

9,272 Economics of central banking
(Zentralbanktheorie und -politik)

Exam HS10

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Monday December 20, 2010, 18.15–19.45, Room 01-014

There are 15 questions with a maximum of 150 marks. The degree of difficulty varies a lot from a question to another one. Keep your answers short. Spend your time efficiently. Good luck!

Last name:

First name:

Student number:

Email:

Marks: ... / 150

Grade: ... / 6

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Question 1 [15 marks] Cross the **TRUE** or **FALSE** box for each statement about the monetary policy strategy of the Swiss national bank (SNB).

(... / 15)

	TRUE	FALSE	
1.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB issues statements on the indicators factored into its inflation forecast. In the long term, the price trend depends essentially upon the money supply, with money stocks and credits holding an important position in the quantitative models used for forecasting inflation. For the shorter term, other indicators relating, e.g. to economic activity, have the greatest weight in the models.
2.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB publishes four times a year a medium-term inflation forecast, which performs a dual function. On the one hand, it serves as the main indicator for the interest rate decision, on the other hand, it is an important element in the SNB's communication policy.
3.	<input type="checkbox"/>	<input type="checkbox"/>	In a nutshell, the SNB is an inflation targeter.
4.	<input type="checkbox"/>	<input type="checkbox"/>	The Federal Constitution entrusts the SNB, as an independent and thus accountable central bank, with the conduct of monetary policy in the interests of the country as a whole.
5.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB has an implicit exchange rate target with the currencies of its main trading partners. Pegging the exchange rate in a small open economy guarantees price stability in the long term.
6.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB currently modulates the money supply in such a way as to maintain stable prices and enable the economy to fulfil its growth potential. It has been using such a monetary targeting strategy since the breakdown of the Bretton Woods system.
7.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB equates price stability with a rise in the national consumer price index of less but close to 2% per annum.
8.	<input type="checkbox"/>	<input type="checkbox"/>	All money stocks – from $M0$ to $M3$ – serve as nominal anchors in the current SNB's monetary policy strategy. This is much more efficient than a plain inflation target.
9.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB's monetary policy strategy is the framework for the assessment of the outlook for price and output developments, which is based on two separate (economic and monetary) pillars.
10.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB implements its monetary policy by fixing a target range for the three-month Libor (i.e. an interbank market rate).
11.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB equates price stability with a rise in the national consumer price index of less than 2% per annum. Thus, the definition of price stability in Switzerland does not encompass deflationary pressures.
12.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB essentially communicates its decisions in its 'Monetary policy report' published four times a year (Quarterly Bulletin).
13.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB has used an explicit definition of price stability since 1979.
14.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB has an implicit definition of price stability.
15.	<input type="checkbox"/>	<input type="checkbox"/>	The SNB implements its monetary policy by fixing a target range for its key interest rate, i.e. the repo rate for the one-week repurchase agreement.

Question 2 [8 marks] Cross the **TRUE** or **FALSE** box for each statement about monetary policy strategies.

(... / 8)

- | | TRUE | FALSE | |
|----|--------------------------|--------------------------|--|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | A monetary policy strategy has usually four main elements: i) some instruments, ii) an operating target, iii) an intermediate target – or indicator – and iv) one or several final goals. |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | A monetary policy strategy describes how and by which means the final target(s) should be attained. This definition essentially holds for inflation targeters, because monetary targeters, as e.g. Switzerland during the 80s and 90s, just have to set once a year the growth rate of the key money stock. |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | Around the globe, monetary targeting is still the most common monetary policy strategy. The reason is, as M. Friedman said, that inflation is always a monetary phenomenon. |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | In order to be efficient, i.e. to achieve its target without creating unnecessary distortions, a central bank needs an explicit definition of its final goal. For example, in the case of price stability, the public should exactly know which value is targeted. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | The role of a nominal anchor, such as the inflation rate, an exchange rate, or the money supply is to tie down the price level. Therefore, adhering to a nominal anchor that keeps the nominal variables in a narrow range supports price stability by directly promoting low and stable inflation expectations. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | To avoid the time-inconsistency problem, the central bank makes it clear to the public that it does not have an objective of raising output above what is consistent with stable inflation and will not try to surprise people with a discretionary policy. Although central bankers are fully aware of this problem, it remains nonetheless, because politicians are able to put pressure on central banks to pursue overly expansionary monetary policy. However, making central banks independent helps insulate them from political pressures to exploit short-run tradeoffs between output and inflation. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | Inflation targeting has evolved from monetary targeting by adopting the institutional commitment to price stability as the primary long-run goal of monetary policy and to achieving the inflation rate goal. Therefore, inflation targeting has increased accountability for the central bank to achieve its inflation objectives and reduced transparency. |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | Whether a central bank aims at holding inflation or the price level constant does not matter for its monetary policy, because price level targeting is just a particular case of inflation targeting (zero inflation rate). |

Question 3 [11 marks] Cross the **TRUE** or **FALSE** box for each statement about the monetary policy strategy of the European central bank (ECB).

(... / 11)

- | | TRUE | FALSE | |
|-----|--------------------------|--------------------------|---|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | Since 2008 (financial crisis), the ECB's third pillar has covered the economic analysis, which aims at identifying risks to price stability at short to medium-term horizons. It attempts to identify the economic shocks relevant to understanding price developments and output trends, notably in the context of business cycle analysis. |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | The ECB has the same definition of price stability as the Bank of England. |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | The ECB crosschecks the outcome of the economic analysis with that of the monetary analysis, ensuring that a consistent overall assessment is provided, where information pertaining to both short and long term horizons is taken into account. Moreover, it reduces the risk of errors caused by an overreliance on a single indicator, forecast, or model. |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | The ECB's inflation forecast is published together with the press release and thus endorsed by the Governing Board. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | The ECB's second pillar covers the economic analysis, which aims at identifying risks to the economic outlook at medium to longer horizons. In this context, monetary and credit developments play a distinct role, given that monetary growth and inflation are closely related over the longer term. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | To be effective in its monetary policy, the ECB has placed great emphasis on communicating its policy actions and the economic rationale underlying its decisions to financial market participants in a transparent and timely manner. This helps to anchor inflation expectations and maintain them consistently low, i.e. between 1% and 3%. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | Monetary policy needs to act in a forward-looking manner and focus on the medium term. This is less important for the ECB, due to less flexible markets in Europe, such as e.g. the labor market. |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | The definition of price stability used by the ECB makes clear that inflation above 2% is not consistent with price stability, the primary objective of the ECB. Besides, it implies that low inflation rates, and even deflation, are not consistent with price stability either. |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | Since its creation, the ECB has had an implicit definition of price stability. |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | The ECB has a quantitative definition of the primary objective of price stability. |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | The ECB is today a true inflation targeter, essentially because of its definition of price stability 'less but close to 2%'. It was not always the case, because in the 80s and beginning of the 90s the ECB used a monetary targeting approach as in Switzerland. |

Question 4 [14 marks] Cross the **TRUE** or **FALSE** box for each statement about the monetary policy strategy of the Federal Reserve Bank (FED).

(... / 14)

	TRUE	FALSE	
1.	<input type="checkbox"/>	<input type="checkbox"/>	In line with the SNB and the ECB, the FED's preferred inflation gauge is CPI inflation.
2.	<input type="checkbox"/>	<input type="checkbox"/>	The FED communicates its economic projections via FOMC Minutes, where the 'Central tendency' represents the mean of all participant's projections.
3.	<input type="checkbox"/>	<input type="checkbox"/>	Contrary to the SNB and the ECB, the FED has no explicit definition of price stability.
4.	<input type="checkbox"/>	<input type="checkbox"/>	For the US, as a large open economy, exchange rate movements are an important channel through which monetary policy affects the economy. Thus, the FED aims at devaluating its currency compared to e.g. China's renminbi yuan.
5.	<input type="checkbox"/>	<input type="checkbox"/>	The FOMC minutes are published no later than 3 weeks after the FOMC meeting, containing economic and financial considerations, which influenced members' policy discussion.
6.	<input type="checkbox"/>	<input type="checkbox"/>	The FED's key policy rate, i.e. the federal funds rate, is the interest rate at which depository institutions lend balances at the FED to other depository institutions for 1-week periods.
7.	<input type="checkbox"/>	<input type="checkbox"/>	Given its dual mandate, the FED conducts monetary policy to maintain price stability and maximum sustainable employment.
8.	<input type="checkbox"/>	<input type="checkbox"/>	At the FOMC meeting held in November 2010, the US President exceptionally participated and voted in favor of QE2 (quantitative easing 2) in order to reduce the government debt.
9.	<input type="checkbox"/>	<input type="checkbox"/>	The operational target of the FED, the federal funds rate, is an uncollateralized interbank rate.
10.	<input type="checkbox"/>	<input type="checkbox"/>	The monetary policy committee of the FED is called FOMC, consisting of a chairman, a vice-chairman, and some other members of the Board of Governors and Reserve Bank presidents.
11.	<input type="checkbox"/>	<input type="checkbox"/>	Since December 2008, the target band for the federal funds rate has been fixed at 0%–0.25%.
12.	<input type="checkbox"/>	<input type="checkbox"/>	Contrary to the SNB, the statement of the FOMC explicitly includes the Committee's assessment of the risks to the attainment of its long-run goals.
13.	<input type="checkbox"/>	<input type="checkbox"/>	The FED essentially follows a Taylor rule in conducting monetary policy, which makes its policy rate decisions very tractable, helping to anchor inflation expectations.
14.	<input type="checkbox"/>	<input type="checkbox"/>	The FOMC regularly meets 8 times per year. On purpose, the meetings are scheduled 3 days before the ECB's meetings.

Question 5 [14 marks] Cross the **TRUE** or **FALSE** box for each statement about guidelines for current monetary policies found in the economics literature.

(... / 14)

	TRUE	FALSE	
1.	<input type="checkbox"/>	<input type="checkbox"/>	Objective functions for central banks are usually described with loss functions.
2.	<input type="checkbox"/>	<input type="checkbox"/>	There is an unmistakable trend in the direction of greater openness of central banks in Europe, whereas in America, e.g. the FED, central banks have become less transparent.
3.	<input type="checkbox"/>	<input type="checkbox"/>	The essence of inflation targeting is announcing a numerical value of the target value of inflation, and being transparent about it.
4.	<input type="checkbox"/>	<input type="checkbox"/>	Empirical surveys of practices at main central banks have shown that policy decisions are mostly made by a single individual.
5.	<input type="checkbox"/>	<input type="checkbox"/>	A central bank may fall 'behind the curve', i.e. it does not adapt its policy even though it would be optimal to do so. This circumstance may be attributed to the fact that central banks are averse to policy reversals.
6.	<input type="checkbox"/>	<input type="checkbox"/>	A survey across main central banks shows a strong preference for small changes of the interest rate. Thus, the interest rate series are strongly serially correlated. This fact is referred to as interest rate smoothing or gradualism.
7.	<input type="checkbox"/>	<input type="checkbox"/>	The transmission processes of monetary policy are well known and the quantitative effects of a change in the monetary stance are directly measurable. Thus, central banks can use monetary policy for short-term fine-tuning in order to achieve their targets precisely.
8.	<input type="checkbox"/>	<input type="checkbox"/>	Central banks should follow market forecasts in conducting its policy, as e.g. the Bank of England. This would stabilize the monetary system, because market participants have usually longer time horizons than central bankers, which are mostly shortsighted.
9.	<input type="checkbox"/>	<input type="checkbox"/>	There is evidence for successful interventions in foreign exchange markets by central banks, especially when they are non-sterilized interventions in actively-traded currencies like the dollar or the euro.
10.	<input type="checkbox"/>	<input type="checkbox"/>	Since 1990 most central banks have conducted their open-market operations with derivative instruments as the repos.
11.	<input type="checkbox"/>	<input type="checkbox"/>	The term structure of interest rates is a well-established and successfully applied monetary transmission mechanism, because central banks can directly influence it through all maturities.
12.	<input type="checkbox"/>	<input type="checkbox"/>	A central bank that includes asset prices in its objective function, should tighten its policy if the stock market overheats.
13.	<input type="checkbox"/>	<input type="checkbox"/>	The 'zero lower bound' describes the fact that real interest rates cannot fall below zero.
14.	<input type="checkbox"/>	<input type="checkbox"/>	The FED, acting as the central bank of a large closed economy, does not have to take responsibility for the health of the world economy, because its interactions with the world economy are negligible.

Question 6 [2 marks] What is the current target band for the three-month Libor in Swiss francs?

Current target band: (... / 2)
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Question 7 [6 marks] In the economics literature many authors have recommended guidelines for central bankers. Find below the main ones. Give for each one the main motivations for its recommendation. The first one about price stability is given as an example.

1. price stability should be the main goal of monetary policy
2. fiscal policy should be aligned with monetary policy
3. time-inconsistency problem should be avoided
4. monetary policy should be forward looking
5. policymakers should be accountable
6. monetary policy should be concerned with output as well as price fluctuations
7. monetary policy should be concerned with financial stability

Principle 1: Because it provides substantial benefits to the economy. Inflation and deflation are costly, because they distort the efficient allocation of resources and impact on the wealth redistribution among economic agents. Moreover, monetary policy influences production temporarily and the price level permanently.

Principle 2: (... / 1)
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Principle 3: (... / 1)
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Principle 4: (... / 1)
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Principle 5: (... / 1)

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Principle 6: (... / 1)

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Principle 7: (... / 1)

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Question 8 [10 marks] Why are structural vector autoregression (SVAR) models useful in central banks? In this context, what is the main problem with this methodology?

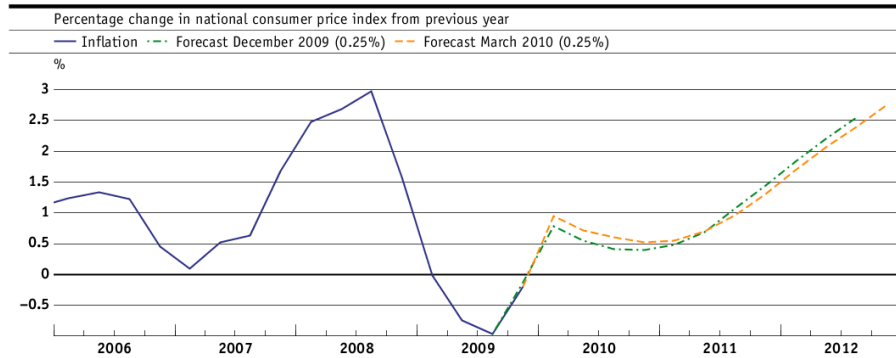
Usefulness of SVAR in central banks: (... / 5)

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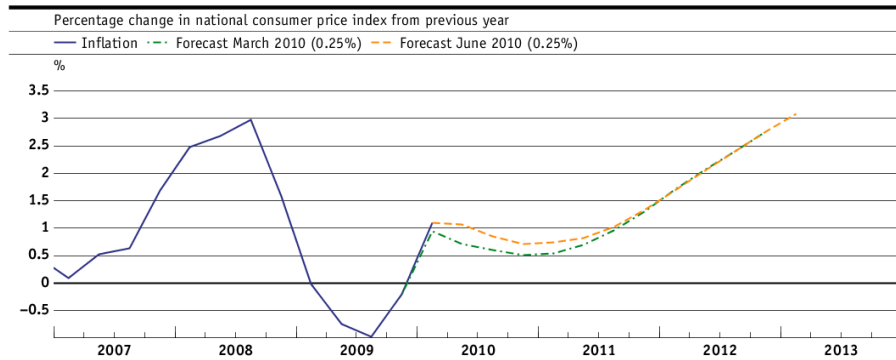
Main problem with SVAR: (... / 5)

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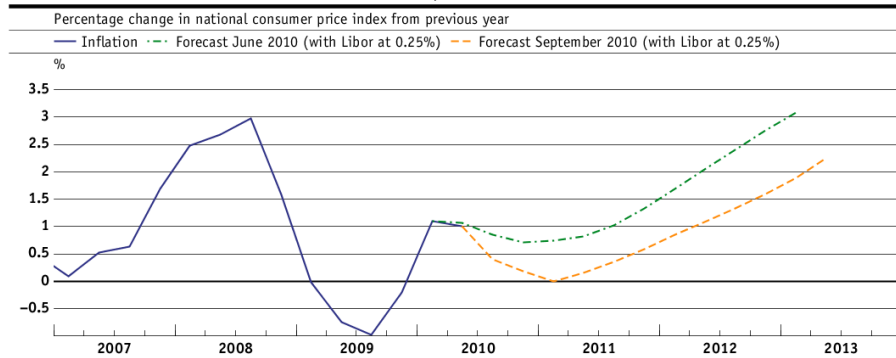
Inflation forecast of December 2009 with Libor at 0.25% and of March 2010 with Libor at 0.25%



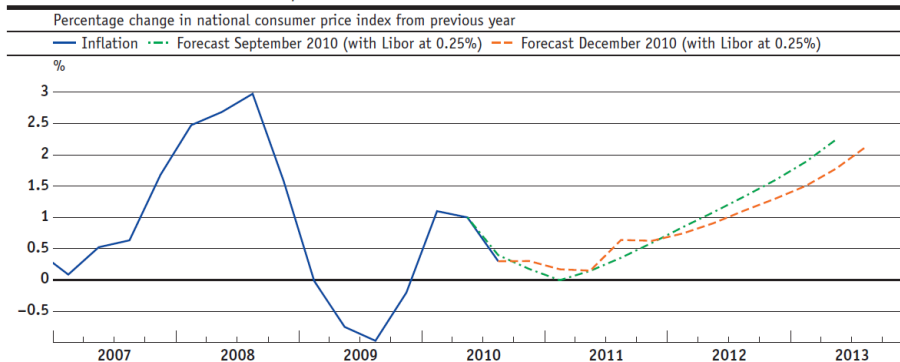
Conditional inflation forecast of March 2010 with Libor at 0.25% and of June 2010 with Libor at 0.25%



Conditional inflation forecast of June 2010 and of September 2010



Conditional inflation forecast of September 2010 and of December 2010



Question 10 [8 marks] The National Bank Act requires the SNB to ensure price stability and, in so doing, to take due account of economic developments. Find below an excerpt of the accountability report 2009. What does this paragraph mean?

Even though the SNB considers economic developments when taking monetary policy decisions, it cannot be expected to fine-tune the economy. There are too many uncertainties with respect to the cause and duration of the shocks that impair economic performance, as well as with respect to the transmission mechanisms, the time lag that elapses before monetary policy measures impact on the business cycle and prices, and the extent of their impact.

Interpretation: (... / 8)

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Question 11 [10 marks] The Bank of England recently published the following inflation forecasts (*Inflation report, November 2010*). What are the main messages of these two charts? Use the table (next page) to answer the question. (CPI = consumer price index)

Chart 5.13 CPI inflation projection based on constant nominal interest rates at 0.5% and £200 billion asset purchases

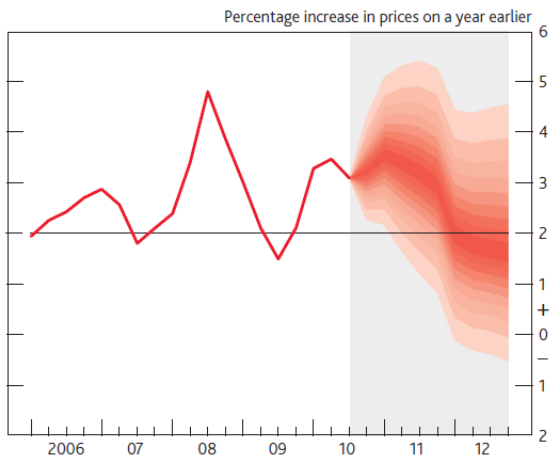
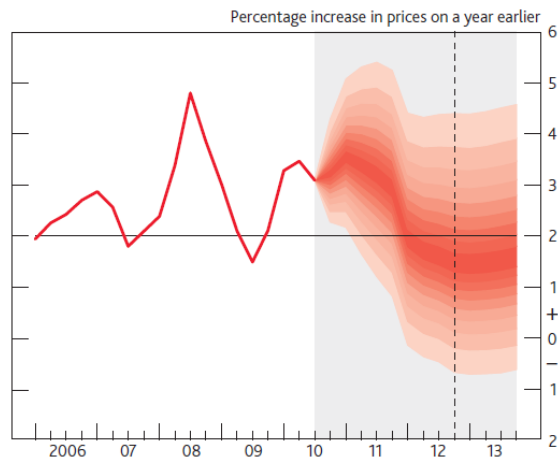
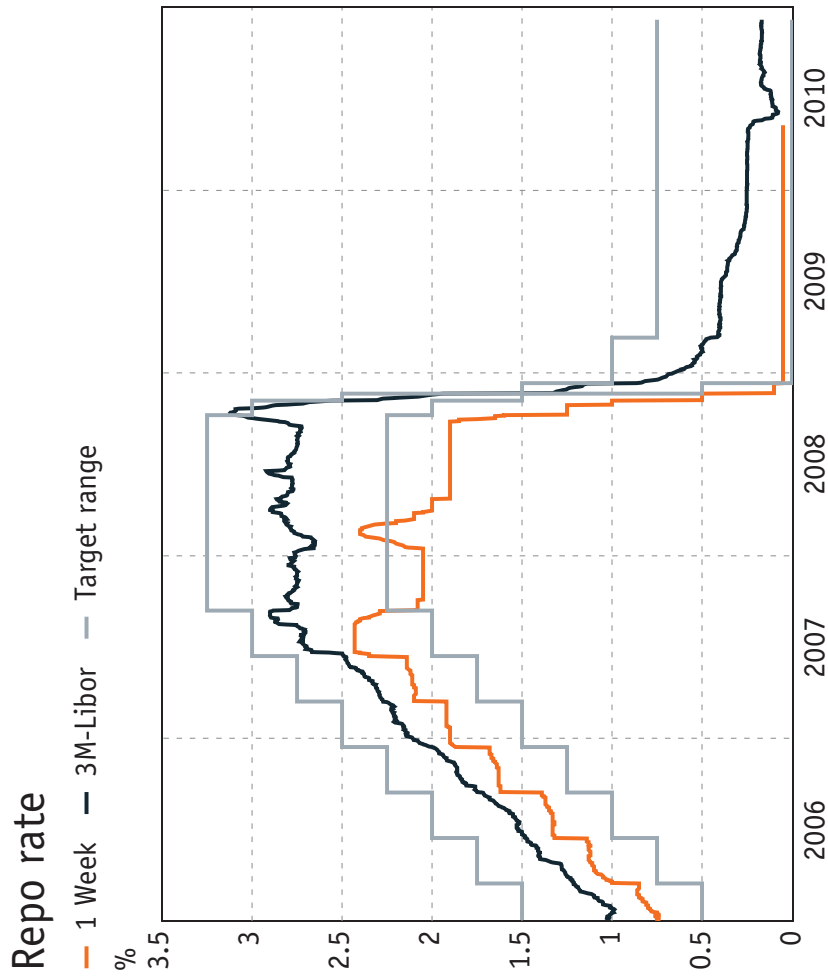
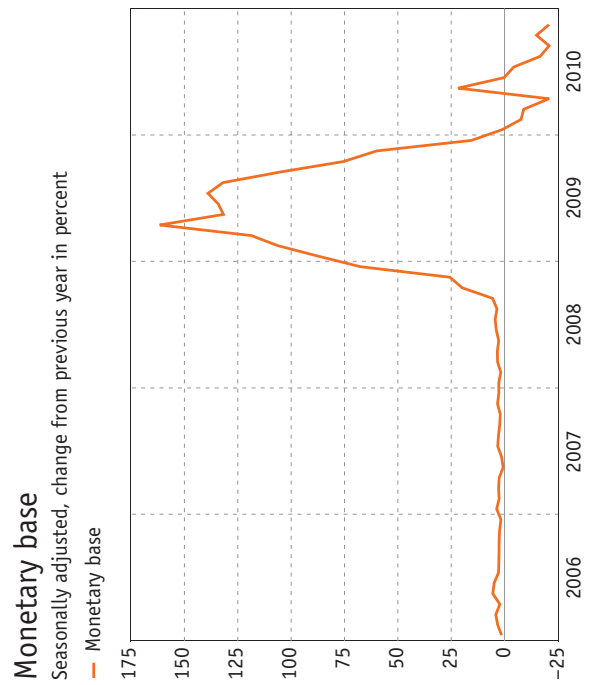
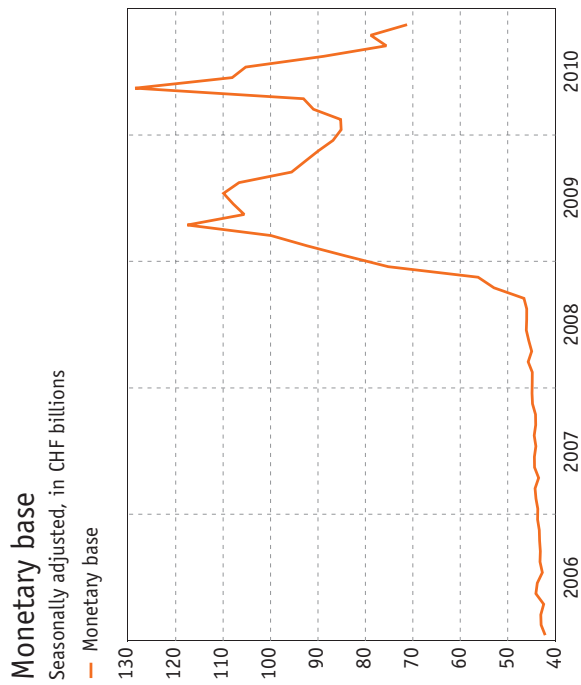
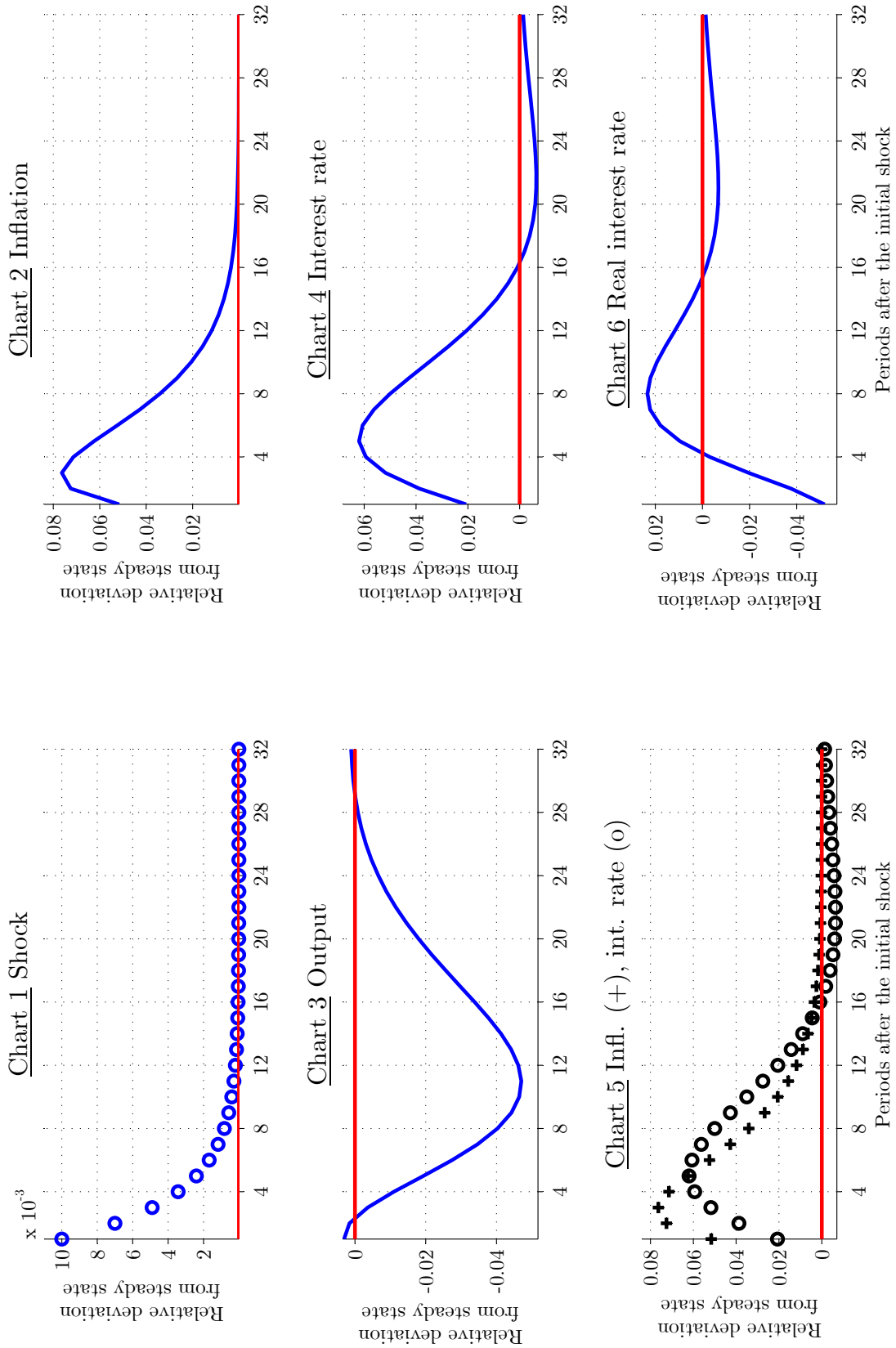


Chart 5.6 CPI inflation projection based on market interest rate expectations and £200 billion asset purchases

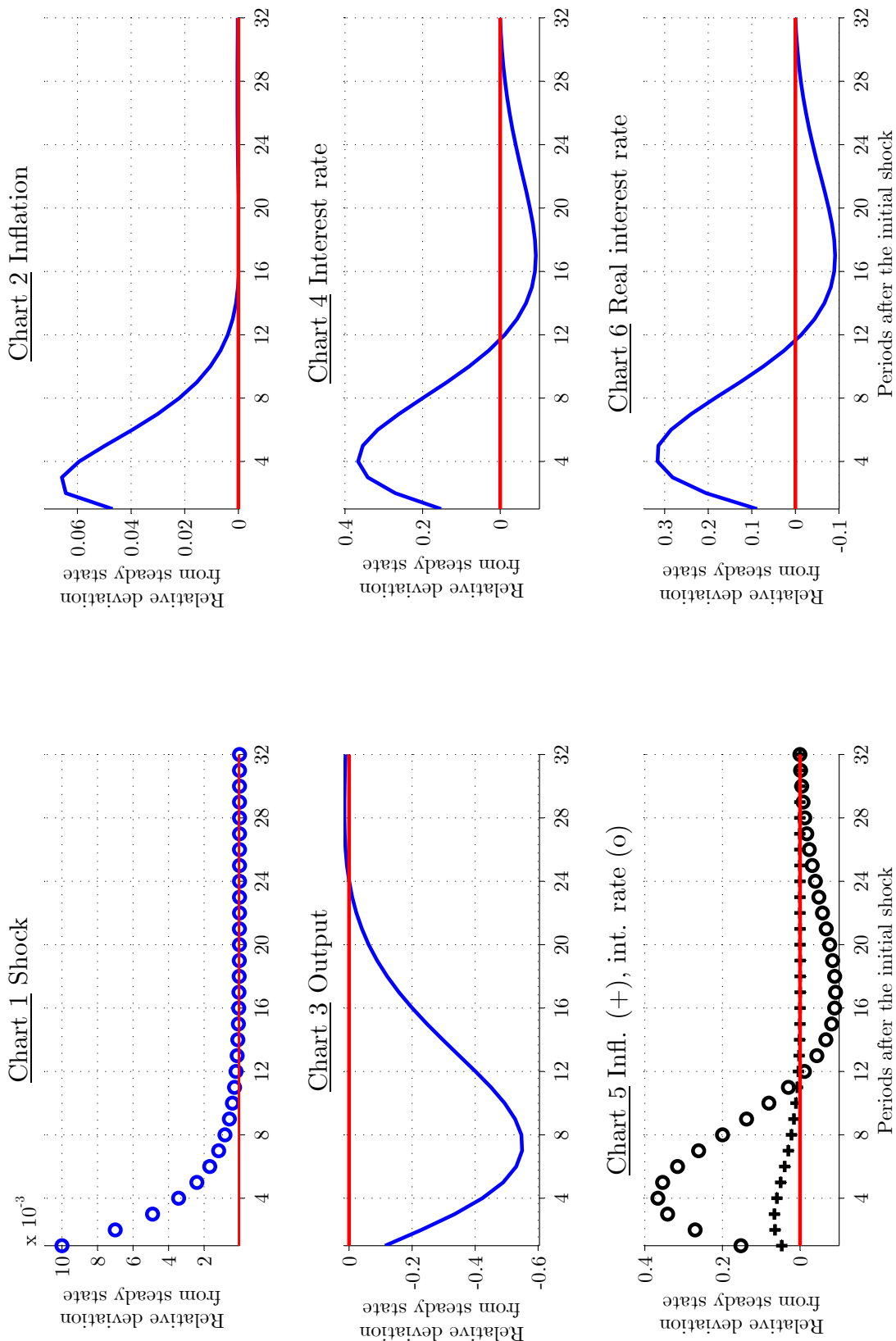




Cost push shock ϵ^{PC} and *IRF* of main variables (**baseline**)



Cost push shock ϵ^{PC} and *IRF* of main variables (**conservative banker**)



Question 15 [12 marks] Describe the following Phillips curve equation and explain its microfoundations. Besides, answer the following questions: What does ω mean? What does an increase in ω imply? How do central banks use this equation? (π = inflation, x = output gap, β = discount factor, E = expectation operator)

$$\pi_t = \beta E_t \pi_{t+1} + \frac{(1 - \omega)(1 - \omega\beta)}{\omega} x_t$$

Microfoundations of the Phillips curve: (... / 3)

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Meaning of ω : (... / 3)

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Increase in ω : (... / 3)

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Use of the Phillips curve in central banks: (... / 3)

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