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

BANK OF CANADA
BANQUE DU CANADA

**SUERF Online Workshop:**
"Macroeconomic models for monetary policy: State of play and way forward"

**February 3, 2022**


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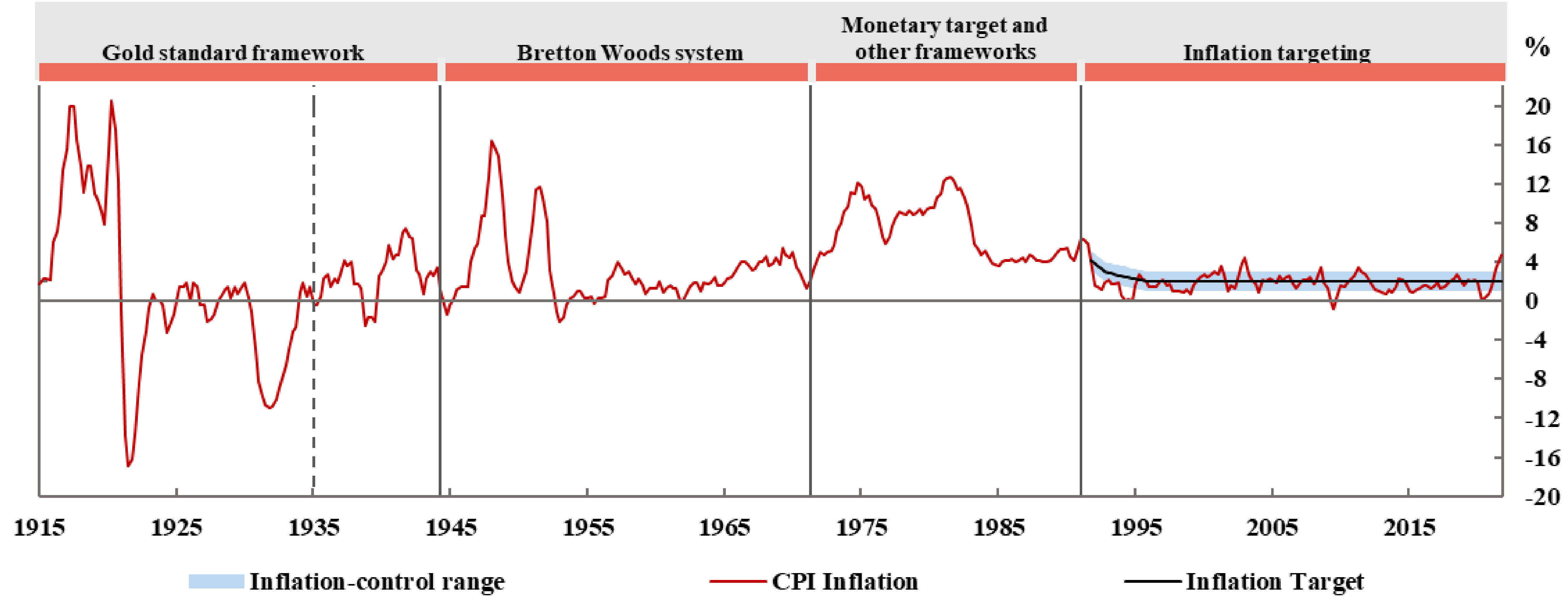
The views expressed in this presentation are solely those of the authors and may differ from official Bank of Canada views. No responsibility for them should be attributed to the Bank.

# Flexible inflation targeting has served Canada well



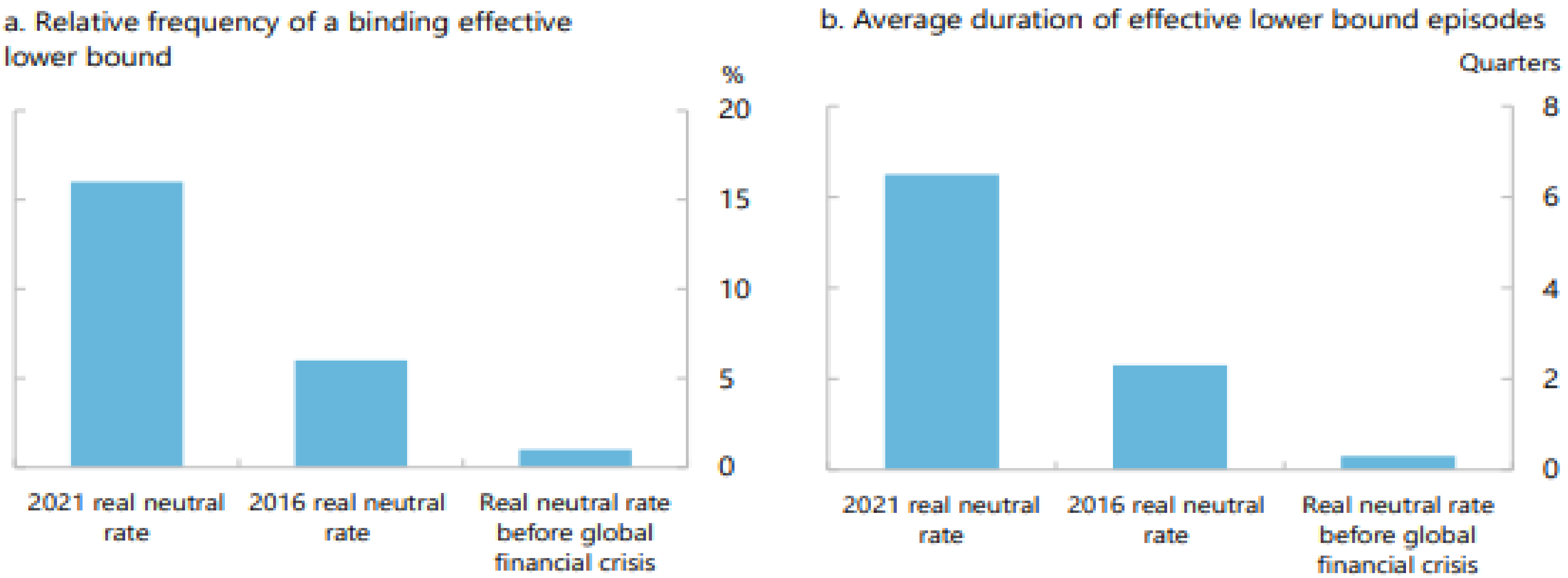

Source: Statistics Canada and Bank of Canada (Year-over-year percentage change, quarterly data)

Last Observation: 2021Q4

# 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



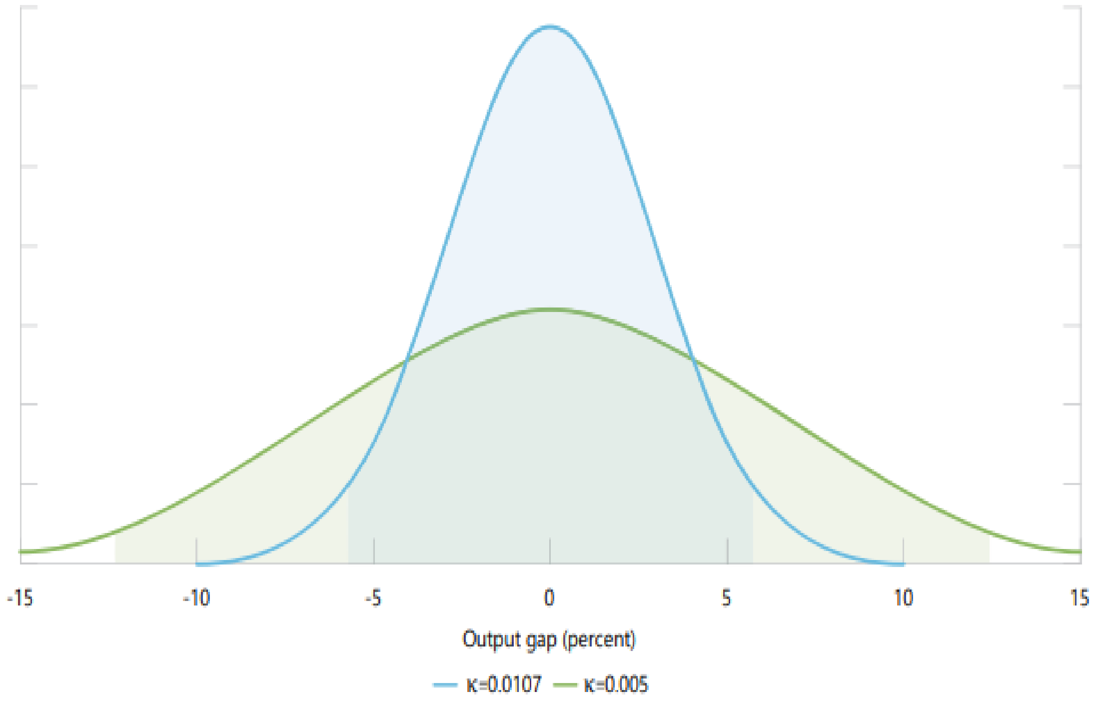

Note: In both panels, the 2021 real neutral rate is 0.25 percent, the 2016 real neutral rate is 1.25 percent and the real neutral rate before the global financial crisis is 3 percent. Rates are calculated using the Bank of Canada's Terms-of-Trade Economic Model (ToTEM) III.

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




Note: The two distributions of the output gap are derived using alternative values of the slope of the Phillips curve, κ, taken from Hazell et al. (2020). The pre-1990s value is 0.0107 and the post-1990s value is 0.005.

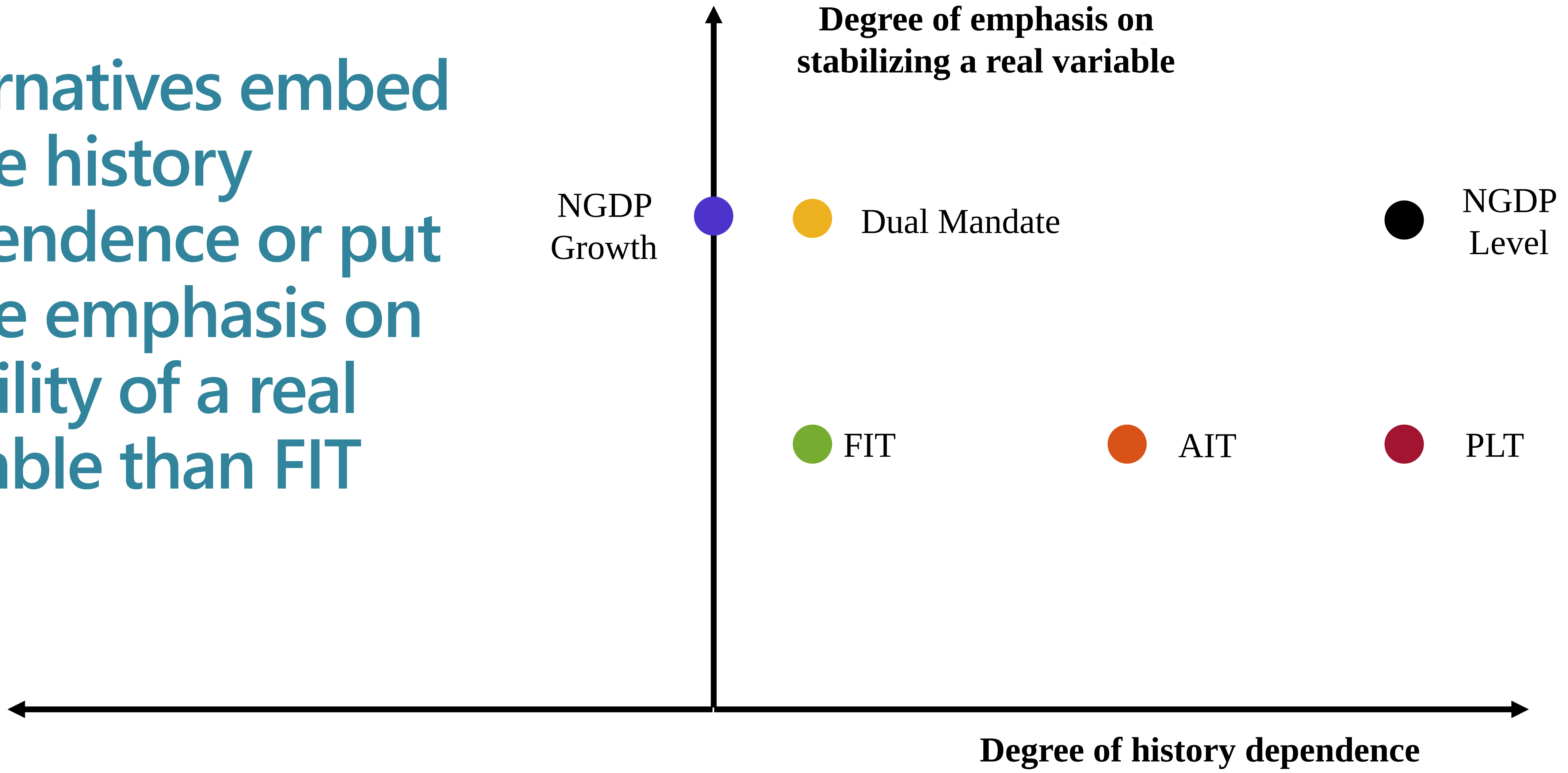
**Source:** Monetary Policy Framework Renewal (2021).

# 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)

**Evaluation criteria**:
- Macro stability
- Financial stability
- Distributional
- Robustness
- Understandability

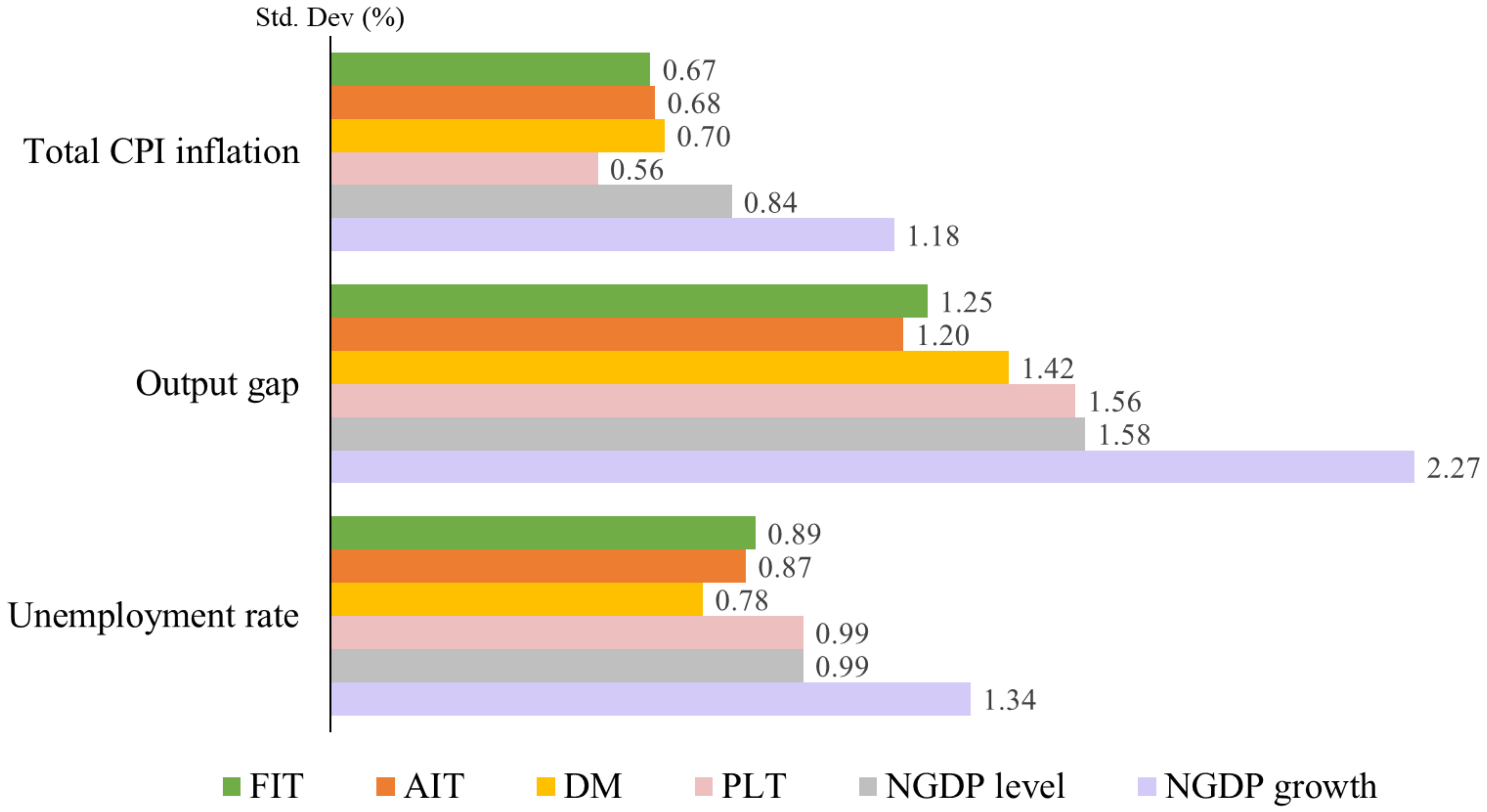
# Alternatives embed more history dependence or put more emphasis on stability of a real variable than FIT



# 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

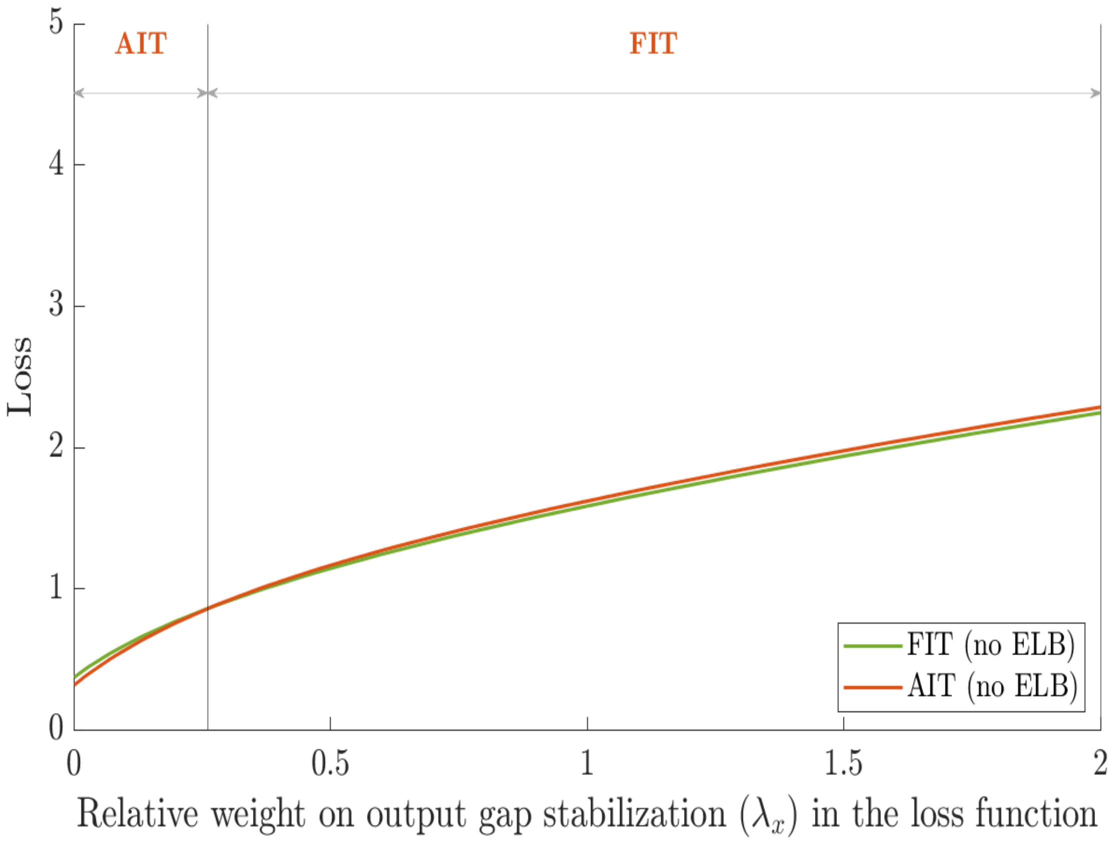
# FIT, AIT and DM yield greater real stability



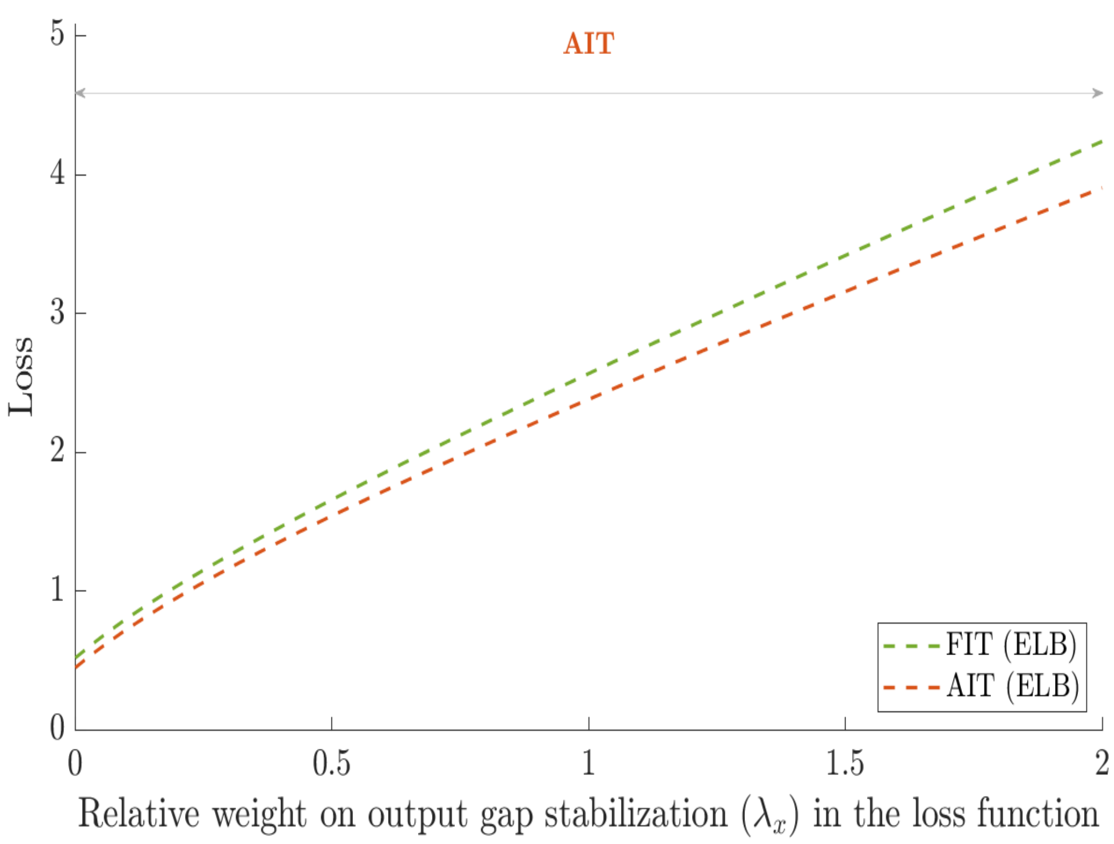

**Source:** Bank of Canada.

# AIT delivers robust performance at the ELB

**Without ELB**




**With ELB**



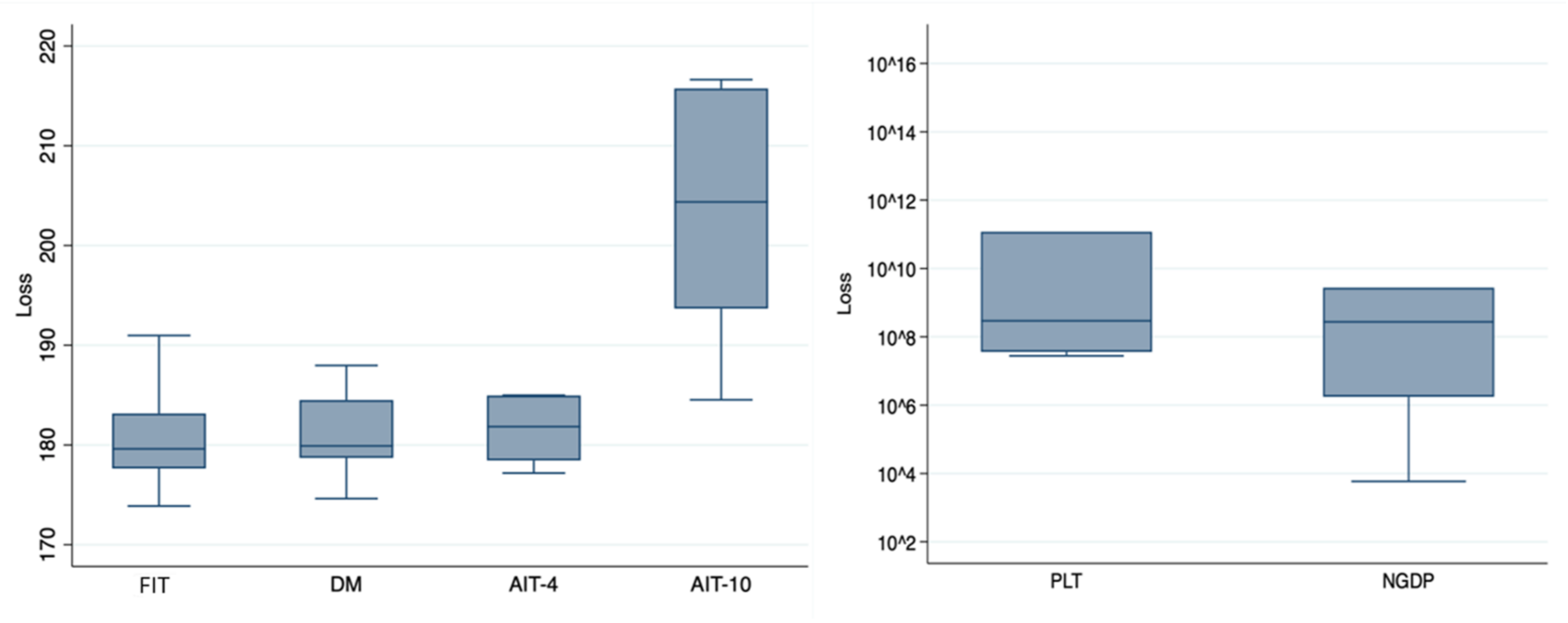

**Source:** Bank of Canada.

# 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)

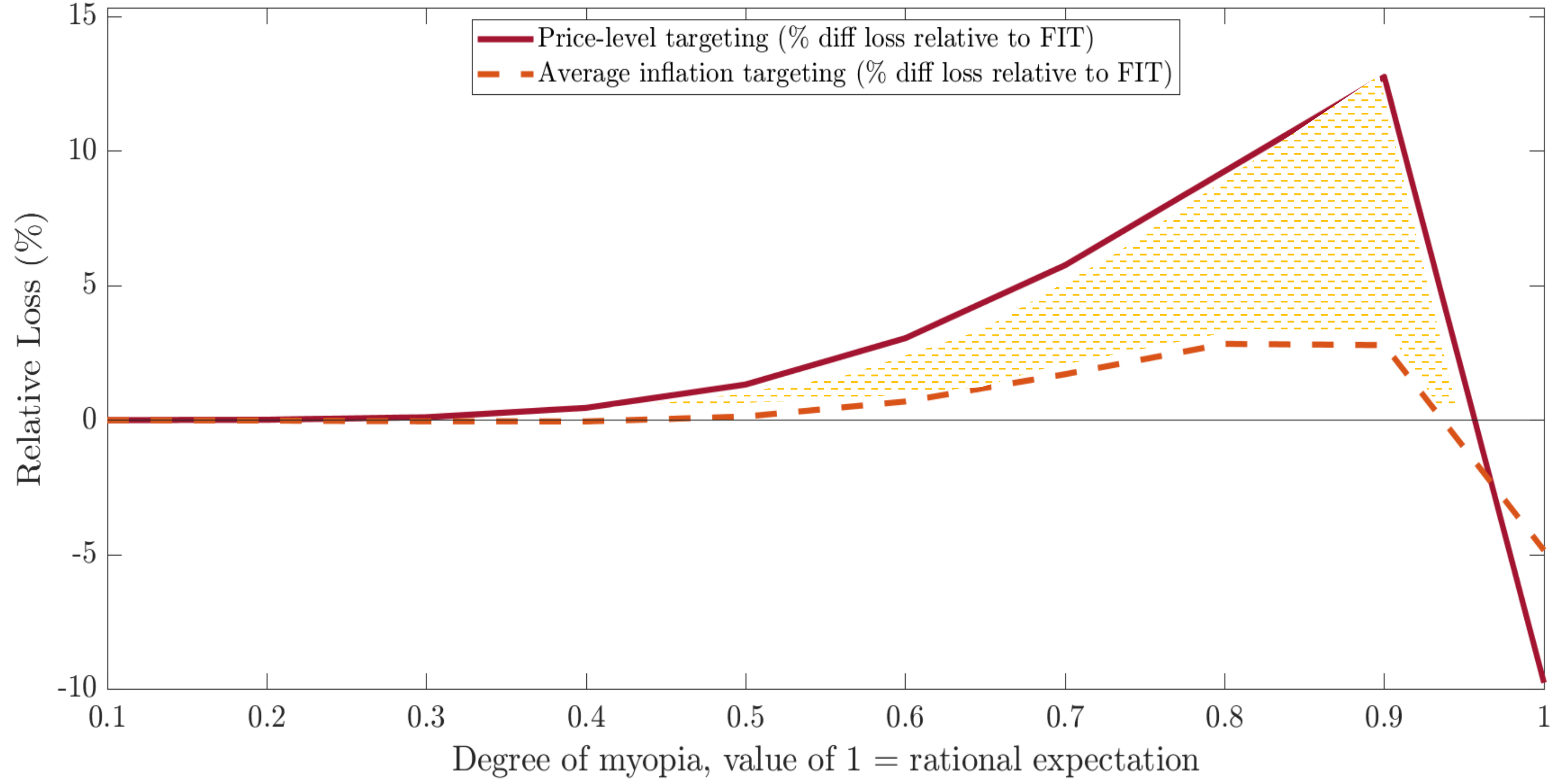
# FIT and DM outperform under more realistic expectations

## Performance of monetary policy regimes after a large demand shock




**Source:** Kostyshyna, Petersen, Yang (2021).

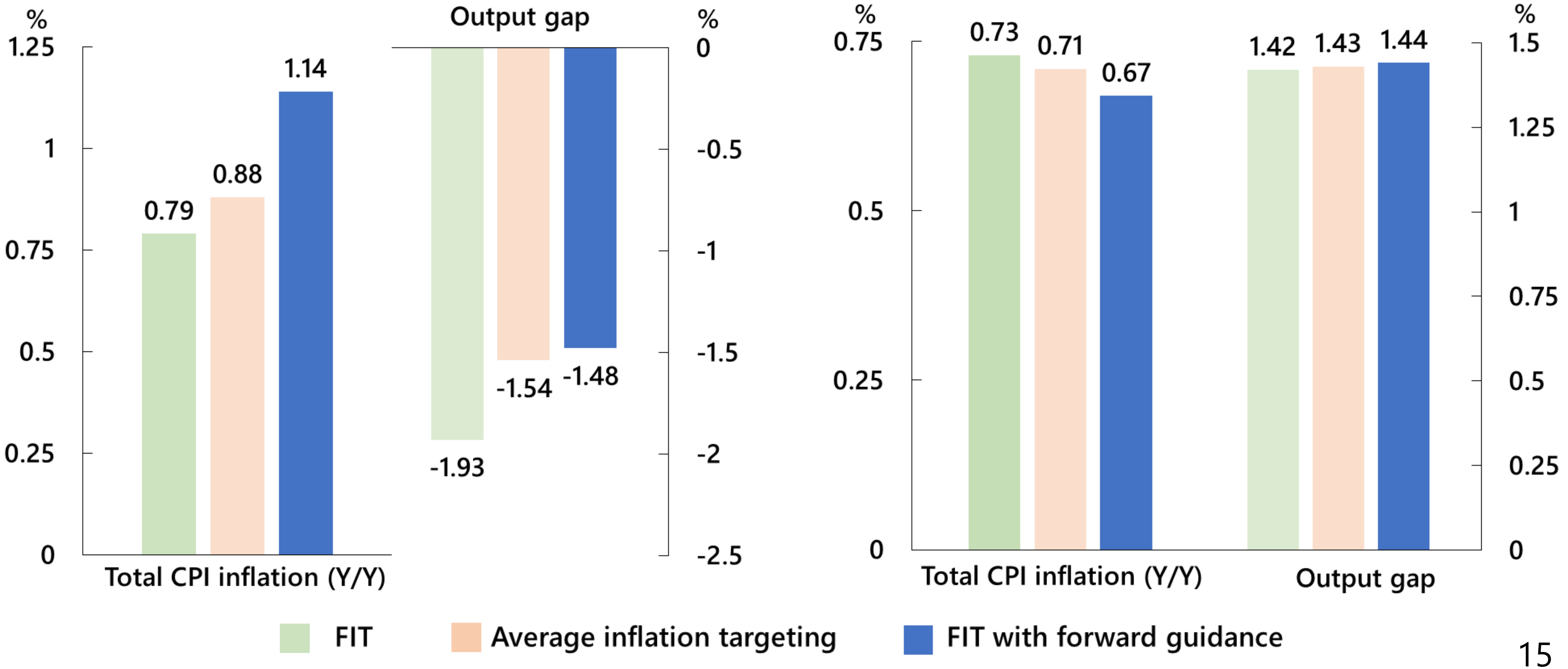
# FIT outperforms when people pay greater attention to near future



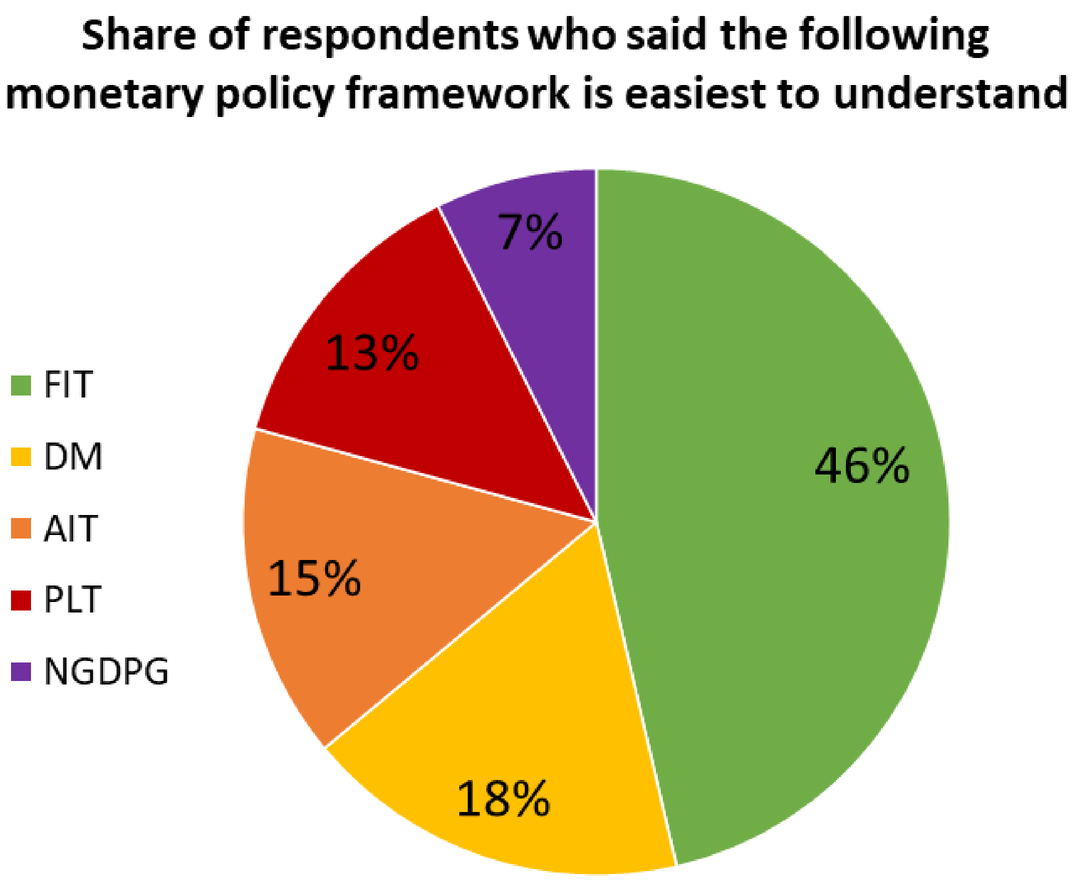
# During ELB episodes, FIT coupled with forward guidance delivers comparable outcome as AIT

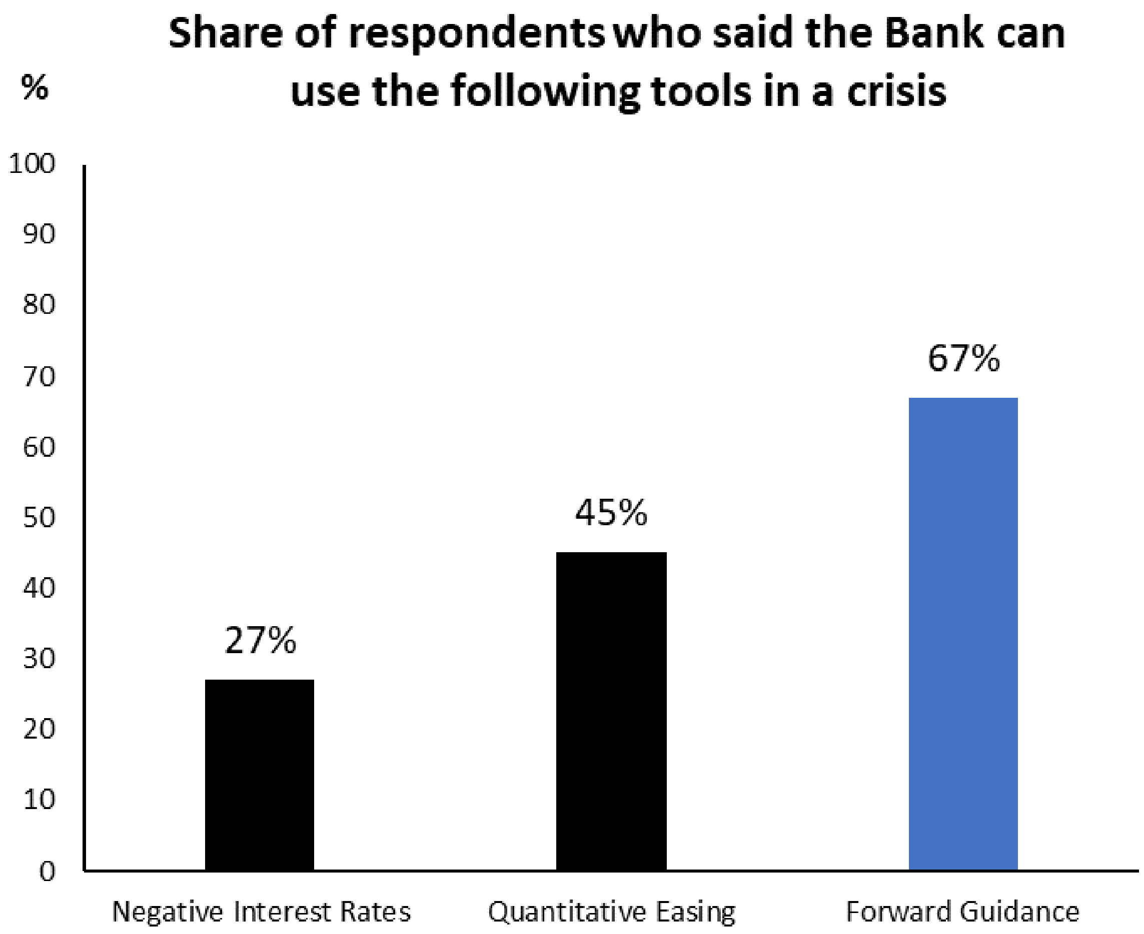
Chart 1: Mean during ELB episodes

Chart 2: Standard deviation during ELB epsiodes



# 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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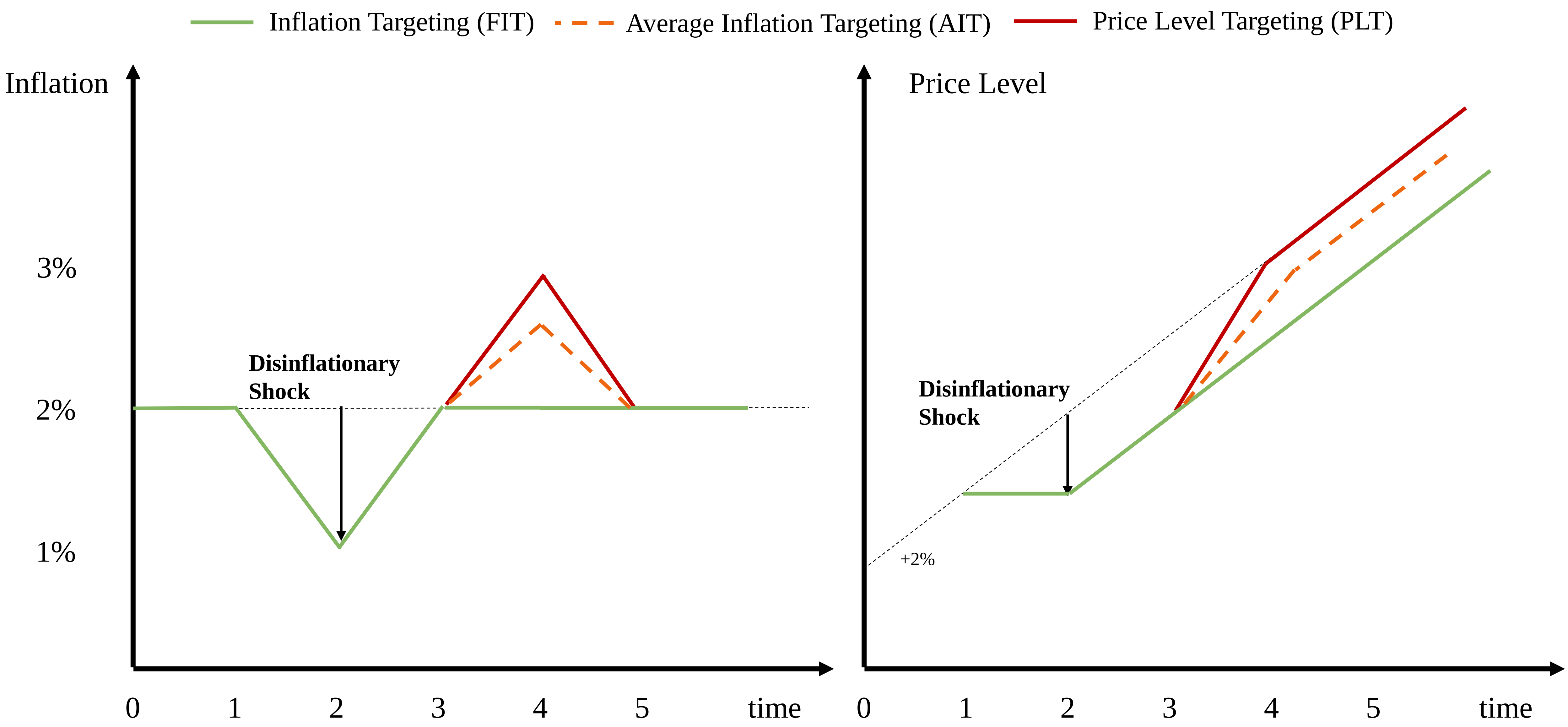
# AIT is an intermediate case between FIT and PLT



# Frameworks in the horse race

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