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CONTACT Press Service, tel. +46-8-787 02 00

SVERIGES RIKSBANK
SE-103 37 Stockholm
(Brunkebergstorg 11)

Tel +46 8 787 00 00
Fax +46 8 21 05 31
registratorn@riksbank.se
www.riksbank.se

■ What have economists learned about monetary policy over the past 50 years?

Deputy Governor Lars E. O. Svensson gave a speech today at the conference "Monetary Policy over Fifty Years" in Frankfurt am Main, on the occasion of the 50th anniversary of the Deutsche Bundesbank. In his speech Mr Svensson gave a personal account of his view on the development of monetary policy research over the past 50 years".

"In economic research, 50 years is a long time. I will actually start in 1967, with Milton Friedman's presidential address at the meeting of the American Economic Association, so I will only cover about 40 years. I will give a very personal view of what economists have learned since Friedman's address that is most relevant for practical monetary policy. I will hence be selective, eclectic, and possibly controversial," began Mr Svensson.

Friedman's "The role of monetary policy" – a classic

"The title of Friedman's address was 'The role of monetary policy.' It remains a classic in the development of a monetary-policy framework. He discussed what monetary policy cannot do, what it can do, and how monetary policy should be conducted. Regarding what monetary policy cannot do, he noted that it cannot in the long run control real variables such as unemployment and GDP; it can only control nominal variables, such as the exchange rates, the price level, or monetary aggregates. These insights were not obvious at the time, but they are now part of the conventional wisdom," continued Mr Svensson.

"Regarding what monetary policy can do, Friedman emphasized three things: First, monetary policy can avoid being a major source of disturbance; it should avoid major mistakes. Second, monetary policy can provide a stable background for the economy, preferably by achieving price stability. Finally, monetary policy can contribute to offsetting major disturbances in the economic system arising from other sources. On the last point, Friedman emphasized the danger of being overly ambitious: '[T]he potentiality of monetary policy in offsetting other forces making for instability is far more limited than is commonly believed. ... In this

area particularly the best is likely to be the enemy of the good. Experience suggests that the path of wisdom is to use monetary policy explicitly to offset other disturbances only when they offer a clear and present danger'," said Mr Svensson.

"Target money – too difficult to target the price level"

"Regarding how monetary policy should be conducted, Friedman stated two requirements: The first requirement is that central banks should only target variables that they can control, such as the exchange rate, the price level, or a monetary aggregate. Friedman considered an exchange-rate target unsuitable for the U.S., since it implies adapting to the average of whatever policies monetary authorities in the rest of the world adopt. He stated that targeting the price level would in principle be best, but emphasized that control of the price level was too imperfect, with policy actions having uncertain effects on the price level with long and variable lags. Therefore, he recommended targeting a monetary aggregate, since central banks have better control over money and lags are shorter. The second requirement is that central banks should avoid sharp swings in policy. Therefore he recommended central banks to achieve a steady but moderate rate of growth of a specified monetary aggregate – which rate of growth and particular aggregate is not so important as long as they are explicitly stated and adopted. Friedman said: 'That is the most that we can ask from monetary policy at our present state of knowledge'," continued Mr Svensson, emphasizing Friedman's qualification "at our present state of knowledge".

Monetary targeting failed, but inflation targeting has worked fine

"Monetary targeting was tried in several countries during the 1970s and 1980s, but it constantly failed and was therefore abandoned. In contrast, when inflation targeting, the current best practice in monetary policy, was introduced in the 1990s in New Zealand, Canada, the U.K., Sweden, Finland, Australia, and later in many other countries, it worked fine. The great exception to the failure of monetary targeting appears to be the great performance in Germany by the Bundesbank, which kept inflation low and stable when inflation became high and variable in other countries," said Mr Svensson.

"However, closer scrutiny and many studies of the Bundesbank's monetary policy have revealed that the Bundesbank was actually a secret inflation targeter: Whenever there was a conflict between achieving the money-growth target and the inflation target (which was called 'unavoidable inflation', 'price norm', or 'medium-term price assumption'), the Bundesbank consistently gave priority to the inflation target and willingly missed its money-growth target. Thus, the Bundesbank's great and admirable performance actually demonstrates the success of inflation targeting, not of monetary targeting – although the success of rather nontransparent inflation targeting," added Mr Svensson.

"Given the evidence, Friedman actually changed his view. Some years ago I had the opportunity to ask him personally at a conference at the San Francisco Fed whether the success of inflation targeting would make him revise his recommendation to target money instead of targeting inflation and the price level directly. He answered that he had revised his recommendation. In an interview with the Financial Times in June 2003, Friedman also conceded that targeting money had not been a success," continued Mr Svensson.

"Inflation targeting is in practice always *flexible* inflation targeting. That is, it aims to stabilize not only inflation around an inflation target but also the real economy. Furthermore, because inflation and resource utilization respond with considerable lags to monetary-policy actions, it is necessary to rely on forecasts. Flexible inflation targeting then boils down to what I have called 'forecast targeting.' That is, it consists of choosing and implementing an interest-rate path such that the resulting forecasts of inflation and measures of resource utilization 'look good'. 'Looking good' means that inflation approaches the inflation target and resource utilization approaches a normal level at a suitable pace," continued Mr Svensson.

Better knowledge about the transmission mechanism

"Why has inflation targeting worked so well? I believe central banks now have a better knowledge about the transmission mechanism of monetary policy than 40 years ago. This allows them to produce usable forecasts of inflation and resource utilization conditional on alternative interest-rate paths, the forecasts that are a necessary requirement for forecast targeting," said Mr Svensson.

"The conventional wisdom about the transmission mechanism with aggregate demand and aggregate supply/Phillips curves is still relevant, but it has been much refined with more transmission channels and, in particular, much better understanding of the role of expectations. It is now generally acknowledged that monetary policy works mainly through the private-sector expectations of future interest rates and future inflation that central-bank actions and statements give rise to. Those expectations matter much more than the current interest rate. That is, monetary policy is 'the management of expectations,' as Michael Woodford has expressed it. A few central banks, namely the Reserve Bank of New Zealand, Norges Bank, the Riksbank, and Sedlabanki Islands, now choose and publish what can be interpreted as an optimal interest-rate path or plan, as a more effective and transparent implementation of policy. This practice will gradually become the norm, I believe. For instance, the Czech National Bank has announced that it will start doing this from 2008," said Mr Svensson.

"Theoretical research on the transmission mechanism has been paralleled by better empirical methods, including Kalman filtering, vector auto regression, and Bayesian estimation methods. The current research frontier of monetary policy seems to be the development at several central banks of empirical Bayesian dynamic stochastic general equilibrium (DSGE) models for policy analysis, forecasting, and simulation. The Riksbank already has such a model, RAMSES, in operational use," continued Mr Svensson.

Monetary aggregates matter little for monetary policy

"We have also learned, I believe, that monetary aggregates matter little, or even not at all, for monetary policy. Credit aggregates may matter, though. But economic theory has not found any separate transmission channel from money to prices. Empirically, a large amount of research has confirmed that there is little or no information in money about future inflation beyond other explanatory variables, both for high- and low-frequency fluctuations," said Mr Svensson.

"Furthermore, I believe that Friedman's statement that 'inflation is always and everywhere a monetary phenomenon' is often misunderstood. It refers to a *cor-*

relation between endogenous variables, inflation and money growth, but it says nothing about *causality*, that is, which variable determines the other. The direction of causality is instead determined by the monetary-policy regime. More precisely, in general equilibrium, endogenous variables are determined by exogenous variables. Which variables are exogenous and endogenous is determined by the monetary-policy regime. Strict monetary targeting would make money growth effectively exogenous. Then inflation becomes endogenous and is determined by money growth. Strict inflation targeting would make inflation effectively exogenous. Then money growth becomes endogenous and is determined by inflation. A fixed exchange rate makes both inflation and money growth endogenous variables. Then both variables are determined by other, exogenous domestic and foreign variables, including foreign monetary policy," said Mr Svensson.

The importance of the institutional framework

"We have also learned the importance of the institutional framework for a stable and successful monetary policy. The Bundesbank has been a starting point for later institutional developments. Good and stable monetary policy is now seen as resting on three pillars: (1) a mandate, with priority to price stability but also with some weight on real stabilization, (2) independence, to avoid short-term political interference and to give the central bank the possibility of achieving its mandate, and (3) accountability, which improves with transparency, creates the incentive to the central bank to achieve its mandate, and provides democratic control of a powerful institution. The importance of credibility and transparency is also much better understood these days, and a good institutional framework contributes to the credibility of the monetary-policy regime," continued Mr Svensson.

Taylor rules are robust but often overemphasized and misunderstood

"Taylor rules, where the interest rate is set mechanically as a simple linear function of current inflation and output, are frequently referred to in current monetary-policy analysis. I believe that they are often overemphasized and misunderstood. In many research papers, monetary policy is modelled as if the central bank is committed to follow a Taylor rule. Taylor rules are often treated as a structural equation. But no central bank has made such a commitment, and inflation-targeting central banks respond to much more information than current inflation and output. The empirical fit of Taylor rules is modest: I am not aware of any estimation that has a higher R-square for interest-rate changes than about 2/3, meaning that 1/3 of the variance of interest-rate changes is explained by other things than the Taylor rule. Taylor rules are actually empirical and simplified reduced forms, not structural equations. They are not optimal, and they lack microfoundations," said Mr Svensson.

"But Taylor rules are quite robust, in the sense that a Taylor rule almost never works very badly in reasonable models. Why is that? The reason is that an optimal instrument rule responds to *all* the determinants of the forecasts of the target variables (inflation and resource utilization). Current inflation and output are important determinants of future inflation and output. Therefore, responding *only* to current inflation and output is not that bad and actually quite a robust policy. If the central bank knows little about the economy and the transmission mechanism but can at least observe current inflation and output, it can do much worse than following a Taylor rule. But today's inflation-targeting central banks have

much more information, know more about the transmission mechanism, and therefore can do better than the Taylor rule. Consequently they respond to more information and deviate quite a bit from the Taylor rule," said Mr Svensson.

What do we not know?

"What do we not know, and where should we try to make progress in future research? I believe that it is desirable to do flexible inflation targeting more explicitly. This requires more work on measures of resource stabilization and potential output and raises difficult but important conceptual and empirical issues. I also believe that flexible inflation targeting would benefit from more use of explicit loss functions to evaluate alternative policy options and determine the optimal one. Norges Bank seems ahead of other central banks in this regard. As every maker of monetary policy knows, model uncertainty is always present and sometimes very large. We could certainly benefit from better techniques to incorporate model uncertainty in forecasts. It would also be desirable to have better modelling of financial markets and the determination of yield curves and exchange rates, the credit channel, and labor markets in the existing empirical DSGE models of the transmission mechanism," continued Mr Svensson.

"Regarding the ongoing discussion about the role of asset prices in monetary policy, I believe we know enough to state that asset prices should not be targets of monetary policy. As long as their development is not a threat to financial stability and the payment system, they are relevant for monetary policy only as indicator variables, that is, only to the extent that they contain some information about the future target variables (inflation and resource utilization). However, if credit or asset-price developments indicate threats to financial stability or the payment system, this may impose restrictions on the normal conduct of monetary policy and also require special actions," concluded Mr Svensson.