Discussion of

Time Varying Risk Aversion

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Motivation

- Empirical stylized facts: Time-varying risk premia
- Explanations
  1. Time-varying risk (e.g., Bansal-Yaron; ...)
  2. Time-varying risk aversion (e.g., Campbell-Cochrane; ...)
  3. Subjective beliefs (e.g., learning; irrational exuberance; ...)
- Stories observationally equivalent on many *macro* dimensions
- Calls for study of investor risk preferences/beliefs in *micro*data
- This paper: Excellent microdata around interesting time period (financial crisis)
  - Combines survey measurements of risk preferences/beliefs with administrative data from bank records
  - Additionally, experimental data

Key findings & comments

- Main findings
  - Does risk aversion vary? YES.
  - Is variation explained by standard determinants such as habits? Mostly NO.
  - Can risk aversion (in financial decisions) be induced by scary experience in the lab? YES
- Comments
  - Concepts/Terminology
  - Interpretation of survey measures of elicited risk aversion
  - Disentangling "fear" and "habit"
  - Role of subjective beliefs

Concepts & Terminology

- Framing of research question in paper
  - "Are fluctuations in risk aversion just a politically correct label for changes in market sentiment?"
  - "If we could establish that psychological factors drive risk aversion fluctuations..."
- Definition of "psychological factors" and "sentiment"? Distinction from risk aversion?
- My interpretation: Paper has useful things to say about extent to which
  - portfolio choices are explained by survey measures of risk aversion
  - standard determinants of risk aversion (fail to) explain variation in survey measures of risk aversion
  - risk averse choices can be induced in the lab by scary experience holding standard risk aversion determinants fixed
- Contribution: Contrast empirical variation in risk aversion with limited explanatory power of standard determinants

Interpretation of survey measures of elicited risk aversion

- Paper does not discuss different interpretation of the two survey measures of risk aversion with regards to wealth
- "Qualitative" survey measure: Proportional gamble, i.e., measures RRA
- "Quantitative" survey measure: Absolute $ gamble, i.e., measures ARA
- Take CRRA as benchmark hypothesis (concerning relation of RRA to wealth):
  - Qualitative: zero coefficient on wealth expected
  - Quantitative: negative coefficient on wealth expected
- Roughly consistent with data and already a hint that habit explanation will struggle to explain the data

Interpretation of survey measures of elicited risk aversion

	(1)	(2)
Risk Aversion Qualitative 2007	-1.142***	-1.153***
	(0.076)	(0.084)
Male	-0.412***	-0.390***
	(0.094)	(0.102)
Age	0.020	0.010
	(0.031)	(0.033)
Age^2	-0.000	-0.000
	(0.000)	(0.000)
Education	-0.034***	-0.037***
	(0.011)	(0.012)
Δ Log Net Wealth 2009-2007		0.209
		(0.230)

	(1)	(2)
Risk Aversion Quantitative: 2007	-0.619***	-0.624***
	(0.045)	(0.048)
Male	-0.291	-0.107
	(0.284)	(0.304)
Age	0.122	0.157*
	(0.081)	(0.083)
Age^2	-0.001	-0.001
	(0.001)	(0.001)
Education	-0.038	-0.040
	(0.031)	(0.033)
Δ Log Net Wealth 2009-2007		-1.054
		(0.697)

Testing habit vs. fear

- Portfolio choice model with time-varying RRA and iid returns

$$\alpha_t = \frac{E[R] - R_F}{\sigma^2} \frac{1}{\gamma_t}$$

- Habit model is a *special case*, where

$$\frac{1}{\gamma_t} = \left(1 - \frac{X}{W_t}\right)$$

  where (slow-moving) X is PV of future habits.
- Survey data:
  - Measures of relative risk aversion at $t = 0, 1$: γ_0, γ_1
  - Initial risky asset share at $t = 0$: α_0
  - Passive risky asset share after price changes at $t = 1$: α_1^p
  - Actively rebalanced risky asset share at $t = 1$: α_1

Testing habit vs. fear

- Active rebalancing under general time-varying risk aversion

$$\alpha_1 - \alpha_1^p = \underbrace{\alpha_0 \frac{\gamma_0}{\gamma_1}}_{Z_1} - \underbrace{\alpha_1^p}_{Z_2}$$

- Habit hypothesis

$$\alpha_1 - \alpha_1^p = \underbrace{\alpha_0 \frac{\left(1 - \frac{X}{W_1}\right)}{\left(1 - \frac{X}{W_0}\right)}}_{Z_3} - \alpha_1^p$$

- But habit model is just special case of model above, because

$$\frac{\left(1 - \frac{X}{W_1}\right)}{\left(1 - \frac{X}{W_0}\right)} = \frac{\gamma_0}{\gamma_1}$$

  and so $Z_3 = Z_1 - Z_2$. Collinearity if habit model true!

Testing habit vs. fear: Well-specified regressions

- Consequence of collinearity: Regression of $\alpha_1 - \alpha_1^p$ on Z_1, Z_2, Z_3 not suitable for assessing habit model
- Well-specified regressions
  - Regress $\frac{\gamma_0}{\gamma_1}$ on Z_3 (w/o Z_1, Z_2): How much of LHS variation is explained? (Table IX)
  - Regress $\alpha_1 - \alpha_1^p$ on Z_3 (w/o Z_1, Z_2):How much of LHS variation is explained?
- A likely important factor in unexplained residual variation: Long-lived inertia in portfolio choice (Brunnermeier and Nagel 2008)

Testing habit vs. fear: Degree of rebalancing

- Paper: "*... the habit model implies that investors should actively and unambiguously buy stocks after the fall in the price of risky assets in order to achieve the new optimal share. Interestingly, this is opposite implication of the fear model.*"
- Actually, it depends: Investors actively buy risky assets if

$$\alpha_0 \frac{\gamma_0}{\gamma_1} > \alpha_1^p$$

  - Can go either way under "fear" hypothesis depending on magnitude of rise in γ
  - Can go either way in habit model, too, if there are unobserved wealth changes
- Moreover: The average investor cannot actively rebalance (market clearing!)
  - Investors with *above average* rise in γ sell risky assets
  - Investors with *below average* rise in γ buy risky assets

Beliefs

- Variation in subjective beliefs about future asset returns could be another reason for time-variation in (objectively observed) risk premia and in individuals' portfolio allocations
- So far paper explores subjective beliefs only as a determinant of survey measures of risk aversion
- But subjective beliefs could play an independent role in addition to risk aversion
- Use changes in subjective beliefs as additional explanatory variable in portfolio rebalancing regressions?

Summary

- Useful findings to advance understanding/reveal extent of non-understanding of time-varying risk aversion
  - Failure of standard determinants to explain cross-sectional variation in risk aversion changes
  - Large effects of "fear" treatment in experiment
- Clean-up of interpretation of risk aversion measures and regression specification should help to obtain sharper results
- Possibly further additional analyses of relation between subjective beliefs and portfolio choices