Monetary Policy in a Globalised and Uncertain World: Risks and Challenges
Claes Berg, Advisor to the Governor
Outline

- Modern Monetary Policy
- Globalisation
- Global Financial Crisis
- Effects on Reserve Management
- Interest Rate Forecasts
- Transparency
- Conclusions
Modern Monetary Policy

1. Mandate
2. Independence
3. Transparency and accountability
1. Mandate

■ What can monetary policy achieve?
■ Nominal variables: permanent impact; Real variables: temporary impact
■ Objective: Low and stable inflation as well as stable resource utilization
■ Numerical inflation target
■ Target and index specified by government or central bank
■ Target level and index vary across countries
2. Independence

- Avoids short-run interference by governments
- Avoids "inflation bias"
- Allows longer horizon in monetary policy
- Strong international trend towards increasing independence (RBNZ 1990, BoE 1997, ECB 1998, Riksbank 1999)
3. Transparency and accountability

- Democracy: Independence requires accountability
- Efficiency: Accountability strengthens CB incentives to fulfill mandate
- Transparency strengthens accountability
- Improves discussion and evaluation of m.p.
- More effective management of expectations
Transparency and Central Bank Independence

Correlation coefficient = 0.42
Globalisation

Can monetary policy control inflation in a globalised world?
Effects of globalisation on monetary policy

- Inflationary pressures varies
  - Reduced due to increased global competition
  - Increased due to higher food and energy prices
- Globalisation has changed the transmission mechanism of monetary policy
Effects on the transmission mechanism

- Financial development, liberalisation and innovation may improve the central bank’s ability to affect aggregate demand.
- Interest rate pass-through is higher in financially developed countries.
- The expectations channel is important.
- The exchange rate channel is also important.
Why is the expectations channel important?

- Prices and wages are not completely flexible
- Anticipated monetary policy has real effects
- The path of future short-term interest rates is important for consumption and investment
- Central bank communication increases the possibility to influence aggregate demand
Globalisation of best practice monetary policy frameworks

- Independent central banks
- Focus on price stability
- Communication important
- Central bank forecasts of inflation contribute to anchoring inflation expectations
Economic effects of inflation targets

- Inflation and inflation expectations have been reduced
- Inflation variability is lower
- Lower impact of large changes in oil prices and exchange rates on inflation
- Lower and less persistent inflation is not accompanied by lower or more volatile growth
Average level of inflation, before and after adoption of inflation targeting

Source: Giavazzi & Mishkin (2006)
Volatility of output (standard deviation) before and after adoption of inflation targeting

Source: Giavazzi & Mishkin (2006)
Conclusion on the expectations channel

- Globalisation of best practice monetary policy frameworks has probably strengthened the expectations channel.
- Globalisation of best practice monetary policy frameworks may also have contributed to the increased correlation of long terms bond yields.
The progress of financial globalisation

- Increased cross border trade in financial assets, but still significant capital controls in several emerging markets
- Indications of covered interest rate parity except in countries with capital controls
- Indications of increased correlation between return on financial instruments but far from full integration
Financial globalisation and the transmission mechanism

- Real interest rates equalization does not imply that domestic monetary policy has no effect on domestic aggregate demand
- Monetary policy controls inflation even in a fully globalised economy
- The exchange rate will appreciate as a result of an increase in the relative tightness of domestic monetary policy in relation to foreign monetary policy
Woodford (2007)

- Inflation differential between two countries is determined by the exchange rate
- Persistent shift in policy that is understood by the private sector affects inflation
- An announced change in the inflation target affects inflation even in a financially globalised world
Conclusions on globalisation

- Globalisation of best practice monetary policy frameworks has probably strengthened the expectations channel
- Monetary policy "controls" inflation in a fully globalised world
- The short term interest rate is still the primary monetary policy instrument in small open economies with floating exchange rates
Global Financial Crisis
Financial crisis

- Not a new phenomenon
- Have occurred at around ten year intervals over the last 400 years (Kindleberger (1993))
- Have occurred in both developed countries as Sweden and Japan and in emerging markets
- Have been followed by economic downturns lasting on average from 2 to 3 years and costing 5 to 10 per cent of GDP (Bordo et al (2001))
"God! Gracious - what's going on?"

"Oh, that? Just somebody restoring confidence again, I suppose..."

NORMAL FEATURES OF OUR TIME.

5 Cartoon by David Low (29 May 1935), from The Evening Standard
The Subprime Crisis

- Too much liquidity, easy credit and a bubble in US property prices
- A credit shock from defaults by subprime borrowers, amplified by:
  - Increased balance sheet leverage in the securitization markets
  - Increased reliance on short-dated funding of CDO trances
  - The absence of a clear LLR to the "shadow banking system"
US real house prices 1890-2007

Source: Shiller (2007)
US house prices 2000-2011

Case-Shiller House Price Indices
(June 2006=100)

20-city actual

10-city actual

10-city implied by futures market prices
A Financial Lesson.

"An Eagle stayed his flight, and corrected a Lion to make an alliance with him to their mutual advantage. The Lion replied: "I have no objection, but you must excuse me for requiring you to find security for your good faith; for how can I trust any one as a friend who is able to fly away from his bargain whenever he pleased?"—Aesop.

Large decline in US real house prices

**Benchmark version, Taylor rule**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>USA</td>
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<tr>
<td>GDP-growth</td>
<td>-0.26</td>
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<th>Euro Area</th>
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<td>-0.08</td>
<td>-0.36</td>
<td>-0.64</td>
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<td>Inflation</td>
<td>-0.04</td>
<td>-0.32</td>
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<td>Interest rate</td>
<td>-0.06</td>
<td>-0.38</td>
<td>-0.96</td>
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<th>Year 3</th>
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<td>GDP-growth</td>
<td>-0.04</td>
<td>-0.2</td>
<td>-0.36</td>
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<tr>
<td>Inflation</td>
<td>-0.04</td>
<td>-0.22</td>
<td>-0.58</td>
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<tr>
<td>Interest rate</td>
<td>-0.04</td>
<td>-0.26</td>
<td>-0.66</td>
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Financial factors contributing to a magnified channel

- Increasing risk premia ==> increased valuation risk
- Increasing risk premia ==> increased real interest rates
- Increasing credit constraints ==> dampening of credit channel
- Falling house prices ==> worsening of balance sheets
Large decline in US real house prices

Magnified channels version, Taylor rule
p.p. deviation

<table>
<thead>
<tr>
<th>USA</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>GDP-growth</td>
<td>-0.52</td>
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<td>-0.22</td>
<td>-0.86</td>
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<td>Interest rate</td>
<td>-0.28</td>
<td>-1.4</td>
<td>-3</td>
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<th>Euro Area</th>
<th>Year 1</th>
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<tr>
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<td>-1.26</td>
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<td>Inflation</td>
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<td>-0.66</td>
<td>-2.08</td>
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<tr>
<td>Interest rate</td>
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<td>-0.74</td>
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<th>Sweden</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>GDP-growth</td>
<td>-0.1</td>
<td>-0.42</td>
<td>-0.7</td>
</tr>
<tr>
<td>Inflation</td>
<td>-0.08</td>
<td>-0.46</td>
<td>-1.16</td>
</tr>
<tr>
<td>Interest rate</td>
<td>-0.08</td>
<td>-0.54</td>
<td>-1.34</td>
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Large decline in US real house prices

**Magnified channels version, Optimal policy p.p. deviation**

<table>
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<th>Country</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td><strong>USA</strong></td>
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<td></td>
</tr>
<tr>
<td>GDP-growth</td>
<td>-0.3</td>
<td>-0.64</td>
<td>0.04</td>
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<tr>
<td>Inflation</td>
<td>0.02</td>
<td>0.26</td>
<td>0.54</td>
</tr>
<tr>
<td>Interest rate</td>
<td>-0.6</td>
<td>-2.62</td>
<td>-3.32</td>
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<tr>
<td><strong>Euro Area</strong></td>
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<tr>
<td>GDP-growth</td>
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<td>-1.06</td>
<td>-1.48</td>
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<tr>
<td>Inflation</td>
<td>-0.14</td>
<td>-1.04</td>
<td>-1.98</td>
</tr>
<tr>
<td>Interest rate</td>
<td>-0.28</td>
<td>-1.48</td>
<td>-2.22</td>
</tr>
<tr>
<td><strong>Sweden</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP-growth</td>
<td>-0.12</td>
<td>-0.62</td>
<td>-0.62</td>
</tr>
<tr>
<td>Inflation</td>
<td>-0.1</td>
<td>-0.76</td>
<td>-1.38</td>
</tr>
<tr>
<td>Interest rate</td>
<td>-0.1</td>
<td>-0.84</td>
<td>-1.54</td>
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Consequences of the financial crisis

- Falling house prices and breakdown of financial intermediation may contribute to a downturn during several years.
- The substantial easing of monetary policy by the Fed dampens the effects of the financial crisis in the US...
- … but may magnify the effects outside the US.
'PHEW! THAT'S A NASTY LEAK. THANK GOODNESS IT'S NOT AT OUR END OF THE BOAT.'

International contagion

- Market prices of securitized instruments below fundamentals: pricing risk
- Interbank markets are not functioning
- Breakdown of trust in money markets around the world
- Severe shortage of US dollars in banks outside the US
"Try to think of something that doesn't require dollars."

8 Cartoon by Starke (undated), from Martin Rosenberg and William Cole (eds), The Best Cartoons from Punch (New York: Simon & Schuster, 1982). Reproduced by permission of Punch.
The role of global cooperation

- Coordinated central bank action to provide USD into markets
- Swap-agreements with Federal Reserve
- Central banks flood domestic banking systems with dollars and local currency
- New facilities providing USD (O/N, week, 28, 84) against collateral in local currency
Conclusions on globalisation and financial crisis

- Globalisation of best practice monetary policy frameworks has probably strengthened the expectations channel.
- Monetary policy "controls" inflation in a fully globalised world in normal times.
- The short term interest rate is still the primary monetary policy instrument in small open economies with floating exchange rates.
- The financial crisis has disturbed the transmission mechanism.
  - Market interest rates higher than policy rates.
  - Slower transmission from changes in policy rates to market rates.
Consequences for Reserve Management
Reserve management before the subprime crisis

- Since the break-down of Bretton Woods international reserves increased
- Most evident in emerging markets
- Traditional rules (Greenspan-Guidotti-rule) old-fashioned
- Financial deregulation and the financial crisis in Asia explain the build-up of reserves in emerging markets
Reserve management after the subprime crisis

- The traditional objective of providing liquidity is upgraded
- More caution regarding asset classes
- Reduced exposure to less highly-rated institutions
- Concerns for financial stability important for the amount of FX reserves and swap lines
Reserve Management Overview in Sweden

- New FX reserves framework needed
- Restrictions given by
  - Monetary policy
  - Financial stability
  - International commitments
- Two models of contingent claims analysis (CCA)
  - Gray/Maechler (2008)
  - Lee (2008)
The Gray/Maechler methodology

- Information on major banks market cap, volatility of market cap, EDF, currency assets and liabilities
- CCA-analysis is used to estimate minimum capital expected losses
- Provides an estimate of the probability distribution of the FX required in various crisis scenarios
An application of the Lee model (2008) to Sweden

- Insurance aspect of holding FX reserves
- The central bank has both internal FX reserves and access to external insurance
- Globalisation hazard is modeled as a rare event: the value of FX jumps
- An increased risk of a financial crisis increases both the level of FX reserves and the level of external insurance
The four dimensions of FX reserves

- Excess return
- Volatility
- Jump risk
- Reserve quota = FX reserves/Overall Insurance Level
The FX area without jump risk
The FX area with 2 per cent jump risk

Jump risk = 0.02

Standard deviation

Excess return

Reserve quota

0.1 0.08 0.04 0.2 0.3 0.4 0.5 0.6 0.7

0.04 0.06 0.08 0.1 0.12

0.4 0.5 0.6 0.7
The FX area with 6 per cent jump risk

Jump risk = 0.06

Reserve quota

Excess return

Standard deviation
Reserve quota with varying jump risk

Estimated reserve quota

- Spread 0.09 sigma 0.7
Conclusions on reserve management

- FX reserves primarily related to concerns for financial stability
- An increased risk of financial crisis affects the level of FX reserves and external insurance (swap lines)
- Swap lines can reduce the need for FX reserves
- A certain level of FX reserves is needed to get swap agreements
- More CCA-analysis: Estimate an appropriate FX level that minimizes distress (risk indicators < threshold)
Consequences of the financial crisis

- The role of asset prices for monetary policy will be addressed again
- Reforms of banking regulation to solve market failures will be on the agenda
- Evaluation of the fees in the guarantee schemes needed
- Improved cross-border cooperation important
- The role of FX reserves and international swap lines may be upgraded
- Reforms of incentive systems in the financial sector will be discussed
Interest Rate Forecasts
Arguments for publishing the preferred interest rate path

- Easier to evaluate the forecast
- Easier to compare the forecast to others
- Easier to internally improve the models
- Reasoning and considerations made clearer
Which are the challenges?

- With a few exceptions there is little experience

Solution:
- Learn from New Zealand
- Learn from Norway
- Learn from academic papers
- Practice swimming strokes out of the water
Which are the challenges?

- The forecast of the repo rate is uncertain and the board can’t commit to a certain interest rate path

Solution:

- The uncertainty of the forecast of the repo rate can be explained by a fan chart similar to fan charts for inflation and GDP-growth

- Emphasize that the repo rate path is a forecast, not a promise, ex MPR feb 08
Monetary Policy Report
February 2008
Repo rate with uncertainty bands
Per cent, quarterly averages

Source: The Riksbank
GDP with uncertainty bands
Annual percentage change, seasonally adjusted data

Sources: Statistics Sweden and the Riksbank
CPI with uncertainty bands
Annual percentage change

Sources: Statistics Sweden and the Riksbank
Which are the challenges?

- The executive board needs to agree on an interest rate path

Solution:
- Demand more input from the staff
- The staff presents feasible alternatives to Board
- The Board chooses "optimal" projections
- Several iterations staff-board
- Limit number of alternatives: main scenario + a few alternatives
- Majority voting
Repo rate assumptions
Per cent, quarterly averages

Source: The Riksbank

Note. Broken lines represent the Riksbank’s forecast.
Inflation
CPIX, Annual percentage change

Note. Broken lines represent the Riksbank’s forecast.  

Sources: Statistics Sweden and the Riksbank
The chart illustrates the annual percentage change of GDP, seasonally adjusted data, from 2004 to 2011. Three scenarios are depicted: a lower interest rate, a higher interest rate, and a main scenario. The sources of the data are Statistics Sweden and the Riksbank. The note indicates that broken lines represent the Riksbank’s forecast.
Output gaps (GDP)
Percentage deviation from the HP trend

Note. Broken lines represent the Riksbank’s forecast. **Sources: Statistics Sweden and the Riksbank**

Which are the challenges?

- There is no agreement on the definition of the output gap
- Solution:
  - Analyse several measures of resource utilization
  - Labour market
  - Goods and services markets
Output gaps (GDP)
Percentage deviation from the HP trend

Sources: Statistics Sweden and the Riksbank

Note. Broken lines represent the Riksbank’s forecast.
Labour market gaps
Percentage deviation from the HP trend

Note. Broken lines represent the Riksbank’s forecast. Sources: Statistics Sweden and the Riksbank
Which are the challenges?

- The main scenario is based on uncertain assumptions
- Solution: Present a few alternative scenarios based on other assumptions
- Riksbank Monetary Policy Report February 2008, Two scenarios:
  - Greater financial turbulence
  - Higher energy prices
GDP, scenario with greater financial turmoil
Annual percentage change, seasonally adjusted data

Note. Broken lines represent the Riksbank’s forecast. **Sources:** Statistics Sweden and the Riksbank
Inflation, scenario with greater financial turmoil
CPIX, Annual percentage change, seasonally adjusted data

Notes: 
- Broken lines represent the Riksbank’s forecast.
- Sources: Statistics Sweden and the Riksbank
Repo rate, scenario with greater financial turmoil
Per cent, quarterly averages

Source: The Riksbank

Note. Broken lines represent the Riksbank’s forecast.
Oil price, scenario with higher oil price
USD/barrel

Note. Broken lines represent the Riksbank’s forecast. Sources: Statistics Sweden and the Riksbank
GDP, scenario with higher international inflation
Annual percentage change, seasonally adjusted data

Source: Statistics Sweden and the Riksbank

Note. Broken lines represent the Riksbank’s forecast.
Inflation, scenario with higher international inflation
CPIX, Per cent, quarterly averages

Note. Broken lines represent the Riksbank’s forecast. **Sources: Statistics Sweden and the Riksbank**
Repo rate, scenario with higher international inflation
Per cent, quarterly averages

Note. Broken lines represent the Riksbank’s forecast. **Sources:** Statistics Sweden and the Riksbank
Monetary Policy Report
October 2008
Difference between interbank rates and government bond rates (TED spread)

Basis points

Sources: Reuters EcoWin and the Riksbank
Stock market movements
Index, 04.01.99 = 100

Source: Reuters EcoWin
GDP abroad
TCW-weighted, annual percentage points

Note. Broken lines represent the Riksbank's forecast.  Sources: National sources and the Riksbank
Oil price, Brent crude
USD per barrel, future price

Sources: Intercontinental Exchange and the Riksbank
Repo rate
Per cent, quarterly averages

Source: The Riksbank

Note. Broken lines represent the Riksbank’s forecast.
CPI
Annual percentage change

Sources: Statistics Sweden and the Riksbank

Note. Broken lines represent the Riksbank's forecast. Sources: Statistics Sweden and the Riksbank.
GDP
Annual percentage change, seasonally-adjusted data

Intensified effects of the credit crisis
Main scenario

Sources: Statistics Sweden and the Riksbank

Note. Broken lines represent the Rikbank’s forecast.
Output gap gap (GDP)
Percentage deviation from the HP trend

Sources: Statistics Sweden and the Riksbank
Repo rate assumptions
Per cent, quarterly averages

Main scenario
Intensified effects of the credit crisis

Source: The Riksbank

Note. Broken lines represent the Riksbank’s forecast.
Repo rate assumptions
Per cent, quarterly averages

Note. Broken lines represent the Riksbank’s forecast.

Source: The Riksbank
Repo rate assumptions
Per cent, quarterly averages

Source: The Riksbank

Note. Broken lines represent the Riksbank’s forecast.
Transparency and accountability
Why should a central bank be open?

- Make it easier for households and firms decisions
- Increase the public’s understanding of decisions
- Enable accountability which is a normal part of a democracy
- Reinforces the staff’s efficiency
Why should a central bank be open?, cont.

- Transparency about inflation target aligns private sector inflation expectations with the target, Cukierman 2001
- Economic transparency can increase flexibility to stabilise economic shocks, Geraats 2000
- Transparency about interest rate projections aligns private sector expectations, Rudebusch & Williams 2006
Why should a central bank be secret?

- Public information can be a negative element when agents put extra weight on it, Morris & Shin 2002
- This result is based on public information being of low quality, Svensson 2006
- If the private sector attaches greater importance to poor public information than to their own better information the economy as a whole suffer losses
Why should a central bank be secret?, cont.

- A more reasonable assumption is that public information is not poorer than the assessments made by private agents.
- Central banks often invest greater resources than any individual agent into economic analysis.
- It is however possible to construct theoretical cases where a lower degree of transparency is preferable to a higher degree.
Geraats (2007)

- The government delegates m.p. to a central bank
- The central bank puts greater weight on inflation stabilisation than the government
- The government can decide to override the bank, but there are two complications
  - The inflation target is unknown to the government
  - The velocity shocks to inflation are not observed by the government
Less transparency may increase independence

- The government knows less about the shock =>
- Does not know the appropriate monetary policy stance =>
- It is less likely to interfere with monetary policy =>
- Increased probability of independence =>
- Lower average inflation
A look at the data

- Hypothesis: central banks with lower independence are less likely to be transparent as they will benefit more from secrecy.
- Cross country data: a positive correlation between transparency and central bank independence.
Correlation coefficient = 0.42
Discussion

- All central banks are not "modern central banks"
- Are both transparency and independence endogenous variables, related to the rule of law?
- Rule of Law is important, Eijffinger & Stadthouders 2003
Correlation coefficient = 0.44
Rule of Law and Central Bank Independence

Correlation coefficient = 0.30
Transparency and Inflation

Inflation, annual average, 2000-2004

Correlation coefficient = -0.14
Conclusions on transparency

- **Reasons for being open**
  - Aligns inflation and interest rate expectations
  - Increases the flexibility to stabilise the economy

- **Reasons for being secret**
  - CB information is of low quality
  - The Government can interfere with monetary policy

- **In practice both transparency and independence are probably endogenous variables, related to the rule of law**
General conclusions

- Monetary policy "controls" inflation in a fully globalised world
- But alternative risk scenarios can be used to explain possible interest rate paths when the economy faces global shocks
- An increased risk of financial crisis affects the level of FX reserves and external insurance (swap lines)
- And coordinated action is needed to prevent international contagion of a financial crisis