Sentimental Business Cycles

Lagerborg, Pappa, Ravn

Discussion by
Luca Gambetti
(CCA, UniTo, UAB, BGSE)
The paper

QUESTION: Do sentiment/confidence shocks affect the macroeconomy?

ANSWER: YES, business cycle is sentimental.

NICE PAPER: contributing to the expectation-driven business cycles and the news shocks literature (vast, Barsky and Sims, Beaudry and Portier, Blanchard, L'Huillier and Lorenzoni, myself with coauthors, etc.).
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Main Idea

- MS is:
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  ➤ Correlated with sentiment shock,
  ➤ Uncorrelated with other shocks,

Great! Let’s use it as an external instrument in a VAR to identify the “sentiment shock.”

VAR(18) (btw, AIC says 14), US monthly data, IP, U, ICE, CPI, FFR (baseline).
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- VAR(18) (btw, AIC says 14), US monthly data, IP, U, ICE, CPI, FFR (baseline).
Main Results (my estimations)
IRF: Cholesky vs IV

![Graphs showing impulse response functions for ICE, IP, U, and CPI]
Adding October 2017
Main Conclusion
Main Conclusion

Cycles are sentimental
My discussion

Two main points:
1. First empirical: shock identification.
My discussion

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Why agents become pessimistic?

Many possible reasons.
1. World is a bad place.
2. Bad economic news about the future.
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     - Financial markets *absent...*
Why agents become pessimistic?

Many possible reasons.

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2. Bad economic news about the future.
   - Macro controlling for U and IP
   - Financial markets absent...But shown to be important for news
S&P500 and VAR Residuals

- Estimate the regression

\[ \hat{u}_{it} = \beta_0 + \beta_{i1}sp_{t-1} + \beta_{i2}sp_{t-2} + \beta_{i3}sp_{t-3} + \beta_{i4}sp_{t-4} + \eta_{it} \]

\((sp_t\text{ is log stock prices}).\)

<table>
<thead>
<tr>
<th>( t \text{- stat} )</th>
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<tbody>
<tr>
<td>( sp_{t-1} )</td>
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<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>( u_{1t} )</td>
</tr>
<tr>
<td>( u_{2t} )</td>
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<tr>
<td>( u_{3t} )</td>
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<tr>
<td>( u_{4t} )</td>
</tr>
<tr>
<td>( u_{5t} )</td>
</tr>
</tbody>
</table>
SP500 and VAR residuals

- Ans in growth rates

| $|t - stat|$ | $sp_{t-1}$ | $sp_{t-2}$ | $sp_{t-3}$ | $sp_{t-4}$ |
|----------|-----------|-----------|-----------|-----------|
| $u_{1t}$ | 3.3605    | 1.3654    | 0.6050    | 0.7391    |
| $u_{2t}$ | 0.9207    | 0.5150    | 0.9685    | 2.1359    |
| $u_{3t}$ | 0.4675    | 1.4069    | 2.2517    | 0.8745    |
| $u_{4t}$ | 4.1781    | 0.3700    | 0.3771    | 0.5684    |
| $u_{5t}$ | 0.0807    | 1.3563    | 0.1759    | 0.3039    |

- So, add the S&P500!
VAR+S&P500
Cholesky VAR+S&P500
What is going on? A possible explanation
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- S&P500 predicts the residuals.
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  ⇒ VAR is noninvertible.
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- S&P500 predicts the residuals.
  ⇒ VAR is noninvertible.
    ⇒ Residuals contain the past of the shock. R1

\[
\begin{align*}
ms_t &= \beta_0 + \beta_1 ms_{t-1} + \beta_2 ms_{t-2} + \beta_3 ms_{t-3} + \beta_4 ms_{t-4} + \eta_t \\
(t - \text{stat}) &
\end{align*}
\]

- Mass shooting predicts future mass shooting. R2
- R1+R2 ⇒ with S&P500 the model becomes invertible, past shocks disappear and the results change.

Take a look at Miranda-Agippino and Ricco (2018) (very interesting)!
What is going on? A possible explanation

- **S&P500 predicts the residuals.**
  - $\Rightarrow$ VAR is noninvertible.
  - $\Rightarrow$ Residuals contain the past of the shock. **R1**

- **Estimate the regression**

  $mst = \beta_0 + \beta_1 mst_{-1} + \beta_2 mst_{-2} + \beta_3 mst_{-3} + \beta_4 mst_{-4} + \eta_{it}$

  ($mst$ is mass shooting).

<table>
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<td>$mst_{-1}$</td>
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<td>4.6890</td>
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- **Mass shooting predicts future mass shooting.** **R2**

- **R1+R2 $\Rightarrow$** with S&P500 the model becomes invertible, past shocks disappear and the results change.

- **Take a look at Miranda-Agippino and Ricco (2018) (very interesting!).**
And then I have found the following...

- Using a different sample: 1960-1996.

|          | $|t - stat|$ |
|----------|----------|
| $sp_{t-1}$ |  1.9108  | -0.3538 | -1.7397 |  1.4666 |
| $u_{1t}$   | -0.4088  |  0.5264 | -0.6900 |  0.6748 |
| $u_{2t}$   | -1.5888  |  1.6382 | -0.3492 | -0.4737 |
| $u_{3t}$   |  1.1943  | -0.7249 | -0.6707 |  1.0572 |
| $u_{4t}$   |  0.2698  |  1.2207 | -1.2814 | -0.1778 |
| $u_{5t}$   |          |          |          |          |

Nothing is significant, S&P500 does not predict...
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Summing up

- Omitting stock prices seems to create distortions in the IRF.
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The distortions are mainly attributable to the latest part of the sample.
Minimization of the distance between empirical IRF and model IRF.
Model #1

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- Model IRF are obtained from estimating the empirical VAR with model-generated data.
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(Sorry for bothering) Again, a VAR representation in terms of structural shocks does not exist in the model.
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- *(Sorry for bothering)* Again, a VAR representation in terms of structural shocks does not exist in the model.

- The reason is that under limited information not even the agents observe the shocks.
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The reason is that under limited information not even the agents observe the shocks.

So, the comparison is hard to interpret.
Model #2

- You use the noise as external instrument in the model.
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- Noise is about technology, while the empirical instrument has nothing to do.
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- You use the noise as external instrument in the model.

- Noise is about technology, while the empirical instrument has nothing to do.

- How can you reconcile this?