Comments on : "Understanding uncertainty shocks and the role of black swans" by A. Orlik and L. Veldkamp

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General comments

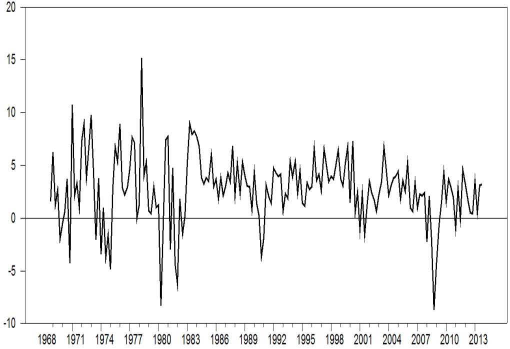
- From understanding the macro effects of uncertainty shocks (Bloom, 2009, ...) ...
- ... to understanding the causes of uncertainty shocks
- Innovative and very important question, but not easy and need to develop theoretical aspects
- Here: A theoretical and empirical approach showing that revisions in the asymmetry of forecast distributions explain to a large extent movements in uncertainty

General comments

- Paper very dense with many various contributions, presented at several occasions
- But not easy to read ...
- More pedagogy would help. For example: more careful presentation of the 3 proposed forecasting model, as well as simulations.
- 3 points in my discussion: 1/ Models, 2/ Empirical results, 3/ How this story relates to macro effects of uncertainty

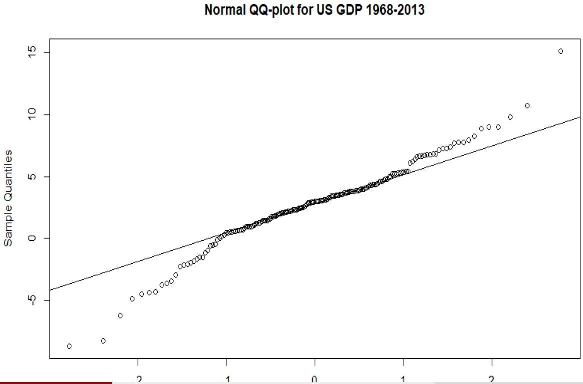
Forecasting model

- The models are explicitely designed to account for non-null skewness in the data. On p.10: *"the skewness of GDP is strong: -0.30 "*
- Real GDP over 1968q4-2013q4: $y_t = (ln(GDP_t) - ln(GDP_{t-1})) \times 400$



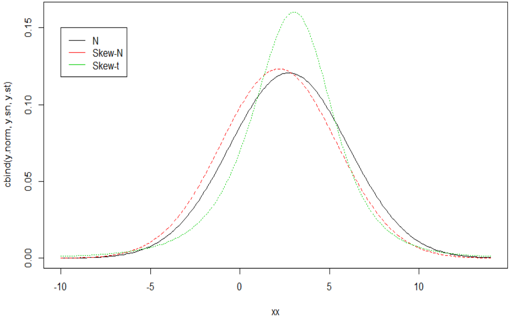
Forecasting model

- Well, $\hat{Sk} = -0.3$ but the p-value of the test for $H_0 : Sk = 0$ is 0.10. Not clear that the negative skewness is a first order issue.
- Strong Kurtosis seems a more important issue: $\hat{Ku} = 4.98$, significantly different from 3 (p-value$=$ 0.0)



Forecasting model

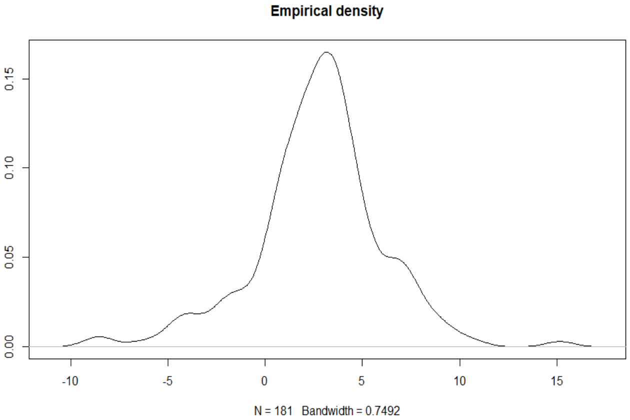
- In fact, a model supposed to be able to generate *Black Swans* should be able to generate **both** (i) negative skewness and (ii) fat tails, not only negative skewness.
- I estimate 3 various distributions on y_t by MLE: Normal, Skew-Normal and Skew-t



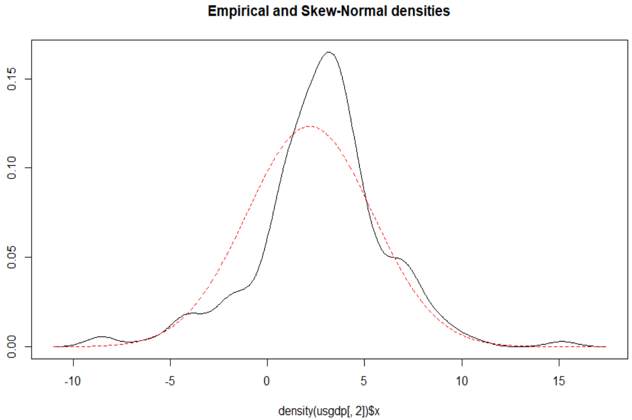
Forecasting models

- Estimation of the (unconditionnal) probability of Black Swans with the 3 various densities as defined in the paper, ie: $P(y_t < -6.53)$
  1. Normal:
  $$P_N(y_t < -6.53) = 0.0025$$
  2. Skew-Normal:
  $$P_{SN}(y_t < -6.53) = 0.0035$$
  3. Skew-Student:
  $$P_{ST}(y_t < -6.53) = 0.0130$$
- **Message:** Under-estimation of tail risk without accounting for fat tails through a Skew-t distribution. A linear forecasting model with Skew-t errors could be used as a benchmark.
- **Comment:** *revisions in the asymmetry of forecast distributions* is not exactly *revisions in the estimates of Black Swan risk*

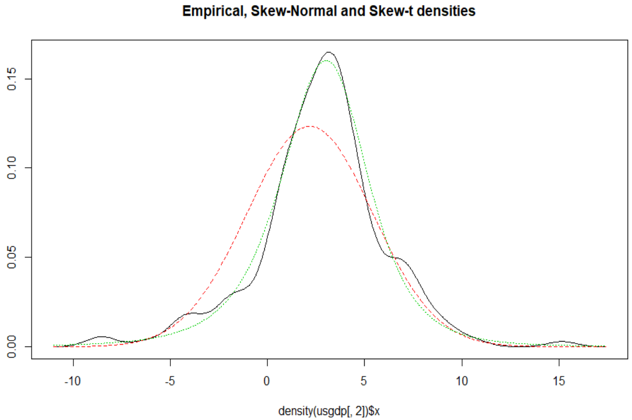
Forecasting model



Forecasting model



Forecasting model



Forecasting models

- 2 important stylized facts have been highlighted in the empirical literature: (i) Long-run decline in GDP growth and (ii) Changes in macro volatility (Antolin-Diaz, Drechsel, Petrella, ReStat 17, or Doz, Ferrara, Pionnier, mimeo 19)

Figure: *Rolling-average of US GDP over 10 years*

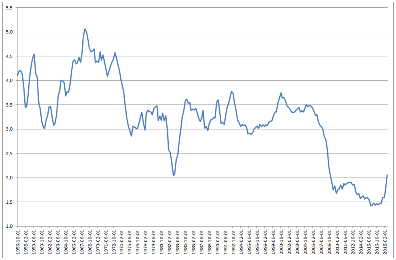
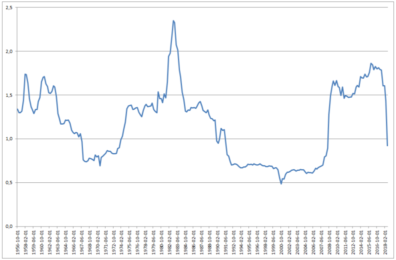
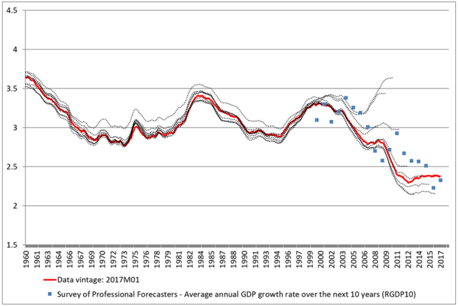


Figure: *Rolling Coefficient of variation of US GDP over 10 years*



Forecasting models

- In your framework, Model M3 allows for a Markov-Switching volatility
- But adding a TV long-run trend in US GDP would be useful in a possible Model M4, especially to account for the bias due to more optimistic forecasts in the wake of the Global Financial Crisis



Forecasting models

- About the horizon: $h = 1$ is always considered, but uncertainty is likely to increase with h
- According to Definition 2 of your uncertainty measure, it is likely that uncertainty will be greater for $h > 1$
- A suggestion: Have a look at the term structure of uncertainty against the background of your approach (linear pattern?)

Results

- Important result for your story: Interaction of parameter updating + Skewness generate more uncertainty. From Table 1: standard deviation of U_t goes from 0.48 to 1.50.
- Could be useful to compare with uncertainty generated by a Skew-t distribution
- Why auto-correlation is so strong (0.99 for M1 and 0.97 for M2), it ranges between 0.32 and 0.74 for other uncertainty measures?

Results

- The forecast puzzle (ie the gap between average GDP of 2.24% and average professional forecasts of 2.68%) disappears when focusing on GDP first estimates provided by the BEA.
- Expected result as professional forecasters (as well as policy-makers) tend to focus of first estimates.
- As you noted in footnote 10, this is another puzzle, but a measurement puzzle for BEA, not related to your problem

Results

- Unexpected results as regards the timing of the rise in uncertainty. We expect an increase in uncertainty at the beginning of recessions, or at least during, but not after.

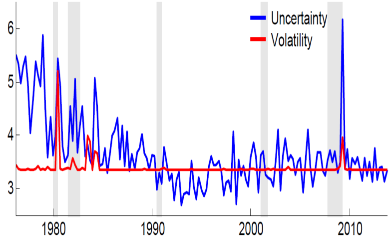


Figure 6: Uncertainty U_t and volatility V_t in the skewed model with stochastic volatility.

Macro impacts of uncertainty

- Bloom's theoretical approach (2014, JEP) on why migh fluctuations in uncertainty matter for macro:
- 2 negative channels:
  1. Real options (Bernanke, 1983), ie: the option value of waiting is high when uncertinaty is high
  2. Risk aversion and risk premia, ie: raise the cost of finance and precautionary savings
- 2 positive channels:
  1. Growth options, ie: increase the size of the potential prize (good news principle)
  2. Oi-Hartman-Abel effects, ie: firms can be flexible enough to benefit from good outcomes and to insure again bad outcomes
- Your explanation about the source of uncertainty fits well with the negative channels, but doesn't really square with the possible possible channels. Any views?

Macro impacts of uncertainty

- Open question: How big data is likely to affect your framework?
- 2 aspects of big data: high-frequency and size
- High-frequency can be considered in your framework as you show that revisions lead to uncertainty
- But the size is not accounted for as only GDP is considered
- In principle, as $n \to \infty$, uncertainty around parameter estimation decreases, thus leading to less uncertainty
- But empirically, the feeling that more information leads to an adjustment towards an increase in Black Swans probability (Trade talks, Brexit news ...) leading to more uncertainty in your framework
- Happy to hear your views on this point