

# Incorporating climate change risk in the Bank of Canada's analysis of the economy and financial system

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**CEMLA IX Meeting on Financial Stability**

**6 September 2019**

**Virginie Traclet**

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# Outline

- Motivation
- Dimensions of climate change
- Research questions
- Building analytical capacity through collaboration

# Including climate change risk in our analysis of the economy and financial system is aligned with our mandate

- Economic activity and the environment are intertwined
  - Changes in global climate => growing implications for the economy and the financial system
  - Transition to lower carbon economy => complex structural adjustments => transition risk + new opportunities
- Our objective: better understand the risks that climate change poses to the economy and financial system

# Climate change has two risk dimensions: physical risks

- Intergovernmental Panel on Climate Change:
  - 2017 temperatures  $1^{\circ}\text{C}$  > pre-industrial levels
  - Projection: +  $0.2^{\circ}\text{C}$  per decade
- Canada warming faster than rest of the world (Environment and Climate Change Canada)
- Consequence: more frequent extreme weather events (e.g., flooding, severe droughts)
- Implication: physical risks for the economy and financial system
  - More frequent extreme weather events = more frequent supply shocks
  - Rising insured damage to property and infrastructure in Canada:
    - 2008-2017: C\$1.7 billion/year
    - 1983-1992: C\$200 million/year

# Climate change has two risk dimensions: transition risks

- Transition to lower-carbon economy => complex structural adjustments in economy => costs and new opportunities
  - Labour and capital reallocation
  - Potential shifts in global trade patterns
  - Different impacts across sectors
- Potential financial system implications:
  - Financial system participants exposed to carbon-intensive assets/sectors
  - Asset prices may not fully reflect carbon-related risks
    - Reasons: lack of information on exposures, difficult to account for uncertainty and complexity associated with climate risk
  - Risk: rapid repricing => potentially destabilizing for financial system

# Research questions

- Features of climate change:
  - Complexity
  - Uncertainty (large range of possible outcomes)
  - Time horizon
- Important to identify questions to focus on in analysis and research

# Research questions – preliminary ideas

- Economy
  - Short-term impacts on price dynamics and output gap
  - Longer-term impacts: changes in relative prices, impact on inflation expectations, impact on productivity (innovation, migration etc.)
  - Modelling: long-term macro models with climate component
- Financial system
  - Evaluate exposures
  - Assess pricing of climate risk (mispricing risk)
  - Assess impact of repricing through scenario analysis and stress testing

# Building analytical capacity through collaboration

- Climate change is complex => collaboration with range of partners is essential
- The Bank of Canada joined the Network for Greening the Financial System (NGFS) in March 2019
  - Workstream 2: macrofinancial focus. Goal: develop analytical framework to assess climate risks and related policies
  - Workstream 3: scaling up green finance
- Collaboration with academics
- Collaboration with domestic agencies
- Engagement with financial system participants





# REFERENCES

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