A Review of Canadian Monetary Policy Frameworks – Model Insights and Beyond

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Flexible inflation targeting has served Canada well
2021 Monetary Policy Framework Review

1. Key challenges
2. How we conducted our assessment
3. What we found
4. Where we landed
Challenge 1: Higher risk of binding ELB

![Graph showing relative frequency of binding effective lower bound and average duration of effective lower bound episodes from 2021 and 2016 real neutral rates before global financial crisis.]

Note: In both panels, the 2021 real neutral rate is 0.25 percent, the 2016 real neutral rate is 1.25 percent and the real neutral rate before the global financial crisis is 3 percent. Rates are calculated using the Bank of Canada’s Terms-of-Trade Economic Model (ToTEM) III. Source: Bank of Canada
Challenge 2: Increased labour market uncertainties

- Labour market affected by shifting demographics, technological change, globalization, new ways of working

- Increased uncertainty about level of maximum sustainable employment

- Uncertainty about relationship between inflation and slack

A flatter Philips curve means inflation is less informative about the output gap

Horse race between six monetary policy frameworks

- Flexible inflation targeting (FIT)
- Average inflation targeting (AIT)
- Price-level targeting (PLT)
- Employment-inflation dual mandate (DM)
- Nominal GDP-level targeting (NGDP level)
- Nominal GDP-growth targeting (NGDP growth)

2. How we conducted our assessment

Evaluation criteria:
- Macro stability
- Financial stability
- Distributional
- Robustness
- Understandability
Alternatives embed more history dependence or put more emphasis on stability of a real variable than FIT.

2. How we conducted our assessment
Methods used to conduct horse race

- **Model simulations**
  - ToTEM – Estimated large-scale DSGE model of the Canadian economy
  - Other complementary models (e.g., with bounded rationality, heterogeneous agent, etc.)

- **Laboratory experiments**
  - Evaluate people’s understanding of alternative frameworks

- **Public consultations**
  - Focus groups
  - Online surveys
FIT, AIT and DM yield greater real stability

Source: Bank of Canada.
AIT delivers robust performance at the ELB

3. What we found

Source: Bank of Canada.
Contrasting model insights with lab evidence

- Superior performance of history-dependent frameworks depends on assumptions about expectations formation
  - Limitation: our models are primarily built on rational expectations

- How do alternative frameworks perform in a lab experiment with real people? Do people understand them? Are people forward-looking?
  - Majority of participants have some form of backward-looking expectations
  - Degree of trend extrapolation increases during ELB episodes in level targeting regimes (PLT, NGDPL)
FIT and DM outperform under more realistic expectations

Performance of monetary policy regimes after a large demand shock

Source: Kostyshyna, Petersen, Yang (2021).
FIT outperforms when people pay greater attention to near future
During ELB episodes, FIT coupled with forward guidance delivers comparable outcome as AIT

3. What we found

Chart 1: Mean during ELB episodes

- Total CPI inflation (Y/Y)
  - FIT: 0.79%
  - Average inflation targeting: 0.88%
  - FIT with forward guidance: 1.14%

- Output gap
  - FIT: -1.93
  - Average inflation targeting: -1.54
  - FIT with forward guidance: -1.48

Chart 2: Standard deviation during ELB episodes

- Total CPI inflation (Y/Y)
  - FIT: 0.73%
  - Average inflation targeting: 0.71%
  - FIT with forward guidance: 0.67%

- Output gap
  - FIT: 1.42
  - Average inflation targeting: 1.43
  - FIT with forward guidance: 1.44
FIT is easier to understand than alternatives

Source: Bank of Canada 2021 Consultations with Canadians
Key lessons from the framework review

- Flexible inflation targeting, AIT and dual mandate have broadly similar overall performance and are superior to the other alternatives.

- Benefits of AIT accrue when economy at ELB. FIT + forward guidance performs equally well at the ELB.

- Dual mandate improves employment stability only modestly despite prioritizing it.

- Public consultations: Canadians value low and stable inflation and find FIT easier to understand.
Where we landed

1. Cornerstone of framework remains the 2 percent inflation target inside a control range of 1 to 3 percent.

2. Continue to use the flexibility of the framework to actively seek maximum sustainable employment

- Bank will consider a broad range of labour market indicators and will report to Canadians on how labour market outcomes are factored into its decisions
- Use broad set of tools to address challenges with low neutral rates
- Exploit flexibility only to extent it is consistent with well-anchored expectations
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AIT is an intermediate case between FIT and PLT.

Inflation Targeting (FIT) - Inflation

Average Inflation Targeting (AIT) - Disinflationary Shock

Price Level Targeting (PLT) - Price Level
## Frameworks in the horse race

<table>
<thead>
<tr>
<th>Framework</th>
<th>Relevant Nominal Variable</th>
<th>Relevant Real Variable</th>
<th>Degree of History Dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT</td>
<td>12-month CPI inflation rate</td>
<td>Output Gap</td>
<td>Low</td>
</tr>
<tr>
<td>AIT</td>
<td>36-month (3-year average) CPI inflation rate</td>
<td>Output Gap</td>
<td>Moderate</td>
</tr>
<tr>
<td>PLT</td>
<td>Level of CPI</td>
<td>Output Gap</td>
<td>High</td>
</tr>
<tr>
<td>Employment-Inflation Dual Mandate</td>
<td>12-month CPI inflation rate</td>
<td>Unemployment rate</td>
<td>Low (similar to FIT)</td>
</tr>
<tr>
<td>NGDP-Level Targeting</td>
<td>Level of GDP deflator</td>
<td>Level of real GDP</td>
<td>High (similar to PLT)</td>
</tr>
<tr>
<td>NGDP-Growth Targeting</td>
<td>Y/Y GDP deflator inflation rate</td>
<td>Y/Y real GDP growth</td>
<td>Very low (because real variable is in growth terms)</td>
</tr>
</tbody>
</table>