0.14	0.04
<i>Group 9: Extreme and downside risk</i>									
47	Skew	0.49	0.34	0.45	0.32	0.24	0.08	0.21	0.07
<i>Group 11: Momentum</i>									
51	StMom	0.89*	0.76**	0.85	0.73**	0.45	0.29	0.40	0.26
52	LtMom	0.26	0.13	0.22	0.09	-0.01	-0.18	-0.06	-0.20
53	IntMom	-0.11	-0.24	-0.15	-0.27	-0.12	-0.27	-0.16	-0.30
54	MomYoung	0.17	0.03	0.12	0.00	-0.10	-0.29	-0.14	-0.31
55	MomIvol	-0.09	-0.24	-0.15	-0.28	0.12	-0.06	0.06	-0.10
56	MomSmall	0.21	0.09	0.16	0.05	0.38	0.26	0.32	0.22
57	MomBM	0.48	0.34	0.42	0.30	0.27	0.11	0.22	0.07
58	MomTR	0.23	0.08	0.18	0.04	0.00	-0.18	-0.05	-0.21
59	Mom52H	0.86	0.74*	0.79	0.68*	0.39	0.11	0.13	0.00
60	MomNeg	0.07	-0.05	0.01	-0.09	-0.10	-0.20	-0.15	-0.24
<i>Group 12: Technical analysis</i>									
61	MA200	0.65	0.52	0.61	0.49	0.15	-0.02	0.11	-0.04
62	MA250	0.68	0.55*	0.64	0.52	0.06	-0.12	0.02	-0.14

63 52H

0.87*

0.75**

0.83*

0.72**

0.28

0.12

0.24

0.09

Note. The table reports the monthly log returns on annually-rebalanced long-only portfolios formed on stock market anomalies adjusted for trading costs, *i.e.*, bid-ask spreads (columns "Spread") and both bid-asks spreads and commissions (columns "Spread & commissions"). The list of the anomalies along with the portfolio formation procedures is described in Table A1 in the Online Appendix. All the results are based on monthly returns and data sourced from Bloomberg. "R" and "Int" are mean monthly returns and intercepts from the CAPM model, respectively. All values are expressed as percentages. *, **, and *** indicate values significantly different from 0 at the 10%, 5% and 1% levels respectively. Values significantly higher than 0 at the 5% level are in bold.

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