Housing as a Measure for Long-Run Risk in Asset Pricing

by José Fillat

Discussion by

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The long-run risks recipe

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2. Small, but highly persistent predictive component of consumption growth.
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Battle plan

- The model
- Pricing implications
- Measuring long-run risks
- Suggestions

Setup of the economy

- Preferences *á* la Hansen and Sargent

$$U_t = (1-\beta)\log\left(C_t^{\frac{\varepsilon-1}{\varepsilon}} + w_t S_t^{\frac{\varepsilon-1}{\varepsilon}}\right)^{\frac{\varepsilon}{\varepsilon-1}} + \beta\theta\log E_t \exp\left\{\frac{U_{t+1}}{\theta}\right\}$$

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- Budget constraint

$$p_t^C C_t + p_t^S S_t + q_t^C \theta_t^C + q_t^S \theta_t^S = \left(q_t^C + p_t^C C_t\right)\theta_{t-1}^C + \left(q_t^S + p_t^S S_t\right)\theta_{t-1}^S$$

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$$\Delta c_{t+1} = \mu_c + \phi^c x_t + \sigma^c \varepsilon_{t+1}^c$$

$$x_t = \rho x_{t-1} + \sigma^x \varepsilon_{t+1}^x$$

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- Expenditure share

$$-\log\alpha_{t+1} = -\log p_{t+1}^C C_{t+1}/(p_{t+1}^C C_{t+1} + p_{t+1}^S S_{t+1})$$

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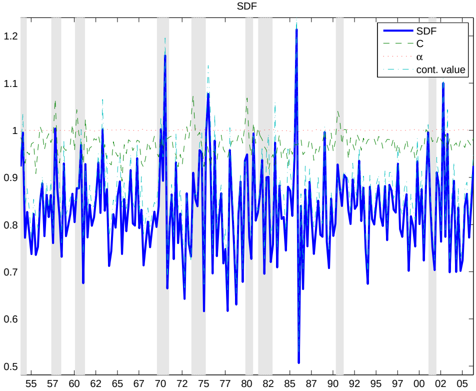
$$-\log\alpha_{t+1} = \mu^\alpha + \phi^\alpha x_{t+1} + x_{t+1}' \Psi x_{t+1}$$

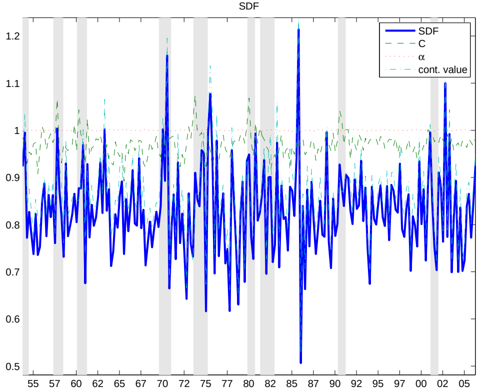
Stochastic Discount Factor

$$m_{t+1} = \log \frac{\partial U_t / \partial C_{t+1}}{\partial U_t / \partial C_t}$$



Stochastic Discount Factor

$$m_{t+1} = \log\beta - \Delta c_{t+1} + \log\frac{\exp\{U_{t+1}/\theta\}}{E_t\exp\{U_{t+1}/\theta\}} + \Delta\alpha_{t+1}$$



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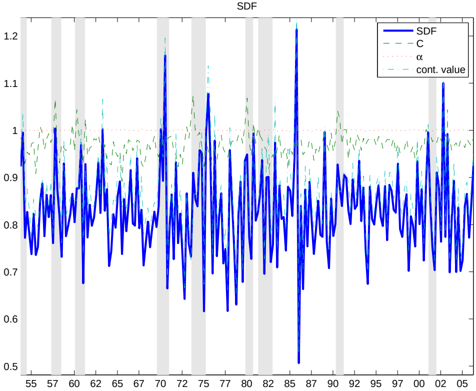
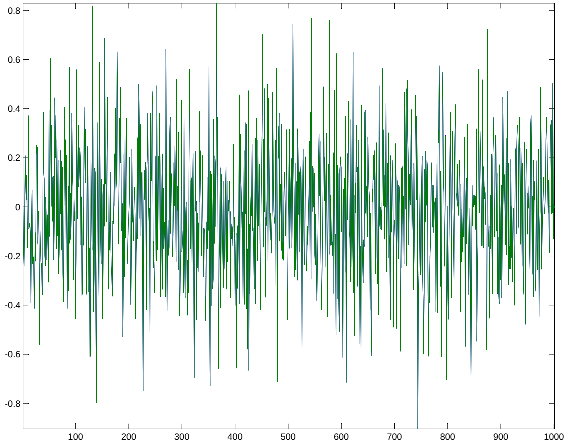


Comparison

Compare two economies:

1. Preference for housing services is shut down.
2. Preference for housing services is turned on.

Comparison of SDF's



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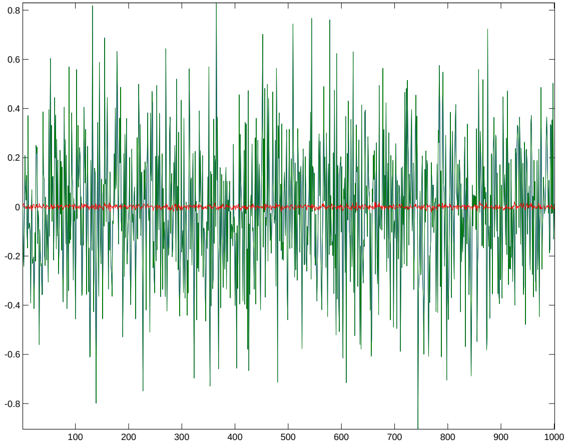

Pricing results

- Volatility of SDF's

	No Durables	With Durables
$\sigma(m_{t+1})$	53.7802	53.7853

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- Equity premia

	1 Period			Limiting		
	R^1	R^5	R^h	R^1	R^5	R^h
RU + housing	5.2780	7.1620	-5.8615	5.6000	7.4894	-6.4424
Rec. Ut.	5.2143	7.1017	-5.7907	5.5893	7.4854	-6.4614
P. Ut	-0.0000	0.9801	0.1941	0.4011	0.7897	0.8834

Estimating long-run risks

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- Estimate long-run risks from

$$-\log \alpha_t = \mu^{\alpha} + \phi^{\alpha} x_t$$

$$x_t = \rho^{x} x_{t-1} + \varepsilon_t^{x}$$

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$$-\log \alpha_t = \underset{(0.004)}{0.010} + \phi^{\alpha} x_t$$

$$x_t = \underset{(0.027)}{0.926}\, x_{t-1} + \varepsilon_t^x$$

Estimating long-run risks

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$$-\log \alpha_t = \underset{(0.004)}{0.010} + \phi^{\alpha} x_t$$

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- How does it compare to Bansal and Yaron's calibration?

$$0.926^{\frac{1}{3}} = 0.975 \approx 0.979$$

Can α predict consumption?

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- Predictive regression

$$\Delta c_t = \phi^c(-\log \alpha_{t-1}) + \varepsilon_t^c$$

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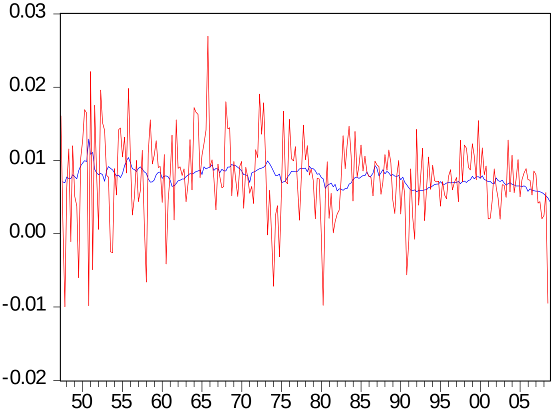
- How much are we explaining?

$$R^2 = 4.7\%$$

Filtered long-run risks



Suggestions

- Less theoretical implications of preference for housing consumption
- More empirical pricing tests using this estimated measure of long-run risks