

Incorporating financial stability considerations into central bank models

October 29, 2013



Outline

- BoC work on incorporating FS considerations
- Selected challenges

Incorporating financial stability considerations into macro models at the Bank of Canada



FS in BoC models of Canadian economy

- BoC analysis built around main projection model:
 - QPM: Early 1990s – 2005
 - ToTEM I: 2006 – 2012
 - ToTEM II: 2012 – Present
- Prior to ToTEM II main models largely ignored real-financial linkages
 - Relied on satellite models

FS in BoC models of Canadian economy

- Historical satellite models:
 - Meh and Moran (2004): Banking sector financial frictions
 - Christensen and Dib (2006): BGG-type frictions
 - Basant Roi and Mendes (2007): HH sector financial frictions

- Current work aims to bring these together

FS in BoC models of Canadian economy

- ToTEM II introduces some minimal real-financial linkages:
 - Independent role for long rates
 - Risk spreads
 - Residential investment and housing stock
 - Link between consumption and “financial wealth”

- Benefits:
 - Can address broader range of policy questions
 - Improved fit
 - Foundation for future enhancements

FS in BoC models of global economy

- GEM: IMF's Global Economy Model
- BoC-GEM: Bank of Canada's version of IMF's Global Economy Model
- BoC-GEM-Fin: BoC-GEM + financial frictions

FS in BoC models of global economy

- BoC-GEM-Fin financial frictions along the lines of Dib (2010):
 - Financial accelerator
 - Leverage affects firms' cost of finance
 - Debt-deflation effect
 - Banking sector
 - Bank capital
 - Cross-border lending

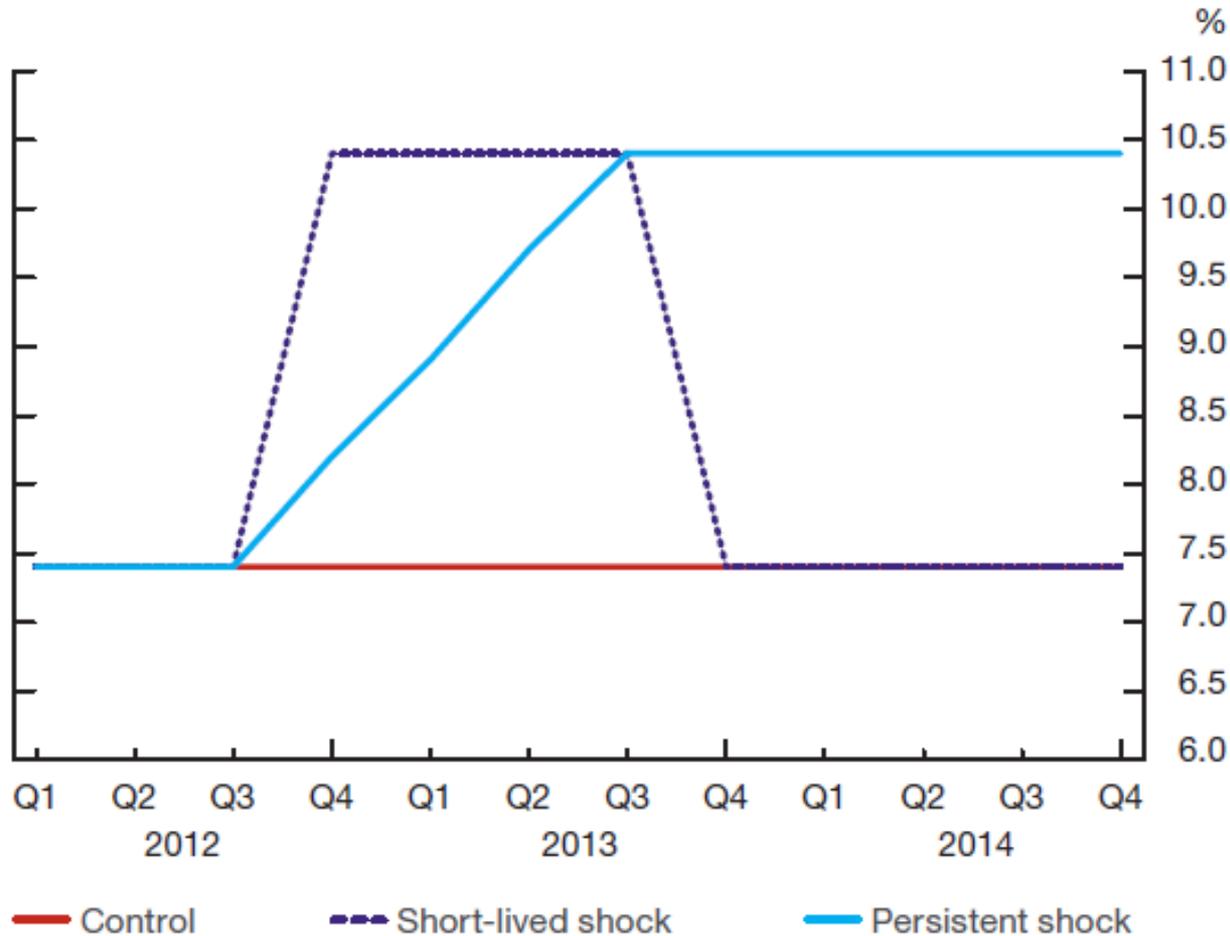
Assessing FS risks from household debt

- Models discussed so far do not allow for impact of HH default on financial system
 - Where HH borrowing is modelled, patient/impatient device is used => no default
- To capture effect of HH default on the financial system, we use a reduced-form satellite model
 - Household Risk Assessment Model (HRAM)

Assessing FS risks from household debt

- Three steps in stress-testing exercise:
 1. Use ToTEM to generate macro scenario
 - Aggregate income, employment, credit
 - Interest rate path
 2. Use HRAM to calculate implied cross-sectional distribution of household debt service ratios
 3. Estimate impact on bank loan portfolios

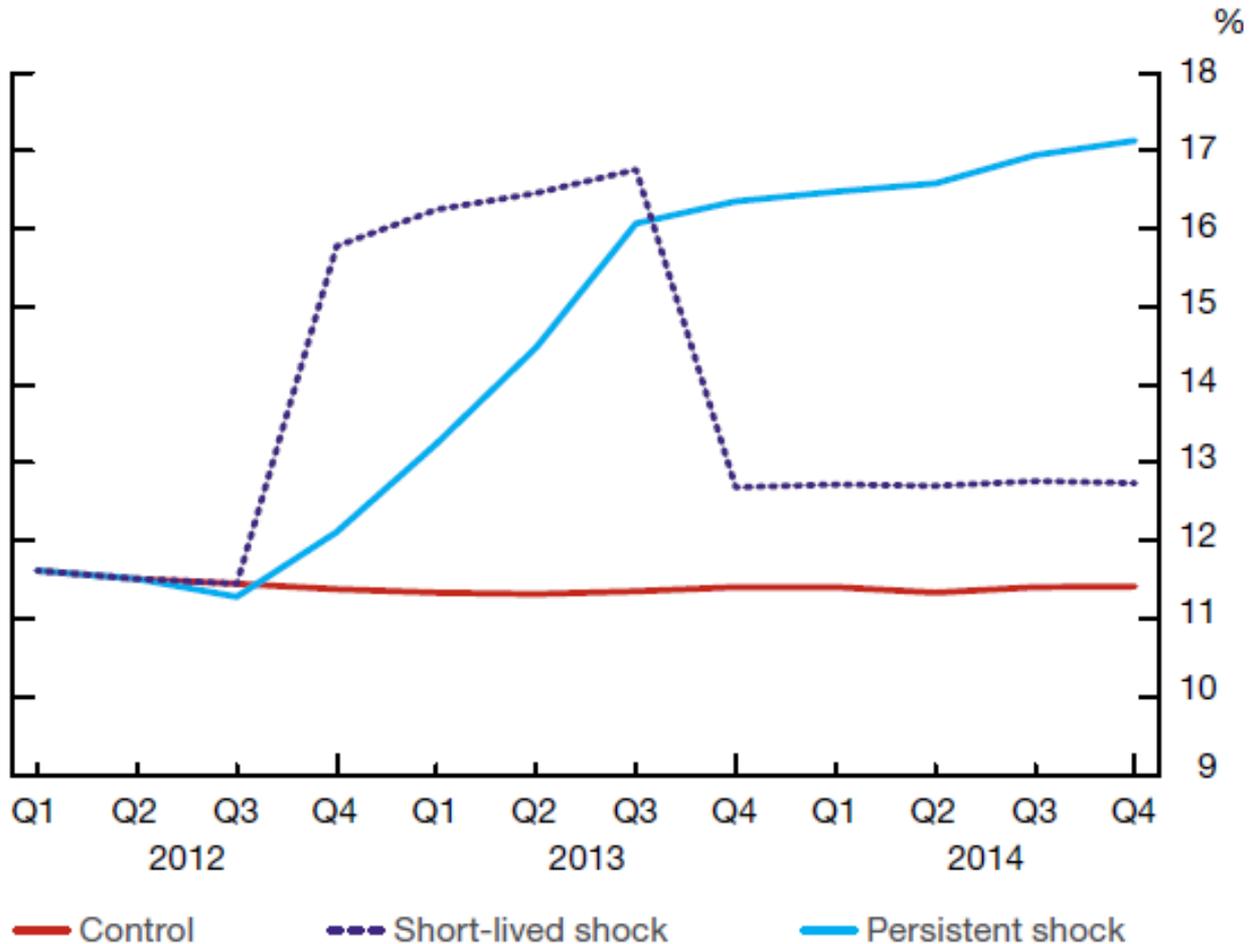
Example: Unemployment rate assumptions



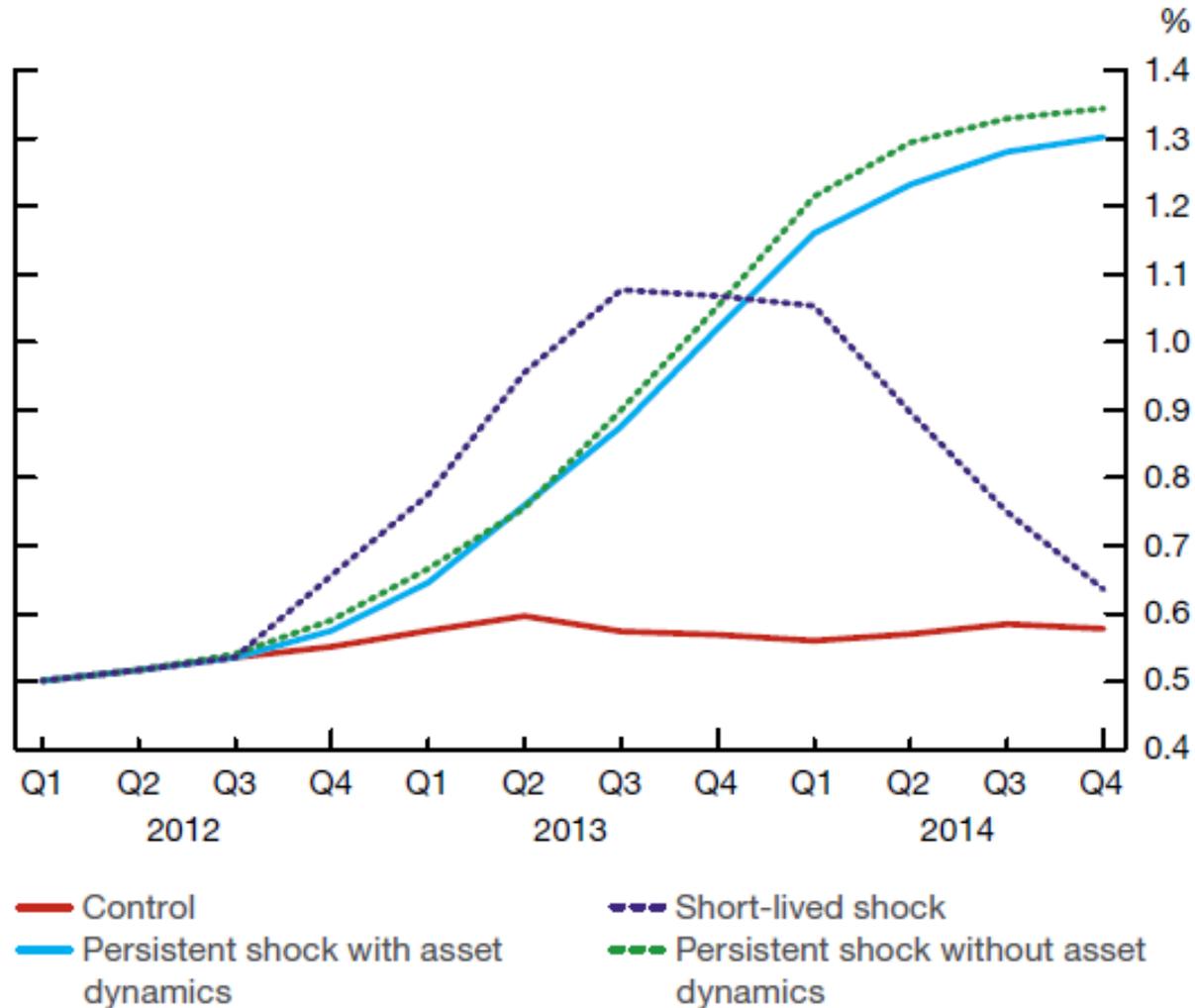
Example: Share of vulnerable households



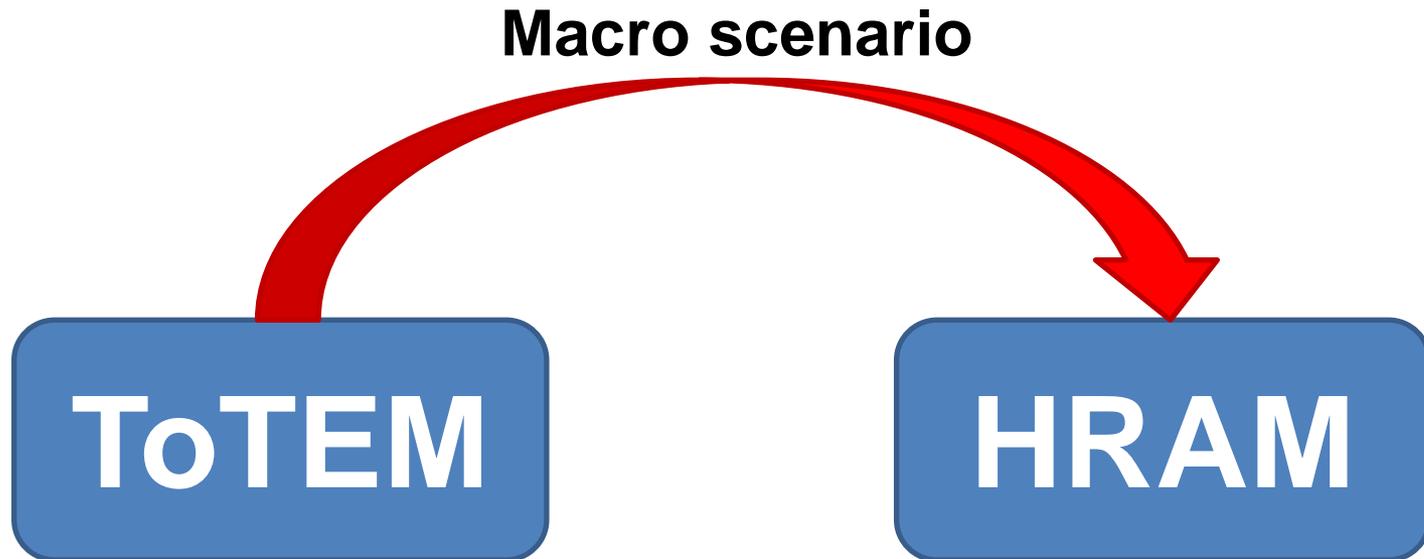
Example: Share of debt held by vulnerable households



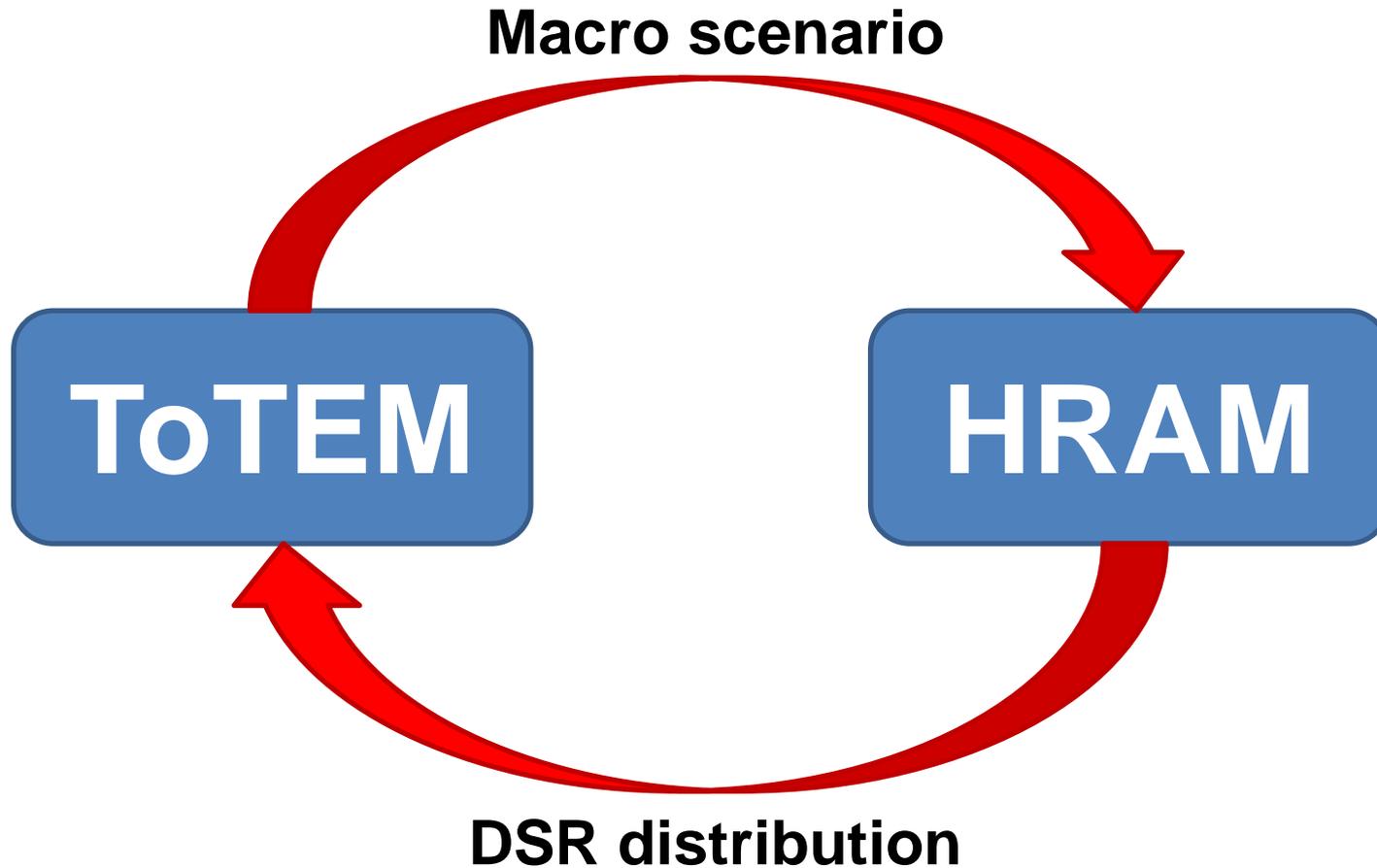
Example: Rate of household loans in arrears



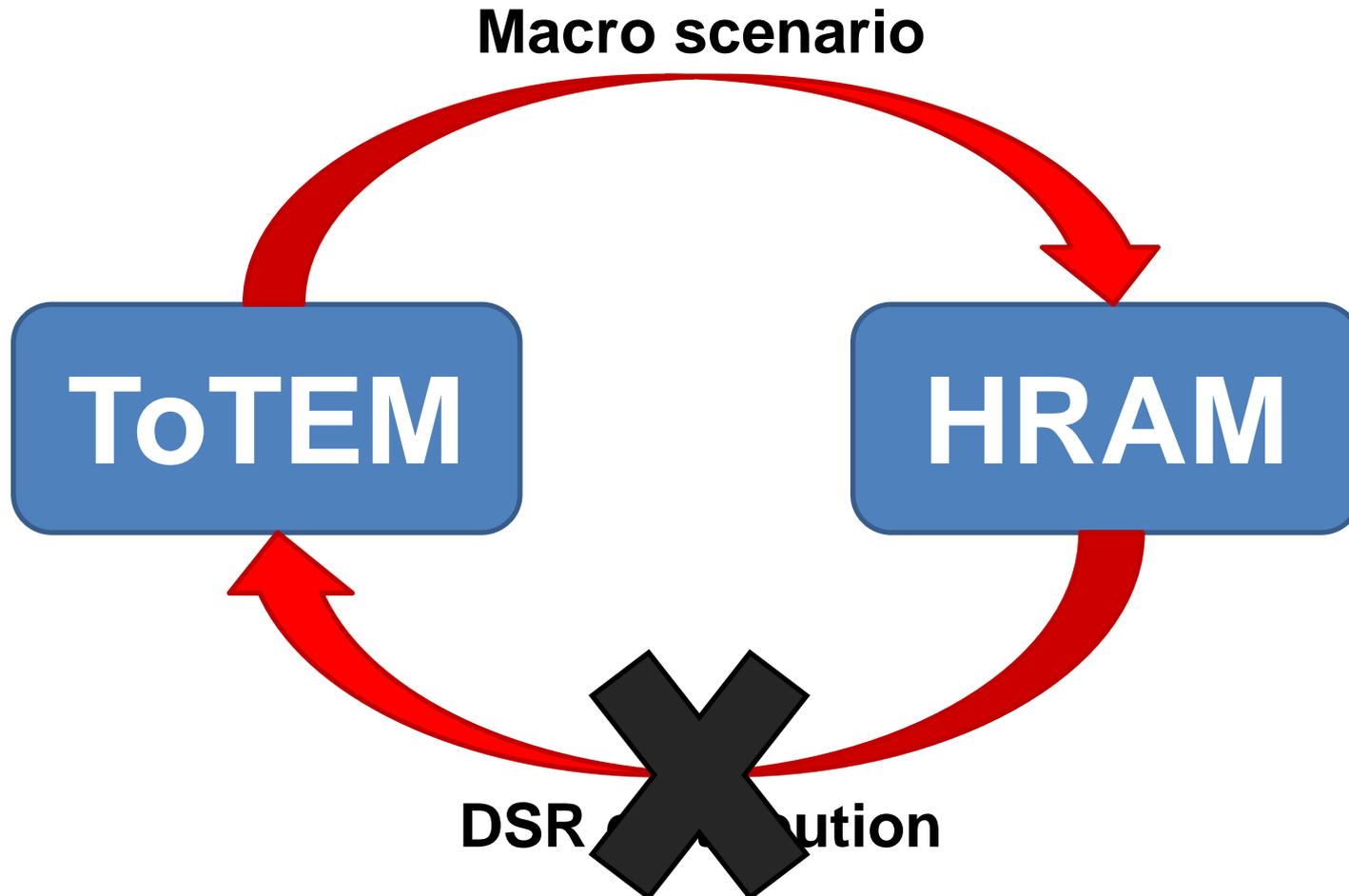
Assessing FS risks from household debt



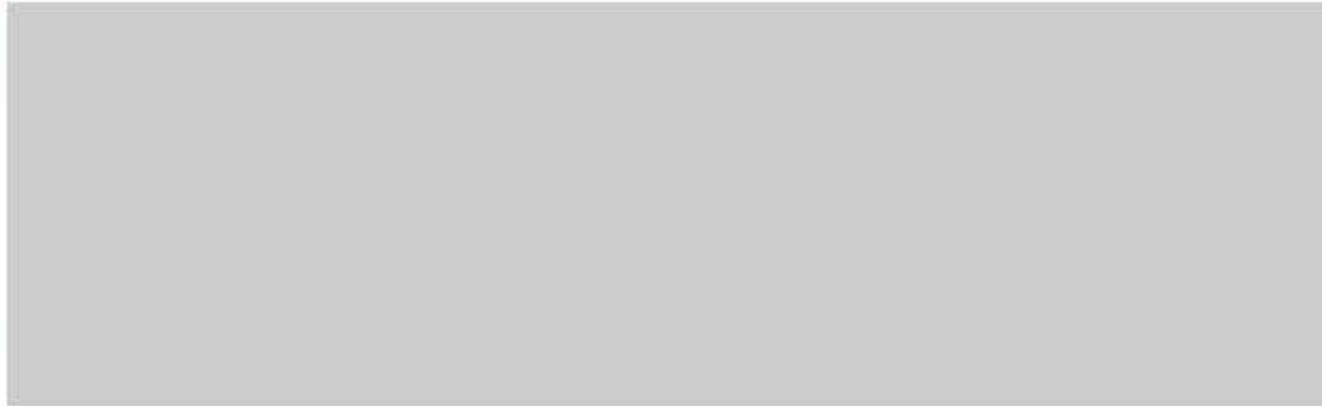
Assessing FS risks from household debt



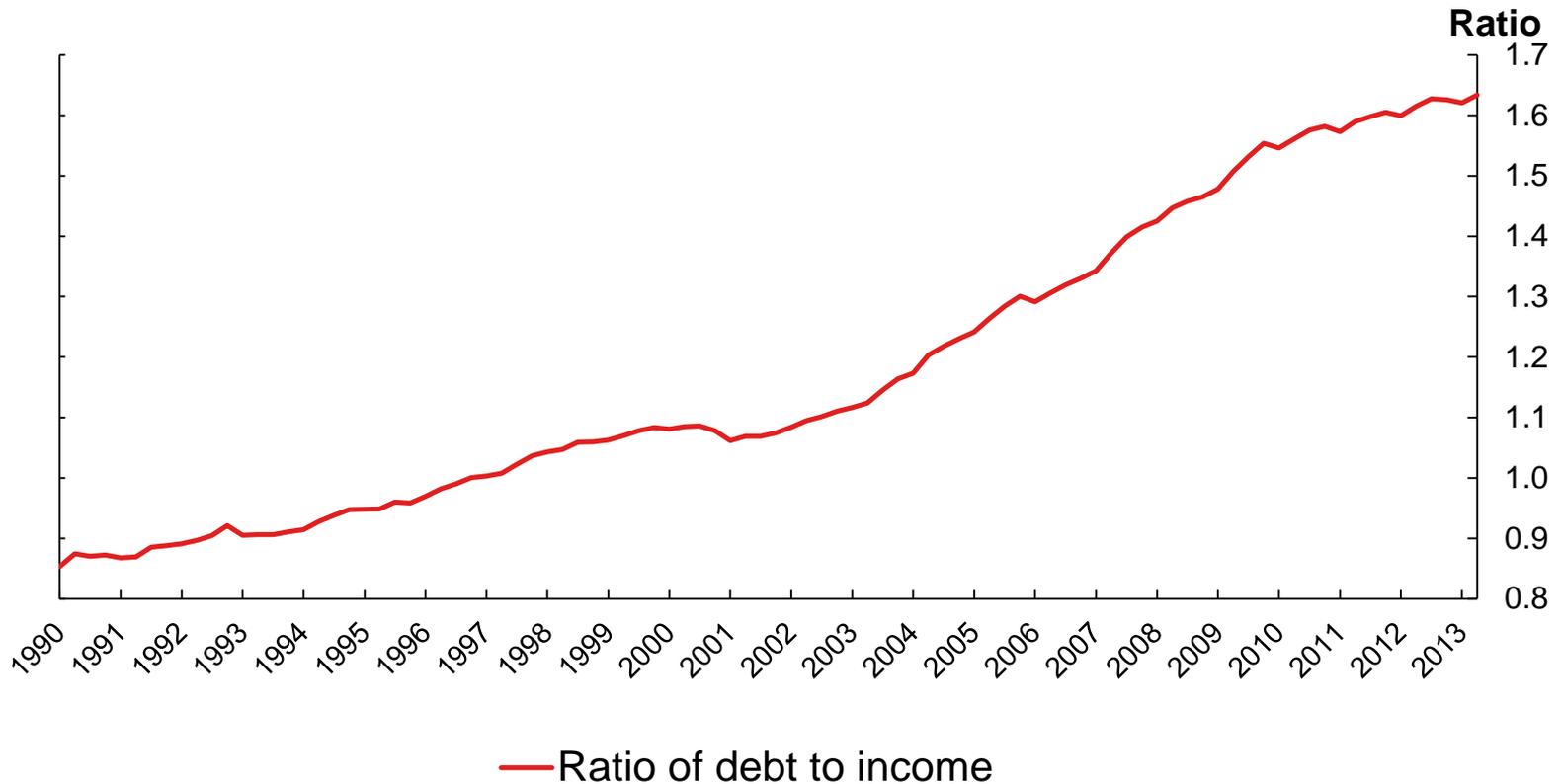
Assessing FS risks from household debt



Selected challenges and areas for future research



Many FS considerations are low frequency developments



Greater focus on trends needed

- Current approach usually involves linearized models designed to explain detrended data
- Need to integrate analysis of trends and cycle
- Near-term options:
 - Use perfect foresight methods to study transitions between steady states
 - Use small models that are amenable to global RE solution methods (useful for building intuition)

Market structure in financial sector

- Need to take market structure seriously
 - Can affects FIs' incentives

- Examples:
 - Canada: Oligopoly
 - Japan: Keiretsu
 - US: Repeal of Glass-Steagall

Modelling needs more empirical guidance

- More micro data, more micro studies
- Experimental approach could also prove useful:
 - BoC has complemented its model-based work on monetary policy with laboratory experiments
 - Has yielded useful evidence on nature of expectations formation that will influence modelling
 - Potential for applications in FS research
 - Can help to fill gaps in data

Thank you

