Discussion of

The Transmission of International Shocks:
A Factor Augmented VAR Approach

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What does the paper do?

• Goals
  – Characterize transmission of identified (domestic and international) economic shocks on UK economy
  – Assess whether “puzzles” can be explained by limited information
    • Studies from mid-1990s: Small-scale VARs
    • Problem: nom. exchange rate and forward discount puzzles

• Proposal
  – Consider larger data set
  – Tool: FAVAR (Bernanke, Boivin, Eliasz (2005))

• Results:
  1. “Reasonable" responses of many macroeconomic variables to economic shocks
  2. International supply shock ➔ Responses of disaggregated prices negatively skewed
  3. UK mon. policy shock ➔ no evidence of exchange rate and liquidity "puzzles"
My Comments

- Paper’s goals
- Approach adopted: FAVAR
- Result 2
- Result 3
- Conclusion
Paper’s goals

• Goal 1: Characterize transmission of identified (domestic and international) economic shocks on UK economy
  – Useful for positive analysis
  – Relevant to determine desirable policy responses

• Goal 2: Assess whether “puzzles” can be explained by limited information
  – “Puzzles”: implications from small VARs differ from basic models
  – Need to know if VARs are well specified
Approach: Why a FAVAR?

• A priori a great idea!... I fully support

• “Puzzles” based on small VARs

• But evidence that large data sets include relevant information

• So small VAR may lack relevant information.... Hence misspecified (Sims (1992))
Approach: Why a FAVAR? (cont.)

- **Solution (Bernanke, Boivin, Eliasz (2005)): FAVAR**
  - Idea: estimate common factors (F) from large data set (X)
    \[ X_t = \Lambda^F F_t + \Lambda^R R_t + \nu_t \]
  - F's have pervasive effects potentially on all indicators
  - Augment standard VAR with extra information (F)
    \[
    \begin{bmatrix}
    F_t \\
    R_t
    \end{bmatrix}
    = B(L) \begin{bmatrix}
    F_{t-1} \\
    R_{t-1}
    \end{bmatrix} + u_t
    \]
  - Not necessary to define measures for diffuse concepts (e.g. "real-activity" or potential output)

- **Application (BBE):** additional information reduces importantly price puzzle
  - Price-puzzle in VAR may be due to misspecification (Sims, 1992)
Result 2: International shock

Prices responses skewed; Aggregate price response different from average of individual prices

Figure 6 in paper
Result 2: Implications

- Mumtaz-Surico:
  - Increased skewness \(\rightarrow\) international shock transmits as shock to relative prices
  - Shock to relative prices can be inflationary!
  - Aggregation bias (as in Imbs et al. (2005), Altissimo et all (2007))
Result 2: How robust is it?

- Result very different from Boivin-Giannoni-Mihov (2006) (US data)

Result 2: What’s wrong?

Simple example: n sectors (n→∞)

Price in sector i: \( p_{it} = \lambda_i f_t + v_{it} \)

International factor: \( f_t = \rho f_{t-1} + u_t \)

Aggregate price index:

\[
p_t \equiv \frac{1}{n} \sum_{i=1}^{n} p_{it} = \left( \frac{1}{n} \sum_{i=1}^{n} \lambda_i \right) f_t + \left( \frac{1}{n} \sum_{i=1}^{n} v_{it} \right) \rightarrow f_t
\]

Normalize: \( \left( \frac{1}{n} \sum_{i=1}^{n} \lambda_i \right) = 1, \sigma_f = 1. \)
Result 2: What’s wrong? (cont.)

Impulse responses to international shock $u_0$

\[ \hat{p}_{0,h} \simeq \hat{f}_{0,h} = \rho^h u_0 \]
\[ \hat{p}_{i0,h} \simeq \lambda_i \hat{f}_{0,h} = \lambda_i \rho^h u_0 \]

so average IRF of disaggregated prices

\[ \frac{1}{n} \sum_{i=1}^{n} \hat{p}_{i0,h} = \hat{p}_{0,h} \]

→ Blue and black lines in Fig. 6 should lie on top

Also can show: \( skew(\hat{p}_{i0,h}) = skew(\lambda_i) \)

So, e.g. if $\lambda_i$ is normally distributed, \( skew(\hat{p}_{i0,h}) = 0 \)
Result 2: What’s wrong? (cont.)

For estimation of factor $f$, data series are standardized:

\[
\tilde{p}_{it} \equiv \frac{p_{it}}{\sigma_i} = \left( \frac{\lambda_i}{\sigma_i} \right) f_t + \frac{\nu_{it}}{\sigma_i}, \quad \text{where} \quad \sigma_i = \text{std} (p_{it})
\]

Problem: Figure 6 reports IRFs of standardized series:

\[
\tilde{p}_{i0,h} = \left( \frac{\lambda_i}{\sigma_i} \right) \rho^h u_0
\]

so average IRF of standardized disaggregated prices

\[
\left| \frac{1}{n} \sum_{i=1}^{n} \tilde{p}_{i0,h} \right| < \left| \tilde{p}_{0,h} \right|
\]

and can show $\text{skew} \left( \tilde{p}_{i0,h} \right)$ is typically nonzero.
Result 2: Conclusions

• Mumtaz-Surico claim:
  – Increased skewness \(\Rightarrow\) international shock transmits as shock to relative prices
  – Shock to relative prices can be inflationary!
  – Aggregation bias (as in Imbs et al. (2005), Altissimo et al (2007))

• No:
  – Aggregate responses diverge from average responses because report standardized responses
  – No aggregation bias
  – No evidence that shock to relative prices can be inflationary
  – Part of skewness due to use of standardized responses
Result 3: Monetary Shock

⇒ No exchange rate puzzle (?)

  – Data: 1974-1990, small VARs
  – US monetary easing ⇒ persistent depreciation of USD

• Contrasts with Dornbusch model
  – Predicts large depreciation on impact, then appreciation
  ⇒ NEER “puzzle”
Result 3: Monetary Shock

No exchange rate puzzle (?)

- Mumtaz-Surico:
  - UK monetary easing \(\rightarrow\) fairly rapid response of exchange rate, some delayed overshooting

- Claim: No more NEER puzzle….. But what is the metric?

- Claim: resolution of puzzle due to information in large data set
  - Possible, but no proof?
  - Should compare to results with small VARs on same data
  - Is it a puzzle anyway? (see Laubach’s discussion)

- Other differences with Eichenbaum-Evans, Grilli-Roubini
  - Country: UK vs US
  - Sample: double (31 years instead of 16)
Result 3: Monetary Shock

→ No exchange rate puzzle (?)

• Mumtaz-Surico’s results carry-over to US:

Source: Boivin-Giannoni (2007, Figure 1)
Other Issues: Stability over sample?

- BG (2007): Important changes in effects of foreign factors on US series since 1980
- Important changes in IRFs to mon. shocks in US since 1979

Source: Boivin-Giannoni (2006, ReStat)

- What about UK?
Other Issues: Stability over sample?

- Series considered display important trends
- But FAVAR assumes stationarity: problem?

Mumtaz-Surico: Figure 1
Conclusion

- Interesting paper
- FAVAR: appropriate and useful framework for this study
- Authors’ conclusions:
  - #1: “Reasonable” effects of shocks on UK variables:
    - I agree
  - #2: Skewness in disaggregate price responses:
    - Results distorted by use of standardized responses
  - #3: Does data-rich environment solve NEER puzzle?
    - Possible, but authors haven’t shown it (yet)
    - Need to show contribution of additional data considered (relative to VAR)