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Development Fund

ชุดข้อมูลปัจจัยขับเคลื่อนผลตอบแทนหุ้น
Factor Library

รศ. ดร.คณิสร์ แสงโชติ
จุฬาลงกรณ์มหาวิทยาลัย

ผศ. ดร.เบน เจริญวงศ์
National University of Singapore

$$r_{it} - r_f = \alpha_i + \sum_i \beta_i \lambda_{it} + \varepsilon_{it}$$

- ถ้า asset pricing model “ถูกต้อง” α_i ควรจะเป็น 0
- λ_i คือ spread ของ zero-cost factor-mimicking portfolios ซึ่งควรจะแตกต่างจาก 0 อย่างมีนัยสำคัญ เช่น สำหรับ CAPM $\lambda = r_m - r_f$
- ผลตอบแทน “ไร้ความเสี่ยง” (r_f) คืออะไร และควรเปลี่ยนแปลงได้ไหม

→ Nobel Prize-winning theory (2013) vs. practice

การคัดกรองหุ้น → theoretical motivations vs. proxies



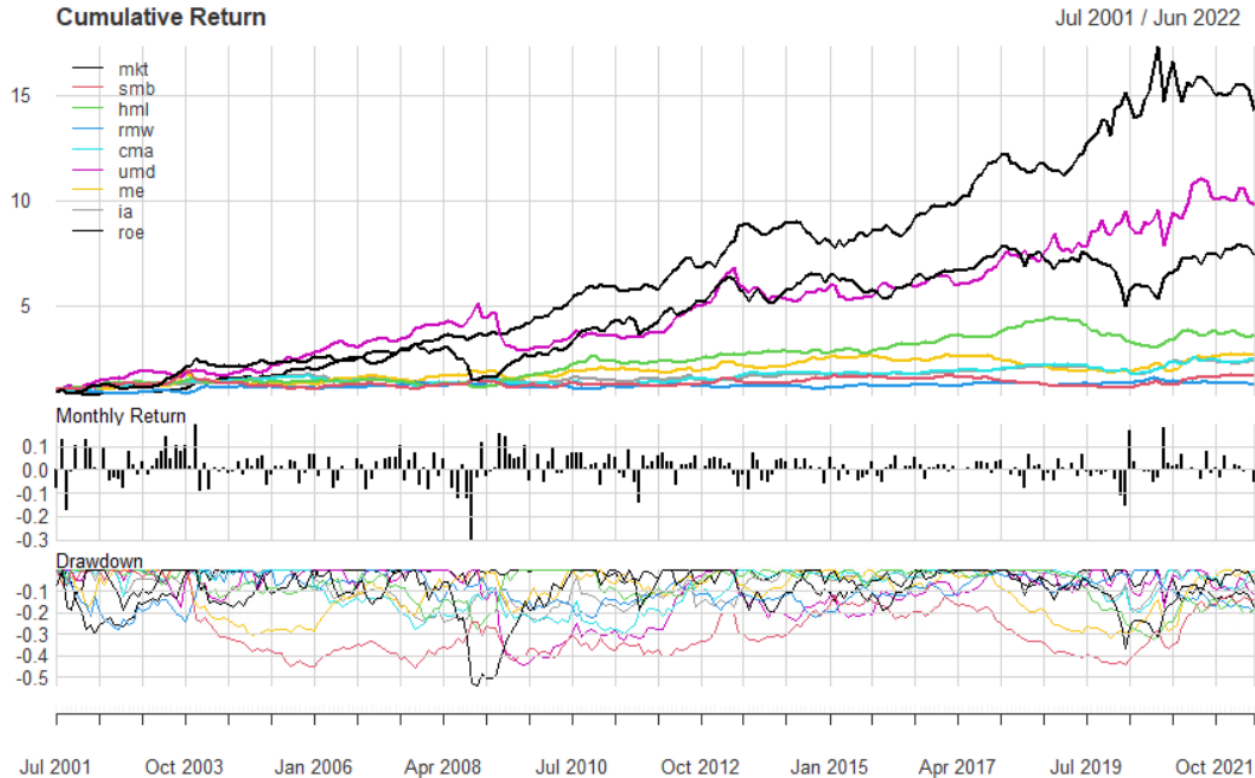
- หุ้น vs กองทุน: ไม่รวมกองทุน
- Large cap?
 - Fama-French ใช้ 50% ของ NYSE แต่สหรัฐฯ มีหลายตลาด
 - Fama and French (2012) เสนอว่าให้ใช้หุ้นที่รวมกันแล้วเป็น 90% ของ total market capitalization
 - 90% ของ SET + mai (June 2001: 78 บริษัท; June 2022: 161 บริษัท)
- High versus low?
 - 30-40-30 → ใช้นิยามเดียวกับ Fama-French และ Hou, Xue and Zhang
- “Penny” and low volume stocks?
 - ราคาต้องไม่ต่ำกว่า 90 สตางค์และซื้อขายติดต่อกันไม่น้อยกว่า 3 เดือน
- Risk-free rate: 1-month T-Bill (FM_RT_001_S2 Interest Rates in Financial Market)

Fama and French (2018) 6-factors and Hou, Xue and Zhang (2015) q-factors



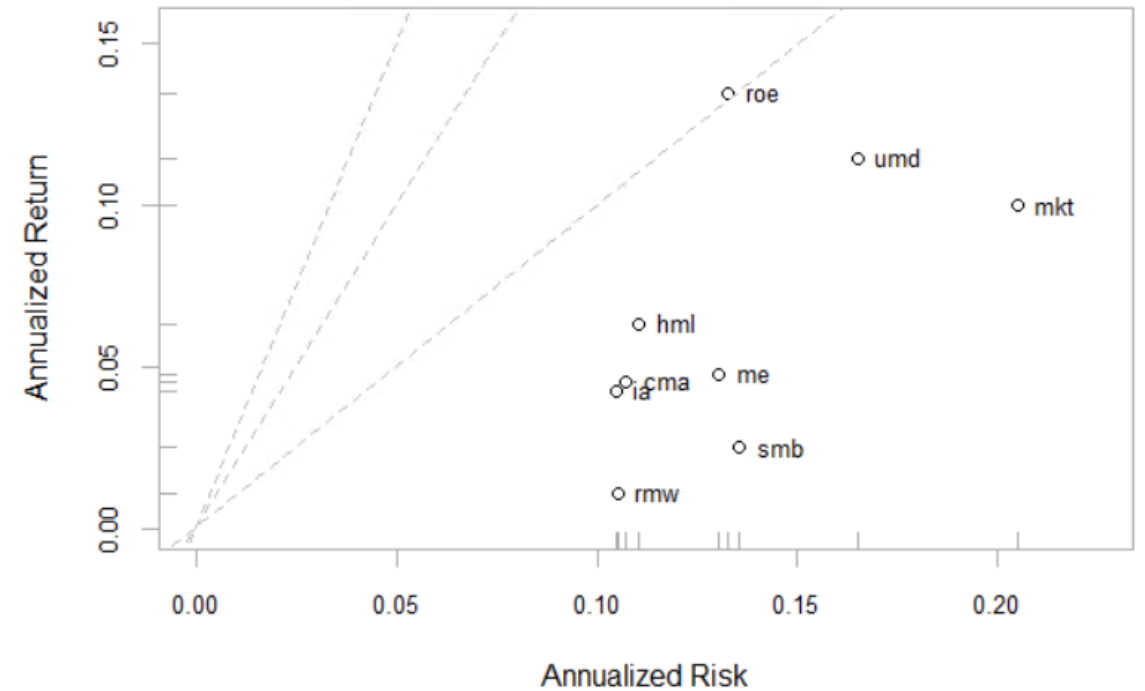
R package: PerformanceAnalytics

Factor Performance Since 2001



charts.PerformanceSummary

Annualized Factor Risk-Return Trade-Off Since 2001



charts.RiskReturnScatter

Factors อื่นที่สามารถอธิบายผลตอบแทนได้ในประเทศไทย



Panel B: Test anomalies

	Anomaly	United States				Thailand			
		Mean	SD	t	SR	Mean	SD	t	SR
Momentum	Abr-1	0.43	1.82	3.58	0.24	1.30	2.68	7.35	0.49
	Abr-6	0.25	1.33	2.89	0.19	0.74	1.90	5.93	0.39
	R6-1	0.23	4.46	0.79	0.05	0.77	4.68	2.50	0.17
	R11-1	0.17	5.95	0.44	0.03	0.86	5.54	2.34	0.15
Value/Growth	B/M	0.58	3.48	2.50	0.17	0.70	2.89	3.65	0.24
	E/P	0.32	2.54	1.90	0.13	0.64	3.70	2.60	0.17
	CF/P	0.35	3.10	1.69	0.11	0.64	3.66	2.63	0.17
	D/P	0.12	2.74	0.68	0.04	0.66	4.74	2.10	0.14
Investments	I/A	0.17	1.74	1.52	0.10	0.40	2.89	2.07	0.14
	NDF	0.14	1.28	1.63	0.11	0.44	2.26	2.96	0.20
	OA	0.01	1.76	0.08	0.01	0.56	2.50	3.39	0.22
Profitability	ROA	0.66	3.85	2.57	0.17	0.87	2.71	4.86	0.32
	ROE	0.76	3.84	2.98	0.20	1.07	2.89	5.57	0.37
	NEI	0.50	2.37	3.18	0.21	0.72	3.83	2.83	0.19
Trading friction	S-Rev	0.40	4.18	1.45	0.10	-0.94	4.58	3.09	-0.20

Charoenwong, B., Nettayanun, S., & Saengchote, K. (2021). Digesting anomalies: A q-factor approach for the Thai market. *Pacific-Basin Finance Journal*, 69, 101647.



Empirical Asset Pricing: Applications in Academic Research

*Kanis Saengchote**

Abstract

One of the most fundamental questions in finance with the most far-reaching consequence is how does one determine the value of an asset. The idea of how to price risk and estimate the return an asset should generate is central to many decisions that individuals, firms and governments must face. In their quest to understand how asset prices behave and the relationship between risk and return, academics have created the portfolio construction technique which is central to empirical asset pricing research. This article provides a brief historical overview of the portion of research on asset pricing relevant to the portfolio construction technique and reviews alternative academic uses for business-related questions.

Keywords: Asset Pricing Model, Portfolio Construction Method, Multifactor Model, Investment Performance

1. Investment Performance Evaluation
 - Jensen (1969) “alpha”
2. Market Efficiency
 - Frazzini and Pedersen (2014) BAB
3. Determinants of Corporate Value
 - Gompers, Ishii and Metrick (2003) corporate governance
 - Bessembinder and Zhang (2013, 2015) corporate actions
4. Non-Finance Applications
 - R&D, intangible capital, brand

Saengchote, K. (2016). Empirical asset pricing: Applications in academic research. *Chulalongkorn Business Review*, 38(2), 149-171.





CMRI FACTOR LIBRARY

One of the most challenging agenda in financial research is how to systematically explain variations in returns across different assets and securities with a "pricing model". The Capital Asset Pricing Model (CAPM) with the "market" as a single risk factor and the Fama-French (1993) Three-Factor Model with "size" and "value" are some prominent examples. In this data library, we provide the Fama-French (2018) 6 factors, comprising market (MKT), size (SML), value (HML), operating profitability (RMW), investment (CMA), momentum (UMD) and the Hou, Xue and Zhang (2015) q-factors, comprising market (MKT), size (ME), investment-to-asset (IA), and return on equity (ROE). Data is available from July 2001 and is updated monthly.

This Factor Library data repository is made possible with the support of Thailand Capital Market Development Fund (CMDF), Thailand Capital Market Research Institute (CMRI) and the Stock Exchange of Thailand (SET).

INTERACTIVE VISUALIZATION

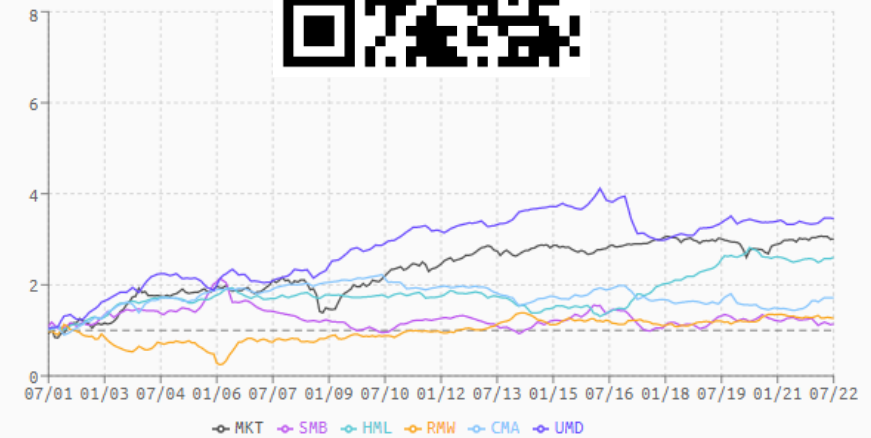
Please select the country (only Thailand is available in Phase 1), portfolio type (long-short or long-only), returns frequency (monthly or daily) and data range. Select the factors you wish to visualize and click apply. Adjusting the time slicer at the top of the page will also automatically change the data range.

For monthly frequency, the annualized factor return and standard deviation can be displayed as a scatter diagram in the Factor Statistics section. For daily frequency, the range cannot be specified and only the last 5 years of data will be displayed.

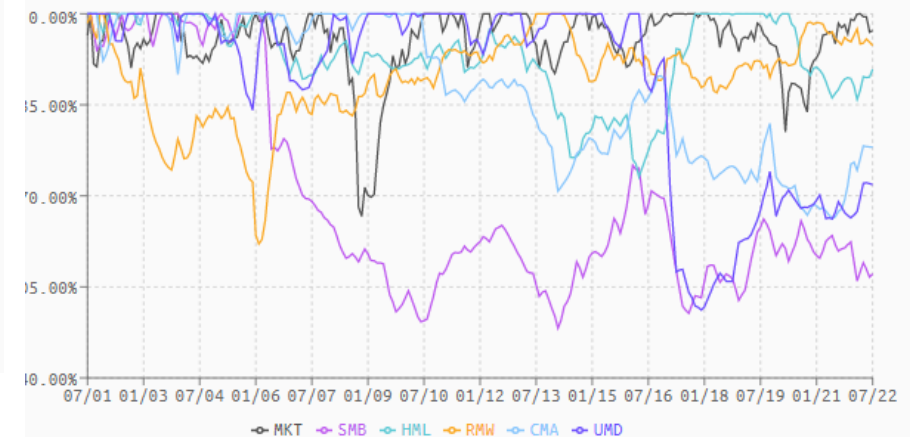
Country



Wealth Index



Drawdown (%)



Factors

The Fama-French 6 factors are constructed using the 6 (2x3) value-weighted (VW) portfolios formed on size and book-to-market ratio, the 6 VW portfolios formed on size and operating profitability, and the 6 VW portfolios formed on size and total asset growth, and the 6 VW portfolios formed on size and prior (2-12) returns. The Hou-Zue-Zhang q factors are constructed using 18 (2x3x3) VW portfolios formed on size, quarterly total asset growth, and quarterly operating profitability. Market returns are calculated from the value-weighted total return of all common stocks listed in the country (for Thailand, both SET and mai). Size threshold for large caps correspond to the largest stocks accounting for 90% of the country's market capitalization at the end of June, following the recommendation of Fama and French (2012). Thresholds for other variables are calculated from the 30th and 70th percentiles of all stocks. The risk-free rate (RF) for Thailand is the 1-month T-bill obtained from the Bank of Thailand (data series FM_RT_001_S2, line 36), scaled to the corresponding frequency.

Factor: Long-Only

Factors are constructed from the average return on the two "high" portfolios minus the average return on the two "low" portfolios. For example, $HML = 1/2 (\text{Small High} + \text{Big High}) - 1/2 (\text{Small Low} + \text{Big Low})$. Long-Short factors offset the cost of the high portfolios by shorting the low portfolios and thus are zero-cost portfolios.

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Factor: Long-Short

Factors are constructed from the average return on the two "high" portfolios minus the average return on the two "low" portfolios. For example, $HML = 1/2 (\text{Small High} + \text{Big High}) - 1/2 (\text{Small Low} + \text{Big Low})$. Long-Only factors hold only the high portfolios and does not offset the investment cost by shorting the low portfolios.

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Long-Short

	date	mkt	smb	hml	rmw	cma	umd	me	ia	roe
1	7/31/2001	-0.07952	0.102029	0.028978	0.029117	0.003778	0.031561	0.090823	0.021671	-0.00736
2	8/31/2001	0.128882	-0.06732	0.038524	-0.0296	0.030626	0.011176	-0.05684	-0.00935	-0.02826
3	9/30/2001	-0.17616	-0.0033	-0.03472	0.136684	-0.07564	0.116827	0.020185	-0.04405	0.122726
4	10/31/2001	-0.00973	0.070005	0.057745	-0.07699	0.039429	0.023293	0.041817	0.052744	-0.06286
5	11/30/2001	0.101378	-0.04334	0.009912	-0.0333	0.032833	-0.04827	-0.08591	0.035703	-0.0815
6	12/31/2001	0.003671	0.04814	0.008985	-0.05382	0.045251	0.000269	-0.00551	-0.00869	-0.07247
7	1/31/2002	0.130667	-0.01148	0.032207	-0.00725	-0.00379	0.082352	-0.09483	0.067605	-0.09632
8	2/28/2002	0.095361	0.020876	0.01478	-0.06304	0.047887	0.043057	0.018698	0.08146	0.033536
9	3/31/2002	0.01125	0.058144	-0.00344	0.111046	-0.02367	0.086159	0.06205	-0.05084	-0.06224
10	4/30/2002	0.003098	0.075341	0.041445	-0.07408	0.064275	0.029355	0.087109	0.05547	0.059792
11	5/31/2002	0.100116	-0.05246	0.07025	-0.04905	0.03897	0.04014	-0.03977	0.031475	0.023682

Long-Only

	date	mkt	smb	hml	rmw	cma	umd	me	ia	roe	rf
1	7/31/2001	-0.07749	0.017004	-0.02478	-0.00814	-0.03057	-0.02176	0.018851	-0.02387	-0.03103	0.002033
2	8/31/2001	0.130949	0.081082	0.139371	0.095098	0.136224	0.106657	0.088072	0.12466	0.121085	0.002067
3	9/30/2001	-0.17396	-0.1797	-0.22246	-0.12003	-0.20659	-0.11064	-0.17106	-0.19452	-0.12251	0.002192
4	10/31/2001	-0.00768	0.059624	0.057211	-0.01746	0.034239	0.039227	0.057278	0.060038	0.011998	0.00205
5	11/30/2001	0.103303	0.064176	0.094411	0.076557	0.096446	0.076309	0.075799	0.151696	0.09458	0.001925
6	12/31/2001	0.005529	0.053801	0.019501	-0.00083	0.051224	0.041753	0.037733	0.042748	0.014755	0.001858
7	1/31/2002	0.132184	0.129337	0.132958	0.132265	0.126202	0.196818	0.131857	0.22782	0.134565	0.001517
8	2/28/2002	0.096969	0.116312	0.0997	0.065334	0.117714	0.137133	0.127258	0.145159	0.153633	0.001608
9	3/31/2002	0.012933	0.058631	0.024665	0.058064	0.015	0.091788	0.074472	0.003756	0.005321	0.001683
10	4/30/2002	0.004716	0.084722	0.06811	0.012599	0.070063	0.055053	0.078889	0.053207	0.061442	0.001618
11	5/31/2002	0.101666	0.062613	0.127039	0.05006	0.101846	0.100027	0.06431	0.093564	0.099535	0.00155
12	6/30/2002	-0.04547	-0.00155	-0.02625	-0.04689	-0.0213	-0.00877	-0.0032	-0.02695	-0.01128	0.001567

Fama-French Bivariate Sorts

Details of the 6 (2x3) value-weighted (VW) portfolios for the Fama-French 6 factors can be downloaded here. BM is the book-to-market ratio used to the construction of HML and SMB, OP is the operating profitability used for the construction of RMW and SMB, AG is the total asset growth used for the construction of CMA and SMB, and MOM11 is the prior (2-12) returns used for the construction of UMD.

BM

The portfolios are constructed at the end of each June as the intersection of 2 portfolios formed size (market equity, MV) and 3 portfolios formed on the ratio of book equity to market equity (BE/MV). The size breakpoint for year t is the 90th percentile of all stocks' capitalization at the end of June of year t . BE/MV for June of year t is the book equity for the last fiscal year end in $t-1$ divided by MV for December of $t-1$. Stocks with negative book equity are excluded. The BE/MV breakpoints are the 30th and 70th of all stocks.

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OP

The portfolios are constructed at the end of each June as the intersection of 2 portfolios formed size (market equity, MV) and 3 portfolios formed on operating profitability (OP). The size breakpoint for year t is the 90th percentile of all stocks' capitalization at the end of June of year t . OP for June of year t is the ratio of annual revenues minus COGS, SG&A, and interest expense, divided by book equity from the previous fiscal year. Stocks with negative book equity are excluded. The OP breakpoints are the 30th and 70th of all stocks.

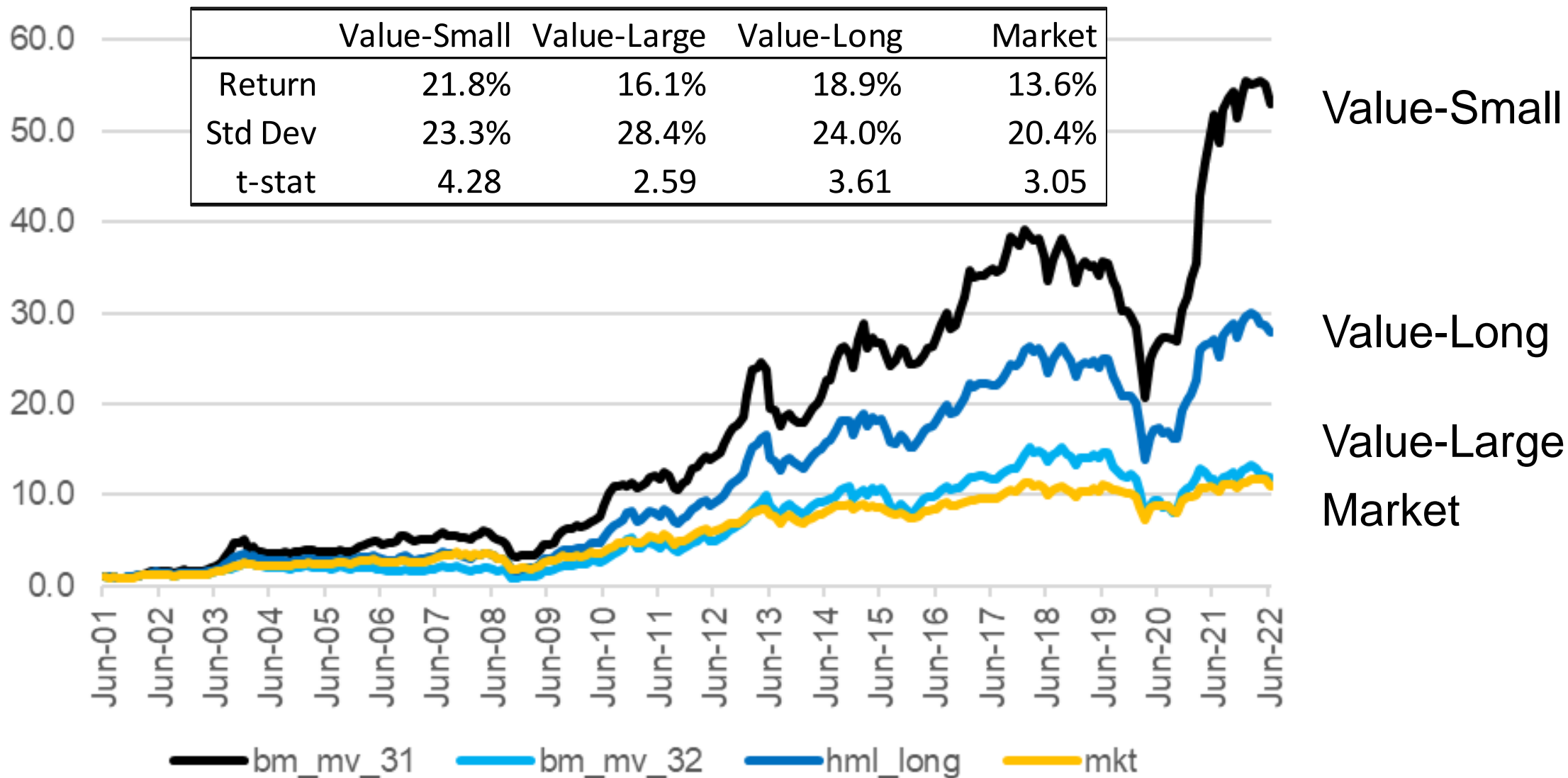
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Book-to-market ratio (daily)



	date	bm_mv_11	bm_mv_12	bm_mv_21	bm_mv_22	bm_mv_31	bm_mv_32
1	7/2/2001	-0.008342119	-0.001802351	0.002227637	0.004542325	0.006259181	0.005411864
2	7/3/2001	0.033186116	0.015147488	0.022312115	0.010350388	0.015192363	0.010441293
3	7/4/2001	0.015770976	-0.005129265	0.009811541	-0.000916494	0.018002588	0.012625364
4	7/5/2001	-0.029595439	-0.003874099	-0.014999667	0.001624726	-0.005491032	-0.004182248
5	7/9/2001	-0.008969755	-0.006530502	-0.001002103	0.022394454	0.006450685	-0.019128288
6	7/10/2001	-0.024108713	0.000655136	0.012093247	-0.009290824	0.006618969	-0.015497442
7	7/11/2001	-0.044657099	-0.036067714	-0.026899873	-0.034311389	-0.052694515	-0.04544478
8	7/12/2001	0.035663685	0.009237077	0.007340357	-0.000758977	0.008856508	0.014634651
9	7/13/2001	-0.010516318	-0.002454132	0.014389709	-0.002018015	0.020158314	-0.011015024
10	7/16/2001	-0.004034979	-0.01873357	-0.015127553	-0.019774171	0.003227807	-0.02654869
11	7/17/2001	0.051445836	0.013860603	0.026251164	0.031718208	0.023536115	0.035546636
12	7/18/2001	0.023917621	-0.001058754	0.006607571	-0.007597687	0.013782	0.007212823

แนวทางในการนำมาปรับใช้กับการลงทุน: (1) benchmarking



แนวทางในการนำมาปรับใช้กับการลงทุน: (2) attribution



Since June 2001

	Return	Volatility	t-stat	Sharpe
Fund 1: SET 50 Index Fund	14.1%	21.5%	2.89	0.57
Fund 2: Equity Large Cap	15.0%	20.6%	3.23	0.63
Fund 3: Equity Large Cap	13.4%	21.1%	2.72	0.54
Fund 4: Equity Small – Mid Cap	5.7%	20.7%	0.74	0.23
Fund 5: Short Term General Bond	0.4%	0.2%	3.46	0.11
Stock A: ENER	20.2%	32.2%	2.84	0.57
Stock B: ETRON	30.1%	53.0%	2.60	0.53

Last 3 years (June 2019 - June 2022)

	Return	Volatility	t-stat	Sharpe
Fund 1	-1.9%	22.2%	-0.15	-0.12
Fund 2	6.2%	20.5%	0.52	0.27
Fund 3	16.2%	25.3%	1.11	0.61
Fund 4	18.0%	24.0%	1.30	0.72
Fund 5	0.4%	0.2%	3.46	0.11
Stock A	-3.7%	29.8%	-0.21	-0.14
Stock B	99.2%	110.1%	1.56	0.89

SET 50 Passive Fund vs Equity Large Cap Fund (all-time)



$$r_{it} - r_{ft} = \alpha_i + \sum_i \beta_i \lambda_{it} + \varepsilon_{it} \quad * \text{ always deduct rf when running factor model}$$

	(1) Fund 1	(2) FF6	(3) q-factor	(4) Fund 2	(5) FF6	(6) q-factor
Market	1.029*** [37.02]	0.997*** [53.95]	0.995*** [51.75]	1.019*** [40.35]	1.004*** [41.72]	1.007*** [50.13]
Size		-0.194*** [-4.82]	-0.175*** [-4.11]		-0.127*** [-2.84]	-0.082** [-1.98]
Value		-0.056*** [-2.92]			0.010 [0.26]	
Profitability		0.062 [1.38]	0.089* [1.81]		0.019 [0.43]	0.114** [2.39]
Investment		-0.019 [-0.63]	-0.049 [-1.02]		-0.021 [-0.64]	0.005 [0.12]
Momentum		-0.052** [-1.99]			0.066*** [2.72]	
Alpha	0.000 [0.08]	0.001 [1.08]	0.000 [0.19]	0.001 [1.31]	0.001 [1.09]	0.000 [0.14]
Observations	232	232	232	236	236	236
R-squared	0.898	0.918	0.909	0.944	0.952	0.950

Fund 1: SET 50 (very large cap)
Fund 2: Large cap

Active return explainable
by factor exposure

Almost all returns
variations are explained.

Equity Large Cap vs Small-Mid Cap vs Short-Term Bond (3 years)



$$r_{it} - r_{ft} = \alpha_i + \sum_i \beta_i \lambda_{it} + \varepsilon_{it}$$

	(7) Fund 3	(8) FF6	(9) q-factor	(10) Fund 4	(11) FF6	(12) q-factor	(13) Fund 5	(14) FF6	(15) q-factor
Market	1.126*** [10.72]	1.159*** [15.43]	1.196*** [16.94]	0.819*** [3.39]	0.935*** [10.61]	0.952*** [8.40]	-0.001 [-0.62]	0.001 [0.49]	-0.001 [-0.25]
Size		0.035 [0.18]	0.043 [0.35]		1.053*** [5.33]	0.782***		-0.003 [-0.76]	-0.002 [-0.97]
Value		0.144 [0.65]			-0.431 [-1.62]	Small-mid cap		-0.005 [-0.85]	
Profitability	Beta: systematic returns explainable by factors	0.201 [0.89]	0.263** [2.13]		-0.033 [-0.13]	[3.03] 0.052		-0.003 [-0.37]	0.003 [0.79]
Investment		-0.331*** [-3.01]	-0.262*** [-3.11]		-0.073 [-0.45]	[0.31] -0.234		-0.003 [-0.81]	-0.002 [-0.45]
Momentum		0.189* [2.03]			-0.079 [-0.72]	[-1.31]		0.005 [1.73]	
Alpha	0.012** [2.63]	0.012** [2.46]	0.011** [2.58]	0.014 [1.68]	0.001 [0.27]	0.006 [1.13]	0.000 [0.24]	0.000 [0.44]	0.000 [0.52]
	Alpha: systematic returns unexplainable by factors						Money market fund		
Observations	36	36	36	36	36	36	22	22	22
R-squared	0.869	0.907	0.901	0.511	0.831	0.753	0.011	0.257	0.056

Stocks: R-squared ต่ำกว่าเพราะ idiosyncratic risk (3 ปี)



$$r_{it} - r_{ft} = \alpha_i + \sum_i \beta_i \lambda_{it} + \varepsilon_{it}$$

	(16) Stock A	(17) FF6	(18) q-factor	(19) Stock B	(20) FF6	(21) q-factor
Market	1.230*** [9.10]	1.059*** [8.33]	1.153*** [9.50]	1.244** [2.52]	3.366*** [3.64]	2.702*** [3.44]
Size		-0.389** [-2.19]	-0.285** [-2.36]		-1.086 [-0.83]	-1.712** [-2.21]
Value		0.263 [1.44]			0.321 [0.18]	
Profitability		-0.205 [-0.69]	-0.132 [-0.64]		5.342** [2.41]	2.746** [2.39]
Investment		0.116 [0.69]	0.188 [1.36]		3.879*** [3.58]	3.006** [2.49]
Momentum		-0.156 [-0.79]			1.839* [2.00]	
Alpha	-0.005 [-0.68]	0.001 [0.11]	-0.002 [-0.29]	0.081 [1.55]	0.059 [1.46]	0.068 [1.61]
Observations	36	36	36	36	36	36
R-squared	0.746	0.821	0.780	0.056	0.537	0.425

การนำ value investing strategy มาประยุกต์ใช้กับ factor investing:
สร้าง value factor อย่างไร? ในงานวิจัยนี้เราใช้ 9 proxies ที่มาจากงานวิจัย

Are value premiums driven by behavioral factors?

Kanis Saengchote* and Sampan Nettayanun⁺
Chulalongkorn Business School | Naresuan University

ABSTRACT

Value investing finds opportunities in price-intrinsic value discrepancies in the market. Statistical value investing can be done by screening stocks based on the ratio between some accounting fundamentals and their prices, such as the book-to-market ratio. Despite strong empirical evidence, researchers are still undecided on the reasons behind these value premiums. We analyze 9 versions of the value premium in Thailand and show that the strategies produce robust and persistent performance between July 2001 and July 2022. The alphas cannot be explained by the Fama-French six-factor model and the q-factor model, and additions of various behavioral factors have limited contribution in explaining the value premium. In short, value investing works, but researchers are still not sure why.

Key words: value investing, empirical asset pricing model, behavioral factor

Table 1: Value factors summary statistics.

This table reports the summary statistics for 9 versions of value premium from July 2001 to July 2022. Panel A reports the mean, standard deviation, t-statistic, annualized Sharpe ratio, min, median and max of the monthly returns. Panel B reports the Pearson's correlation coefficients between each pair of value factors. In this definition, BM is the same as the Fama-French HML factor.

Panel A: Descriptive statistics

	BM	iBM	EBP	SP	CFP	OCP	EP	DP	EM
Mean	0.44%	0.69%	0.37%	0.71%	0.76%	0.86%	0.38%	0.96%	0.58%
SD	2.76%	3.66%	2.55%	3.12%	3.10%	3.10%	3.18%	3.56%	3.68%
t-stat	2.52	3.01	2.32	3.65	3.90	4.41	1.89	4.30	2.51
SR	0.55	0.66	0.51	0.79	0.85	0.96	0.41	0.94	0.55
Min	-8.35%	-8.62%	-8.43%	-9.83%	-9.04%	-8.74%	-10.64%	-9.81%	-12.35%
p50	0.30%	0.53%	0.24%	0.50%	0.50%	0.70%	0.27%	0.83%	0.38%
Max	10.93%	15.18%	7.80%	16.14%	14.74%	20.35%	11.70%	19.34%	18.73%

Idea: accounting book value divided by market price.

Figure 1: Cumulative Return for Value Premium.

This figure plots the cumulative return of the 9 long-short value premiums, starting from June 2001 as the baseline (1.00), until July 2022.

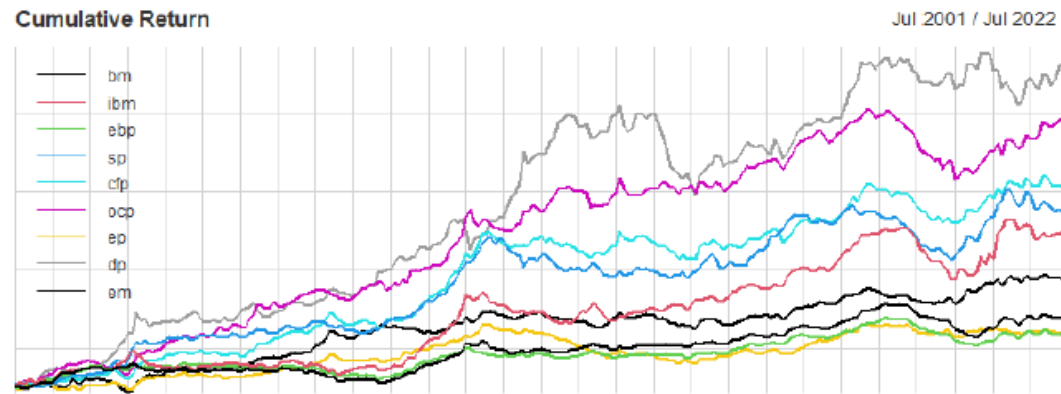


Figure 2: Annualized Risk-Return Tradeoff.

This figure plots the annualized return against the annualized standard deviation of the 9 long-short value premiums from July 2001 to July 2022. The slope of the line connecting the origin to the point can be viewed as the annualized Sharpe ratio of the premium, corresponding to the statistics reported in Table 1, Panel A.

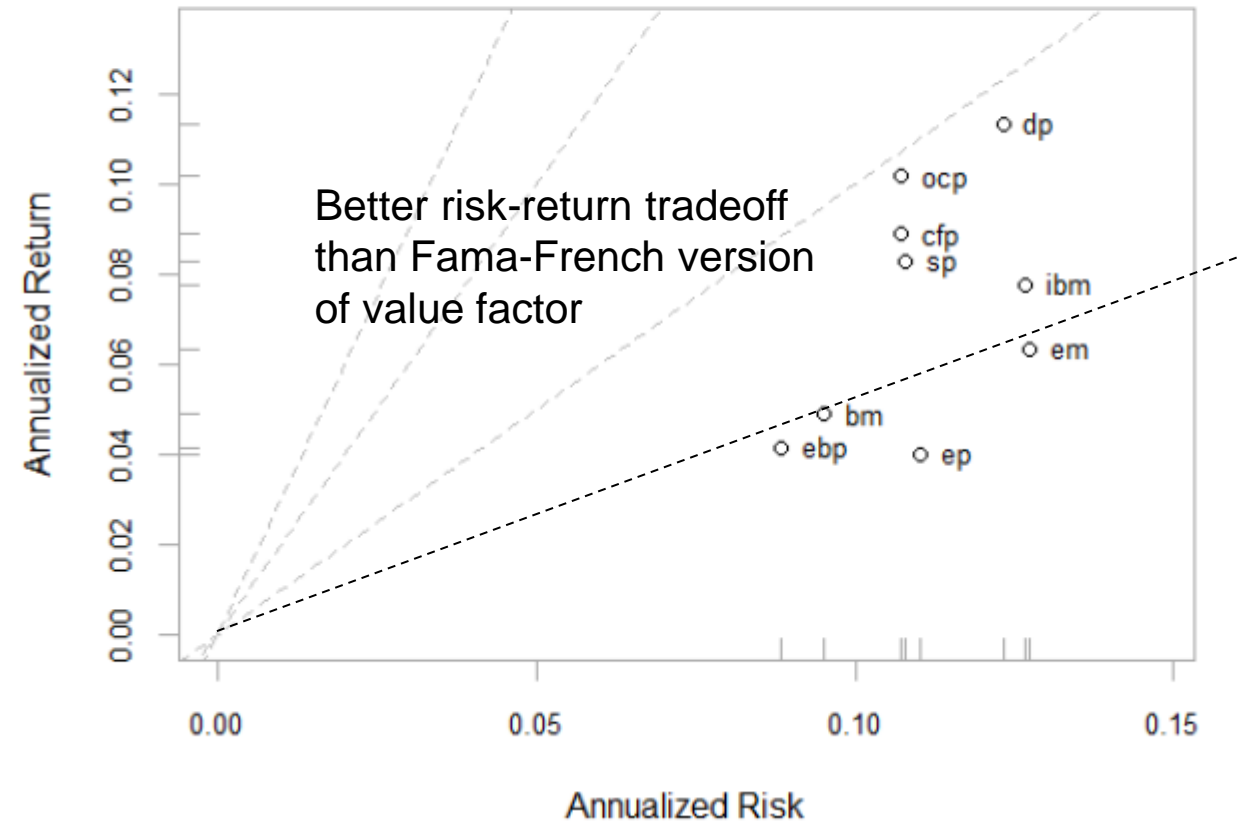


Table 2: Value factor alphas.

Panel A: Fama and French (2018) six-factor model

	(1) iBM	(2) EBP	(3) SP	(4) CFP	(5) OCP	(6) EP	(7) DP	(8) EM
MKT	0.037 [1.21]	-0.046** [-2.20]	0.125*** [2.61]	-0.050 [-1.16]	-0.058* [-1.65]	-0.178*** [-5.95]	0.060 [0.78]	-0.217*** [-4.82]
SMB	0.146*** [2.75]	-0.032 [-1.02]	0.068 [0.72]	-0.091 [-1.19]	-0.175** [-2.40]	-0.175*** [-4.43]	-0.182* [-1.75]	-0.161** [-2.39]
HML	1.080*** [18.92]	0.848*** [20.58]	0.391*** [5.46]	0.482*** [6.86]	0.351*** [5.51]	0.420*** [6.68]	0.040 [0.42]	0.283*** [3.77]
RMW	0.035 [0.62]	0.026 [0.56]	-0.096 [-0.60]	0.448*** [4.00]	0.425*** [3.54]	0.641*** [9.50]	-0.054 [-0.44]	0.686*** [6.25]
CMA	-0.060 [-0.99]	-0.122*** [-2.80]	-0.007 [-0.07]	-0.104 [-1.37]	0.347*** [4.22]	-0.181*** [-2.96]	0.234** [2.04]	-0.049 [-0.53]
UMD	-0.065 [-0.82]	0.038 [0.77]	0.225* [1.69]	0.215** [2.17]	0.161 [1.25]	0.036 [0.49]	0.107 [0.63]	0.262** [2.50]
Alpha	0.002* [1.76]	0.001 [0.77]	0.002 [1.22]	0.005*** [2.85]	0.005*** [2.94]	0.005*** [3.05]	0.007*** [2.66]	0.005*** [2.67]
Adj R-squared	0.663	0.742	0.188	0.317	0.359	0.505	0.083	0.474

1. Some versions of value factor cannot be explained [spanned] by the Fama-French version.

Panel B: Hou, Xue, and Zhang (2015) q-factor model

	(1) BM	(2) iBM	(3) EBP	(4) SP	(5) CFP	(6) OCP	(7) EP	(8) DP	(9) EM
MKT	0.059 [1.60]	0.106** [2.33]	0.004 [0.09]	0.147*** [3.24]	-0.038 [-0.81]	-0.062* [-1.84]	-0.155*** [-3.65]	0.083 [1.05]	-0.223*** [-4.47]
ME	0.030 [0.59]	0.182*** [2.65]	-0.027 [-0.50]	0.066 [0.71]	-0.245*** [-2.83]	-0.319*** [-2.75]	-0.316*** [-5.15]	-0.137 [-1.15]	-0.358*** [-3.43]
I/A	0.319*** [4.40]	0.284*** [3.36]	0.156** [2.21]	0.148** [2.00]	-0.095 [-1.09]	0.257*** [3.46]	-0.246*** [-2.69]	0.162 [1.52]	-0.186* [-1.66]
ROE	-0.286*** [-5.03]	-0.309*** [-2.73]	-0.199*** [-3.05]	-0.043 [-0.52]	0.173** [2.20]	0.142* [1.85]	0.250*** [3.88]	0.154* [1.84]	0.309*** [3.25]
Alpha	0.006*** [3.18]	0.008*** [3.02]	0.005*** [2.84]	0.005*** [2.81]	0.007*** [3.50]	0.007*** [3.74]	0.004** [2.13]	0.007*** [2.74]	0.006*** [2.66]
Adj R-squared	0.194	0.135	0.066	0.066	0.088	0.190	0.223	0.058	0.242

2. The q-factor model does not explain value premium (in Thailand)

Challenge:
What drives the value premium?

- **New factors?**
 - Fundamental vs. behavioral factors
 - High / low frequency signals
 - False discovery
- **What explain “factors”?**
 - Markets are inefficient → “frictions” and behavioral biases
 - Markets are efficient → “wrong” asset pricing models
 - Risk-based stories vs cash flow outperformance stories
 - “Narratives” and assessment of growth options (Damodaran-style)
- **Factor “crafting” – how should portfolios be formed?** **IMPORTANT FOR PRACTITIONERS**

But regardless of how we do it, the best practice is to understand the source of “alphas”.



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