Discussion of "Trend and Cycle in Bond Premia"

John Heaton

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Standard Stylized Facts:

- Yield curve slopes up on average.
- Historical patterns of bond prices imply high average returns to trading.
- Significant variation in predicted holding period returns based on forecasts from dynamic factor models.
- Standard factors are: level, slope, Cochrane-Piazzesi factor, ...

Standard Explanation for Facts:

- Risk premia
- Time varying risk premia
- But from where?
    - Consumption growth
    - Time varying risk in consumption growth
    - Covariance between factors predicting consumption growth and those predicting bond prices
    - Tough to make this work . . .

Approach in this paper

- Drop the assumption that market expectations are consistent with standard estimates of factor dynamics extracted from data.
- Without restriction this will explain anything.
- Here: use professional forecasts of interest rates to impose restriction on market expectations.
- Unfortunately these forecasts provide only limited summaries of the information and methods used by forecasters.
- Instead: come up with "reasonable" dynamics for information/states used by the market that are consistent with these forecasts.

Forecasts

- Statistical Forecasts:

  - Risk premia (expected holding period return relative to short rate): quite variable and cyclical
  - Strong factor structure: level and slope of the yield curve help forecast holding period returns.
  - Same factors forecast interest rates themselves.

- Professional forecasts:

  - Don't forecast turning points in interest rates very well.
  - Positive correlation between the excess holding period returns from VAR methods and the difference between professional forecasts of interest rates and their VAR counterparts.
  - Errors made by the forecasters are counter-cyclical: for example they miss large declines in interest rates forecasted by yield spreads.

- Set of standard factors: short yield, slope of the yield curve, (expected) consumption growth, (expected) inflation.
- Fit a linear model to capture the joint dynamics of these variables.
- Observed bond prices are linear functions of these state variables.

- Assume that professional forecasts are also based on the same state variables with Markovian dynamics.
- Fix the functional form linking state and bond prices.
- Fit the dynamics of the Markov state by minimizing the difference between professional forecasts and forecasts implied by the factor model.
- Important identifying assumption: professional forecasts are based on the same macro factors as those found to be useful in VAR models.
- Recall: included factors are chosen based on their statistical performance.

Comparing dynamics

- The dynamic model of subjective expectations tracks important characteristics of the professional forecasts
- Can now examine subjective risk-premia:
    - More persistent dynamics.
    - Smaller volatility and more trend in risk premia
- Forecasters appear to view short rate and level as more persistent than they are historically.
- This weakens the ability of these variables to forecast risk-premia
- If these forecasts represent investor expectations then the "reason" we see persistent risk-premia is that investors are confused (or haven't learned) about the dynamics of the factors and/or the loadings on these factors.

Structural Model

- Why the structural model at this point?
- Explain observed equilibrium with standard recursive preferences:
    - Shocks affect current and future consumption.
    - Different prices depending on impact.
- But now expectations are "distorted"
- Why didn't they just use the previously estimated evolution of subjective expectations?
    - Justify the subjective dynamics with learning.
    - Learning results in variation in conditional means and conditional covariances.

- Expectations at date *t* are based on information up to that point.
- Investors don't weigh the data as a statistician would. They put more weight on recent information.
- Results in more persistence in the state variables than standard statistical estimates
- Captures the variation in subjective risk premia identified previously.

Prices predicted by the model

- Impact of inflation on future consumption and covariance between bond prices and future consumption:
  - Forecasts upward sloping yield curve.
  - Risk premia more in line with the data.
- Also get interesting time variation in risk premia.
- Notice however: still need substantial risk aversion. Haven't identified a new significant macro shock.

Conclusions

- I like the approach.
- Still not entirely sure about restrictions from subjective forecasts, however.
    - Will there always be a reasonable learning story to justify the observed forecasts?
    - What objective are they really solving?
- Still doesn't answer the question: what are the fundamental factors?
- Link to monetary policy: how do markets learn about policy in a world where there are structural shifts?
    - Market prices reflect this learning.