Discussion of "Monetary Policy Drivers of Bond and Equity Risks" by John Campbell, Carolin Pflueger & Luis Viceira

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Summary

- Three subsamples: 60s-mid 70s, late 70s-mid 90s, late 90s-now.
- Why are bond betas low & even negative in subsamples I & III, strongly positive in subsample II?

- NK model estimated separately over three subsamples

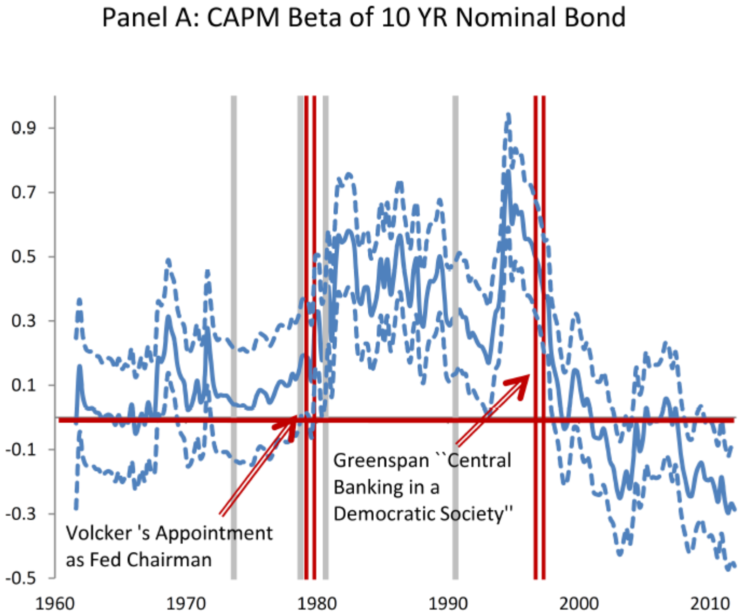
- Counterfactuals relate bond betas to monetary policy changes.

  Subsample II positive bond betas because stronger inflation response, more interest rate smoothing

Comments

1. Timing of changes in bond betas and monetary policy
2. Compare with learning about dynamics, David & Veronesi JPE 2013
3. Mechanism for countercyclical risk premia in the model
4. Trend stationarity
5. Quantitative asset pricing performance of the model

Why comovement of bonds & stocks during 80s?



Story?

Nature of shocks has changed

- late 1970s/early 1980s mostly nominal shocks:
  all "paper assets" do poorly
  (real assets like housing did well, Piazzesi & Schneider 2012)
- before & after mostly real shocks:
  growth benefits stocks, raises interest rates and thus hurts bonds

CPV show that changing nature of shocks not enough quantitatively
need changes in monetary policy

Does the timing of these changes coincide?

Monetary policy literature

Literature estimates Taylor rule cofficients over subsamples

$$i_t = c^0 + c^x x_t + c^\pi \pi_t + c^i i_{t-1} + \varepsilon_t$$

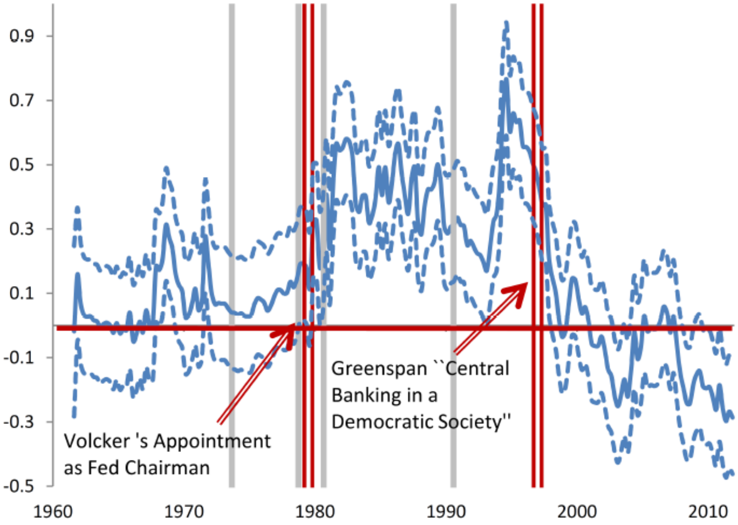
subsamples are tenures of Fed chairmen, typically finds

1951 - 1970 William Martin
1970 - 1979 Arthur Burns (+ William Miller) low inflation response
1979 - 1987 Paul Volcker high inflation response
1987 - 2006 Alan Greenspan interest rate smoothing

Bernanke tenure is dominated by QEs, not interest-rate policy.

When did bond betas switch sign?

Panel A: CAPM Beta of 10 YR Nominal Bond



Timing

- Bond betas switched sign during Greenspan tenure

Paper chooses

- subsample II: Volcker & 1st decade Greenspan (1979 – 1996)
  subsample III: 2nd decade Greenspan & Bernanke (1997 – now)
- argues 1996 Greenspan speech about asset market bubbles

- Important for subsample results in the model, but convincing?

2. Compare with learning about dynamics

- estimation over subsamples makes sense with natural subsamples
  support choice with rolling estimates of Taylor rule coefficients?

- David & Veronesi 2013 JPE
  learning about consumption & inflation dynamics
  positive bond betas during late 80s, early 90s from high *perceived uncertainty* about inflation

- Earlier well published dabate between Sargent and Sims/Primiceri
  on "bad policies" versus "bad shocks"
  use various learning mechanisms
  (regime switching, constant-gains learning ...)
  upshot: policy coefficients & volatilities are hard to distinguish

3. Mechanism for time-varying risk premia

- Campbell-Cochrane 1999 external habits

$$U\left(C_t, X_t\right) = \frac{\left(C_t - H_t\right)^{1-\alpha}}{1-\alpha}$$

- Pricing kernel

$$M_{t+1} = \beta \frac{U_c\left(C_{t+1}, H_{t+1}\right)}{U_c\left(C_t, H_t\right)} = \beta \left(\frac{S_{t+1} C_{t+1}}{S_t C_t}\right)^{-\alpha} \quad \text{where } S_t = \frac{C_t - H_t}{C_t}$$

- Discipline on habit Δs_{t+1}, Δc_{t+1} are driven by same shock ε_{t+1}

- CC use time-varying vol $\lambda\left(s_t\right)$ of habits

  Not this paper! Here: time-varying vol of fundamentals are key

Countercyclical vol in fundamentals?

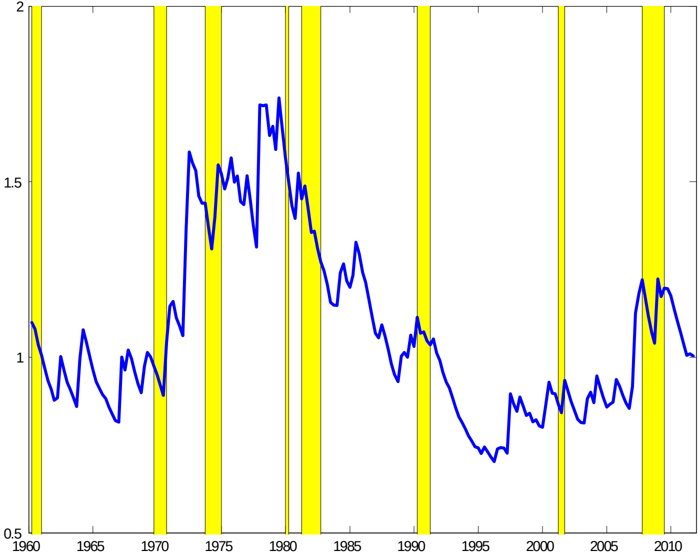
- Cond variance-covariance matrix of innovations

$$E_t \left(u_{t+1} u_{t+1}^\top \right) = \Sigma_u \times (1 - b x_t) = \text{ linear in output gap } x_t$$

- Shocks $u_t = \left(u_t^{IS}, u_t^{PC}, u_t^{MP}, u_t^* \right)$ are nominal & real
- Paper calibrates b to match conditional VAR moments for nominal, real variables & asset returns.

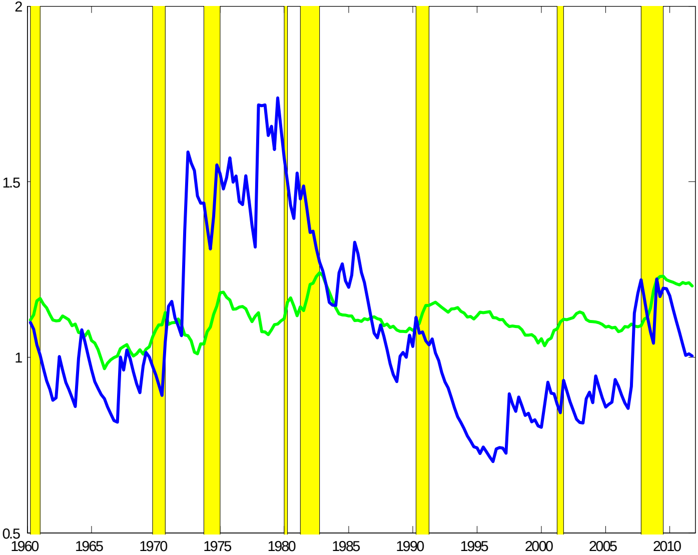
- Investigate time-varying vol in nominal & real variables separately:
  1. Garch(1,1) for innovations to inflation, consumption growth
  2. OLS regression of cond. variance from
     Garch(1,1) on constant, output gap

Time-varying vol in nominal variables



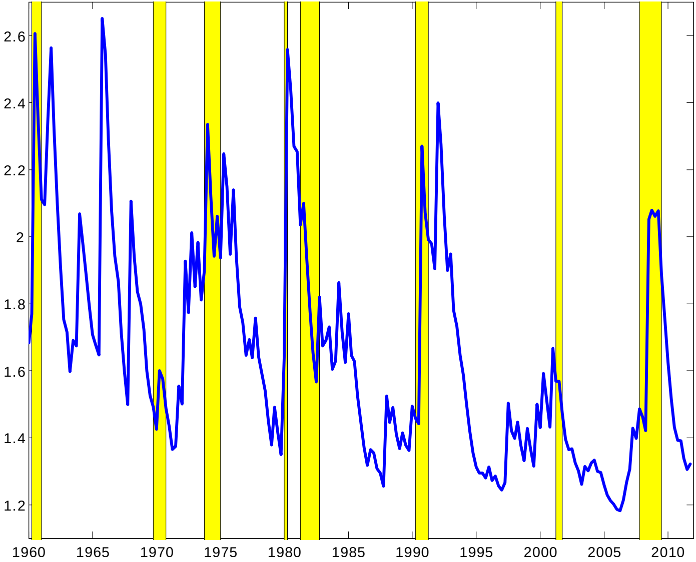
Garch(1,1) for inflation

.... is mostly low frequency



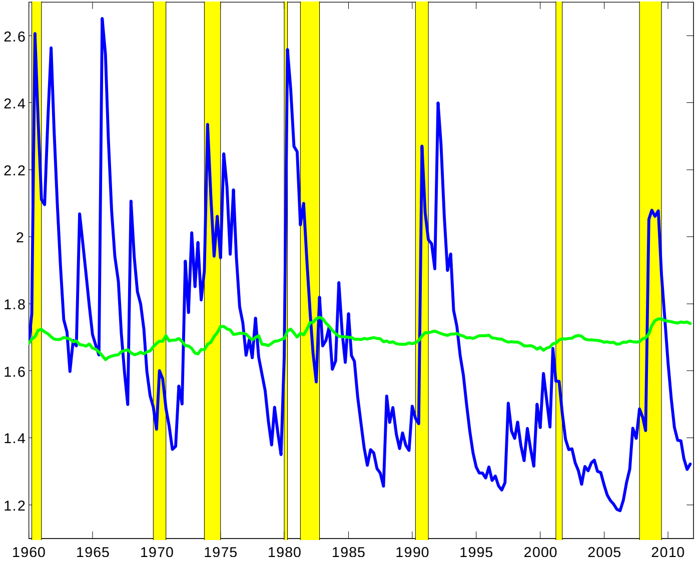
Garch(1,1) for inflation together with OLS on output gap

Time-varying vol in consumption growth is small



Garch(1,1) for consumption growth

… and cyclicality not well captured with output gap



Garch(1,1) for consumption growth together with OLS on output gap

3. Mechanism for time-varying risk premia (ctd)

- strong evidence of time-varying vol in nominal variables
  interest rates, inflation etc.
  acyclical, large vol during Great Inflation

- less evidence of time-varying vol in real variables
  especially consumption growth
  maybe cyclical, but not related to output gap

- Better calibrate b to match conditional vol of consumption growth, maybe use cyclical variable other than x

4. Trend stationarity

risk premium on two-period bond with log utility

$$
\begin{aligned}
&= cov_t\left(\Delta c_{t+1}, \text{return on bond } t \rightarrow t+1\right) = cov_t\left(\Delta c_{t+1}, \log P_{t+1}\right) \\
&= -cov_t\left(\Delta c_{t+1}, E_{t+1}\left[\Delta c_{t+2}\right]\right)
\end{aligned}
$$

- log consumption difference-stationary:
  Δc_t positively autocorrelated
  states with low growth have low growth expectations:
  bond price is high
  bonds are hedges, negative premium on average

  low Δc_t, expect low Δc_{t+1}: short rate is procyclical
  Δc_{t+j} expected to revert back: long rate is high
  slope is countercyclical
- Alvarez & Jermann 2005: large permanent component
  in marginal utility

4. Trend stationarity (ctd)

risk premium on two-period bond with log utility

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\end{aligned}
$$

- log consumption is trend-stationary, e.g. c_{t+1} = linear trend + AR(1)
  Δc_t negatively autocorrelated
  states with low growth have high growth expectations:
  bond price is low
  bonds are bad, positive premium on average

  low Δc_t, expect high Δc_{t+1}: short rate is countercyclical
  Δc_{t+j} expected to revert back down: long rate is low
  slope is procyclical
- common in many DSGE models

5. Quantitative performance

Table 3 in appendix

	Model	Data
bond premium	0.21	1.64
slope of term structure	0.08	1.05
regress excess bond returns on x_t	-0.06	-0.47
regress excess bond returns on slope	0.37	2.84
corr(output gap, slope)	0.30	-0.46
corr(output gap, nom rate)	-0.20	0.05

5. Quantitative performance (ctd.)

stocks = leveraged consumption claim, leverage factor = 2.4

	Model	Data
equity premium	4.71	5.36
regress excess stock returns on d-p	0.31	0.08
corr(output gap, d-p)	0.96	0.18
std(d-p)	0.21	0.40