Time-varying State Variable Risk Premia in the ICAPM

Authors: Pedro Barroso, Martijn Boons, and Paul Karehnke

Discussant: Andrei S. Gonçalves

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The Paper in a Nutshell...

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M_{t+1} &= \frac{\partial_W V(W_{t+1,}, z_{t+1})}{\partial_W V(W_{t,}, z_t)} \\
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&= a_t \quad - \quad \gamma_t \times R_{w,t+1} \quad - \quad \phi_t \times \Delta z_{t+1}
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- "The ICAPM simplify matters by assuming pure (retired) investors who sit on a pile of wealth, all invested in stocks and bonds....For this reason, the only state variables in the ICAPM are those that forecast future market returns" (Cochrane (2005), Ch. 9)
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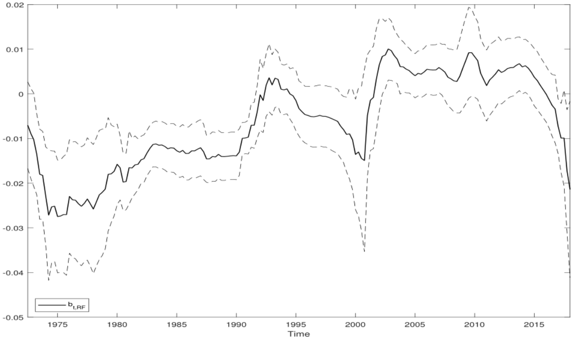

Figure 1: Rolling coefficients of consumption growth on lagged risk-free rate
This figure presents coefficient estimates, $b_{t,RF}$, from a rolling ten-year regression of quarterly consumption growth on the lagged three month t-bill rate (± 1.65 Newey and West, 1987, standard error bands).

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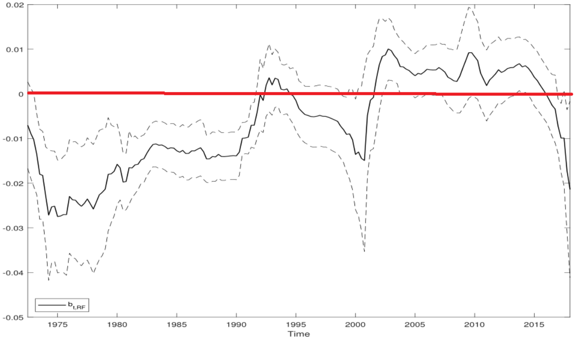

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Specification	1	2	3	4
Fixed effects		✓		✓
g_0	-3.32	-3.39	0.06	
	(-2.80)	(-3.00)	(0.10)	
	[-2.46]	[-2.66]	[0.08]	
$I_{b^4_{t,z_k}>0}$	6.51			
	(2.54)			
	[2.87]			
$I_{b^4_{t,z_k}>\text{median}}$		6.31		
		(2.87)		
		[3.01]		
b^4_{t,z_k}			321.64	297.70
			(2.14)	(2.13)
			[2.64]	[2.10]
$R^2(\times 100)$	3.37	6.37	3.02	4.78

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Fixed effects		✓
g_0	0.00	
	(0.00)	
b_{t,z_k}	270.68	252.42
	(1.95)	(1.91)
σ^2_{t,z_k}	0.56	0.56
	(0.54)	(0.58)
$b_{t,z_k} \times \sigma^2_{t,z_k}$	185.86	185.91
	(1.95)	(2.00)
$R^2(\times 100)$	5.00	6.75

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Fixed effects		✓
Low b_{t,z_k}, High σ^2_{t,z_k}	-4.36	-4.19
	(-2.64)	(-2.42)
	[-2.36]	[-2.11]
Low b_{t,z_k}, Low σ^2_{t,z_k}	-2.90	-2.73
	(-2.13)	(-1.96)
	[-2.14]	[-1.77]
High b_{t,z_k}, Low σ^2_{t,z_k}	2.44	2.27
	(1.62)	(1.67)
	[1.69]	[1.42]
High b_{t,z_k}, High σ^2_{t,z_k}	4.73	4.56
	(1.93)	(2.12)
	[2.28]	[2.05]
$HH - LH$	9.09	8.74
	(2.86)	(3.01)
	[2.85]	[2.47]

Outline

The Paper

Comments

Final Remarks

Comment 1: Motivating the use of Δc

- "...the only state variables in the ICAPM are those that forecast future market returns" (Cochrane (2005), Ch. 9)
- This paper: "As argued by Roll (1977), the aggregate stock market return can be a poor proxy for the return on aggregate wealth...we follow the advice in Cochrane (2005, Ch. 9) and seek instead recession state variables"
- The argument goes against using R_w in the SDF
- "...expected returns may depend on additional betas that capture labor market conditions, house values, fortunes of small business, or other non-marketed assets. Yet these state variables need not forecast returns on any traded assets–this is not the ICAPM. Much current empirical work seems to be headed towards additional state variables of this type for distress, recession, etc..."
- Treat Δc as a feature, not a bug!

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Comment 2: ϕ_t allows for more than Campbell (1993)

- With Epstein-Zin preferences (see Campbell (1993)):

$$log(M_{t+1}) = \gamma \times r_w + (\gamma - 1) \times \Delta\mathbb{E}_t[\Sigma_{h=1}^{h=\infty} \rho^h \cdot r_{w,t+h}]$$

$$= \gamma \times r_w + (\gamma - 1) \cdot \rho \cdot \boldsymbol{B} \cdot (\mathbf{I} - \rho \cdot \boldsymbol{B})^{-1} \times \Delta z_t$$

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$$\phi = (\gamma - 1) \cdot \rho \cdot \boldsymbol{B} \cdot (\mathbf{I} - \rho \cdot \boldsymbol{B})^{-1}$$

- In some sense, Campbell (1993)'s framework provides a much stricter test of the ICAPM than Cor(ϕ,b)>0
- Why should we care about the weaker test then?
- Because the test allows for time-varying predictability, which is empirically important
- $\boldsymbol{B}_t$ in Campbell (1993)'s framework is not tractable
- This is a clear contribution of this paper...but never discussed

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2. Does the behavior of γ make sense?

3. ICAPM implies $\phi_t = \frac{\partial_{Wz} V_t}{\partial_W V_t} = f(z_t)$

R^2 from $b_t = d_0 + d_1 \times z_t + \epsilon_t$					
Model 1			**Model 2**		
DY	*DS*	*TS*	*DY*	*DS*	*RF*
15%	10%	67%	16%	32%	65%
Model 3			**Model 4**		
PE	*VS*	*TS*	*DY*	*CP*	*LVL*
8%	41%	57%	34%	33%	54%

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PE	*VS*	*TS*	*DY*	*CP*	*LVL*
8%	41%	57%	34%	33%	54%

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