Ramses II – the core macro model at Sveriges Riksbank

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SVERIGES RIKSBANK

Background: Ramses II - the current core model

- Developed by Christiano, Trabandt and Walentin (2011), and Adolfson et al. (2013)

- Extension of Christiano, Eichenbaum, Evans (2001), Smets and Wouters (2003, 2007)

  - Small open economy, largely modelled as in Ramses I (Adolfsson et al. 2008)

  - Unemployment following Gertler, Sala, Trigari (2008)

  - Financial frictions following Bernanke, Gertler, Gilchrist (1999), Christiano, Motto, Rostagno (2003, 2008)

- Otherwise standard features:

  - Sticky prices and wages, indexation, habits in consumption, variable capital utilization, investment adjustment costs, Monetary policy rule (CPIF inflation, hours), unit-root technology process (global)
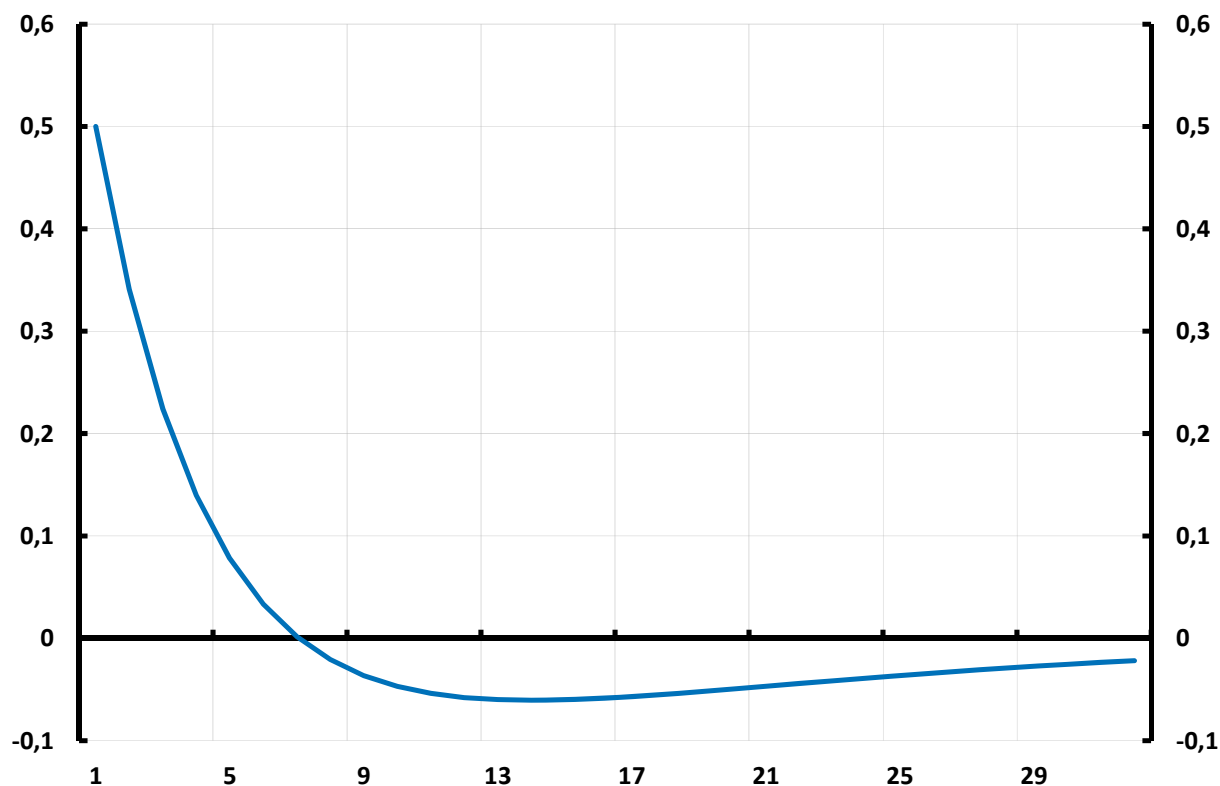
Effects of a 50 bp monetary policy shock

Persistent response of repo rate due to inertia in monetary policy rule
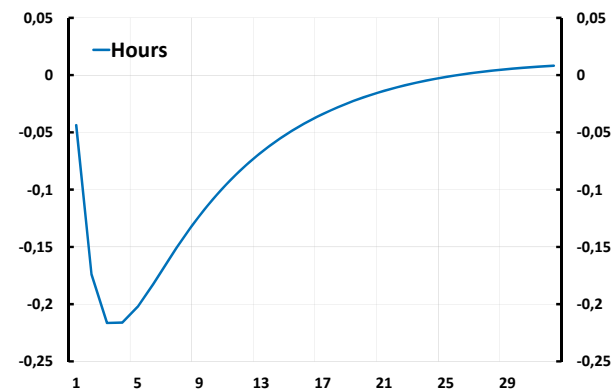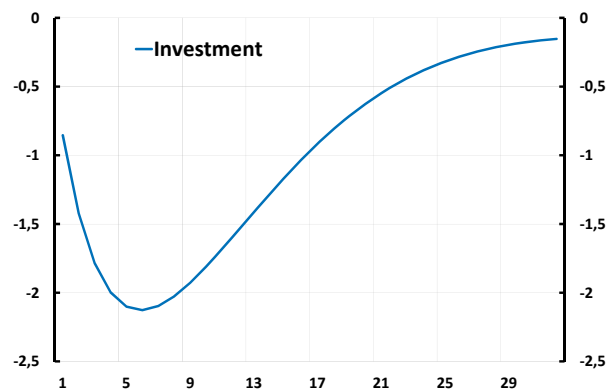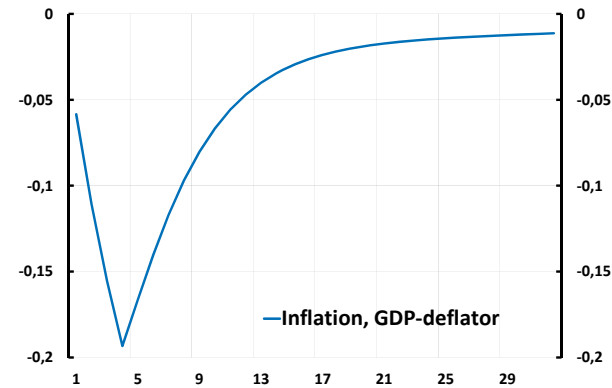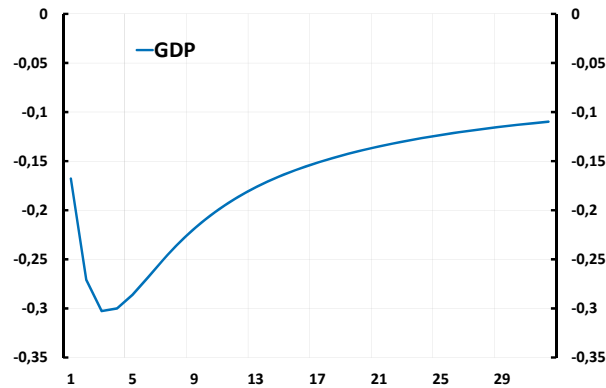
Repo rate, percentage points, deviation from steady state

Note: impulse response function from shock to monetary policy rule that changes repo rate by 50 bp on impact

Hump-shaped responses of GDP, investment, and hours; annual inflation drops first four quarters

Note: impulse response functions from shock to entrepreneurial net worth that changes borrowing spread by 50 bp on impact. GDP, investment, and hours in per cent deviation from steady state. Annual percentage change of inflation in deviation from steady state.
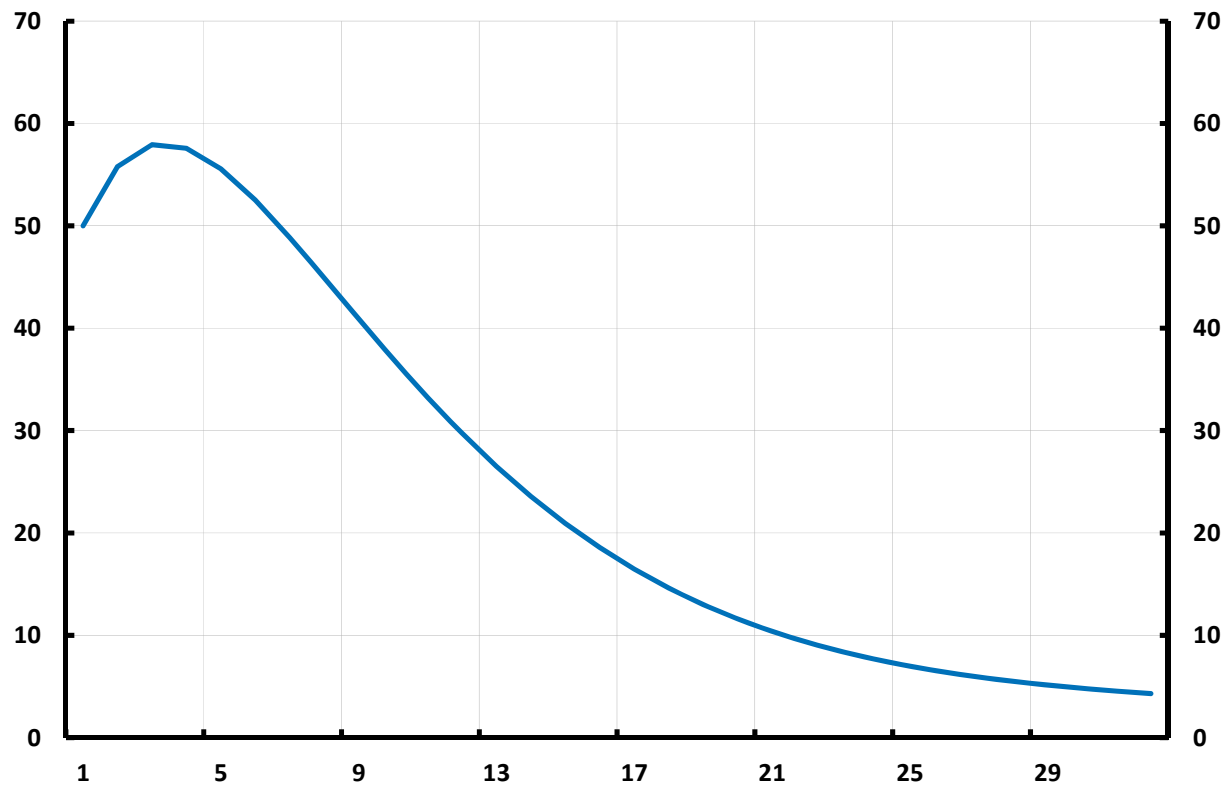
Effects of financial shock that changes spread by 50 bp

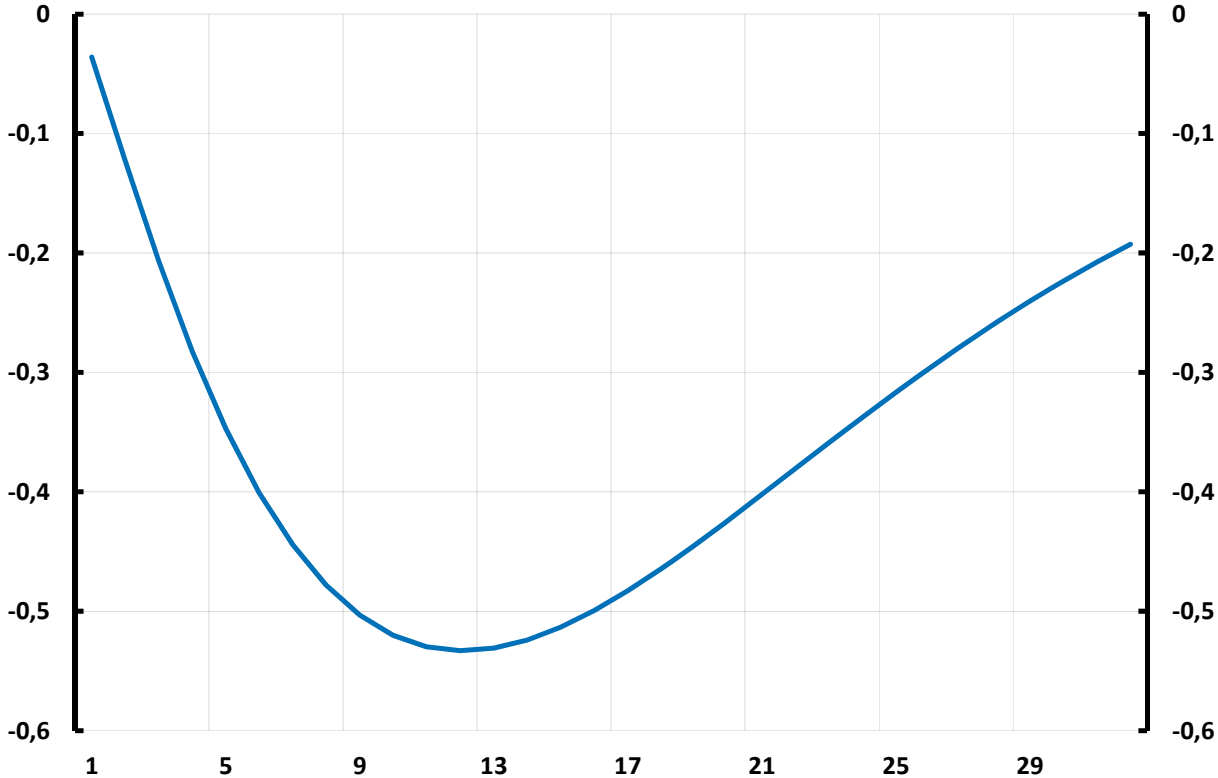# Persistent response of the spread – shock dies out faster

Borrowing spread, basis points, deviation from steady state

Note: impulse response function from shock to entrepreneurial net worth that changes borrowing spread by 50 bp on impact

Maximal repo rate response after roughly 3 years
Repo rate, percentage points, deviation from steady state

Note: impulse response function from shock to entrepreneurial net worth that changes borrowing spread by 50 bp on impact
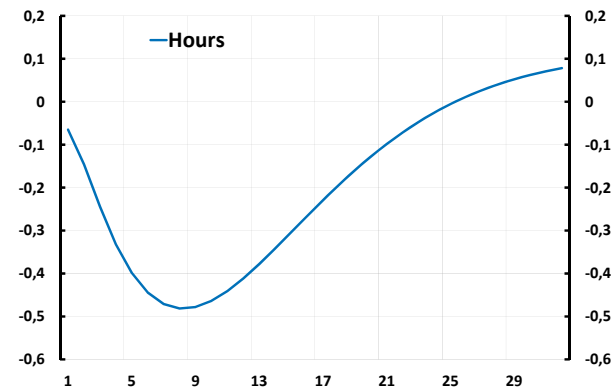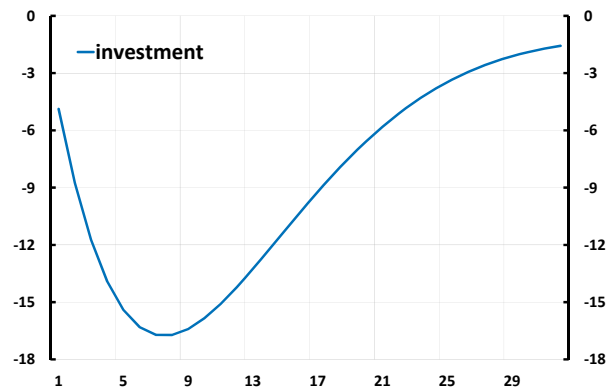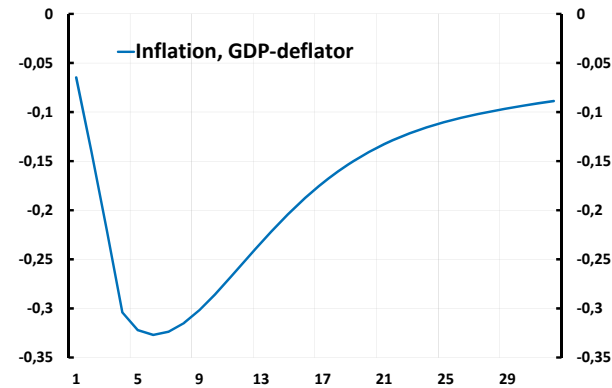
Strong impact on investment but muted GDP response – due to large import component of investment and counteracting consumption response

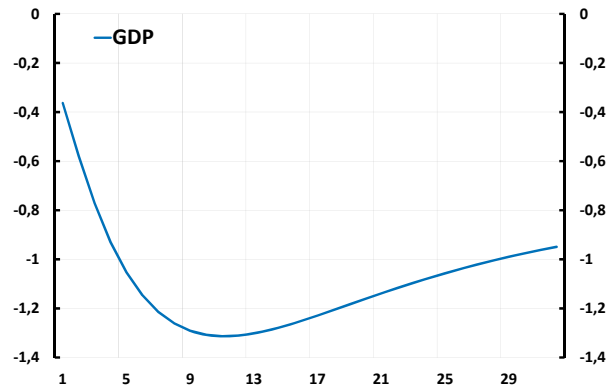Note: impulse response functions from shock to entrepreneurial net worth that changes borrowing spread by 50 bp on impact. GDP, investment, and hours in per cent deviation from steady state. Annual percentage change of inflation in deviation from steady state.

Model development project

Challenges we've encountered when working with Ramses II

- Lack of international co-movement

  - Empirical evidence suggests that Sweden is very dependent on international developments – not sufficiently captured in Ramses II

  - Developing new core model with stronger international comovement (hopefully)

    - Correlated shocks, structural foreign economy, oil, alternative production structure

- Complicated labour market modelling – will be simplified in new model

- Financial block is "domestic" – does not capture international financial linkages which are important for Sweden

- Not always easy to communicate model results to principals