Duration-Driven Returns

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刘旭东

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NIELS JOACHIM CHRISTFORT GORMSEN

Academic Appointments

2018- Neubauer Family Assistant Professor of Finance, **University of Chicago Booth School of Business**
2023- NBER Faculty Research Fellow

Education

2014-2018 PhD, Financial Economics, **Copenhagen Business School**
2015-2016 Visiting PhD student, **Harvard University, Department of Economics**
2008-2014 M.Sc. and B.Sc, **Copenhagen Business School**

Research Interests

:Asset pricing, macroeconomics, corporate finance, behavioral finance

Publications

"Conditional Risk," 2023 (with Christian Skov Jensen), Journal of Financial Economics (forthcoming).
"Selfish Corporations," 2023 (with Emanuele Colonnelli and Tim McQuade), The Review of Economics Studies (forthcoming)
"Financial Markets and the COVID-19 Pandemic," 2023 (with Ralph S. J. Koijen), Annural Review of Financial Economics (forthcoming).
"Duration-Driven Returns," 2023 (with Eben Lazarus), The Journal of Finance, 78(3), 1393-1447.
"Time Variation of the Equity Term Structure," 2021, The Journal of Finance, 76(4), 1959-1999.

Eben Lazarus

Academic Positions

Haas School of Business, UC Berkeley, 2023 – Present
Assistant Professor of Finance
MIT Sloan School of Management, 2018 – 2023
Assistant Professor of Finance

Education

Ph.D., Economics, Harvard University, 2013 – 2018
Thesis: "Tests of Restrictions and Models in Macro-Finance"
B.A., Economics, University of Pennsylvania, 2007 – 2011

Research Areas：

Asset pricing, macroeconomics, behavioral economics, time-series econometrics

Publications

"Duration-Driven Returns," with N.J. Gormsen, Journal of Finance 78: 1393–1447, 2023.
"The Size-Power Tradeoff in HAR Inference," with D.J. Lewis & J.H. Stock, Econometrica 89: 2497–2516, 2021.
"HAR Inference: Recommendations for Practice," with D.J. Lewis, J.H. Stock, & M.W. Watson, Journal of Business & Economic Statistics 36: 541–559, 2018.
"Spatial Clustering During Memory Search," with J.F. Miller, S.M. Polyn, & M.J. Kahana, Journal of Experimental Psychology: Learning, Memory, and Cognition 39: 773–781, 2013.

我们提出了一种基于持续时间的主要股权因素溢价的解释，包括价值、盈利能力、投资、低风险和支付因素。这些因素投资于在不久的将来赚取大部分现金流的公司，因此可能受到近期现金流溢价的驱动。我们使用单股股息期货的新数据集来检验这一假设，单股股息期货是对个别公司股息的要求。与我们的假设一致，企业内部个人现金流量的预期CAPM alpha随着期限的增加而降低，在控制期限的情况下，alpha与上述特征无关。

- 1.数据和方法

股票：1926.8——2019.12 23个国家67842支股票全球样本（CRSP tape and the XpressFeed Global Database.）

单一股票股息期货：2010——2019年，190家不同公司（德意志交易所）

债券收益：1352家美国公司发行的23211只债券，期限为2002年7——至2016年1月（WRDS债券回报数据库）

长期增长（LTG）预期：1981年至2019年（IBES数据库）

Cash-Flow Duration：

$$Dur_t = \sum_{m=1}^{\infty} i \times \omega_t^m. \qquad \omega_t^m = \frac{E_t[CF_{t+m}]/(1+r)^m}{P_t},$$

- 2.股权风险因素投资于（久期短期，低增长率，高预期）公司
- 3.引入新的持续时间风险因素，用它总结了大多数主要的股权风险因素；它在解释横截面方面也提供了有力和有意义的贡献
- 4.研究了单股股息期货和公司债券回报率，分离出持续时间作为持续时间因素上风险调整后收益的驱动因素
- 5.持续时间驱动回报的结果背后的经济机制

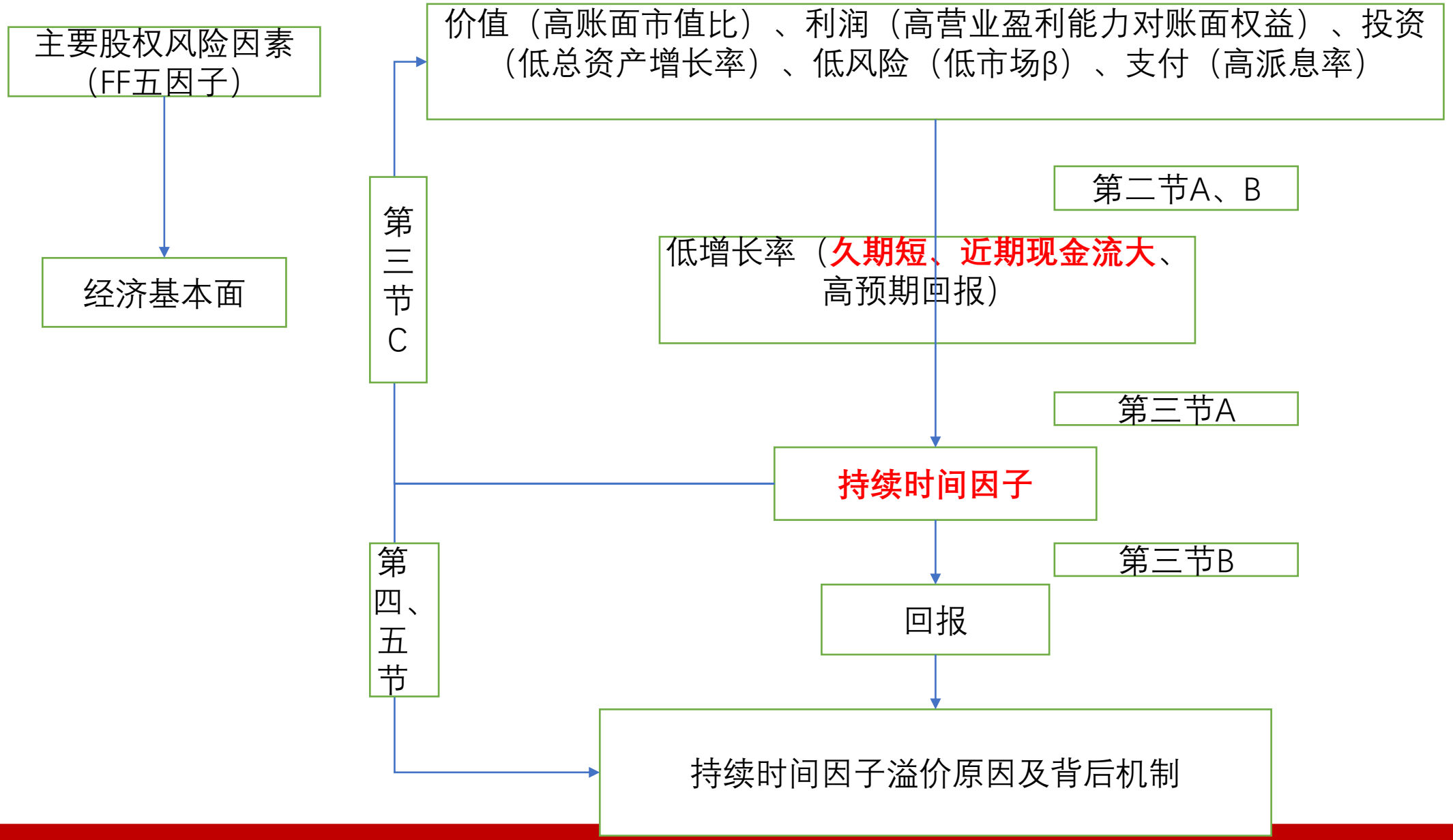

主要股权风险因素
（FF五因子）
经济基本面
价值（高账面市值比）、利润（高营业盈利能力对账面权益）、投资（低总资产增长率）、低风险（低市场β）、支付（高派息率）
第三节C
第二节A、B
低增长率（久期短、近期现金流大、高预期回报）
第三节A
持续时间因子
第三节B
回报
第四、五节
持续时间因子溢价原因及背后机制

Fig 1.a: Relative Size of the First Fifteen Cash-Flows for the Firms the Risk Factors Invest in

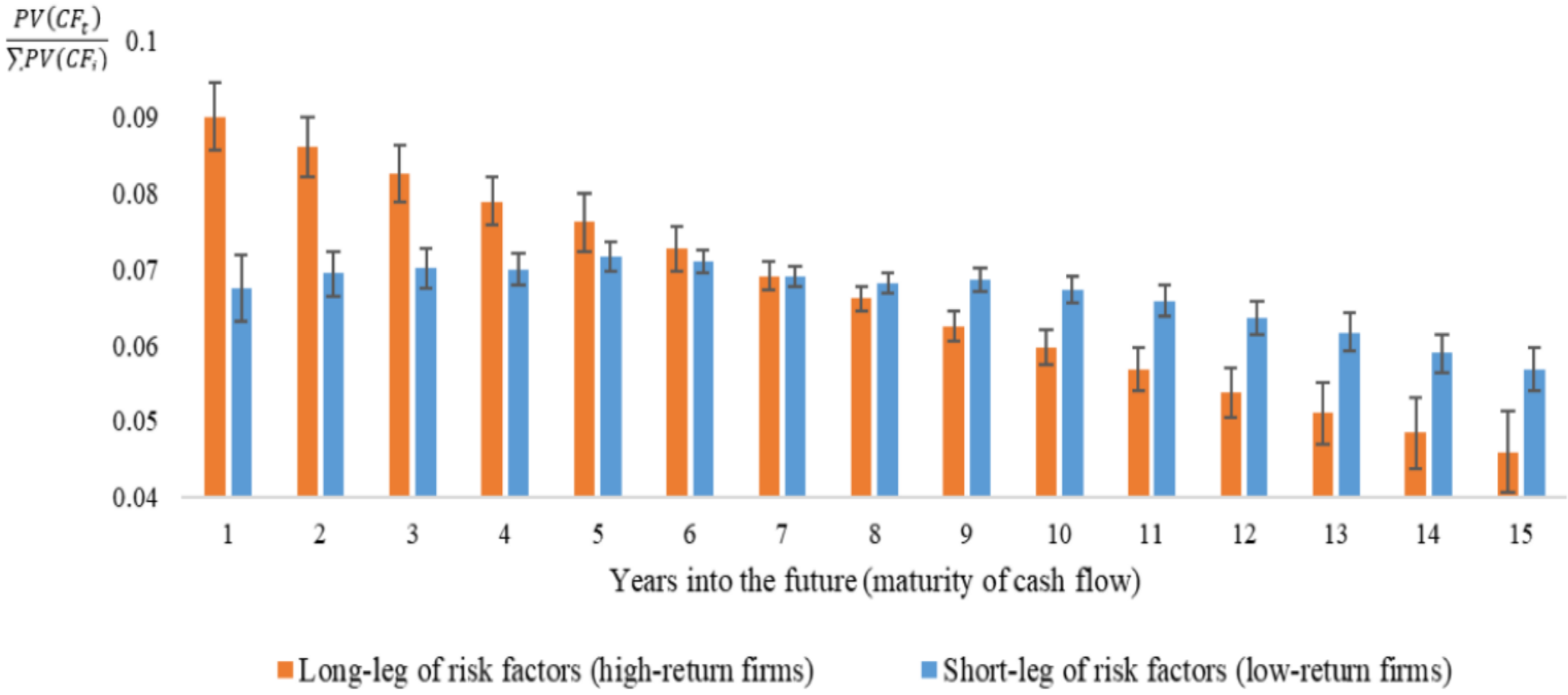


Fig 1.b: CAPM alpha on single-stock dividend strips

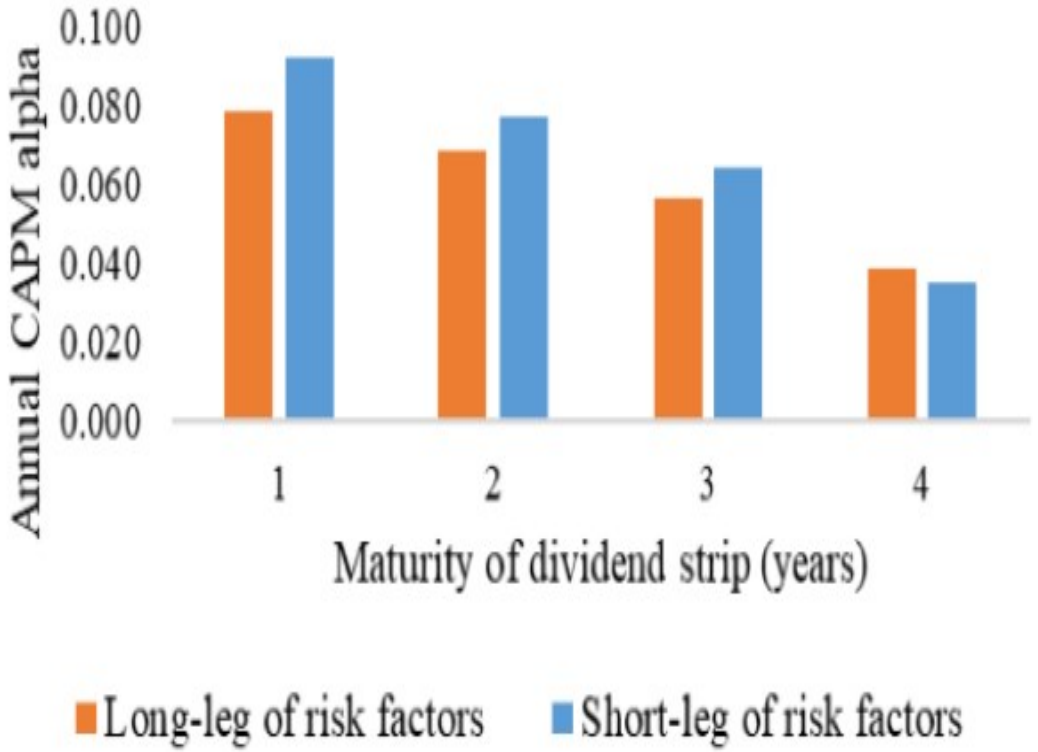
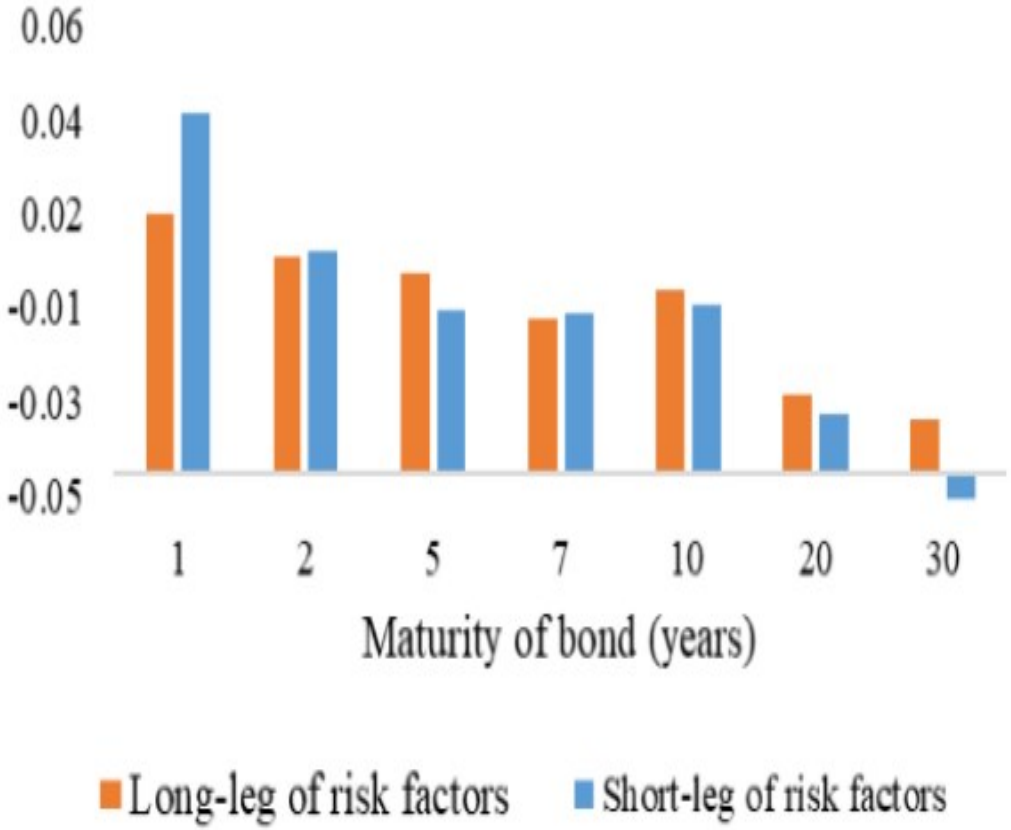


Fig 1.c: CAPM alpha on corporate bonds



第二节：股权风险因素投资于（久期短期，低增长率，高预期）公司

We first look at the relation between characteristics and realized growth rates. To do so,we create 50 characteristics-sorted portfolios, 10 for each characteristic. For each portfolio i and year t, we calculate growth rates in dividends and earnings from year t to t + 15 and regress them on the vector of time-t characteristics Xi,t:

我们首先看一下特征和实现增长率之间的关系。为此，我们创建了50个按特征排序的投资组合，每个特征10个。

$$\text{Growth rate}_{i,t,t+15} = \beta_0 + X'_{i,t}B + \epsilon_{i,t}. \tag{4}$$

这些特征与低增长率有多变量关联

Table 1: Growth Rates and the Characteristics that Predict Returns

Panel A: Portfolio level regressions

Dependent variable:	Explanatory variables					
	High value	High profit	Low inv	Low beta	High pay	R^2
Realized 15-year dividend growth rate	**-0.01** (-2.74)	**-0.02** (-2.07)	-0.00 (-0.16)	**-0.02** (-4.35)	**-0.02** (-4.57)	0.38
Realized 15-year earnings growth rate	**-0.10** (-2.22)	**-0.07** (-2.50)	0.11 (1.99)	-0.01 (-0.33)	**-0.06** (-2.49)	0.05

Panel B: Firm-level univariate correlations between characteristics and analyst expectations of growth rates

	High BM	High profit	Low invest	Low beta	High pay
Expected growth (LTG)	-0.38	-0.13	-0.26	-0.29	-0.30

Panel C: Firm-level regressions of survey expected growth rates on different characteristics

US Only	Dependent variable: analyst expected growth rates (LTG)					
	(1)	(2)	(3)	(4)	(5)	(6)
High BM	**-0.490** (-53.60)	**-0.511** (-21.63)	**-0.445** (-53.21)	**-0.334** (-34.10)	**-0.331** (-27.53)	**-0.328** (-22.54)
High profit	**-0.197** (-22.61)	**-0.293** (-9.554)	**-0.212** (-24.70)	**-0.0954** (-11.40)	**-0.0563** (-6.230)	**-0.168** (-11.42)
Low investment	**-0.0923** (-16.33)	**-0.0944** (-4.841)	**-0.0737** (-13.99)	**-0.0459** (-12.23)	**-0.0356** (-7.025)	**-0.0412** (-8.599)
Low beta	**-0.173** (-18.51)	**-0.280** (-12.65)	**-0.131** (-15.33)	**-0.0672** (-9.053)	**-0.0265** (-2.745)	**-0.0463** (-4.777)
High payout	**-0.259** (-33.51)	**-0.168** (-6.810)	**-0.229** (-31.18)	**-0.116** (-16.63)	**-0.120** (-12.91)	**-0.0857** (-9.287)
Fixed effect	Date	Date	Date	Firm/Date	Firm/Date	Firm/Date
Cluster	Firm/Date	Firm/Date	Firm/Date	Firm/Date	Firm/Date	Firm/Date
Weight	Analysts	Market Cap	None	Analysts	Analysts	Analysts
Sample	Full	Full	Full	Full	Early	Late
Observations	582,580	582,580	582,580	582,488	267,544	314,914
R-squared	0.467	0.406	0.321	0.740	0.810	0.707

Table 1 -- Continued
Growth Rates and the Characteristics that Predict Returns

Panel D: Firm-level regressions of survey expected growth rates on different characteristics – International Evidence

Non-US	Dependent variable: analyst expected growth rates (LTG)					
	(1)	(2)	(3)	(4)	(5)	(6)
High value	**-0.166**	**-0.191**	**-0.151**	**-0.132**	**-0.146**	**-0.161**
	(-16.92)	(-9.280)	(-17.15)	(-10.93)	(-6.197)	(-9.475)
High profit	**-0.090**	**-0.112**	**-0.076**	**-0.157**	**-0.055**	**-0.270**
	(-8.964)	(-5.087)	(-8.768)	(-12.71)	(-2.129)	(-15.15)
Low investment	**-0.025**	**-0.007**	**-0.023**	**0.019**	**-0.021**	**0.036**
	(-3.613)	(-0.525)	(-3.778)	(-3.40)	(-2.173)	(-5.492)
Low beta	**-0.055**	**-0.115**	**-0.052**	0.007	0.021	**0.04**
	(-5.770)	(-7.124)	(-5.990)	(-0.765)	(-1.179)	(-2.8210)
High payout	**-0.152**	**-0.135**	**-0.138**	**-0.062**	**-0.045**	**-0.049**
	(-17.53)	(-8.381)	(-17.65)	(-7.075)	(-2.547)	(-4.053)
Fixed effect	Date	Date	Date	Firm/Date	Firm/Date	Firm/Date
Cluster	Firm/Date	Firm/Date	Firm/Date	Firm/Date	Firm/Date	Firm/Date
Weight	Analysts	Market Cap	None	Analysts	Analysts	Analysts
Sample	Full	Full	Full	Full	Early	Late
Observations	366,867	366,867	366,867	366,795	104,264	262,498
R-squared	0.06	0.09	0.04	0.32	0.49	0.35

第三节：引入新的持续时间风险因素，用它总结了大多数主要的股权风险因素；它在解释横截面方面也提供了有力和有意义的贡献

我们首先将主要风险因素背后的特征合并为一个低增长特征。我们将组合特征构建为利润、投资、贝塔和支出特征的加权平均，其中的权重由表1中Panel C中的回归(5)中的因子负荷给出。我们将账面市值比排除在我们的综合特征之外，因为对账面市值比进行排序涉及对价格进行排序，而价格最终是我们试图解释的变量。低增长特征衡量的是公司的预期增长率

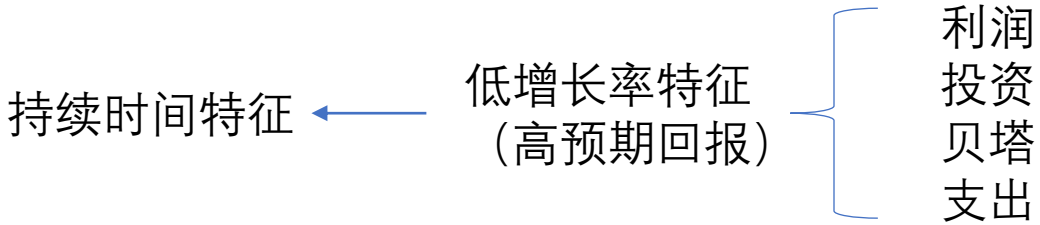


Table 2

Risk and Return for Portfolios Sorted on Duration

This table shows the risk and return characteristics for ten long-only portfolios sorted on duration and a long-short portfolio. We sort stocks into ten groups based on our measure of ex ante duration. Portfolio weights are value-weighted and rebalanced monthly and the breakpoints are refreshed each June and based on NYSE firms. CAPM alpha is the intercept in a regression of the excess return to the portfolio on the excess return to the market portfolio. We report *t*-statistics in parenthesis under parameter estimates and statistical significance at the five percent level is marked in bold. Sharpe ratios and information ratios are annualized. Excess return and alphas are in monthly percent. Realized duration is calculated based on the assumption that dividend growth rates of the portfolios continue forever and a constant discount rate of 8% per year for all portfolios. Sample is US firms from 1929 to 2019.

	Portfolios sorted on duration										Long/short
	1	2	3	4	5	6	7	8	9	10	10 minus 1
Excess return	**0.67** (5.87)	**0.68** (5.22)	**0.68** (4.57)	**0.69** (4.28)	**0.73** (4.09)	**0.83** (4.35)	**0.71** (3.34)	**0.71** (3.16)	**0.70** (2.70)	0.55 (1.80)	-0.13 (-0.53)
CAPM alpha	**0.30** (5.18)	**0.23** (4.38)	**0.15** (3.08)	**0.11** (2.33)	0.09 (1.69)	**0.14** (2.58)	-0.05 (-0.82)	-0.10 (-1.38)	**-0.22** (-2.43)	**-0.49** (-3.79)	**-0.79** (-4.94)
CAPM beta	**0.61** (56.68)	**0.73** (74.66)	**0.86** (93.59)	**0.95** (108.21)	**1.06** (109.33)	**1.13** (109.59)	**1.25** (105.90)	**1.33** (103.92)	**1.51** (91.62)	**1.69** (71.32)	**1.08** (36.73)
Sharpe ratio	0.62	0.55	0.48	0.45	0.43	0.46	0.35	0.33	0.28	0.19	-0.06
Information ratio	0.55	0.46	0.33	0.25	0.18	0.27	-0.09	-0.15	-0.26	-0.40	-0.52
Adjusted-R^2	0.75	0.84	0.89	0.91	0.92	0.92	0.91	0.91	0.89	0.82	0.55
# of observations	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091
Realized dividend growth rates	2%	3%	4%	4%	4%	4%	5%	5%	6%	7%	
Analyst expected growth rates	7%	8%	9%	9%	10%	11%	12%	13%	13%	16%	
Realized duration	15	17	18	18	20	20	24	28	33	59	

非单调下降

单调下降

现金流持续时间的巨大差异导致了增长率的差异

Table 3 The Duration Factor

这张表显示了构成我们的持续时间因素的投资组合的风险和回报特征。

山西财经大学 Shanxi University of Finance and Economics

Panel A: US	Long duration		Short duration		Duration factor
	Large cap	Small cap	Large cap	Small cap	
Excess return	**0.43** (1.99)	**0.63** (2.33)	**0.58** (4.10)	**0.94** (5.66)	0.23 (1.91)
CAPM alpha	**-0.24** (-4.38)	-0.13 (-0.93)	**0.15** (3.08)	**0.48** (5.63)	**0.50** (5.64)
CAPM beta	**1.24** (99.19)	**1.40** (45.72)	**0.79** (69.39)	**0.85** (43.91)	**-0.50** (-24.69)
Sharpe ratio	0.26	0.31	0.55	0.75	0.25
Information ratio	-0.59	-0.12	0.41	0.76	0.76
Adjusted-R^2	0.94	0.76	0.88	0.74	0.47
# of observations	678	678	678	678	678
Analyst expected growth	14.0%	15.9%	8.1%	8.9%	
Realized dividend growth	4.6%	6.0%	1.3%	1.5%	

Panel B: Global	Long duration		Short duration		Duration factor
	Large cap	Small cap	Large cap	Small cap	
Excess return	0.37 (1.32)	0.36 (1.19)	**0.54** (2.74)	**0.69** (3.31)	**0.25** (1.97)
CAPM alpha	**-0.22** (-3.80)	-0.24 (-1.88)	**0.13** (2.33)	**0.28** (3.18)	**0.44** (4.82)
CAPM beta	**1.22** (89.00)	**1.24** (41.83)	**0.84** (62.29)	**0.83** (39.80)	**-0.39** (-18.34)
Sharpe ratio	0.24	0.22	0.50	0.61	0.36
Information ratio	-0.70	-0.35	0.43	0.59	0.89
Adjusted-R^2	0.96	0.83	0.92	0.82	0.49
# of observations	354	354	354	354	354
Analyst expected growth	11.4%	14.4%	7.2%	8.3%	

我们使用三因素回归来研究我们的持续时间因子在多大程度上总结了第2节研究的五个主要股票风险因素

$$r^i_{t+1} = \alpha^i_{\mathrm{DUR}} + \beta^i_{\mathrm{Mkt}}(r^{Mkt}_{t+1} - r^f_t) + \beta^i_{\mathrm{smb}} r^{Smb}_{t+1} + \beta^i_{\mathrm{Dur}} r^{Dur}_{t+1} + \epsilon_{t+1}, \qquad (6)$$

Table 4: Summarizing the Major Risk Factors with the Duration Factor

Panel A: US Sample

Factor	CAPM model			Three-factor model						
	α_{CAPM}	β_{CAPM}	R^2	α_{Dur}	β_{Mkt}	β_{Smb}	β_{Dur}	R^2	*LTG*	*# obs*
HML	**0.39** (3.75)	**-0.16** (-6.73)	0.06	-0.02 (-0.26)	**0.13** (4.62)	**0.37** (10.65)	**0.66** (15.49)	0.32	-9.5%	678
RMW	**0.32** (3.87)	**-0.11** (-5.93)	0.05	0.09 (1.31)	**0.14** (6.34)	**-0.07** (-2.67)	**0.48** (15.03)	0.35	-5.1%	678
CMA	**0.37** (5.19)	**-0.18** (-10.87)	0.15	0.09 (1.38)	0.02 (1.15)	**0.25** (10.56)	**0.44** (15.48)	0.38	-6.7%	678
BETA	**0.49** (4.22)	**-0.73** (-27.87)	0.53	-0.04 (-0.52)	**-0.20** (-9.63)	-0.02 (-0.80)	**1.05** (33.59)	0.85	-7.9%	678
PAYOUT	**0.26** (3.86)	**-0.30** (-19.89)	0.37	-0.03 (-0.72)	-0.02 (-1.67)	**0.04** (2.32)	**0.57** (25.83)	0.70	-7.2%	678

Panel B: Global Sample

Factor	CAPM model			Three-factor model						
	α_{CAPM}	β_{CAPM}	R^2	α_{Three}	β_{Mkt}	β_{Smb}	β_{Dur}	R^2	*LTG*	*# obs*
HML	**0.29** (2.40)	**-0.09** (-3.18)	0.03	-0.02 (-0.15)	**0.17** (4.62)	**0.24** (4.12)	**0.66** (9.93)	0.24	-7.1%	354
RMW	**0.42** (6.02)	**-0.14** (-8.74)	0.18	**0.22** (4.25)	**0.04** (2.39)	**-0.12** (-4.42)	**0.47** (15.27)	0.56	-5.1%	354
CMA	**0.29** (3.17)	**-0.17** (-7.95)	0.18	0.05 (0.56)	0.03 (1.20)	**0.20** (4.56)	**0.51** (10.54)	0.35	-5.7%	354
BETA	**0.42** (3.47)	**-0.65** (-22.79)	0.59	-0.10 (-1.58)	**-0.19** (-9.01)	**0.10** (3.06)	**1.18** (30.87)	0.89	-6.6%	354
PAYOUT	**0.28** (3.92)	**-0.19** (-11.26)	0.26	0.03 (0.64)	0.03 (1.66)	0.03 (1.04)	**0.56** (17.66)	0.62	-6.9%	354

Table 5：Multi-Horizon Returns Tests for the Duration Factor

Test Assets:	Own Model's Factors	FF5 Factors
p-value (GMM)	0.060	0.619
Mean absolute price error (annualized)	0.042	0.036
Max. Sharpe ratio	1.133	1.133
Max. information ratio (annualized)	0.776	0.779

第四节：研究了单股股息期货和公司债券回报率，分离出持续时间作为持续时间因素上风险调整后收益的驱动因素

持续时间因子的溢价是该因子中公司现金流持续时间短的产物，还是源于与这些公司相关的其他特征。我们将利用单一股票股息期货的新数据集来解决这个问题，该数据集使我们能够确定现金流持续时间对预期回报的影响。

$$\alpha_t^i = \sum_{m=1}^{\infty} w_t^{i,m} \alpha_t^{i,m} \tag{7}$$

where α_t^i is the CAPM alpha on firm i, $\alpha_t^{i,m}$ is the CAPM alpha on the $t+m$ cash flow of firm i, and $w_t^{i,m}$ is the cash flow's relative present value.

固定单个α，改变期限即权重（近期现金流的权重相对较大，持续时间短）

Table 6: Summary Statistics on Single-Stock Dividend Futures

	# obs	Mean	Sd	Min	Max
Panel A: Returns and Prices					
Annual returns	1,474	0.049	0.21	-1	1.32
Annual returns (using settlement prices)	1,474	0.050	0.21	-1	1.32
Annual log-returns	1,465	0.034	0.22	-2.33	0.84
Annual volume	1,711	11,864	41,701	0	1.07e+06
Open interest	1,711	5,444	15,438	1	341,816
Price of contract	1,711	2,149	3,943	0	69,000
Notional (in thousands)	1,711	4,075	7,011	0	71,781
Panel B: Maturity and Betas					
One-year dummy	1,711	0.36	0.48	0	1
Two-year dummy	1,711	0.33	0.47	0	1
Three-year dummy	1,711	0.22	0.42	0	1
Four-year dummy	1,711	0.090	0.29	0	1
Maturity (in years)	1,711	2.04	0.97	1	5
CAPM beta of strip	1,711	0.51	0.85	-1	1.50
# Obs for CAPM beta	1,711	36.4	27.5	2	101
Panel C: Sample Representativeness					
Duration	1,711	33.1	28.7	0.078	100
Book-to-market	1,696	52.8	27.0	0.26	100
Market cap	1,711	97.2	3.24	74.1	100
Operating profit	1,689	62.4	22.7	4.47	99.9
Investment	1,699	48.8	21.9	2.55	99.5
Beta	1,700	74.5	18.0	7.45	100
Payout	1,669	67.3	21.3	0.51	100

Table 7：Expected CAPM Alpha for Single Stock Dividend Futures

	Maturity of Strip				
	1 year	2 year	3 year	4 year	Average
Short-duration firms	0.078 (0.0046)	0.068 (0.0061)	0.056 (0.0070)	0.038 (0.0057)	0.066 (0.0045)
Long-duration firms	0.092 (0.011)	0.077 (0.011)	0.064 (0.0071)	0.035 (0.0070)	0.077 (0.0090)
Average across firms	0.085 (0.0066)	0.073 (0.0077)	0.060 (0.0057)	0.037 (0.0054)	

Table 8: Expected Return and Alpha on Single Stock Dividend Futures

Panel A: Expected returns and alphas

Expected returns: $E_t[r_{t+m}^{i,m}] = \left(\frac{E_t[D_{t+m}^{i}]}{f_t^{i,m}}\right)^{1/m}$

CAPM alphas: $\alpha_{t+m}^{i,m} = E_t[r_{t+m}^{i,m}] - \beta_{maturity}^{i,m} \times 5\%$

Dependent variable	Expected ret	Expected ret	Expected ret	CAPM alpha	CAPM alpha	CAPM beta
2-year dummy		-0.000	-0.004	-0.013*	-0.012*	0.427***
		(0.005)	(0.006)	(0.006)	(0.006)	(0.119)
3-year dummy		-0.002	-0.009*	-0.027***	-0.025***	0.816***
		(0.003)	(0.004)	(0.005)	(0.005)	(0.111)
4-year dummy		-0.017***	-0.022***	-0.045***	-0.044***	0.805***
		(0.004)	(0.004)	(0.007)	(0.007)	(0.137)
CAPM beta of strip ($\beta^{i,m}$)	0.011***		0.014***			
	(0.003)		(0.004)			
CAPM beta of firm (β^{i})	0.044**		0.044**			0.599**
	(0.016)		(0.016)			(0.195)
无关 Cash-flow duration of firm (higher = shorter duration)	-0.004		-0.003	-0.001	-0.002	
	(0.004)		(0.004)	(0.004)	(0.004)	
Observations	1,226	1,236	1,226	1,236	1,236	1,699
R-squared	0.13	0.10	0.14	0.10	0.12	0.20
Fixed effect	Date/Cur	Date/Cur	Date/Cur	Date/Cur	Date/Cur	Date/Cur
Cluster	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm
Weight	None	None	None	None	Notional	None

Table 9：Realized Return and Alpha on the Annual Horizon for Single Stock Dividend Futures

Panel A: Realized versus expected returns

Expected returns: $E_t[r_{t+m}^{i,m}] = \left(\frac{E_t[D_{t+m}^{i}]}{f_t^{i,m}}\right)^{1/m}$

Realized returns: $r_{t+1}^{i,m} = f_{t+1}^{i,m+1}/f_t^{i,m}$

Dependent variable	Realized return	Realized returns	Realized log-return	Realized log-return	Realized return	Realized log-return
Expected return	0.68***	0.76***			0.58***	
	(0.17)	(0.17)			(0.17)	
Expected log-return			0.71***	0.80***		0.71***
			(0.14)	(0.14)		(0.12)
Observations	1,059	1,059	1,054	1,054	1,059	1,054
R-squared	0.203	0.251	0.171	0.218	0.187	0.194
Fixed effect	Firm	Date/Firm	Firm	Date/Firm	Firm	Date/Firm
Cluster	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm
Weight	None	None	None	None	Notional	Notional

Panel B: Realized returns and alphas

Realized returns: $r_{t+1}^{i,m} = f_{t+1}^{i,m+1}/f_t^{i,m}$

Realized alphas: $\tilde{\alpha}_{t+1}^{i,m} = r_{t+1}^{i,m} - \beta^{i,m} r_{t+1}^{Mkt}$

Dependent variable	Realized returns	Realized log-returns	Realized alpha	Realized alpha	Realized log-alpha	Realized log-alpha
2-year dummy	0.0021	0.00066	-0.035	-0.035	-0.037	-0.037*
	(0.018)	(0.016)	(0.026)	(0.023)	(0.023)	(0.019)
3-year dummy	0.011	0.0018	-0.062	-0.062	-0.071	-0.071*
	(0.031)	(0.028)	(0.041)	(0.041)	(0.038)	(0.038)
4-year dummy	-0.020	-0.035	-0.084*	-0.084*	-0.100**	-0.100**
	(0.034)	(0.032)	(0.042)	(0.042)	(0.042)	(0.041)
Observations	1,466	1,457	1,466	1,466	1,457	1,457
R-squared	0.187	0.156	0.227	0.227	0.205	0.205
Fixed effect	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm
Cluster	Date/Firm	Date/Firm	Date/Firm	Date/Strip	Date/Firm	Date/Strip
Weight	None	None	None	None	None	None

无关

Panel C: Realizations and firm characteristics

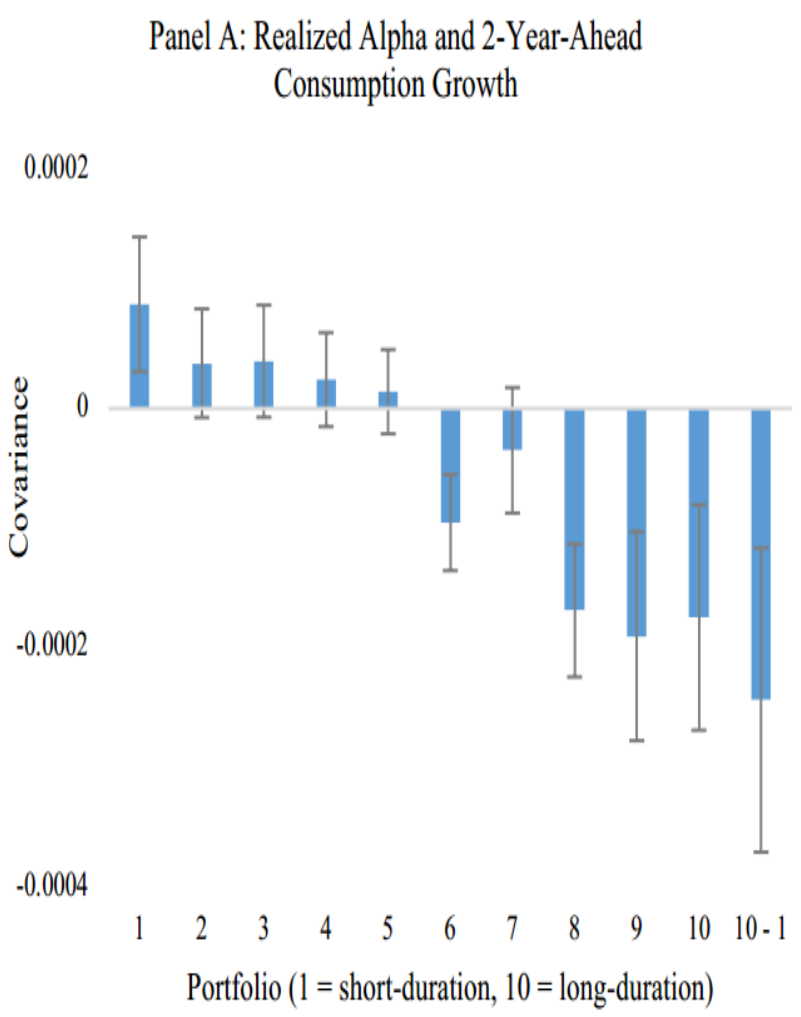
Dependent variable	Realized returns	Realized log-returns	Realized alpha	Realized alpha	Realized log-alpha	Realized log-alpha
2-year dummy	0.0011	-0.0012	-0.034	-0.035	-0.035	-0.037
	(0.019)	(0.016)	(0.025)	(0.025)	(0.021)	(0.021)
3-year dummy	0.0028	-0.0065	-0.069	-0.069	-0.077*	-0.076*
	(0.033)	(0.029)	(0.041)	(0.040)	(0.035)	(0.035)
4-year dummy	-0.022	-0.038	-0.086*	-0.091*	-0.10*	-0.11*
	(0.035)	(0.033)	(0.045)	(0.046)	(0.045)	(0.047)
Cash-flow duration of firm	0.0052	0.010	0.015	0.021	0.020	0.025**
(higher = shorter duration)	(0.015)	(0.013)	(0.014)	(0.013)	(0.011)	(0.011)
Observations	1,473	1,464	1,473	1,473	1,464	1,464
R-squared	0.045	0.039	0.064	0.072	0.066	0.069
Fixed effect	Date/currency	Date/currency	Date/currency	Date/currency	Date/currency	Date/currency
Cluster	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm	Date/Firm
Weight	None	None	None	Notional	None	Notional

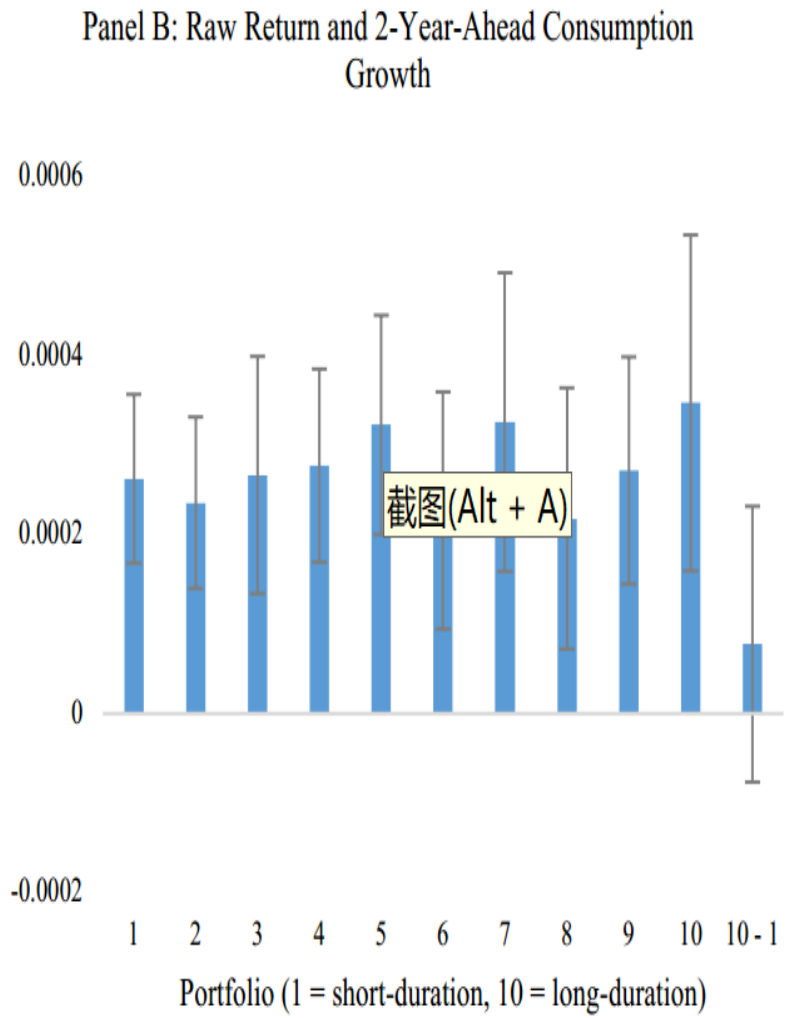
Panel D: Expectations errors

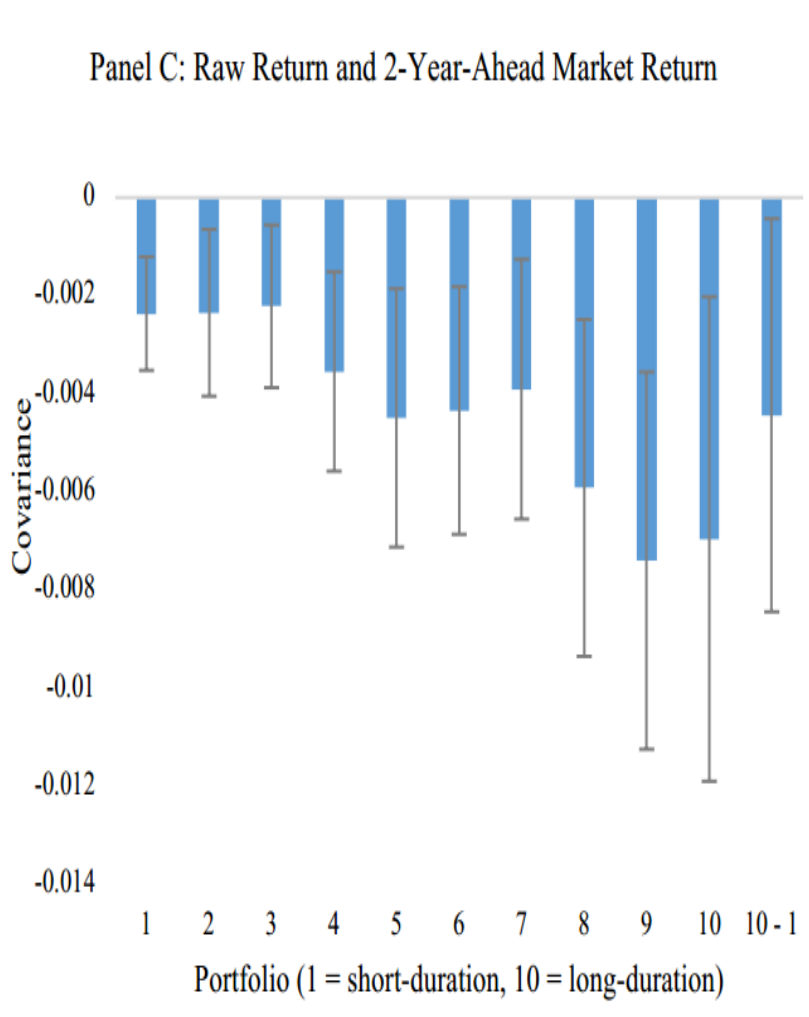
Dependent variable	Realized returns – Expected returns		Realized log-returns – Expected log-returns	
2-year maturity dummy	0.0061	0.0050	-0.0012	-0.0032
	(0.016)	(0.016)	(0.012)	(0.014)
3-year maturity dummy	0.015	0.011	-0.0041	-0.0059
	(0.031)	(0.029)	(0.029)	(0.028)
4-year maturity dummy	-0.0020	-0.0029	-0.023	-0.023
	(0.031)	(0.029)	(0.034)	(0.032)
Cash-flow duration of firm	0.017	0.017	0.017	0.018
(higher = shorter duration)	(0.012)	(0.012)	(0.010)	(0.010)
Observations	1,065	1,065	1,060	1,060
R-squared	0.078	0.074	0.074	0.070
Fixed effect	Date/currency	Date/currency	Date/currency	Date/currency
Cluster	Date/Firm	Date/Firm	Date/Firm	Date/Firm
Weight	None	Notional	None	Notional

无关

Figure 8 Consumption and Discount Rate Risk for Duration-Sorted Portfolios







结论

股票数据

图一：特征值 增加 增长率 减小

图二：D 增加 α 减小 r 增加

图三：D 增加 α 减小 r 增加

图四：D因素可以解释风险因素

1.现金流持续时间是短期公司溢价的重要决定因素

期货数据

图七图八（预期）：期限 增加 α 减小　　D与α无关　　**过度反应理论（预期乐观）**

图九（实现）：　　期限 增加 α 减小　　D增加α增加

2.公司层面的持续时间特征并不能解释单股股息的预期CAPM alpha，这表明持续时间特征只能预测预期CAPM alpha，因为它预测了现金流的持续时间

3.持续时间因子的一部分alpha必须来自于近期现金流具有高CAPM alpha

Figure 8

4.短期企业市场调整收益正暴露于消费风险（消费风险可以部分解释现金流溢价）