Discussion of "Could a Higher Inflation Target Enhance Macroeconomic Stability" by Dorich et al.

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Summary

- The GFC sparked a new debate on what should be the **optimal inflation target** (Williams, 2009, 2016; Blanchard, Dell”Ariccia, and Mauro, 2010).
- NK view: Inflation distorts pricing decisions when prices are not fully flexible (Woodford, 2003). Inflation should be zero … but in practice, because of measurement issues in the CPI, main central banks settled for **2 percent**.
- But the crisis showed that central banks can run out of ammunition and hit the zero (or effective) lower bound in short-term nominal interest rates.
- In addition, neutral nominal rates have fallen because **equilibrium real rates** have been on a declining trend (Summers, 2017). In the next crisis central banks will have less room to cut rates.
- Should inflation targets be increased, and by how much?

Summary

- This paper addresses the question using the Bank of Canada's large-scale DSGE model (ToTEM II).
- Main contribution is **quantitative**.
- The authors evaluate increasing the inflation target to **3 or 4 percent**. Main benefit: avoid hitting the ELB and give the central bank more room to ease conventional monetary policy in downturns.
- **Main results**. Increasing the inflation target is more beneficial when:

i. The real neutral interest rate is lower (and negative), and

ii. Unconventional Monetary Policies are not available or are not effective.

- **Metric**: reduce the frequency of ELB episodes, as well as their duration and cost in terms of output gap and inflation level and volatility.

Discussion

1. Model.

2. Calibration.

3. Benefits and Costs?

Model: ToTEM II

- Large scale DSGE model that is discussed in a companion paper.
- Very complete and carefully constructed model, with lots of nominal and real rigidities, and shocks ("bells and whistles") to fit Canadian data.
- Includes a commodity sector that is used both for exports and as an intermediate input.
- Estimated with Bayesian methods between 1980Q1 and 2012Q2 (Dorich et al., 2013).

Model: ToTEM II

- Model includes financial frictions for QE to have non-neutral effects. The modelling mechanism follows Chen, Curdia and Ferrero (2012) with two types of households:
  1. "Unrestricted" households that can save in short and long-term bonds, but pay a cost to invest in the latter.
  2. "Restricted" households that can only save in long-term bonds ("preferred habitat investors").

  As a result the long-term rate is not the discounted expected path of short-term rates and QE can play a role.

- But is this the way we think about restricted households? Due to lack of information or expertise they might save in short-term deposits and hold money, rather than ***only*** save in long-term instruments.

- QE gets transmitted through household credit, non-durable consumption and residential investment.

- Spreads are mostly exogenous in the model, they do not depend on financial variables (debt levels or ratios), and move with shocks.

Model: ToTEM II

"The assumption of exogenous risk spreads is an important limitation of the interest rate structure in ToTEM II. We would expect risk spreads to be related to endogenous variables such as leverage ratios. Modelling such relationships would allow macroeconomic shocks and policies to affect risk spreads, and would therefore have implications for the policy prescriptions that emerge from the model. Other authors have modelled risk spreads as endogenous, but only in environments without an independent role for long-term rates."

(Dorich et al., 2013)

Model: ToTEM II

- Instead (or in addition) to modelling the effects of QE through credit demand restrictions, the authors could also introduce credit supply restrictions through the banking sector which are more likely to be binding in a recession:
  - Gertler and Karadi (2011, 2013). Spreads in lending-deposit rates are a function of bank leverage.
  - Quint and Rabanal (2017). Extend GK with long-term debt and maturity transformation by banks.
- QE also gets transmitted through corporate borrowing and investment, employment, and GDP.

- Financial shocks can help explain the behavior of the economy around recessions (Del Negro et al. 2016), including impaired balance sheets and a “credit crunch”.

Calibration

- The text could clarify what are the shocks that bring about a large recession and make monetary policy end up hitting the effective lower bound.

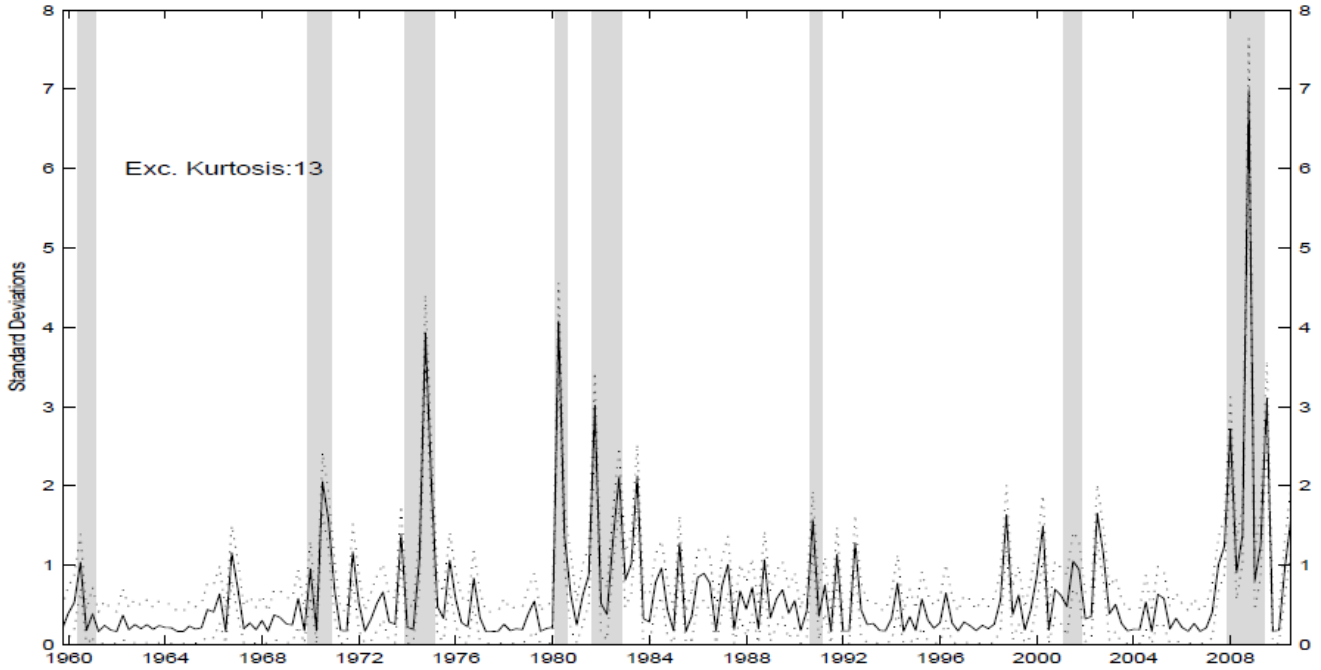
- Financial shocks?

- Commodity price shocks?

- But these shocks are likely to be non-Normal. Which is useful to generate infrequent but large recessions.

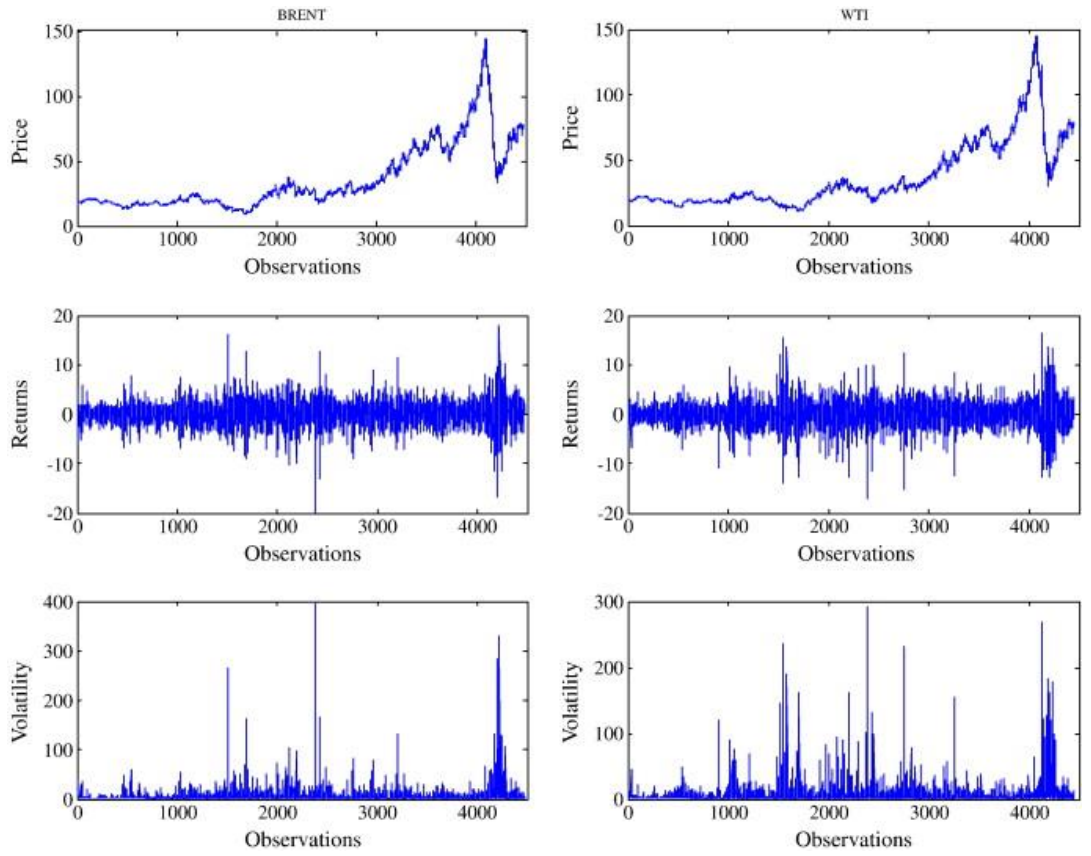
Calibration—Spread Shocks

- Absolute value of spread shocks (in st. dev. units) in the FRBNY DSGE model



Source: Cúrdia, Del Negro, Greenwald

Calibration—Oil Price Shocks



Source: Wei, Wuang, and Huang, 2010, Energy Economics

Results

Table 2: Macroeconomic Outcomes under Different Inflation Targets (1.5% Neutral Rate)

		Average				Standard Deviation			
		Inflation Gap (%)		Output Gap (%)		Inflation Gap (%)		Output Gap (%)	
UMP	Inflation Target (%)	All	LNS	All	LNS	All	LNS	All	LNS
Without UMP	2.0	-0.04	-0.94	0.01	-1.87	0.72	0.64	1.69	1.52
	3.0	-0.02	-0.82	0.01	-1.64	0.70	0.60	1.65	1.43
	4.0	-0.01	-0.78	0.01	-1.54	0.69	0.58	1.64	1.39
With UMP	2.0	0.00	-0.69	0.01	-1.48	0.68	0.61	1.63	1.44
	3.0	0.00	-0.69	0.01	-1.42	0.68	0.57	1.63	1.42
	4.0	0.00	-0.71	0.01	-1.44	0.68	0.56	1.63	1.41

Results

Table 3: Macroeconomic Outcomes under Different Inflation Targets (-1.5% Neutral Rate)

UMP	Inflation Target (%)	Average				Standard Deviation			
		Inflation Gap (%)		Output Gap (%)		Inflation Gap (%)		Output Gap (%)	
		All	LNS	All	LNS	All	LNS	All	LNS
Without UMP	2.0	-0.68	-2.82	-0.03	-4.53	1.15	1.02	2.48	2.07
	3.0	-0.26	-1.76	0.00	-3.23	0.88	0.85	2.00	1.88
	4.0	-0.11	-1.21	0.01	-2.36	0.76	0.72	1.78	1.67
With UMP	2.0	-0.48	-2.34	-0.02	-3.94	1.02	0.99	2.24	2.03
	3.0	-0.14	-1.30	0.00	-2.56	0.79	0.82	1.82	1.77
	4.0	-0.03	-0.83	0.01	-1.78	0.71	0.69	1.67	1.54

Results

- What is the benchmark? When the inflation target is large enough such that the ELB never binds, what is the volatility of the output gap and inflation? Or put it differently, what happens when there is no ELB?

- The text should clarify if changes in $\bar{r}$ change other parameters of the model, as it is not a free parameter.

- In a simple model with growth (g) and log-utility in consumption: $\bar{r}$ =(1+g)/β. Changes in $\bar{r}$ also change the potential output growth rate – Is this taken into account when computing the output gap?

Results

- This also affects the conduct of monetary policy:

$$R_t = \max\left[ELB,\ \Theta_R R_{t-1} + (1-\Theta_R)\left(\bar{r} + \bar{\pi} + \Theta_\pi\left(\frac{\sum_{j=1}^{4}\pi_{t+j}}{4} - \bar{\pi}\right) + \Theta_x x_t\right)\right], \qquad (4)$$

- Why is $\bar{r}$ constant? It moves in the short run with productivity, domestic and foreign demand shocks, and foreign interest rates. In fact, since $\bar{r}$ declines in recessions, we would expect that periods at the ELB would be more costly.
- Why is the inflation target constant? It could also be a time-varying function of the economy, and it could be raised in bad times (nominal GDP targeting).

Balancing Benefits and Costs

- In the paper, a higher inflation target buys central banks more insurance against the ELB, but what are the costs? These can be substantial.
- Feldstein (1997): benefits from going from 2 percent to 0 percent inflation in the United States would be about 1% of GDP.
- Coibion et al. (2012):
  - Even taking into account the ZLB, the optimal inflation rate is low (1.3 percent) in the US.
  - Further, an inflation target of 4% would reduce consumption by 2%.
  - Finally, increases in the level of the target increase inflation volatility, which affect long-term rates.
- The authors should further investigate these costs in the context of their model.