Discussion of "An inflation predicting measure of the output gap in the euro area" presented by Michele Lenza (ECB)

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These are my views and not necessarily the views of Norges Bank

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The paper in a nutshell

- Estimation of euro area output gap with a small Bayesian dynamic factor model

- Several specifications ranked on the basis of their ability to forecast core inflation

- The best model implies an historically large negative output gap in recent years (-6%)
  
  - there is scope for demand stimulus
  - small adjustments of trend growth in the euro area

- Good performance in real time, no need for stochastic volatility, similar shape but lower level than other measures
Features of the approach

- Use of non-filtered data and careful modeling of low frequency behavior: parsimonious random walk for trends
  - Alternatives: IRW, LLT or iid (for stationary variables)
- Multiple real activity indicators (real GDP, investment, imports, exports, unemployment, consumer confidence, capacity utilization)
- Trend inflation related to long-term inflation expectations
Main result

![Graph](image)

**Figure 1** - Point estimates (posterior medians) of the output gap from Models 1 to 8

- **Legend:**
  - Model 1
  - Model 2
  - Model 3
  - Model 4
  - Model 5
  - Model 6
  - Model 7
  - Model 8
General comment

- Very interesting paper, easy to read and polished (in fact, already accepted for publication)

- What I will do:
  1. Provide two small comments to the manuscript
  2. Put the paper in perspective (in particular with respect to theory)
Comment 1: when does an output gap look good?

1. Useful to forecast inflation
2. Good real time properties (Orphanides and van Norden, 2002)

- Similar in logic in the evaluation of central banks’ measures of the output gap
  - Edge and Rudd (2016) for the Greenbook forecasts
  - Champagne, Poulin-Bellisle and Sekkel (2017) for the Bank of Canada’s staff output gap estimates
    - Emphasis on combination of different measures
Comment 1: When does an output gap look good?

- Perhaps a third criteria should be added

1. Useful to forecast inflation
2. Good real time properties (Orphanides and van Norden, 2002)
3. **Potential output should respond more to permanent shocks than to temporary shocks** (Coibion, Gorodnichenko and Ulate, 2018)
   - Current methods to estimate potential output do not distinguish between different sources of shocks
Comment 2: multiple indicators

- Real GDP, investment, imports, exports, unemployment, consumer confidence, capacity utilization
- Participation rate, immigration, marginally attached
- Financial factors (Borio, Disyatat and Juselius, 2013)
  - Perhaps investment is enough
Reconsider the desirability of the output gap as a measure of inflationary pressures

In particular in presence of

1. Cost push shocks (and more generally, supply shocks)
2. Financial shocks
Cost push shocks

In small scale New Keynesian models the output gap is

1. a measure of the economy's cyclical position
2. an indicator of inflationary pressure
3. a measure of welfare (imbalances)

\[
\pi_t = \beta E_t \pi_{t+1} + \lambda mc_t
\]

\[
mc_t = (\sigma + \varphi) x_t
\]

\[
\pi_t = \beta E_t \pi_{t+1} + \lambda (\sigma + \varphi) x_t
\]
Cost push shocks

- This correlation is weakened in the presence of
  - **Cost-push shocks**
    \[ \pi_t = \beta E_t \pi_{t+1} + \lambda (\sigma + \varphi) x_t + \omega_t \]
  - Price and wage mark up shocks
  - Capital accumulation

- Empirical measures of the output gap control for cost push factors
  - Including measures of commodity prices, oil prices and exchange rates

- Is this sufficient? It largely depends on the importance and the nature of cost-push factors
Cost push shocks: are they important?

- Dominant drivers of inflation in Smets and Wouters (2007)
- New Keynesian models are not useful for policy analysis (Chari, Kehoe and McGrattan, 2009)
Cost push shocks: are they important?

- Irrelevant in models with labor market frictions
  - Gertler, Sala and Trigari (2009)
- Irrelevant in models with financial frictions
  - Footnote in Christiano, Motto and Rostagno (2014) and Furlanetto, Gelain and Taheri-Sanjani (2018)
Cost push shocks: are they important?

- However...they are non-negligible in SVAR models: Foroni, Furlanetto and Lepetit (2018) and Drautzburg, Fernandez Villaverde and Guerron Quintana (2018)

- Dominant drivers of the labor share decline in US and explain 30% of inflation fluctuations (Bergholt, Furlanetto and Maffei Faccioli, 2018)
Financial shocks

- Stock market and credit booms are non-inflationary (Christiano, Ilut, Motto and Rostagno, 2010; Furlanetto, Ravazzolo and Sarferaz, 2018)...

  - ...or even deflationary (Abbate, Eickmeier and Prieto, 2018)

- Borio, Disyatat and Juselius (2013): standard measures of the output gap do not properly take into account financial factors
Concluding caveats

1. Not obvious how to account for cost push factors

   - In theory, they do not affect potential output
   - In practice, they may be seen as an example of structural factors

2. Large debate on a decrease in competition in the US (Barkai, 2018; Gutierrez and Philippon, 2017). No such an evidence for Europe

3. Financial factors may amplify the main result of the paper

4. Blanchard (2018): "To me the best tool remains the inflation signal at least as far as the labor market, and unemployment goes. Inflation is the canary in the mine and a very reliable canary. If the labor market is too tight, workers will ask for higher wages...firms will start increasing prices"