Monetary Policy and Business Cycle

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Lecture VII

Monetary policy strategy I: Role of simple rules, and monetary targeting

"Motto"

"The first and most important lesson that history teaches about what monetary policy can do-and it is lesson of the most profound importance-is that monetary policy can prevent money itself from being a major source of economic disturbance."

Friedman(1968)

Outline

- The function of simple rules
- 'Simple rules', Intermediate targets, and Indicators of monetary policy
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The function of simple rules

- we are looking at the central bank,
  - which is obliged to pursue price stability ...
  - but which is left with a sufficient discretion to cope with supply and demand shocks
  - so, the bank is constrained by an exogenous final target rule (or in the terminology of Svensson (1999b) a 'targeting rule')
  - but can determine intermediate targets, operating targets, and instruments at its own discretion
  - and the central bank legislation provides the decison-makers with high degree of goal, instrumental, and personal independence

- all these assumptions coincide with actual situation in many industrial countries

- the **key** question for such central bank is **how** to frame practical monetary policy so as to achieve the ultimate goal of price stability while at the same time being flexible enough to deal with supply and demand shocks

- this is certainly *a very difficult task ...*

- decision-makers are continually confronted with a flow of new macroeconomic information ... GDP data, industrial production, new orders, unemployment rate, inflation, exchange rate, exports and imports ...

- facing all these, decision-makers then have to decide at regular meetings the concrete values for their *operating target*, i.e. variable over which they have a direct control (short-term interest rates are widely used nowadays)

- ideally, to do this, a central bank should have a comprehensive and reliable macroeconomic model, which enables:
  - identify, those data that are relevant for monetary policy purposes
  - determine what effect the observed changes in such data will have on the ultimate goal (price stability)
  - ascertain what changes to the operating target (short-term interest rates) are necessary in order to avoid any deviation from the ultimate goal

- in fact many central banks have econometric or economic models, however, they need to be complemented by judgmental decision

- Vickers (former chief economist of Bank of England) states that *' good forecasting generally entails use of off-model information and hence off-model models. Precisely how this is done seems to me to be literally indescribable in detail'* (Vickers, 1998)

- however, in order to process all the 'off-model information' in some way, a central bank needs some relatively simple rule of thumb that enables to check the plausibility of results produced by an econometric or economic model

- second half of 1990s has seen an intensive discussion of such 'simple rule' that was initiated by pioneering paper by Taylor(1993)

- it is obvious that even a 'simple rule' needs a theoretical background, and the rules we are going to discuss rely on different theories of transmission process:
  - Monetary targeting
  - Inflation targeting
  - Taylor rule
  - Exchange rate targeting

- a question we would like to aks is whether there exists such a thing as a 'simple rule' that can be

used as the main navigation system of monetary policy

- there are basically two reasons for this question:
  - if such rule does exist, it would greatly facilitate the regular decision process within the central bank (especially if there is a large number of members in the decison body)
  - a reliable 'simple rule' helps the central bank communication with the public; committing itself to such a rule, the central bank would enhance transparency and credibility providing a clear framework for its dialogue with the public

- it is important to make a difference between two forms of rule:
  - *explicit rule* (or following Svensson (1999b) a *'targeting rule'* (money target, inflation target, exchange rate target, etc.)
  - and an *implicit rule*, which defines how an operating target has to be adjusted in order to keep the target variable close to the target value

- it is important to mention that the term 'rule' for our purpose comes close to notion of a *'heuristic*, which is defined as a simple, generally aplicable rule that allows decision to be taken even under difficult situations in a reliable and fast way

- thus, when discussing 'rules' we need to check whether such rules are able to serve as a heuristic for decision-makers in the sense of providing a relatively simple and reliable recipe for interest rate decisions ...

'Simple rules', intermediate targets, and indicators of monetary policy

- actual debate on 'simple rules' is not completely new; in recent decades similar question was discussed under the headings of 'intermediate targets' or 'indicators' of monetary policy

- a search for *monetary policy indicators*:
  - can be interpreted as an attempt to reduce the multitude of available data to a set of 'most important cues'
  - following Issing(1994) two different indicators can be used:
    - *leading indicators*, which signal the existence of inflation risks in good time
    - *policy indicators*, which show what adjustment will need to be made to the operating target in order to put the economy back on the path of price stability
  - in Bofinger (2001) view, short-term real interest rate and the term structure of interest rates, are widely used 'indicators'

- as far as *intermediate targets* are concerned:
  - they are 'variables' that occupy an intermediate position in the transmission process; between

the operating target (directly under control) and ultimate goal

- and they are justified by the argument that it is difficult for a central bank to control the ultimate goal directly: *'The relationship, it is argued, between the operating target and the ultimate target is extremely complex, and our understanding of this relationship is incomplete'* (Neumann, 1974)
- well known definition of an intermediate target is as follows:
  * it must be *easily to control by the operating target*
  * and there must be *a close relationship between the intermediate target and the ultimate target*
- this 'traditional' reasoning is, however, not fully constistent, as at the same time it is
  * argued that an intermediate target is needed because of our lack of knowledge about transmission mechanism
  * and expected that a variable, reliably manageble by the central bank, and with a close relationship to the ultimate goal, could be found ...

  - just the existence of such a variable would, however, imply also the existence of a stable relationship between the operating target and the ultimate goal
  - despite the latter it is supposed that an intermediate target can still serve as an general compass to determine how to use the operating target, and at the same time fulfils the role of the most important 'leading' and 'policy' indicator

- the decision, which variable to choose as the intermediate target depends essentially on which theory the central bank bases its explanation of the transmission process

- having in mind our definiton of 'simple rules' following variables can be considered as intermediate targets:
  - a monetary aggregate such as M1, M2, or M3
  - an inflation forecast
  - the exchange rate (or an exchange rate basket)

- or the central bank can try to control the ultimate target directly with instruments at its disposal ...

Monetary targeting

- the *explicit rule* provided by monetary targeting can be stated as follows:
  'growth rate of the money stock should follow a medium-path that is determined by the quantity theory'

- while the *implicit rule* is understood as follows:
  'if monetary growth exceeds the targeted monetary growth, short-term interest rates have to be increased'

- this, no doubts, reduces the monetary policy decision process to a single cue, and can be viewed as a perfect 'simple rule'

- as you well know, the concept of monetary targeting was developed by economists of the Monetarist School (Friedman, 1968; Brunner and Meltzer, 1964; Brunner, 1968) ...

- and became attractive for policy-makers after the breakdown of the Bretton Woods system, that had provided simple and stable policy rule for all the central banks outside the United States

Explicit rule of monetary targeting

- monetary targeting is based on the simple theoretical framework described by the quantity theory:
  - economic process is inherently stable because of strong self-stabilizing tendencies of flexible prices
  - main task of monetary policy is to increase the money supply over time in accordance with the trend rate of real growth
  - best thing monetary policy can do is to prevent money from becoming a source of economic instability
- monetary targeting is, therefore, claimed to be a medium-term or even long-term strategy, which has the main advantage of defining a neutral path for the money stock
- despite this, the practical use of monetary targeting is mostly based on an annual basis; the whole approach can most clearly be demonstrated with the Bundesbank's practise ...
  - the starting point is the quantity equation:

$$MV \equiv PY \tag{1}$$

- transforming the quantity equation into growth rates and solving for money stock, one obtains:

$$\widehat{M} \equiv \pi + \widehat{Y} - \widehat{V} \tag{2}$$

- replacing the actual values of right-hand side by normative of trends, this identity can be transformed into the so-called *'potential formula'*:

$$\widehat{M2}^{*} = \pi^{norm} + Y^{\widehat{pot}} - V^{\widehat{trend}} \tag{3}$$

- the value for the inflation is the *normative inflation rate*, an inflation rate considered to approximate price stability
- for the real output growth rate, estimation of *potential output* growth is used
  - which ensures that monetary policy is geared to the medium-term
  - and makes monetary targeting to be a 'self-stabilising' policy rule
- for a change in velocity of money, value obtained as the long-term *trend in the velocity of money* is used (in many developed countries a falling trend has been observed recently)
- following Table shows the *'target values'* that the Bundesbank has derived since 1975 based on the potential formula

Year	π	Y^{pot}	V^{trend}	$\widehat{M}$
1975	5-6	-	-	8
1976	4-5	2	'increase'	8
1977	≤ 4	3	'slight increase'	8
1978	3	3	-	8
1979	'moderate price increase'	'as the year before'	'declining'	6-9
1980	3.5-4	3	'continuous decline'	5-8
1981	3.5	2.5	'inreasing'	4-7
1982	3.5	1.5-2	-	4-7
1983	3	1.5-2	-	4-7
1984	2	2	-	4-6
1985	2	2	-	3-5
1986	2	2.5	-	3.5-5.5
1987	2	2.5	-	3-6
1988	2	2	-0.5	3-6
1989	2	2-2.5	-0.5	5
1990	2	2.5	-0.5	4-6
1991	2	2.5	-0.5	3-5
1992	2	2.75	-0.5	3.5-5.5
1993	2	3	-1	4.5-6.5
1994	2	2.5	-1	4-6
1995	2	2.75	-1	4-6
1996	2	2.5	-1	4-7
1997	1.5-2	2.25	-1	3.5-6.6
1998	1.5-2	2	-1	3-6

Monetary targeting and shocks

- 'potential formula' shows that shocks are not explicitly addressed by monetary targeting

- in fact, supporters of monetary targeting regard this as an advantage, since
  - it avoids any policy reaction to such shocks
  - which would always bear risk of additional destabilisation of the economy
  - former ECB president Duisenberg declared: *'It would be overambitious and therefore risky to steer the economy in the short term. Fine-tuning would more likely lead to instability than to stability.'* (Duisenberg, 1999a)

- assume that the central bank can perfectly control the money stock:
  - if an economy is confronted with a negative *demand shock*, monetary targeting implies that a central bank will keep the money stock constant
  - lower demand for money (less transactions) results in fall of interest rates
  - stimulating aggregate demand ...
  - monetary targeting therefore encompasses an automated return towards the equilibrium

- in a situation with a negative *supply shock* monetary targeting comes close to nominal GDP rule
- dividing the shock effect into a price increase and output fall
- monetary targeting, thus, does not imply any active attempt to keep the price level constant in the short run

- it follows that although monetary targeting has not explicitly been designed to cope with demand and supply shocks, it provides a stabilization of demand shocks and accommodation of supply shocks

- entailing a pasive attitude to short-term changes in the price level

- question: is the stabilization of demand shocks and accommodation of supply shocks provided by monetary targeting a complete one?

The implicit rule of monetary targeting

- while an explicit rule defines the target level of a monetary aggregate, an implicit rule desribes how the central bank can control the targeted monetary aggregate

- the implicit rule of monetary targeting is usually understood as follows: if monetary growth (μ) exceeds the target (μ^*), central bank has to increase short-term interest rates (and vice versa)

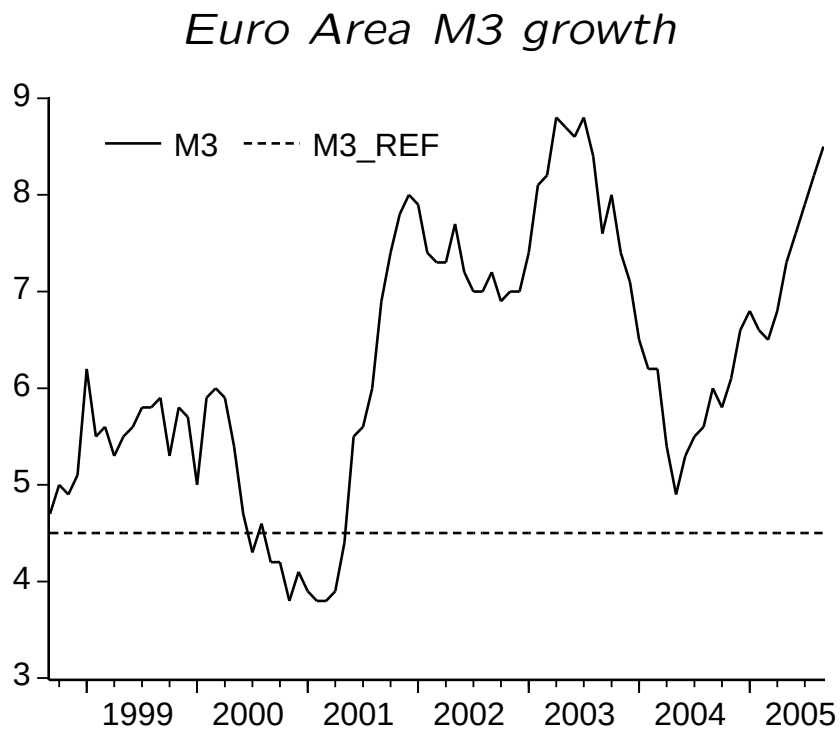
$$i_t - i_{t-1} = \gamma(\mu - \mu^*) \tag{4}$$

  with $\gamma > 0$

- anyhow simple this rule seems to be, in practice it is really difficult to be followed

Money demand (in)stability and other stories

- practical applicability of the above mentioned rule critically depends on the money demand stability
- this, however, cannot be taken for granted; especially in the short run
- even the monetary growth on an annual basis has proved itself to be rather difficult to control
- if money demand is not stable enough ...
  - observation of a higher than targeted monetary growth could mean just the shift in money demand (and vice versa)
  - a shift that does not call for any monetary policy action
  - nevertheless, this is of course quite difficult to recognise
- following Figure depicts this problem using 'M3 growth reference value' of the ECB and real observation of the same variable



- it is evident that if the ECB has been following monetary targeting it would have to:
  - decrease the short-term interest rate during the years 2000 and 2001
  - but mainly, increase the short-term interest rate during the years 2002, 2003 and again 2005
- however, as following table documents, the movements of the ECB policy rate were rather opposite

Date	Rate (%)	Change (p.p.)
January 1999	3	-
April 1999	2.5	-0.5
November 1999	3	0.5
February 2000	3.25	0.25
March 2000	3.5	0.25
April 2000	3.75	0.25
June 2000	4.25	0.5
September 2000	4.5	0.25
October 2000	4.75	0.25
May 2001	4.5	-0.25
August 2001	4.25	-0.25
September 2001	3.75	-0.5
November 2001	3.25	-0.5
December 2002	2.75	-0.5
March 2003	2.5	-0.25
June 2003	2	-0.5
December 2005	2.25	0.25
March 2006	2.5	0.25

- but even if the money demand were stable, the control of monetary growth tends to be difficult

- this is due to the interest rate that is used in money demand function (money demand specification)
  - in order to get 'significant' result for interest rate elasticity for the M3 monetary aggregate
  - interest rate representation by the *spread* between long-term and short-term interest rate is often used (Coenen and Vega, 1999, for the Euro Area)

- however, this above all raises the problem that the central bank (even the ECB) cannot control this spread
- in addition, as money demand has a negative elasticity in relation to this spread it follows that whenever the money growth is to high, short-term interest rates have to be lowered (lowering the short-term interest rate, the interest rate spread can become higher)

- indeed, this problem was present in the era of the Bundesbank:
  - in fact, Bundesbank lowered its short-term interest rates in the period 1992-4
  - although monetary growth was much higher than targeted
  - and as a result, the monetary growth decelerated

- of course, one can argue that the Bundesbank lowered its short-term interest rates expecting a slowdown of the German economy, and consequent deceleration of money growth was just the result of that slowdown

- however, such an argument goes already behind the monetary targeting policy strategy ...