SPEECH

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Monetary policy and the academics[1]

I would like to begin by saying how happy and grateful I am to have been awarded the title of honorary doctor at Umeå University and to stand here and speak to you today.

I intend to talk about a subject that I think may be fairly appropriate in an environment like this, namely the connection between academic research and practical monetary policy. It is also a subject that I have rather much experience of. I imagine that one of the reasons Umeå University wanted to confer this distinction on me is precisely the fact that for some 20 years now I have helped create a bridge between academia and the institutions in the country – mainly the Ministry of Finance and the Riksbank – where economic policy is shaped.

There can be no doubt that the research that has been carried on in the academic world has had great, and in some respects even crucial, significance for how monetary policy today is conducted in Sweden and many other countries. At the same time, it is just as clear that the practical policy in turn has been a step ahead on occasions and provided important inspiration and ideas to the academic research. So it has been a mutual exchange. I think you could say that there are few fields within the social sciences where the interaction between academics and practitioners has been – and still is – as intensive and fruitful as it is within monetary policy.

A look back

It may be appropriate to begin with a brief look back at the economic performance in Sweden in recent decades. As you all remember, our country was hit hard by a deep economic crisis at the start of the 1990s. This crisis had several specific causes, but on a more general level it could be described as a dramatic end to almost twenty years of stabilisation policy problems in the Swedish economy. During the 1970s and 1980s the policies conducted tended to be too expansionary for various reasons. That created an environment in which it proved difficult to keep price and wage increases at a reasonable level. So the fixed exchange rate policy did not lead, as was intended, to a Swedish inflation rate on

[1] I would like to thank Mikael Apel and Per Jansson for their considerable support in the work on this speech.

a par with that of our most important trading partners. Instead, price and wage developments repeatedly came on a collision course with the fixed exchange rate – we ended up in cost crises. These cost crises were ”resolved” temporarily through devaluations of the krona, but the fundamental problem – the excessively fast trend increase in domestic prices and wages – was always there in the background.

In this way the economy came to be characterised by "devaluation cycles" with alternating periods of sharp slowdowns and strong stimulus. In my opinion, the unsuccessful stabilisation policy was a significant reason why the Swedish economy performed so weakly, both compared with previous periods and in relation to other countries. When the fixed exchange rate system finally had to be abandoned in November 1992, in the wake of yet another cost crisis and following a battle to defend the krona and break the negative developments, it was obvious that something drastic had to be done to get the Swedish economy on a better track.

The solution was a shift in stabilisation policy regime, whereby the tasks of both monetary and fiscal policy were fundamentally re-defined. Fiscal policy, which previously often had been too expansionary and had helped fuel the high inflation, was now instead to be governed by the aims of long-term stability and sustainability in the public finances. Monetary policy, on the other hand, was given a considerably more central and active role than before. Now that the krona was to continue to float, the main objective of monetary policy was to more directly attempt to keep inflation at a low and stable level, chiefly by adjusting interest rates to influence demand in the economy. This objective was interpreted by the Riksbank to mean that the rate of increase in the consumer price index was to be two per cent a year. With that, in 1993 Sweden became one of the first countries to adopt a policy of inflation targeting. This framework for conducting monetary policy has gained in popularity ever since and today is implemented by some twenty central banks around the world.

Looking back on the developments in the past ten years, it is difficult to come to any other conclusion than that the new regime has worked well. Sweden is no longer a high-inflation economy with recurrent cost crises, high interest rates, an unstable economic performance and modest rises in real wages. Instead, inflation has been low, economic growth higher and more stable than in the 1970s and 1980s, and real wage growth considerably more favourable (Figure 1). Employment growth has not been as good, but it nonetheless is worth pointing out that the situation today is far better than it was in the mid-1990s. At that time unemployment was commonly judged to have become entrenched around 8 per cent.

The role of the academic research

The introduction of an explicit target for inflation

So what role has the academic research played for the way in which monetary policy today is conducted and thus in some measure also for the past decade's favourable economic performance? Allow me to begin by saying a few words about the idea to allow monetary policy to be guided by a specific, numerical target for inflation.

As I just mentioned, Sweden was one of the first countries to introduce inflation targeting. The first, more specifically in 1990, was New Zealand, which like Sweden long had contended with problems of high trend inflation and an otherwise poor economic performance.[2] The idea of setting a numerical target for inflation today appears fairly natural, but at that time it was actually almost revolutionary. For countries with a floating exchange rate the usual approach during the 1980s was instead, in line with the academic literature, to use different measures of the money supply to steer inflation. But it proved increasingly difficult to find stable, useful methods for this, or as a former governor of the Bank of Canada put it: "We didn't abandon the monetary aggregates, they abandoned us". Another common system was, as I already mentioned, to keep the exchange rate fixed and thus stabilise inflation in that way. So even though monetary policy in many countries by this time had the task of keeping inflation low and stable, no direct and explicit numerical target for inflation had so far been specified.

It is perhaps interesting to note in this context that during a period in the 1930s Sweden actually implemented what could be described as a form of inflation targeting. When the fixed exchange rate had to be abandoned in autumn 1931 the Riksbank and the Government declared that the Riksbank's objective would be to stabilise the price level, i.e. an inflation target of zero per cent, if you like. Thus, by all appearances Sveriges Riksbank became the first central bank in the world to explicitly announce price stabilisation as the norm for its policy under a floating exchange rate.[3] The inspiration for the price stabilisation norm came from works that had been done far earlier – at the end of the 1800s – by Knut Wicksell, who today stands out as perhaps our country's foremost economist of all time. However, in 1990 the experiences from the Swedish price stabilisation norm were a distant memory and it is unlikely that they had any significance – or even were known – when New Zealand decided to introduce inflation targeting.

It is said that the decisive effort towards introducing an explicit inflation target for monetary policy was made by far-sighted individuals at New Zealand's finance ministry and central bank. There was no relevant academic research from which to draw support; instead, the New Zealand authorities had to launch the new regime more or less as an "experiment" and quite simply see how well it worked in practice. So the concept of an explicit inflation target for monetary policy cannot – at least in its modern version – be said to have its origin in the academic world but instead in the work of practising economists.

That the academic research initially played a more limited role can be seen by searching on the term "inflation targeting" in one of the best-known databases for scientific publications in economics and counting the number of hits for each year (Figure 2). This shows that it does not seem to be until the mid-1990s, i.e. about five years after its introduction in practice, that inflation targeting began to attract any significant interest in the academic research. The first international conference on inflation targeting with the participation of both academic researchers and central bank representatives was, to my knowledge, held in

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[2] It is not that easy to date the introduction of inflation targeting in New Zealand since it happened as part of a process over a number of years. The start of that process is usually considered to be March 1985 when New Zealand changed over from a fixed to a floating exchange rate and the new government (elected in June 1984) gave the central bank the sole task of achieving price stability. The end of the process is usually dated March 1990 when the new central bank legislation gave the bank full independence to aim to meet an inflation target of 0-2 per cent.

[3] See Berg, C. and L. Jonung (1999), "Pioneering price level targeting: The Swedish Experience 1931-1937", *Journal of Monetary Economics* 43, 525-551.

Milan in 1994.[4] From the mid-1990s the interest in academic circles increased quickly, though.

The importance of independent central banks

So even though the research cannot be said to have played a decisive role as regards the introduction of a specific target for inflation, it has had all the more significance for the conduct of inflation targeting in a different central aspect, namely how the institutional framework should be designed to ensure the best possible result.

To illustrate this, let me return for a moment to the Swedish performance during the 1970s and 1980s. As I said earlier, the main problem was that Swedish prices and wages were tending to increase far too fast. It is worth stressing that this situation was not due to a lack of insight into the problems or a lack of ambition – at least on paper – to try to remedy them. On several occasions voices in Government circles emphasised the importance of bringing inflation under control. For instance, in the report "Krisplan för Sverige" (Crisis plan for Sweden), which the Government presented in 1982, it was concluded:

"After the devaluation has taken effect, inflation must be pushed down and stabilised at a low level. Both the development of demand and costs in the Swedish economy must be adjusted to this".[5]

Similarly, the 1985 report *Vägen till ett stabilare Sverige (the road to a more stable Sweden)*, by the Center for Business and Policy Studies, concludes that

"We currently stand at an important crossroads between essentially two different strategies for economic policy. The first option is a continued accommodative […] regime. The second is a […] price stabilisation policy […] [where] a low and constant inflation rate […] [is] the central condition for a balanced economic performance in Sweden with high employment and growth".[6]

Why then, despite all these commitments, did we not succeed in breaking the unfavourable trend? The answer is likely given in large measure by the research into the so-called time-inconsistency problems of economic policy, which were one of the reasons that Finn Kydland and Edward Prescott in 2004 were awarded the Riksbank's Prize in Economic Sciences in memory of Alfred Nobel.[7] This research brought into focus the fact that difficulties in making binding commitments in stabilisation policy can make it hard to keep down inflation. The basic problem is that economic policymakers' short-term motives may come into conflict with the long-term ambition to keep inflation at a low level. That makes it difficult to convince economic agents that policy will be consistent over time – hence the term time-inconsistency problem.

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[4] The contributions to this conference have been compiled in Leiderman, L. and L.E.O. Svensson (eds.) (1995), *Inflation Targets*, Centre for Economic Policy Research, London.
[5] See "An account of fiscal and monetary policy in the 1990s", annex 5 to the 2001 Spring Fiscal Policy Bill.
[6] The quotation is taken from *Vägen till ett stabilare Sverige (the road to a more stable Sweden)*, Economic Policy Group report 1985, Center for Business and Policy Studies (SNS). Quotation translated by Sveriges Riksbank. Similar observations had also been made earlier in, for example, Jonung, L. (1978), "En stabil stabiliseringspolitik" (A stable stabilisation policy), *Ekonomisk debatt* 1, 7-18.
[7] Kydland, F. and E. Prescott (1977), "Rules Rather Than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy* 85, 473-490. A summary of Kydland's and Prescott's research is given in The Royal Swedish Academy of Sciences (2004), "Finn Kydland and Edward Prescott's Contribution to Dynamic Macroeconomics: The Time Consistency of Economic Policy and the Driving Forces Behind Business Cycles" (http://nobelprize.org/economics/laureates/2004/ecoadv.pdf).

Suppose that the Government authorities declare that inflation will be held at a certain low level in the period ahead and that economic agents initially believe that this will be the case. Inflation expectations in society will then adjust to the low inflation rate. However, when inflation expectations have been adjusted economic policymakers may, for various reasons, have cause to depart from the established long-term norm for inflation. For instance, a temporary drop in unemployment, achieved by stimulating the economy and allowing inflation to rise, might be perceived as politically advantageous, even though the benefits will not last. At the same time, the costs of higher inflation are not seen as that serious since the initial inflation rate is low. It is easy to imagine that the temptation to conduct such a policy might be especially strong in some situations, e.g. in the run-up to an election.

But since economic agents realise that such a constant temptation exists for economic policymakers with an ambitious employment target, they will adjust their inflation expectations from the very beginning to this fact rather than to the declared inflation target. That means that price and wage formation in practice will be based on a higher inflation rate than the set target. The best the Government authorities perceive that they can do in this situation is to conduct an accommodative policy that ensures that the high inflation expectations are fulfilled. The end result is that inflation ends up at a higher level than the public authorities' long-term target – an inflation bias arises – without output and employment turning out higher in the end.

This appears to be a fairly good description of what happened in Sweden and many other countries during the 1970s and 1980s. The repeated commitments to keep inflation low were quite simply not perceived to be credible. Excessively high wage increases were not considered to be that serious by wage-earners and employers; it was assumed that the exchange rate would be adjusted down if employment was threatened. In other words inflation expectations adapted in advance to an expected economic policy course of action whereby high increments in prices and wages were accommodated through devaluations. So you could say that what was lacking was sufficiently convincing arrangements to back up the low-inflation ambitions that nonetheless evidently existed.

The academic research subsequently generated several more or less realistic theoretical solutions designed to overcome the time-inconsistency problem and the inflation bias it gives rise to.[8] Many of these solutions, though, were based on the assumption that the temptation to stimulate the economy to attain short-term advantages not only existed for governments but also for central banks, regardless of whether the banks had been given an explicit mandate and freedom to act independently. I do not believe this is a very accurate description of reality, which I also think practical experience has shown. So it seems to me that at least some of the research for a while underestimated what delegating monetary policy to an independent central bank can accomplish in terms of getting the better of the problem of overly high inflation. Alan Blinder, the well-known American economist and also for a time vice chairman of the Board of Governors of the Federal Reserve, appears to share this opinion. He has claimed that during

[8] See, for example, Rogoff, K. (1985), "The Optimal Degree of Commitment to an Intermediate Monetary Target", *Quarterly Journal of Economics* 100, 1169-1190, Persson, T. and G. Tabellini (1993), "Designing Institutions for Monetary Stability", *Carnegie-Rochester Conference Series on Public Policy* 39, 53-84, Walsh, C.E. (1995), "Optimal Contracts for Central Bankers", *American Economic Review* 85, 150-167, and Svensson, L.E.O. (1997), "Optimal Inflation Targets, 'Conservative' Central Banks, and Linear Inflation Contracts", *American Economic Review* 87, 98-114.

his time at the Federal Reserve he never perceived there to be any temptation to stimulate the economy at the expense of the Fed's inflation ambitions so as to achieve short-term benefits in the form of temporarily higher employment and output. There simply was an awareness of the costs associated with such a policy.[9] The same is true of the ten years of monetary policy with an inflation target that I can remember in Sweden.

Behind the successful policy lies a change in central bank behaviour. There is now a widespread understanding that monetary policy cannot permanently raise the level of employment and that attempts to that end only result in higher inflation. Employment problems instead must be tackled through improvements in the functioning of the labour market. That monetary policy cannot permanently raise employment or boost output is one of the most important insights that theoretical and empirical academic research has contributed to, and it is supported by the practical experiences of monetary policy in several countries for more than a decade.

At the end of the day, it is fairly natural that it is considerably easier for an independent central bank to resist the temptation to conduct an overly expansionary policy than for a government that has to make day-to-day decisions under pressure from key voter groups. When this temptation no longer exists, economic agents trust that inflation will be kept low and thus the inflation bias also disappears. So my interpretation is that the problem is very much politically determined and that it is the actual delegation of monetary policy to an independent central bank, coupled with the understanding that monetary policy cannot raise the employment level permanently, that has been the key to the solution. In line with that it is no longer assumed in monetary policy research that central banks have a tendency to over-stimulate the economy.

But even though some of the research may have underestimated the advantages of an independent central bank the fact undoubtedly remains that Kydland's and Prescott's original contribution has had great practical significance. The knowledge that inflation can become unnecessarily high in the absence of opportunities to gain credibility among economic agents that the announced low-inflation policy will remain in place over time can be said to have been the starting point for those institutional reforms concerning central bank status that have been carried out in many countries since the beginning of the 1990s. In Sweden monetary policy was in practice conducted independently from the mid-1990s at least. The legislation itself was changed on 1 January 1999 in a way that also formally strengthened the Riksbank's status; among other things, the former Governing Council, which was appointed directly by the Government, was replaced by an Executive Board with full-time members whose job it is to independently make monetary policy decisions. At the same time it was confirmed by law that the objective of the Riksbank's activities was to maintain price stability.

Further developments in inflation targeting

What can be said then regarding how inflation targeting has developed further in the past ten-fifteen years? There is no doubt that the Riksbank's monetary policy strategy has gradually evolved and been modified during the period with an

[9] See, for example, Blinder, A.S. (1997), "What Central Bankers Could Learn from Academics – and Vice Versa", *Journal of Economic Perspectives* 11, 3-19.

inflation target. In other words, we do not think, act or communicate in the same way today as we did when the inflation targeting regime was new. To some extent the force driving the changes has been practical experience, both in Sweden and in other countries that conduct policy in a similar way and with which we have discussions in many different international contexts. But the academic research has also had great significance. Incidentally, this research is being carried on to an increasing extent in central banks themselves (Figure 3).

If we were to try to summarise more generally what the research has meant for the development of the inflation targeting policy we could say that in many respects it has helped to *systematise and discipline the thinking* at central banks on various matters – it has, so to speak, made the foundation for policy more stable. A good example of this kind of work and of fruitful interaction between researchers and the central bank world is the early works on inflation targeting by the Riksbank's adviser Lars Svensson, in which the trade-off between inflation stability and real stability is formalised and elucidated.[10] These works helped make it clearer to us at the Riksbank what inflation targeting involves. They also were a contributory factor in our decision to start publishing our forecasts and helped us to make our policy clearer by communicating a principle for how deviations from target would be handled; we said that we *normally* aimed to bring inflation back to target within two years when a shock had occurred.[11]

Inflation targeting research has long stressed the importance of *openness and clarity*, or transparency as it usually is called in these contexts. Not that long ago it was a tradition that central bankers' doings should be surrounded by a considerable amount of mystery and secrecy, also in Sweden.

There are both political and economic reasons why a high degree of transparency is desirable.[12] The political reason is simply that it is important to have openness and clarity if it is to be possible to undertake evaluations and exercise democratic control. This of course is a demand that we should be able to make on all government activities. But as regards monetary policy it is especially important given the independence that central banks have today.

The economic reasons are of different kinds. One is related to the time-inconsistency problem I spoke about earlier. By openly and clearly expressing the principles we follow in our decision-making, and by also publishing the data underpinning these decisions, we make it possible for all that so wish to follow our policy and see if we are living up to our principles. So we are tying ourselves to the mast, so to speak. This was a strategy that the Riksbank embarked upon in 1996 and the immediate years thereafter, when there still was no independence legislation to fall back on, and broadly speaking it worked very well. This way of working still has great value today, though. A present-day example is the Riksbank's decision in June to cut the repo rate. There is no doubt that this would have been questioned by some commentators, and described as a result of political pressure, if it had not been for the fact that it was so easy to see the grounds for the decision. Given the principles we follow, it was clear that the new data pointing to a weaker economy almost automatically led to the conclusion that a rate cut was justified.

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[10] See, for example, Svensson, L.E.O (1997), "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets", *European Economic Review* 41, 1111-1146.
[11] See Heikensten, L. (1999), "The Riksbank's inflation target - clarification and evaluation", *Sveriges Riksbank Quarterly Review* 1999:1.
[12] See, for example, chapter 1 in Blinder, A.S. (2004), *The Quiet Revolution – Central Banking Goes Modern*, Yale University Press.

The capability to steer the economy is also likely to increase the more transparent the central bank is. Both theory and empirical evidence suggest that long-term interest rates, exchange rates and the conditions in other financial markets have at least as much significance for how monetary policy influences the economy – what is usually called the transmission mechanism – as the short-term interest rates that the central bank can control more directly. Long-term interest rates and the prices of other financial assets in turn reflect the expectations of economic agents regarding future short-term interest rates as well as how uncertain they are over developments in the future. The clearer the central bank is about what it is doing and why, and about its outlook on the future, the easier it becomes for economic agents to form an opinion of how short-term rates will develop. That enhances the central bank's ability to influence longer-term interest rates as well and to bring them more in line with what is considered desirable. You could say that monetary policy thereby becomes more effective.

So inflation targeting now is conducted – almost by necessity – with a high degree of openness and clarity. During the latter part of the 1990s the Riksbank spearheaded this development and is usually ranked highly in international comparisons of monetary policy transparency (Figure 4).[13]

It may also be worth mentioning the research both in finance and econometrics. This has had great practical significance, above all because it has provided *new tools for the analysis and forecasting* conducted at central banks. Among other things, the research has developed methods to extract important information for monetary policy from price-setting in financial markets. The progress has been fairly dramatic and the decision-making data that we at the Riksbank have when it comes to interpreting developments in various markets is today completely different to what it was around ten years ago. For instance, on the basis of the yield curve, i.e. the interest rate on instruments with different maturities, we can use a number of methods to estimate what monetary policy market participants expect in the future; also, by looking at options prices we can get an idea of market uncertainty.

Another area in which the research in recent years has been rather extensive is where central banks have to deal with the fact that their *decisions are made under uncertainty*.[14] A central theme in this research is that it is not only the forecasts themselves – the expected outcome – that are important for what monetary policy should be conducted, but also the uncertainty and risks surrounding these forecasts.

One line of research has revolved around Bayesian methods, which briefly can be said to be a technique to formally incorporate estimated subjective probabilities of various conceivable outcomes in the analysis. Another area of research has focused on robust policy, which in somewhat simplified terms means a policy where the central objective is to avoid very poor outcomes. In such cases, when extraordinary events occur it is often a question of acting with prevention in mind

[13] See, for example, Eijffinger, S.C.W. and P.M. Geraats (2003), "How Transparent Are Central Banks?", CEPR Discussion Paper Series No. 3188 or van der Cruijsen, C. and M. Demertzis (2005), "The Impact of Central Bank Transparency on Inflation Expectations", Paper presented at the National Bank of Poland conference "Central Bank Transparency and Communication: Implications for Monetary Policy", Warsaw, June 2-3, 2005.

[14] See Walsh, C.E. (2004), "Precautionary Policies", Federal Reserve Bank of San Francisco *Economic Letter*, Number 2004-05, for a description of the latest findings and discussions in this field of research (http://www.sf.frb.org/publications/economics/letter/2004/el2004-05.pdf).

as a kind of "insurance" against a very weak performance. The Riksbank's action in autumn 1998 could be taken as an example of this.

At that time we thought we could see a small but nonetheless clear risk that the economy, as a result of the serious disturbances in the financial system at the time, could begin to decline and we therefore implemented a couple of rate cuts in fairly rapid succession. Afterwards, when the situation had become clearer, it turned out that the fears were exaggerated and that it was not necessary to cut rates. But we did not know that when we made the decision and the rate cuts were a way to guard against a very poor outcome. The lower interest rate meant an "unnecessary" stimulus of the real economy, but this could be remedied through somewhat tighter monetary policy later on.

The research in this field can to some extent be said to be positive in the sense that it describes how central banks tend to behave in practice and attempts to find theoretical arguments for this. But at the same time it has helped to formalise and structure the thinking at central banks as regards the best way to conduct monetary policy under uncertainty. It has also quite clearly put its finger on the fact that the management of different risks is a particularly important element of monetary policy.

Another, somewhat more specific example of the research's practical influence – and one that incidentally is rather relevant for the Riksbank at the moment – is the assumption for the *policy rate's future path* on which we base our forecasts. With few exceptions, it has been the practice among inflation-targeting central banks to base, or condition, their forecasts on the assumption that the policy rate is held constant during the forecast period. One reason for making this assumption was that it was thought to facilitate the communication of monetary policy in the sense that it clearly shows when there may be cause to adjust the policy rate – if inflation is forecast to deviate from target with an unchanged repo rate it is usually a sign that the current interest rate level is wrong.

However, the assumption of an unchanged policy rate also has a number of drawbacks, which have been pointed out in particular in the academic research.[15] For instance, the assumption makes it difficult both to evaluate the accuracy of the forecasts and to compare them with those of other forecasters. Other forecasters most often base their forecasts on the policy rate path that they assume the central bank will follow, and in practice it is fairly unusual for the repo rate to be held unchanged over the kind of time frame that is most often involved, at least two years. If the policy rate were changed during the period it would be quite strange if the central bank's forecasts turned out to be accurate. More generally, it can also be said that the assumption of an unchanged policy rate in some cases may be so unrealistic that it might be difficult to produce consistent and meaningful forecasts. For the Riksbank, this has become an increasingly important issue as our knowledge has increased and our analytical capacity has improved. That is why we now – like some other central banks, e.g. those in Norway and the UK – have decided to base our forecasts on market expectations of the future interest rate level. The discussion is unlikely to end here, however. For example, in the academic world there is currently a discussion as to whether it would not be even better if the interest rate path were entirely

[15] See, for example, Svensson. L.E.O. (2005), "Further Developments of Inflation Targeting", unpublished paper, Princeton University (http://www.princeton.edu/~svensson/papers/FrDevs.pdf) or Faust, J. and E.M. Leeper (2005), "Forecasts and Inflation Reports: An Evaluation", unpublished paper, Federal Reserve Board and Indiana University (http://www.riksbank.se/upload/Dokument_riksbank/Kat_foa/FaustLeeper.pdf).

endogenised, i.e. that the central bank more explicitly decides and announces what it judges to be the optimal path for the future policy rate, given the current information and the central bank's target.

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By way of conclusion – I hope that today you have got an idea of the close linkages that exist between academic research and practical monetary policy. Sometimes these linkages have meant that the research has influenced the practitioners and sometimes that the influences have gone in the other direction, from practical policy to research. In my speech today I have put somewhat more emphasis on the first of these channels than on the second, which reflects the fact that I am a practitioner who has been able to benefit from the insights of academics. But there is no doubt that the problems central bankers face and the practical experiences they gain also have been, and still are, an important source of inspiration for the academic research. Several of my academic contacts have stressed how valuable the contact with the central bank world is for their research. So it is indeed a case of a very productive giving and taking.

In addition, we seem to be seeing an increasing element of "personal unions". I recently saw a study that showed that central bank governors today, in a completely different way, are being appointed from academic economists. The nomination of Ben Bernanke as new chairman of the Federal Reserve is the latest excellent example of this. Overall at the Riksbank there also have been notable changes in this direction. For instance, fifteen years ago there was only a very small number of economists with a PhD at the Riksbank. The number today has risen to at least thirty.

This increasing academic influence has, of course, been significant for the central bank world in other ways too. In area after area – financial stability, foreign reserve management, financial risk management, and so on – it is becoming more common to apply an academic approach.

Naturally, it has also meant a lot for the environment in a broader sense. One of the things I will miss most now that I am leaving the Riksbank is the inquiring, lively and open academic discussions that I have had over the years with colleagues and staff.

Thank you.