Is Economic Uncertainty Priced in the Cross-Section of Stock Returns?

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Introduction

※ **Knight (1921) distinction between risk and true uncertainty**

※ *Uncertainty* **when probability distribution is itself unknown**

 ※ **Uncertainty, by its nature, cannot be measured and is uninsurable**

 ※ **But is the result of measurable economic changes.**

※ **Not much attention in the empirical asset pricing literature**

Conditional ICAPM with Risk and Uncertainty

❋ **Merton's ICAPM:** $\mu_i = A \cdot \sigma_{im} + B \cdot \sigma_{ix}$

❋ **We examine conditional ICAPM with time-varying covariances:**

$$E[R_{i,t+1} \mid \Omega_t] = A \cdot \mathrm{cov}[R_{i,t+1}, R_{m,t+1} \mid \Omega_t] + B \cdot \mathrm{cov}[R_{i,t+1}, X_{t+1} \mid \Omega_t]$$

❋ **Investors are concerned with**
   ❋ **Terminal wealth of portfolio**
   ❋ **Future consumption and investment opportunities.**

Economic uncertainty index

- Jurado, Ludvigson, and Ng (2015)
- Uncertainty: conditional volatility of innovations
  - 132 macroeconomic time series
    - Real output and income
    - Employment and hours
    - Real retail, manufacturing and trade sales
    - Consumer spending
    - Housing starts
    - etc.
  - Computed on a one month, three month and one year basis

Economic uncertainty index
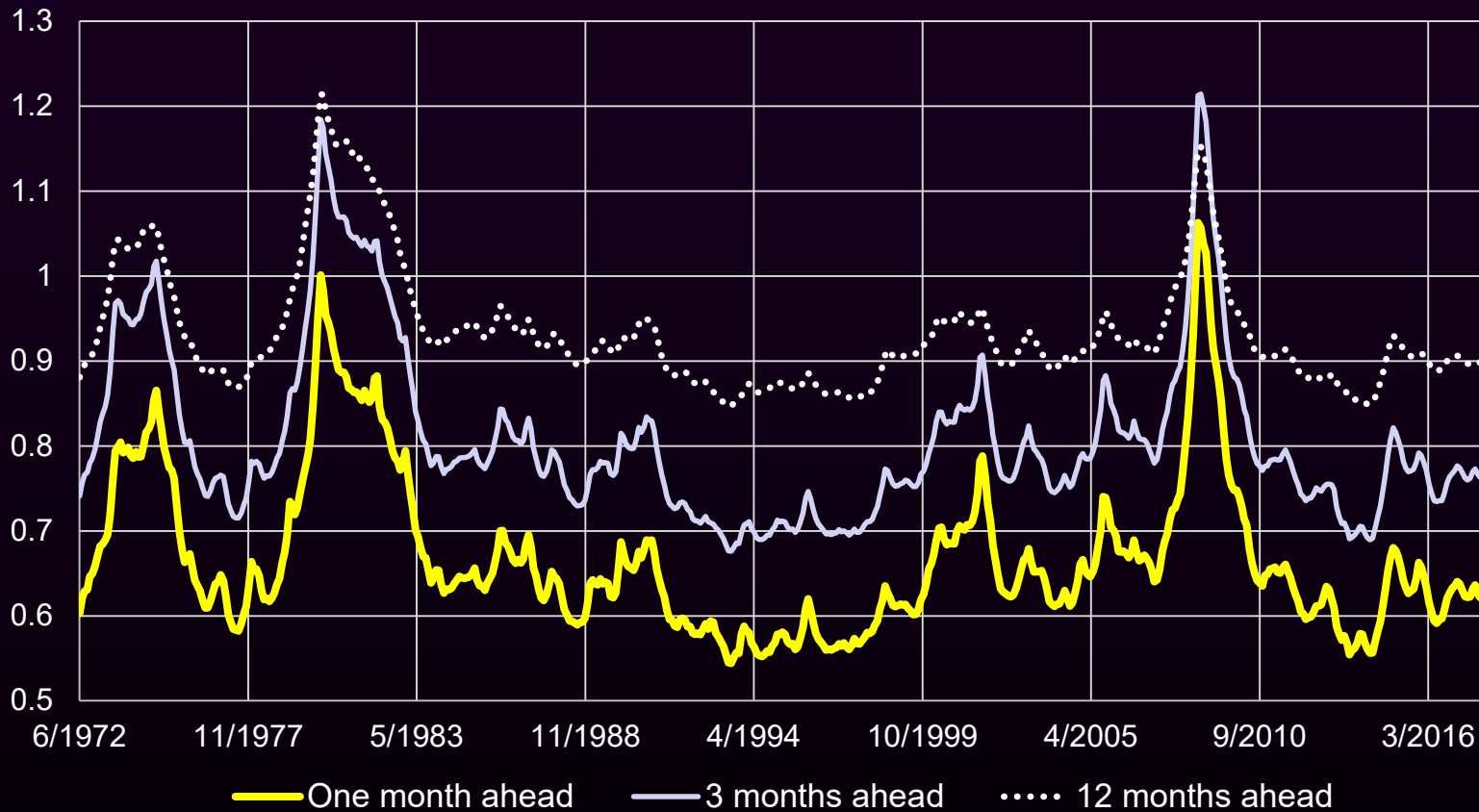
Source: Sydney Ludvigson https://www.sydneyludvigson.com/data-and-appendixes/

Uncertainty Beta

* **Excess stock returns regressed on uncertainty index**

* **Sixty month rolling regressions**

$$R_{it} - r_{ft} = \alpha_i + \beta_i^{UNC} \cdot UNC_{1,t} + \beta_i^{MKT} \cdot (R_{MKT,t} - r_{ft}) + \beta_i^{SMB} \cdot SMB_t$$

$$+ \beta_i^{HML} \cdot HML_t + \beta_i^{UMD} \cdot UMD_t + \beta_i^{LIQ} \cdot LIQ_t$$

$$+ \beta_i^{I/A} \cdot R_{I/A,t} + \beta_i^{ROE} \cdot R_{ROE,t} + \varepsilon_{i,t}$$

Equal weighted portfolios

	β^{UNC}	Rm - Rf	FF 5 factor α	FF 5+ factor α
Low	-0.62	1.13 (3.60)	0.34 (2.77)	0.35 (2.85)
. . .	. . .	. . .	. . .	. . .
High	0.72	0.62 (2.06)	-0.13 (-1.31)	-0.15 (-1.49)

Equal weighted portfolios

	β^{UNC}	Rm - Rf	FF 5 factor α	FF 5+ factor α
Low	-0.62	1.13	0.34	0.35
		(3.60)	(2.77)	(2.85)
. . .	. . .	. . .	. . .	. . .
High	0.72	0.62	-0.13	-0.15
		(2.06)	(-1.31)	(-1.49)
High-Low	1.34	-0.51	-0.47	-0.50
		(-3.81)	(-2.93)	(-3.09)

Value weighted portfolios

	β^{UNC}	Rm - Rf	FF 5 factor α	FF 5+ factor α
Low	-0.62	0.93 (2.87)	0.50 (2.14)	0.49 (2.12)
. . .	. . .	. . .	. . .	. . .
High	0.72	0.53 (1.72)	-0.17 (-1.33)	-0.19 (-1.46)

Value weighted portfolios

	β^{UNC}	Rm - Rf	FF 5 factor α	FF 5+ factor α
Low	-0.62	0.93 (2.87)	0.50 (2.14)	0.49 (2.12)
. . .	. . .	. . .	. . .	. . .
High	0.72	0.53 (1.72)	-0.17 (-1.33)	-0.19 (-1.46)
High-Low	1.34	-0.40 (-1.93)	-0.67 (-2.35)	-0.69 (-2.40)

UNC Alphas of different samples

	S&P500	1,000 Largest stocks	1,000 Most Liquid stocks
Low β^{UNC}	0.47 (2.97)	0.27 (2.33)	0.30 (2.13)
. . .	. . .	. . .	. . .
High β^{UNC}	-0.16 (-1.72)	-0.11 (-1.20)	-0.13 (-1.21)

FF 5+ factor α

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. . .	. . .	. . .	. . .
High β^{UNC}	-0.16 (-1.72)	-0.11 (-1.20)	-0.13 (-1.21)
High-Low	-0.64 (-3.20)	-0.38 (-2.35)	-0.43 (-2.28)

FF 5+ factor α

Premium controlling for other factors

Controlling for	Low β^{UNC}	High β^{UNC}
β^{MKT}	0.28	-0.10
SIZE	0.23	-0.08
BM	0.29	-0.04
I/A	0.27	-0.03
ROE	0.26	-0.10
MOM	0.22	-0.22
ILLIQ	0.27	-0.06
IVOL	0.29	-0.15
MAX	0.32	-0.14

Premium controlling for other factors

Controlling for	Low β^{UNC}	High β^{UNC}	Difference
β^{MKT}	0.28	-0.10	-0.38 (-3.24)
SIZE	0.23	-0.08	-0.32 (-2.39)
BM	0.29	-0.04	-0.33 (-2.63)
I/A	0.27	-0.03	-0.30 (-2.54)
ROE	0.26	-0.10	-0.36 (-3.00)
MOM	0.22	-0.22	-0.44 (-3.72)
ILLIQ	0.27	-0.06	-0.34 (-2.45)
IVOL	0.29	-0.15	-0.43 (-3.84)
MAX	0.32	-0.14	-0.46 (-3.99)

Fama and McBeth results

$$\beta^{UNC}$$ -0.504 (-3.12)

Fama and McBeth results

β^{UNC} -0.504 (-3.12)   -0.458 (-3.22)

β^{MKT} 0.071 (0.54)

Fama and McBeth results

β^{UNC}	-0.504 (-3.12)	-0.458 (-3.22)	-0.254 (-2.73)
β^{MKT}		0.071 (0.54)	0.160 (1.58)
SIZE			-0.060 (-2.18)
BM			0.160 (2.55)
MOM			0.005 (3.27)
I/A			-0.246 (-4.50)
ROE			0.778 (3.32)
Controls	No	No	Yes

UNC alphas by industry

Quintile	Low β^{UNC}	High β^{UNC}
Nondurable	-0.02	-0.31
Durable	0.01	-0.45
Manufacturing	0.06	-0.19
Energy	-0.02	-0.78
High tech	0.63	0.28
Telecom	1.24	-0.37
Retail	0.24	-0.21
Health	0.55	0.18
Utilities	0.39	0.20
Other	0.04	-0.31

UNC alphas by industry

Quintile	Low β^{UNC}	High β^{UNC}	Difference
Nondurable	-0.02	-0.31	-0.29 (-1.73)
Durable	0.01	-0.45	-0.46 (-1.99)
Manufacturing	0.06	-0.19	-0.25 (-1.63)
Energy	-0.02	-0.78	-0.76 (-2.14)
High tech	0.63	0.28	-0.35 (-2.31)
Telecom	1.24	-0.37	-1.62 (-3.25)
Retail	0.24	-0.21	-0.46 (-3.67)
Health	0.55	0.18	-0.37 (-1.77)
Utilities	0.39	0.20	-0.19 (-0.50)
Other	0.04	-0.31	-0.35 (-3.02)

Alphas of uncertainty beta factors

	FF 5 factor α	FF 5+ factor α
EW β^{UNC} factor	-0.35% (-3.27)	-0.34% (-2.85)
VW β^{UNC} factor	-.31% (-2.79)	-.32% (2.46)

Recessions vs. Expansions

	Recession-NBER	Expansion-NBER	Recession-CFNAI	Expansion-CFNAI
EW β^{UNC} factor	-0.67 (-1.67)	-0.26 (-3.39)	-0.91 (-2.52)	-0.23 (-2.14)
High-low Analyst disagreement	-1.80 (-3.44)	-0.62 (-2.26)	-1.86 (-2.98)	-0.57 (-2.08)

Hedge fund application

* **Economic uncertainty exposure explains hedge fund returns**

* **A significant relation between future returns and exposure to uncertainty**

* **Effect is greatest for directional fund strategies:**

$$R_{i,t+1} = 0.306 + 0.157\beta_{i,t}^{UNC} + 0.127\delta_{i,t} + 0.140(\delta_{i,t} \cdot \beta_{i,t}^{UNC})$$

$$(2.78) \quad (2.00) \qquad (0.94) \qquad (2.03)$$

$$\delta_{i,t} = 1 \ if \ fund_i \ is \ directional, \ \delta_{i,t} = 0 \ otherwise$$

Turan Bali, Stephen Brown and Mustafa Caglayan "Macroeconomic risk and hedge fund returns *Journal of Financial Economics* 114(1) 2014 1-14..

Conclusion

✳ **Uncertainty is both measurable and material**
   ✳ **Is distinct from market volatility**
   ✳ **Is associated with a negative premium in stock returns**

✳ **Stocks differ in their sensitivity to this factor**
   ✳ **Systematic differences in sensitivity by industry**

✳ **Uncertainty affects consumption and investment**
   ✳ **Increased uncertainty => unfavorable investment opportunities**
   ✳ **Uncertainty premium is higher in times of economic distress**