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EDITOR: STAFFAN VIOTTI Information Secretariat, Sveriges Riksbank, S-103 37 Stockholm, Sweden Telephone Int. +46 8 787 00 00

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Economic policy coordination in the EU/euro area

By Lars Heikensten and Tomas Ernhagen

Recent decades have seen the evolution of ever closer economic cooperation in the EU. An important step was taken in 1993 when the internal market became a reality, and six years later 11 member states formed a monetary union with a common monetary policy. Both moves have had a major impact on the economic playing field in Europe. The combination of a common supranational monetary policy and otherwise primarily national economic policies is also changing the ground rules for economic policy. New demands are being made of economic policy cooperation, and lessons are being learnt from what has gone before.

New ground rules for economic policy

The spring of 1999 brought calls for the European Central Bank (ECB) to lower its main refinancing rate to counter the repercussions of the Asian crisis. Shouting loudest was German finance minister Oskar Lafontaine – no great surprise considering how

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much the sluggish German economy would have benefited from lower interest rates. But the new ground rules of European Monetary Union (EMU) do not allow monetary policy to be determined on the basis of the needs of one particular country. The cut in interest rates Lafontaine wanted to bring about did not materialise until after he had resigned, and only then as a result of the ECB's appraisal of the inflation outlook in the euro area as a whole.

This example illustrates the new economic policy playing field in Europe, with a common monetary policy intended to ensure price stability throughout the euro area, while responsibility for the rest of economic policy remains with the individual member states.

The common monetary policy is accentuating the interdependence between the EMU participants. There is now a risk of fiscal policy misjudgements and spiralling pay rises in one country impacting on the others in new ways via the common monetary policy. No longer can problems caused by events in the outside world be managed through interest and exchange rate adjustments.

This interdependence is the most important driving force behind the common economic policy discussions in the EU. This interdependence is the most important driving force behind the common economic policy discussions in the EU and has also underlain the decisions to introduce binding rules in areas such as budget deficits and gov-

ernment finances. But there are other contributing factors. In a common European approach to employment, the member states have attempted to address one of the most important political issues they have to tackle domestically. In both this and other contexts, the positive outcome of cooperation to date has formed an important starting point – clear examples being the improvements seen in government finances and inflation.

This article first examines the role of monetary policy in the new European order before presenting the different options available for discussion and contact between the various players on the European economic policy playing field. The following four sections review the diverse range of processes and instruments that have emerged for formulating and coordinating economic policy. Before the closing summary, the article then looks at various policy areas where closer cooperation has been discussed and, in some cases, introduced.

Monetary policy is to maintain price stability and be unambiguous

ECB must retain the right to intervene and change the interest rate, whenever circumstances so dictate. The Treaty on European Union clearly states that the ECB is to have independent responsibility for price stability within the monetary union. This means that cooperation or coor-

dination in the sense of the ECB sitting down with, say, Europe's finance ministers to hammer out a policy for the future is not an option, except in extreme emergencies. Just like the Riksbank, the ECB must retain the right to intervene and change the interest rate, whenever circumstances so dictate.

However, this does not mean that monetary policy cannot contribute to the

overall dialogue and cooperation on economic policy in the EU. In fact a dialogue with other parties in the economic policy field can provide the ECB with information and experience in areas such as fiscal policy and wage developments that are important when it comes to taking monetary policy decisions. Ultimately, of course, a sustainable fiscal policy that helps to dampen real fluctuations in the economy will also make it easier for the ECB to maintain price stability. Furthermore, the clearer the various governments can be on, for example, their fiscal policy stance, the easier it is to assess the inflation outlook and formulate a monetary policy.

Similarly, the ECB's actions are, of course, important for Europe's finance ministers. Price stability makes life much simpler for those negotiating pay rises and setting prices as they need not worry about allowing for future deterioration in purchasing power. In addition, price stability reduces the uncertainty for those who invest and contribute to improvements in the production environment as a whole. The ECB can also help by pursuing its policies openly and unambiguously.

The relationship between monetary policy and measures to increase economic efficiency can be viewed in a similar light. The former focuses on stabilising prices and the real economy in the relatively short term while the latter increase the economy's long-term growth potential. Reforms in the goods, services, capital and labour markets that increase the flexibility of an economy also provide a better starting point for a monetary policy focusing on price stability.

A wealth of opportunities for dialogue and coordination

Even if monetary policy is handled independently at supranational level, there is still a need for contact with the other players. It is all about predicting and understanding each other's actions and formulating the best pos-

Even if monetary policy is handled independently at supranational level, there is still a need for contact with the other players.

sible policy for the euro area and the EU as a whole. The channels used in the first instance to influence economic policy and facilitate cooperation are the dialogue and exchange of information between the EU member states and between them and the ECB. This is, in its way, a natural consequence of the fact that the decision-making power in the majority of economic policy issues lies with the national governments and parliaments, while the scope of EU rules that are actually binding on the member states is far less extensive.

There is a wide range of different fora for economic policy discussion and cooperation. An idea of how they all fit together is provided in Figure 1.

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Undersecretaries of state and deputy central bank governors from throughout the EU meet monthly on the Economic Financial Committee (EFC). The central bank governors and EU finance ministers do not meet that often: the only institutionalised forum is the "informal" ECOFIN meeting held every six months. However, this relatively infrequent contact is offset by plenty of opportunities elsewhere for

regular communication between those in charge of monetary policy and EU ministers. For example, undersecretaries of state and deputy central bank governors from throughout the EU meet monthly on the Economic Financial Committee (EFC), previously known as the Monetary Committee, which accounts for the bulk of the preparations for meetings of the ECOFIN Council and the Euro 11 Group.¹ In addition, the president of the ECOFIN Council and a member of the European Commission take part in meetings of the ECB Governing Council, albeit without a vote. Similarly, the president of the ECB attends meetings of the ECOFIN Council when issues affecting the European System of Central Banks (ESCB) are discussed. There are also numerous informal interfaces, for example in connection with IMF and, in the case of the largest economies, G7 meetings. Within each member state, central bank governors and finance ministers on the one hand and deputy central bank governors and undersecretaries of state on the other will generally also get together in a wide variety of contexts.

The main forum for the ongoing dialogue between EU governments is the Council of Economics and Finance Ministers, ECOFIN, which meets approximately once a month. The Treaty on European Union gives the ECOFIN Council the final say in the coordination of economic policy.² These meetings are generally attended by each member state's finance minister and his or her undersecretary of state.

The clear sense of exclusivity among the EMU participants was particularly in evidence during the debate on the creation of the Euro 11 Group at the end of 1999. In connection with these meetings, the euro area's finance ministers also meet in the informal Euro 11 Group for separate deliberations. Since these countries share a common monetary policy, they discuss primarily eurorelated issues. Although no formal decisions

can be taken in this forum, the fact that this informal group of EMU participants with their common interests meets so often gives it hidden powers. The clear

¹ Experts from the ministries and central banks also meet on the Economic Policy Committee (EPC) to discuss, in the first instance, structural changes in the goods, capital and labour markets.

² Article 99 of the Amsterdam version of the Treaty of Rome states: "Member States shall regard their economic policies as a matter of common concern and shall coordinate them within the Council."

sense of exclusivity among the EMU participants was particularly in evidence during the debate on the creation of the Euro 11 Group at the end of 1999. The British and others that were worried about being left behind in an EU context demanded access to this exclusive group. Somewhat teasingly the then French finance minister Strauss-Kahn rejected this proposal by comparing the launch of the euro to a wedding. When you've just got married you don't want anyone else in the bedroom.

The ECB has an open invitation to take part in meetings of the Euro 11 Group, with often both its president and its vice president (and always one of the two) in attendance. These meetings include a review of the overall economic situation, currency markets, and so on, while the ECB explains the background to various decisions and common problems are discussed. It is by no means a coordination forum, but it does provide the basis for a very open dialogue at least once a month. As a result, ministers are kept abreast of the ECB's position, and the ECB can gain a very clear picture of where the various ministers stand since it is present when they hold their discussions.







At the heart of economic policy cooperation in the EU lie the Broad Economic Policy Guidelines.

At the heart of economic policy cooperation in the EU lie the Broad Economic Policy Guidelines. Issued annually, these guidelines contain not only a status report in the form

of recommendations but also the basic outline of an economic policy strategy for the EU as a whole. There is also a separate chapter with country-specific guidelines highlighting key economic policy issues. These guidelines are not binding in the sense that member states failing to observe them can be fined, but the ECOFIN Council can issue recommendations for those that do not meet the guidelines and, where deemed necessary, make them public. In practice these measures are fairly far-reaching and have not been called upon to date.

It is the European Commission that puts forward recommendations for the Broad Economic Policy Guidelines.

It is the European Commission that puts forward recommendations for the Broad Economic Policy Guidelines. Those parts of the guidelines dealing with structural issues are now prepared by the Economic Policy Com-

mittee (EPC) and then reviewed by the EFC. The guidelines are adopted by the ECOFIN Council following a debate in the European Council (comprising the EU heads of state/government). To strengthen the link with national budget preparations in the member states and so make this work more efficient, the council decided in January 1994 that the guidelines should be adopted during the summer. In that way they are available ahead of the preparations for the national budgets, which normally take place during the autumn.

When first introduced in 1993 the guidelines were very general in scope, but the European Commission and others have since pushed hard to make them more concrete and country-specific. As a result the guidelines have become a gradually more effective instrument for peer pressure and are now en route to becoming a kind of general fiscal plan for the community and its members. The discussions led by the Finnish presidency last autumn revealed a clear ambition to strengthen the position of the guidelines further. This is particularly in the interest of the smaller member states since they are more dependent on the outside world and are hit hardest by policy misjudgements elsewhere.

The 1999 Broad Economic Policy Guidelines began with a general assessment of the economic situation before moving on to provide detailed recommendations in various policy areas. The member states were urged to comply with the



Figure 2. The annual economic policy coordination cycle

Note. The Broad Economic Policy Guidelines are presented during the summer so that they can be used by the member states in their budget preparations, which are normally stepped up during the autumn. The guidelines also provide input for the other coordination processes, which, in turn, lay the foundations for the following year's guidelines. The arrows illustrate how the various processes feed into each other. The national employment reports form the basis for the European Commission's employment report and the following year's employment guidelines.

requirements of the Stability and Growth Pact, to ensure that wage developments were consistent with price stability and to implement economic reforms to increase the flexibility and efficiency of the goods, capital and labour markets.

For Sweden's part, the guidelines stressed the importance of adhering to the budget policy line of a surplus of 2 per cent over a full business cycle. The report also emphasised the need to ease the tax burden and maintain a tight rein on government

expenditure. Reforms to increase the efficiency of the Swedish economy were an important element in the guidelines. When it comes to the labour market, the Swedish government was encouraged to reduce the number of people on special employment schemes in favour of initiatives to create jobs in the private sector. The guidelines also called for reduced taxes on employment, especially in the lower income brackets, and tougher rules on the acceptance of job offers by the unemployed.

Such comments on national policies naturally have a bearing on the economic policy debate in the individual member states, sometimes making for tricky negotiations on the formulation of some of the guidelines.

Such comments on national policies naturally have a bearing on the economic policy debate in the individual member states.

Nevertheless, the guidelines have shown a tendency to become increasingly con-

For Sweden's part, the guidelines stressed the importance of adhering to the budget policy line of a surplus of 2 per cent over a full business cycle.

crete and, although due account is still taken of the individual member states' opinions, the scope for national "censorship" has diminished in recent years. It is also important to see that discussions of this kind do not always have to be taken as negative by the finance ministers concerned.

The Broad Economic Policy Guidelines now lie at the very heart of the coordination of economic policy in the EU and build on a number of processes covering various aspects of economic policy, namely the Stability and Growth Pact and the Luxembourg, Cardiff and Cologne Processes. These are timed in such a way that the guidelines both start and end the annual coordination cycle (see Figure 2).

The Stability and Growth Pact for budget discipline

Unhealthy government finances in one particular member state – especially one of the big ones – could restrict the room to manoeuvre the common monetary policy. Unhealthy government finances in one particular member state – especially one of the big ones – could restrict the room to manoeuvre the common monetary policy. In an extreme case they could even force the other countries to intervene with direct bud-

get support. It is therefore not surprising that the criteria governing the budget policy of each member state were a key element in the Maastricht Treaty. On Germany's initiative the treaty was also supplemented with a Stability and Growth Pact to ensure that all the countries signing up for EMU would pursue a responsible fiscal policy even after EMU was in place.³

Formulating a set of rules like this is difficult. Ultimately it is a matter of striking a balance between the ambition of maintaining healthy government finances in the different parts of the union and the risk of tying down individual countries too tightly, thereby putting them at risk of being forced to tighten fiscal policy in an already recessionary economy. This can be particularly politically sensitive given that another potential counterbalance, monetary policy, is no longer available to the individual EMU participants.

The approach chosen was to set a target for government finances together with a process for monitoring performance and, in the worst case, imposing sanc-

³ The pact consists of two council regulations and a resolution from the Amsterdam European Council in 1997. The first regulation (1466/97, July 1997) aims to identify the risk of an excessive government deficit in any of the member states at an early stage and so prevent it from materialising. The second regulation (1467/97, July 1997) sets out the detailed procedure to apply in the event of an excessive deficit, as outlined in Article 104 of the Treaty. The resolution sets out important commitments for the council, member states and commission.

tions. Government budgets must not run a deficit of more than 3 per cent of GDP and must be close to balance or show a surplus over the full business cycle. It was also agreed that the target of a near-balance or surplus must be met by 2002. It is believed that, if these targets are achieved, there will normally be sufficient scope for the automatic stabiliser to kick in properly in the event of a recession without the 3 per cent deficit reference limit being broken.

According to the rules, each EU member state is to prepare an annual stability or convergence programme.⁴ The programmes of the EMU participants focus on budget policy, while the programmes of the other member states take a broader look at eco-

The programmes of the EMU participants focus on budget policy, while the programmes of the other member states take a broader look at economic policy.

nomic policy. In Sweden's case, issues discussed include the definition of the country's monetary policy targets relative to European targets and fluctuations in the value of the krona. The programmes are reviewed by the European Commission, the EFC and, finally, by the ECOFIN Council. If there is a risk of the budget deficit exceeding the reference limit, the ECOFIN Council is to give the member state in question an early warning. If there is no improvement, its recommendation can be made public. The ECOFIN Council also has various sanctions at its disposal when it comes to EMU participants.⁵

One thorny issue when discussing the pact was the circumstances under which fines could actually be demanded. It is one thing if a member state gets into trouble as a result of a consciously irresponsible fiscal policy line, but quite another if the problems are caused by specific factors outside that country's control. Eventually it was decided that action will not be taken if the council believes a deficit to be due to exceptional circumstances. Thus a political element – and so a certain degree of flexibility – was built into the system. Ultimately the power behind the pact lies not in the fines themselves but in the process created, whereby problems can be highlighted at an early stage and offending member states subjected to peer pressure.

So how did the first year of EMU go? While 1998/99 did bring improve-

⁴ The EMU participants prepare stability programmes, while the other four member states prepare convergence programmes. These programmes are among the most important instruments for monitoring government budget performance in the EU member states. See, for example, the Updated Swedish Convergence Programme, Swedish Ministry of Finance, November 1999.

⁵ This part of the pact comes into play once a recommendation has been made public. The country concerned is then required to present a package of measures to correct the deficit within a year for the approval of the council. If sufficient steps are not taken, the council can decide to impose sanctions, comprising an interest-free deposit equivalent to 0.2–0.5 per cent of GDP that becomes a fine if the offending country does not balance its deficit within two years of the decision to demand this deposit.

1998/99 did bring improvements in most of the participants' budget balances.

ments in most of the participants' budget balances, these were largely a result of higher economic growth and lower interest expenditures rather than a reduction in structural

deficits. The EMU participants were also less ambitious than the rest of the EU: the three largest – Germany, France and Italy – were all counting on a budget deficit of between 1 and 1.5 per cent of GDP in 2001 (see Table 1).

The first year also saw one clear problem emerging with the targets in the pact. The downward revision of the Italian budget target in the wake of the Asian crisis, and the associated fears of a reduction in the credibility of the pact as a whole, demonstrated that the pact works well only when the medium-term budget target is met. Only then is there the room to manoeuvre that fiscal policy requires. The situation could have become worrying if the economic situation had deteriorated in the spring of 1999: the pact could then have had procyclical effects if downward revisions had also been demanded in other countries that were already in a recessionary phase.

The outlook for economic growth over the next few years is bright, giving the member states a good opportunity to meet the pact's budget balance targets as planned and so build up sufficient buffers in their government finances for the future. The outlook for economic growth over the next few years is bright, giving the member states a good opportunity to meet the pact's budget balance targets as planned and so build up sufficient buffers in their government finances for the future. However, the ambitions set out in the stability and convergence programmes suggest that far from all member states are prepared to exploit this

opportunity. This attitude is unfortunate and runs the risk of giving economic policy limited room to manoeuvre in the future.

The Luxembourg and Cologne Processes for increased employment

The Luxembourg Process was launched in connection with the special EU summit on employment in Europe held at the end of 1997.⁶ The idea was to exploit

⁶ In Amsterdam (June 1997) the EU's heads of state/government agreed on amendments to the Treaty to promote cooperation between member states on employment. In anticipation of the entry into force of the Amsterdam Treaty in May 1999, the European Council held an additional meeting to discuss employment issues in Luxembourg on 20–21 November 1997. The outcome of this meeting was that the implementation of the Amsterdam Treaty's employment chapter could be brought forward.

	1999	2000	2001	2002		
Austria	-2.0	-1.7	-1.5	-1.4		
Belgium	-1.3	-1.0	-0.7	-0.3		
Denmark	2.5	2.8	2.6	-		
Finland	2.4	2.2	2.1	2.3		
France	-2.3	-2.0	-1.6	-1.2		
Germany	-2.0	-2.0	-1.5	-1.0		
Greece	-2.1	-1.7	-0.8	-		
Ireland	1.7	1.4	1.6	-		
Italy	-2.0	-1.5	-1.0	-		
Luxembourg	1.1	1.2	1.3	1.7		
Netherlands	-1.3	-	-	-1.1		
Portugal	-2.0	-1.5	-1.2	-0.8		
Spain	-1.6	-1.0	-0.4	0.1		
Sweden	0.3	1.6	2.5	-		
UK	-0.3	-0.3	-0.1	0.2		

Table 1. EU member states' budget balances as a proportion of GDP according to the 1998/99 stability and convergence programmes

Source: European Commission.

some of the positive experience gained from the Maastricht Process in the labour market field in the run-up to EMU. Clear common goals were to be set and peer pressure exerted to bring about changes in policy that

The Luxembourg Process was launched in connection with the special EU summit on employment in Europe held at the end of 1997.

could lead to increased employment and reduced unemployment. The framework for this work was set out in the special employment chapter of the Amsterdam Treaty, which states that the member states are to consider employment as a matter of common interest.

Each year special employment guidelines are adopted with a view to being used as the basis of the member states' own employment policies. These guidelines must be consistent with the Broad Economic Policy Guidelines. The 1999 employment guidelines focused on increasing employment by improving employability, entrepreneurship, the flexibility of businesses and their employees, and equal opportunities.

The member states for their part are to present national reports each year on the most important measures taken to increase employment. For example, the Swedish action plan for 1999 states that the keys to higher employment are greater skills and knowledge in the workforce, coupled with the promotion of entrepreneurship and a favourable overall business climate.

The national action plans are assessed by the Employment and Labour Mar-

The greatest pressure that can be exerted by the council is the issue of non-binding recommendations to the member states on the basis of proposals from the commission. ket Committee⁷, and the member states' progress is then reviewed – exactly as for the budget stability and convergence programmes – by the European Commission and the ECOFIN Council, which draw up a joint annual report.⁸ The greatest pressure

that can be exerted by the council is the issue of non-binding recommendations to the member states on the basis of proposals from the commission. This power was exercised for the first time in 1999, when the commission formulated recommendations for all the member states. There were two recommendations for Sweden: one emphasised the importance of breaking down the divisions between the sexes in the labour market, and the other stressed the need to reduce taxes on employment, especially for those in the lower income brackets.

The Cologne European Council in the summer of 1999 heralded the launch of another process related to the labour market: the Macroeconomic Dialogue. This is a forum for the discussion of the policy mix between the players responsible for wage developments and those responsible for monetary and fiscal policy. The first dialogue at a political level took place in November 1999. The Riksbank represented the central banks of the four member states outside EMU. The idea is now to meet twice a year: in the spring before the employment guidelines are adopted and in the autumn before the Broad Economic Policy Guidelines are adopted.

The Luxembourg Process and the Macroeconomic Dialogue focus on what is probably the Achilles' heel of the Western European economies: the efficiency of the labour market and wage developments. The Luxembourg Process and the Macroeconomic Dialogue focus on what is probably the Achilles' heel of the Western European economies: the efficiency of the labour market and wage developments. There are two different ways of putting these issues on the European agenda. The Luxembourg

Process in particular should be able to play a positive role, with comparative studies and analyses being conducted, good examples being highlighted and peer pressure being exerted. In contrast to the budget balance set-up, no sanctions are applicable in this context. The main reason for this is presumably that when it comes to government finances there is believed to be a risk that one member state

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⁷ When the Amsterdam Treaty entered into force, the Employment and Labour Market Committee was replaced by an advisory employment committee charged with promoting the coordination of the member states' employment and labour market policies.

⁸ The 1999 report was reviewed by a joint ECOFIN/Labour and Social Affairs Council.

might actively pursue a policy that could prove costly to the other EMU participants. This risk is less pronounced when it comes to the labour market and wage developments, primarily because each country will largely have to bear the cost of policy misjudgements itself. However, things are not entirely clear-cut: excessive pay rises in one country, especially one of the big ones, would obviously have the potential to necessitate higher interest rates throughout the euro area and so entail costs for the other EMU participants. One interesting issue is how problems of this kind – if they arise – will be handled and what demands for coordination will then be raised.

To some extent the Macroeconomic Dialogue could be said to address this problem. However, its primary purpose is the exchange of information through a process in which the labour market players are also involved. If this dialogue leads to increased understanding among all those involved of the ground rules now applying to economic policy within the

If this dialogue leads to increased understanding among all those involved of the ground rules now applying to economic policy within the EU, it may come to play an important role in the coordination process.

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The Cardiff Process for structural reforms

The Cardiff Process can be viewed as the equivalent in the goods, services and capital markets as the Luxembourg Process in the labour market. The process was crystallised in the form of a political declaration at the Cardiff European Council in 1998.⁹ The idea is to increase the efficiency and growth potential of Europe's economies, the fundamental methodologies again being to highlight good examples and exert peer pressure on individual member states.

Each year the member states now draw up national reports on their progress with structural reforms, and the European Commission prepares an equivalent report from a

community perspective. In turn, these reports lay the foundations for another commission report that is considered by the ECOFIN Council and forms the basis of the country examinations undertaken by the EPC. The stated aim of these examinations is to put pressure on member states to push through impor-

⁹ The process is outlined in Article 9 of the Presidency Conclusions from the Cardiff European Council in June 1998.

tant structural changes. The EPC's work then results in a synthesis report, which

To date Sweden has presented two national reports. The first arrived at the end of 1998 and stressed that, although the reforms of the 1990s had clearly boosted competition, more remained to be done, especially when it comes to the capital markets and the market for services that benefit society. The second was submitted to the EPC on 30 November 1999 and reports on progress in those areas where Sweden was given specific recommendations in the 1999 Broad Economic Policy Guidelines. These included the need for greater competition in the food sector, the retail trade and the wholesale trade, and greater efficiency in the public sector.

is used to formulate the next set of Broad Economic Policy Guidelines.¹⁰

For the EU as a whole, factors highlighted by the Cardiff Process via the Broad Economic Policy Guidelines include the need to increase competition, especially in public procurement. For the EU as a whole, factors highlighted by the Cardiff Process via the Broad Economic Policy Guidelines include the need to increase competition, especially in public procurement. There have also been calls for deregulation in the telecommunications, transport and energy sectors. The develop-

ment of deeper and more efficient markets for risk capital is another issue that has been discussed within the framework of the Cardiff Process.

Like the Luxembourg Process, the Cardiff Process may prove an efficient tool for governments wanting to break down resistance to change at national level. The national studies can serve the same purpose in the debate as, for example, the appendices of the Swedish Medium Term Surveys and the reports from the Expert Group on Public Finance have served in Sweden in recent decades. The goal of further strengthening the links between the various coordination processes with the Broad Economic Policy Guidelines may also help to make the peer pressure more potent.

New areas for cooperation and coordination

Of course, the road to greater cooperation does not end with the steps taken so far. Of course, the road to greater cooperation does not end with the steps taken so far. As stated in the introduction, future economic developments are set to make new demands

¹⁰ With effect from 1999 the Broad Economic Policy Guidelines include a section on the operation of the goods and capital markets.

of cooperation in the EU. At the same time, experience of cooperation to date has provided lessons well worth learning.

In the first respect – issues raised by economic developments – there are several examples of areas that have come up for discussion and warrant a brief mention here.

The first area is the need for fiscal policy coordination even in situations where the rules of the Stability and Growth Pact have been observed. Such a situation might, for example, arise if inflation increases worryingly in some member states despite being low in the euro area as a whole. Examples of this are the developments last year in Ireland and maybe also Spain. Whether this turns out to be a problem in practice depends partly on the reasons behind the inflation differential. It need not be a major problem if it results from differences in growth patterns and – as is the case in Ireland – to some extent goes hand-in-hand with stronger productivity growth, since the negative effects of movements in costs are then limited. It is a different matter if competitiveness is gradually eroded and growth is held back. Nevertheless, the principal line in this debate has been that there are clear motives for the individual member states to deal with problems of this kind themselves, and so there is no need for any joint action. However, tangibly different rates of inflation may give rise to concern over how EMU in general will work and to fears about what would happen if a bubble building up in one or more countries were to burst, with depressive tendencies in the countries most affected.

A second area that has been discussed is the implications of a sharp change in the value of the euro against the US dollar. This could raise issues concerning the mix between monetary and fiscal policy in the euro area. It might, for example, be appropriate to ease monetary policy to counter a sharp drop in the dollar, but this might require a tighter fiscal policy to maintain price stability. The issue is how to implement a policy of this kind with 11 different countries involved.

Closely related to this problem is the third issue, concerning the external representation of the euro and the EU in various contexts, which has forced itself onto the agendas of the EFC, ECOFIN Council and Euro 11 Group in the last year. As once bemoaned by Henry Kissinger, Europe does not have a sin-

There is a more general wish to bring about a more coordinated European response, partly in a bid to assert the interests of the EU member states more firmly in relation to other power centres in the world economy.

gle telephone number, so who should be contacted in the event of exchange rate turbulence - the president of the ECB, the president of the ECOFIN Council, the president of the Euro 11 Group, or all of them? For this reason it has been decided, for example, that the president of the ECB and the president of the Euro 11 Group will attend G7 meetings. Issues on the G7 agenda are also discussed by the EFC and others both before and after the meetings, albeit on a fairly general level. However, the greater importance given to coordination of the EU member states' positions in international financial contexts is presumably not exclusively a result of this particular issue. In addition, there is a more general wish to bring about a more coordinated European response, partly in a bid to assert the interests of the EU member states more firmly in relation to other power centres in the world economy.

Experience in the EU has been much the same as in Sweden, with spending cuts tending to be made during crises and recession, which is unfortunate when it comes to real economic performance. There is also good reason to mention an example of how previous experience of coordination rather than developments themselves is driving the debate. We believe that most commentators agree that the Growth and Stability Pact has worked relatively well overall. However, it is not difficult to see how

the pact could be made more ambitious in various respects and that this might make the policy better for some member states even if a new process or set of rules is not actually needed for EMU to perform well. One point of discussion is the fixation on the actual deficit and liability brought on by the government budget rules. Has this led to deterioration in the quality of budget measures? Does a budget consolidation focusing on cuts in spending have as good effects on the economy as one focusing on tax hikes? Should higher public investment be viewed in the same way as higher public consumption? Anyone who has grappled with these issues knows that there is no easy answer: it all depends on the country's stage of development, position in terms of tax pressure or expenditure, the quality of public services and investments, and so on. However, in principle it is easy to sympathise with the idea of taking the discussion beyond purely quantitative targets. Another issue is *demographic developments*, with pensioners accounting for a rapidly increasing share of the population in many member states. This too was not taken into account in the Stability and Growth Pact, and these are factors that can have a major bearing on the sustainability of government finances. A third issue is the *cyclical adaptation* of fiscal policy: experience in the EU has been much the same as in Sweden, with spending cuts tending to be made during crises and recession, which is unfortunate when it comes to real economic performance. The question then has been whether a common process of some kind could break this pattern.

Conclusion

Internationalisation in general, with growth in trade and factor mobility, has brought the EU member states closer together and increased their interdependence. Politically motivated changes such as the internal market and the new monetary union have served to promote this trend.

Internationalisation in general, with growth in trade and factor mobility, has brought the EU member states closer together and increased their interdependence.

When it comes to government finances, various processes (including a system of sanctions) have been set up to test national policies. The reason is the risk that individual member states would otherwise be able to pursue a policy that could harm the others. Processes have also been established in other policy areas to highlight key issues in the European debate, to point to good examples and to exert peer pressure. This should not be despised: we know from Swedish experience that comparative analysis and in-depth debate can push things in the right direction. The EU's role in the international economic and financial arena has also become more coordinated in recent years. These are small steps but they all lead in the same direction, so also making the EU an ever more important arena for small countries like Sweden looking to influence developments beyond EU borders.

What should we expect in the future? We have briefly touched on a number of situations where cooperation and coordination could lead to a better policy for the EU. However, even if there are rewards to be reaped from coordination, it will probably be

Even if there are rewards to be reaped from coordination, it will probably be some time before the EU member states are sufficiently mature to take further big leaps.

some time before the EU member states are sufficiently mature to take further big leaps. Ultimately it now boils down to the sensitive issue of how much power should be placed in European rather than national hands. However, there is no doubting the strength of the tension between the common monetary policy and the remainder of economic policy that is still handled at national level. In this tension lie the seeds of continued coordination of economic policy in Europe.

Is there a "new economy", and is it coming to Europe?

By Jonas A. Eriksson and Martin Ådahl*

The "new economy" has become something of a buzzword and the topic of extensive debate both in the media, enthusiastically, and in academic circles, more reluctantly. Above all, it refers to the US economy's astonishing performance in recent years with high growth, falling unemployment and low inflation, coupled with a real breakthrough in the use of new information technology, in particular the Internet. The purpose of this article is to try to analyse what the evidence tells us about the US and what this implies for Europe.

Unfortunately there is by no means
any generally accepted definition of
the new economy.

Unfortunately there is no generally accepted definition of the new economy. The term is used to cover everything from statistical research into the growth and inflation figures the new millennium

of the 1990s to far-fetched visions of the new millennium.

Some commentators claim that the IT revolution has transformed the economy in such a way that the old laws of economics no longer apply (for example, the old in the relationship between supply and demand no more applies) and, in principle, spells the end of the traditional business cycle.¹ However, we have chosen to stick to established, albeit modern, economic theory. The relationships between different macroeconomic variables will, of course, evolve over time, but this has nothing to do with new laws of economics.

As a result, this article takes the new economy to mean *an increase in the economy's growth potential as a result of more rapid productivity growth*, since productivity tends to be highlighted as the most important contributing factor to long-term growth.²

 1 Kelly (1995 and 1999) and Sahlman (1999).

^{*} The authors would like to thank Mikael Apel, Claes Berg, Mårten Blix, Per Jansson, Staffan Viotti and Anders Vredin for valuable comments.

² For a discussion of the basis of economic growth, see, for example, Barro and Sala-i-Martin (1995).

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Figure 1. GDP, unemployment and inflation in the USA

Percentage/annual percentage change

Source: Bureau of Economic Analysis.

First we will take a look at the US as something seems to have happened to the American economy in recent years that appears to be more than just a temporary phenomenon. We will discuss the factors that might lie behind the upswing, focusing primarily on

This article takes the new economy to mean an increase in the economy's growth potential as a result of more rapid productivity growth.

macroeconomic stability, microeconomic reforms (deregulation and free trade) and their interaction with globalisation and technological advances.

We will also ask why the change seems to have come right now and how far the accelerating growth rate should be considered temporary or permanent. We will then examine whether there are signs of a new economy emerging in Europe before ending with a summary of our conclusions.

It is important in this context to distinguish between two issues that are often muddled in this debate:

- Firstly, seeing whether signs of the new economy can be found in existing economic statistics – in other words, *what we can observe today*. Here there is a need to take a critical look at the statistics, which do not always present an accurate picture of events.
- Secondly, what kind of breakthrough we might expect for the new economy in the future. Historically there has often been a time lag between a new technology becoming available and businesses actually being able to use it in a way that increases productivity. For example, it is often assumed in the debate that the Internet revolution has already had a major impact on macroeconomic statistics, even



The origin of the debate – the US as the "best economy ever"

Something has happened to the US economy. An economy that seemed to have begun to lag behind the other industrialised countries somehow managed to find new reserves of strength in the 1990s and widen the prosperity gap to its peers. Something has happened to the US economy. An economy that seemed to have begun to lag behind the other industrialised countries somehow managed to find a renewed strength in the 1990s and widen the prosperity gap to its peers (see Figure 2) – the exact opposite of what should be happening according to the convergence hypothesis, which predicts that countries with a lower

initial per-capita GDP should grow more rapidly than those with a higher initial per-capita GDP.³

Otherwise the 1990s were a decade of disaster and stagnation for much of the global economy, with crises in Mexico, Asia (including Japan), Russia and elsewhere having global repercussions.⁴



Figure 2. GDP growth

³ See, for example, Calmfors and Persson (1999) or Romer (1996).
⁴ See IMF (1999a).

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CHARACTERISTIC I: HE INVESTMENT BOOM

A number of phenomena on both the supply side and the demand side support the US economy's longest ever expansion, which began back in early 1991.⁵ One key factor has been the investment boom seen in the

One key factor has been the investment boom seen in the 1990s. with businesses investing heavily. especially in information technology.

1990s, with businesses investing heavily, especially in information technology.⁶ In real terms, gross capital investments have almost doubled since 1991. The increase has been so rapid that it has not been possible to finance these investments through domestic saving, leading to a substantial current account deficit equivalent to around 4 per cent of GDP, the highest in US history.

Investment has accounted for around 25 per cent of real GDP growth during this economic expansion, compared with only around 15 per cent in other expansions since the Second World War (see Figure 3). In nominal terms investment in information technology at the end of the 1990s was twice that of a decade earlier, but in real terms the increase was almost twelve-fold on account of the dramatic slide in the price of computers during the period. It is also worth noting that investment in property has been lower than in previous upswings (see Figure 3).

The relationship between unemployment and inflation observed in previous decades would appear to have changed, since the falling unemployment of recent





⁵ According to the National Bureau of Economic Research (NBER), which officially announces the beginning and end of a business cycle.

6 See Sichel (1999).

Source: Council of Economic Advisers.

The relationship between unemployment and inflation observed in previous decades would appear to have changed. years has not led to sufficiently high capacity utilisation for inflation to take off. One major reason for this seems to be the extremely high levels of investment, which have resulted in production capacity being expanded at a rate

not seen since the late 1960s. Consequently, capacity utilisation has held at historical levels, even though production has soared and employment has risen. While employment has decreased in industry, this has been more than offset by increases in other sectors. Although unemployment is nudging down towards 4 per cent, its lowest since the 1960s, wage growth has been moderate and not, as yet, inflationary.

CHARACTERISTIC 2:

The acceleration of productivity growth⁷

While productivity growth has slowed during previous economic expansions, this time it has accelerated. One explanation for the greater willingness to invest is that productivity growth has also begun to climb in recent years. The most common measure of productivity, output per man-hour in the non-farm business sector,

accelerated during the 1990s. Annual productivity growth averaged around 2 per cent over the decade as a whole and has averaged more than 2.5 per cent over the last three years, which is back at the levels seen during the "Golden Age" (see Figure 4). While productivity growth has slowed during previous economic expansions, this time it has accelerated (see Figure 5). The investment boom has led to a process of "capital deepening" – an increase in capital per employee.⁸ The rapid improvement in productivity has meant that profits have been maintained and real wages have risen.

Of particular interest is the increase in that part of productivity known as total factor productivity (TFP), which depends on factors other than just increases in inputs of labour or capital and tends to be linked with technological development and organisational improvements (also called the "Solow residual").⁹ It is, above all, the increase in TFP in recent times that has given rise to hopes that the

⁷ See, for example, the box in Sveriges Riksbank (1999) for a review of the different measures of productivity.

⁸ See Council of Economic Advisers (1999).

⁹ In Robert Solow's original basic, neo-classical growth model based on labour and capital alone, the rate of growth per capita decreases with time. Each worker receives more and more capital and machinery until he or she can no longer handle it all and the return on capital no longer matches its cost. As a result, high levels of saving (which can be used for capital investments) do not help long-term growth if the capital is ultimately of no benefit on the margin. The difference between this model and reality (where growth has not slowed) is a factor known as the Solow residual, which Solow does not explain in his model but cites as some form of "technology factor". Comparisons are often drawn between TFP and the Solow residual.





Figure 5. Growth in productivity (non-farm economy) during various economic expansions



Source: Council of Economic Advisers.

introduction of new technology, especially information technology, has begun to make a breakthrough. According to the Federal Reserve, at least a third of productivity growth since 1995 can be attributed to TFP.¹⁰ This can be compared to the period from 1979 to 1990 when the contribution from TFP was nil and the early 1990s when TFP grew by just over half of one per cent, compared to more than one per cent per annum since 1996 (see, Figure 6).

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¹⁰ See Bureau of Labor Statistics (1999) and Greenspan (1999a).



Figure 6. Productivity in the USA (non-farm economy) by factor

Annual percentage change

Has the new economy come to the US?

What are the reasons behind the investment boom and acceleration of productivity growth in the US, and is its current performance sustainable?

There are those who claim that it is essentially a series of chance factors that have fuelled developments in the USA. There are those who claim that it is essentially a series of chance factors that have fuelled developments in the US. These include the end of the Cold War in the early 1990s, which released resources (from the military

sector), and falling import prices for raw materials (oil) and other inputs during the Mexican and Asian crises.¹¹ These crises also triggered a "flight to quality", with investors transferring capital from emerging markets to the US. Together these factors have helped to curb inflation and avoid the need for the Federal Reserve to tighten monetary policy.

Few commentators deny that the new information technology has played an important role, even if it cannot in isolation explain what has been happening. However, most commentators agree that these phenomena alone are not sufficient to explain the more fundamental changes, such as the increase in productivity growth. Few commentators deny that the new information technology has played an important

role, even if it cannot in isolation explain what has been happening.

¹¹ See, for example, Brinner (1999).

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Sources: Federal Reserve Board of Governors and Bureau of Economic Analysis.

A return to the Golden Age?¹²

One hypothesis is that what we are now seeing is simply a return to the situation seen before US productivity began to flag in the early 1970s.¹³ Many attempts have been made to explain the decline in the 1970s and 1980s, but it appears that economists have yet to agree on what really caused it.

The most important factors usually cited include: soaring oil prices, making a substantial proportion of existing capital equipment unprofitable to use on account of excessive oil consumption; various controls introduced in the product and labour markets that undermined the economy's efficiency and ability to recover from negative shocks; less favourable demographics¹⁴; and, in particular, a macroeconomic policy fuelling high inflation and large budget deficits.

Many of these factors now seem to have reversed. Oil prices have fallen sharply, despite the recent recovery, and the overall dependence on oil has decreased. The demographics have also become more favourable, with the "baby boom" generation now reaching a more productive age.¹⁵ Moreover, the 1980s brought the lifting of some of the *microeconomic controls* from the 1970s, such as the price controls introduced after the oil shocks.

It is above all when it comes to *macroeco-nomic policy* that there can be talk of a return to the Golden Age. Since the mid-1980s eco-nomic policy has successfully centred on price stability rather than the fine-tuning of the economy attempted in the 1970s. Infla-

Since the mid-1980s economic policy has successfully centred on price stability rather than the finetuning of the economy attempted in the 1970s.

tion has more than halved since the beginning of the 1990s to a shade over 2 per cent.¹⁶ At the same time, fiscal policy focused on budget consolidation throughout the 1990s, with taxes raised, expenditure cut and the budget process tightened up. All in all, macroeconomic policy has laid stable and increasingly predictable foundations for investment and allocation decisions in a way that, in the US, is associated with the first decades after the Second World War.

¹² Suggested by US Treasury Secretary Larry Summers, among others, see Financial Times (2000).

¹³ For example, patent applications in the USA dropped more than 20 per cent between 1970 and 1983. See OECD Economic Studies (1988).

¹⁴ See, for example, Dornbusch and Fischer (1990).

¹⁵ The demographics will worsen again once the baby boom generation begins to retire. Around 20 per cent of the population is expected to be over the age of 65 in 2029, compared with just over 12 per cent today. See Council of Economic Advisers (1999).

¹⁶ In 1994–95 the Federal Reserve managed to stave off an inflation threat by raising its benchmark interest rate by around three points without tripping the economy into recession. In 1998 the benchmark rate was lowered by three quarters of a point to prevent an excessive drop in prices in the wake of the Asian crisis, which helped to stabilise the rate of inflation.

Something new?

However, the real issue is whether the productivity surge in the USA is more than just a return to the good old days. The world of today is very different to that before the first oil shock in the early 1970s: the snowballing globalisation process now under way, with increasingly intensive information flows, stiffer competition and wave upon wave of technological advances, is in many ways fundamentally different to the industrialisation process seen in the 1950s and 1960s.

Microeconomic policy

The 1980s heralded the launch of a series of measures to kick-start the US economy's anaemic growth.

The 1980s heralded the launch of a series of measures to kick-start the US economy's anaemic growth, measures that went beyond simply reversing the controls introduced in

the 1970s:

- Deregulation got under way in several sectors, including transport, financial services, energy, telecommunications and health insurance, and monopolies were broken up. Transport costs and health insurance (HMO) costs, for example, have decreased since these sectors were deregulated.
- Successive rounds of trade liberalisation under the auspices of GATT and elsewhere, combined with regional trade agreements (NAFTA and APEC), have rapidly opened up the US domestic market to international competition and increased the international division of labour between the US and the rest of the world. The clearest indication of this is the increase in import penetration in the US manufacturing sector from the equivalent of 10 per cent of output in 1980 to almost 20 per cent in 1998.
- The labour market has been further deregulated, and the social security and tax systems have been reformed to increase the incentive to earn and invest. New rules on the portability of pension plans have increased the mobility of the workforce, time limits have been imposed on social security benefits and tax rebates have been introduced for those on low incomes.

Taken together, these reforms at the microeconomic level have made the already open US economy even more open to competition, triggering a wave of corporate restructuring with cost-cutting programmes and a sharper focus on core businesses.¹⁷

¹⁷ One way in which businesses have become more efficient is through the rationalisation of human resources, especially middle management.

The technological boost

However, the major new boost to the growth potential and productivity so widely touted by the media is the technological breakthrough spearheaded by the US during the 1990s. A wealth of synergies has arisen between a handful of strategic innovations.

A wealth of synergies has arisen between a handful of strategic innovations. The transistor and the microprocessor, lasers, fibre-optics and satellite technology.

The transistor and the microprocessor, lasers, fibre-optics and satellite technology (plus genetic engineering and microbiology in the future) have not only developed at a very rapid pace, as symbolised by the much quoted Moore's Law¹⁸, but also resulted in a multitude of practical applications in a wide variety of areas.

Particularly impressive in the last decade has been the development of the IT sector, which accounted for just over 6 per cent of total GDP in 1993 but a third of GDP growth in 1995–97 (see Figures 8 and 9).¹⁹ Productivity growth in the sector has been extremely high, averaging 41.7 per cent per annum between 1995 and 1999.²⁰ IT hardware, which accounted for just over 0.1 per cent of the total capital stock in the eighties, has increased to around 0.5 per cent in just ten years (see Figures 10 and 11). The key contributing factors have been computerisation, computerised and automated processes, and computer networks: expensive physical capital has been replaced with cheaper IT-based capital.²¹

The last few years have seen this increasingly intensive computerisation and connectivity *within* businesses being complemented by the Internet, which, in the form of e-commerce, is creating an integrated system *between* businesses and their customers and suppliers. This transition from the IT economy to the network economy has only just begun, but there are already signs that it has impacted on economic development in the last two years.

The last few years have seen this increasingly intensive computerisation and connectivity within businesses being complemented by the Internet, which, in the form of e-commerce, is creating an integrated system between businesses and their customers and suppliers.

The number of regular Internet users has already tripled in two years, from around 70 million in 1997 to well over 200 million in 1999. According to the US

20 Gordon (1999).

¹⁸ Gordon Moore, founder of microprocessor producer Intel, predicted in 1973 that the capacity of computer processors would double every eighteen months, a prophecy that has proved remarkably accurate.

¹⁹ US Government Working Group on Electronic Commerce (1998) and US Department of Commerce (1999a).

²¹ See, for example, Jorgenson and Stiroh (1999).



Percentage of GDP











■ IT and telecommunications sectors' contribution to real GDP growth

* estimate

Source: Department of Commerce.



Figure 10. IT sector's contribution to capital investment in the US



Figure 11. IT sector's contribution to capital investment in the US



Figure 12. The IT sector's impact on prices in the US

Source: Department of Commerce.

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body Internet Software Consortium (www.isc.org), the number of Internet domains (websites) increased from 33,000 in 1988 to around 56 million in July 1999 and is forecast to hit 100 million this year. Internet shopping has exploded from just a few billion dollars in 1997 to an estimated USD 26 billion in 1999, and is projected to reach USD 200 billion as early as 2003–05²², climbing from less than 1 per cent of total retail sales in 1999 to more than 10 per cent in 2003–04 (see Figure 13). According to the OECD, e-commerce could cut costs in the retail trade by between half and two thirds of 1 per cent of GDP in the OECD countries.²³ The OECD's report also predicts a drop in distribution costs in information-intensive sectors of between 50 and 99 per cent. When it comes to the banking sector, consultants Booz Allen och Hamilton have estimated that the cost of the same service provided over the Internet in 1999 was just 12 per cent of the cost at an ATM.

The benefits of this information flow can be divided into two factors: firstly the efficiency gains from customer and producer being able to find each other more easily, and secondly the reduced margins (profits) for producers. Even where the actual purchase is not made over the Internet, more and more purchasing decisions are being based on information obtained from the Internet, so enhancing the efficiency of the market.²⁴ The benefits of this information flow can be divided into two factors: firstly the efficiency gains from customer and producer being able to find each

other more easily, and secondly the reduced margins (profits) for producers from their being forced by Internet comparisons into a more uniform market where they can no longer dominate sub-markets to the same extent and so command higher prices on the strength of their market power and the insufficient (asymmetrical) information available to consumers. This latter effect impacts primarily on prices (and so also monetary policy) rather than productivity.

These factors are expected to have their greatest economic impact not on trade with consumers but on trade between businesses as they move over to purchasing over the Internet (business-to-business e-commerce). An OECD compilation of forecasts from a variety of IT consultants predicts that the total value of business-to-business e-commerce in the US will increase from around USD 40 billion in 1998 to USD 800–3,200 billion in 2003.²⁵ According to newly pub-

²² OECD (1999a).

²³ idem.

²⁴ For further discussion of the changes in the microeconomic picture for households brought on by the Internet and IT, see Lindbeck and Wikström (1999a och 1999b).

²⁵ Forrester Research (1999), IDC (1999) and Dataquest (1999). For a detailed discussion of the development of ecommerce, see The Emerging Digital Economy II, US Department of Commerce (1999).



Figure 13. Sales over the Internet

lished but as yet highly uncertain calculations, the overall impact of business-to-business e-commerce could boost GDP growth in the leading OECD economies by a quarter of a point over the next ten years.²⁶ This is expected to lead to more efficient matching of suppliers and producers, both in the US and in the rest of the world.

These factors are expected to have their greatest economic impact not on trade with consumers but on trade between businesses as they move over to purchasing over the Internet (business-to-business e-commerce).

There are already many examples of major changes at corporate level: General Electric's e-commerce system Trading Process Network has cut the duration of the procurement cycle by half, evaluation time by a third and costs by between 5 and 50 per cent.²⁷ In several sectors we are already seeing the consolidation of electronic marketplaces, the most widely reported being the steel marketplaces like e-steel and the newly merged global marketplace for car components agreed on by US car giants Ford, Daimler-Chrysler and General Motors for their hugely complex network of tens of thousands of suppliers, which accounted for total purchases in excess of USD 240 billion in 1999.²⁸ According to investment bank Goldman Sachs, e-commerce is expected to reduce supplier costs by between 5 and 40 per cent, depending on the sector.²⁹

In this way information technology is bringing about a general reduction in the search costs incurred by businesses in retrieving information, both internally

²⁶ Brookes and Wahhaj (2000).

²⁷ The Economist, 26 June 1999.

²⁸ The Economist (2000b).

²⁹ Brookes and Wahhaj (2000).

In this way information technology is bringing about a general reduction in the search costs incurred by businesses in retrieving information, both internally and externally. and externally. Among other things, this has led to more efficient stock management and better matching of supply and demand, so releasing resources and speeding up the production process. New potential is opening up for stock management systems such as the

just-in-time (JIT) method that have been slashing stockholding costs and are expected to continue to do so in the future (see Figure 14). The greater availability of information also reduces the need for safety margins and so the amount of capital tied. Internet retailers such as Dell and Amazon that bring the customer and production units together directly over the Internet without any other intermediary have only a fraction of the working capital (in Amazon's case negative working capital) needed by their competitors.³⁰

The Federal Reserve believes that there are clear signs that search costs in the labour market have also fallen now that the Internet has opened up new ways of finding personnel and the recruitment companies have been able to expand their operations with IT support. The Federal Reserve believes that there are clear signs that search costs in the labour market have also fallen now that the Internet has opened up new ways of finding personnel and the recruitment companies have been able to expand their operations with IT support.³¹ The technological revolution has brought not only more jobs but also record levels of staff turnover, even if the net impact

has been extremely positive. The workforce has therefore become more mobile and job security has diminished, so putting a damper on wage growth.

Moreover, IT has both been the key to the emergence of more extensive, efficient and globalised financial markets and been supported by venture capital from these markets. Rapidly rising wealth in the US during the 1980s and 1990s has also brought broader and stronger venture capital markets, with new phenomena such as "business angels"³² and "business incubators".³³ The US venture capital market, symbolised by the technology-dominated Nasdaq exchange, increased its capitalisation by more than 850 per cent during the 1990s.³⁴

30 Sahlman (1999).

³² Independent or organised wealthy investors contributing both capital (the entrepreneur's stake in the business depends on his or her work input) and a network of contacts.

³³ Businesses that provide office accommodation and other practical infrastructure for innovators.

³⁴ Lerner (1999) demonstrates that businesses financed through the venture capital market account for a disproportionately large share of technological development in the form of patents, registered pharmaceuticals and industrial innovations.

³¹ According to one study, 60 per cent of US personnel managers used the Internet for recruitment purposes in 1998, compared with just 13 per cent in 1997. The largest marketplace, America's Job Bank, provided information on 1.5 million job seekers in 1999. See Council of Economic Advisers (2000) and Greenspan (1999b).


Statistical illusion?

In this context it should be noted that several leading experts have long been sceptical about the supposed productivity-enhancing impact of computerisation, particularly given the fact that much of the increase in productivity did not come about until the late 1990s. A favourite quotation that no self-respecting article on the topic can be without is Nobel Prize for Economics laureate Robert Solow's comment: "You can see the computer age everywhere but in the productivity statistics." This scepticism has gone hand-in-hand with images of office workers playing computer games and surfing for pleasure, and office printers repeatedly refusing to print.

One reason often cited for the acceleration of productivity growth is that the statistical basis for putting together the national accounts has been expanded, calculation methods have been modified and various items have been reclassified (for example, business spending on computer software is now counted as an investment rather than an

One reason often cited for the acceleration of productivity growth is that the statistical basis for putting together the national accounts has been expanded, calculation methods have been modified and various items have been reclassified.

expense, so pushing up GDP). Together these changes have led to historical inflation figures being revised downwards and historical GDP and productivity figures being revised upwards.³⁵

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³⁵ See, for example, The Economist (1999).

Some economists believe that these methodological changes can explain much of the increase in productivity growth. One proponent of this view is Robert J. Gordon, who is convinced that the acceleration of productivity growth can be explained entirely by three factors: changes in statistical methods, rapid productivity increases in computer manufacturing and cyclical GDP growth above the trend rate in recent years. He finds that no acceleration of productivity growth can be seen in the statistics for the 99 per cent of the US economy that does not involve the production of computer hardware.³⁶ However, Gordon's conclusions are very much dependent on his statistical assumptions.

What the economic literature does currently lend extensive credence to is that the use of IT, and not just IT production, has increased the efficiency of business processes. What the economic literature does currently lend extensive credence to is that the use of IT, and not just IT production, has increased the efficiency of business processes, with clear indications of a rapid increase in the return on IT investments at company level since the ear-

ly 1990s.³⁷ In actual fact, studies show that this is by and large a diffusion phenomenon: the eight sectors of the US manufacturing industry that have used computers most intensively (equivalent to 40 per cent of the total value added in manufacturing) increased their productivity substantially back in the 1970s and 1980s, with productivity then accelerating rapidly between 1990 and 1996 to an annual rate of 5.7 per cent, compared with 2.6 per cent for the rest of the industry.³⁸

Others, including the Federal Reserve, believe that problems with measuring productivity and quality improvements in the rapidly expanding service sector have resulted in productivity growth being heavily underestimated.³⁹ For example, if productivity per man-hour is measured on the basis of income statistics rather than primarily production statistics as is the case today, productivity growth in the US economy has been around 1 percentage point higher over the last two years.⁴⁰

Problems with the data have led some researchers to conclude that productivity can be measured satisfactorily only in the third of the economy that is most heavily involved in physically quantifiable production.⁴¹ Given that there are

³⁶ Gordon (1999).

³⁷ See Brynjolfsson och Hitt (1994).

³⁸ McGuckin and Stiroh (1998).

³⁹ See, for example, Sichel (1999). A classic example of a service improvement that was not captured by the statistics at all to begin with was the automatic teller machine (ATM), which offered customers basic banking services around the clock without being included in the national accounts as anything other than an expense.

⁴⁰ Greenspan (1999b).

⁴¹ Griliches (1994).

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equally valid arguments in favour of the statistics both overestimating and underestimating the phenomenon of the new economy, we have chosen for the most part to start from, and rely on, the data that are available.

One fact is clear despite all this uncertainty, namely that the greatest productivity surge came right at the end of the 1990s. This leads us on to the next issue, which is why the productivity surge has arrived now

One fact is clear despite all this uncertainty, namely that the greatest productivity surge came right at the end of the 1990s.

and whether this heralds further productivity growth in the future.

Why a breakthrough right now?

Why has the big surge in productivity and growth taken place now when the deregulation and technological processes mentioned earlier as possible underlying causes have been under way for decades, with most of the breakthroughs made back in the mid-1980s?

In a widely cited article, Paul David highlights the striking parallels with previous technological revolutions.⁴² David mentions the steam engine and the combustion engine but chooses to concentrate on how the dynamo came to conquer US industry around the turn of the last century. The process took longer than one might imagine: almost half a century.⁴³ It took time to expand the capacity of the electricity system. It took time to tailor the technology as best possible to its potential applications in industry. And it took time for the organisation of the workplace to adapt to the opportunities opened up by the new technology (in the case of the dynamo, switching from huge steam engines to a series of smaller electrical machines and so making factories more flexible).

It also took time for the workforce to get to grips with the new technology (learningby-doing, LBD), and in some cases it took time before it became profitable to replace cheap labour with electrically powered machinery. During the early days of electrification, the productivity gains were not particularly large and in some cases productivity

It also took time for the workforce to get to grips with the new technology (learning-by-doing, LBD), and in some cases it took time before it became profitable to replace cheap labour with electrically powered machinery.

⁴² David (1990 and 1999).

⁴³ In 1899, twenty years after Edison's invention of the light bulb in 1879, still only 3 per cent of US households had electric lighting. Although the first electrical power station was built in 1881, it was not until the 1920s that electricity made a sufficient breakthrough in industry for it to have a noticeable impact on US economic growth.

actually dropped.⁴⁴ But once the adaptation process gained momentum and higher volumes of electrical power began to push down prices, there was something of a "ketchup effect" (see Figure 15).⁴⁵

A common way of describing a progression of this kind is the S-curve: a slow initial phase followed by a rapid upswing and finally a slowdown as the gains from the new technology are reaped.⁴⁶ This builds largely on Schumpeter's groundbreaking works of the 1930s⁴⁷ where he describes a process he calls "creative destruction". New technology first squeezes out the old technology, which involves major costs both for the reorganisation and for the old capital destroyed, then come the rewards and finally things level off as more and more simply copy the technology. Figures 15, 16 and 17 illustrate the rise of electrical power and the development of the Internet and e-commerce to date. The Internet as a productivity-enhancing factor may well now be in the S-curve's ascendant phase.

Romer adds to this discussion the need for interaction and synergies between different technologies where a new technology can breathe new life into a number of "dormant" innovations. The microprocessor needed to be supplemented with (established) technologies such as magnetic storage (hard disk) and video displays (monitor) to have its sudden critical breakthrough, which in turn paved the way for the rise of the Internet.⁴⁸ In other words, it is not a single innovation that determines how things will develop but the interaction between a number of different innovations. The interaction of technologies in "development blocks" where the real productivity gains are not realised until investments have been made in all of the complementary investments in a block, has been demonstrated empirically by Dahmén, among others.⁴⁹

A complementary explanation of why we are seeing this unique acceleration process right now at the end of the 1990s and dawn of the new millennium is that many of the new innovations are having a breakthrough when reaching a critical number of users. Varian och Shapiro have used theoretical and practical examples demonstrate this "positive feedback" in networks whereby each new user adds value to a network and participants enjoy mutual "positive network exter-

⁴⁴ According to some calculations based on historical innovations, it can take two decades simply for productivity to get back to its previous rate of growth.

⁴⁵The shortage of qualified labour is a restrictive factor at the beginning of the process. For a discussion of similar drops in productivity at the start of the industrial revolution in the early 19th century, see Greenwood (2000) and Jovanovic (1997).

⁴⁶ For this type of progression, see Kuznets (1930).

⁴⁷ Schumpeter (1936 och 1939).

⁴⁸ Romer (1996).

⁴⁹ For a discussion of Dahmén's theory of development blocks as developed in "Svensk industriell företagarverksamhet. Kausalanalys av den industriella utvecklingen 1919–1939" (1950), see Carlsson and Henrekson (1991).

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Figure 15. The S-curve: Proportion of electricity consumers among US households and factories



Figure 16. At the start of the S-curve? The rise of the number of Internet domains (websites)



nalities"50, in other words gains from participating in the same network. A simple example of this is the telephone: the first telephone was expensive to make and complex to use, and the first user of the telephone had only a limited need to call the one other person who had a telephone. However, with each new owner of a telephone, the value of having a telephone that provided access to the others

A complementary explanation of why we are seeing this unique acceleration process right now at the end of the 1990s and dawn of the new millennium is that many of the new innovations are having a greater breakthrough in line with growth in numbers of users.

in the network increased. The value of owning one therefore increased exponen-

⁵⁰ Varian and Shapiro (1999).



Figure 17, E-commerce, compilation of OECD forecasts

tially with the number of users – at the same time as larger production runs reduced the cost of producing each unit.

Exponentially higher values and lower costs result in exponentially higher productivity once a network leaves its slow start behind and finally reaches a critical mass and begins to expand ever more rapidly. Exponentially higher values and lower costs result in exponentially higher productivity once a network leaves its slow start behind and finally reaches a critical mass and begins to expand ever more rapidly. This naturally calls to mind the Internet, whose use has now become practically free of charge and

whose value as a source of information and as a marketplace has increased with the arrival of each new participant.

However, network externalities also have their limitations and follow the same S-curve described above: a slow start followed by sudden acceleration and finally, once the majority of the potential users have been connected to the network, deceleration. Varian och Shapiro cite the fax machine as an example of the slow adaptation to new technology and critical network externalities. The idea behind the fax machine dates right back to 1843 and a fully functioning machine was launched in the US in 1925, but fax machines remained rarities until the 1980s. Then, around 1982, the fax suddenly gained critical mass, with more and more businesses buying one until practically every business had fax facilities by around 1987. Since then fax machines have spread only slowly on to households and private individuals. Similarly, the development of mobile telephony networks and broadband networks for Internet communications reaps major rewards when towns and cities are connected, but the gains gradually taper off as the networks move out into more sparsely populated areas to tap the last remaining prospective customers.⁵¹

Standards are important for the development of network externalities. Where there are several competing standards creating competing networks, it is difficult to realise the gains to be had from a broad network. In fact, the use of several networks in parallel during a transition period can create additional costs. This means that the real gains may have to

Standards are important for the development of network externalities. Where there are several competing standards creating competing networks, it is difficult to realise the gains to be had from a broad network.

wait until the network participants have agreed on a common standard. Examples of this include the battle between direct and alternating current in the US^{52} or, perhaps, between conventional and electronic mail today. An example of the importance of standards even when many of the participants have made a commitment is the changeover process currently under way in the banking sector, where there is still a network of bank branches running parallel to the new Internet functions in which the banks have had to invest heavily but which will in theory be much cheaper to operate once the majority of customers have changed their behaviour.⁵³

There is also extensive literature on the "cluster" phenomenon, another type of externality between the know-how of different people in regional networks of innovation businesses, often start-ups. A local entrepreneurial culture is created with synergies between different skills and a mobile workforce moving between existing businesses and over to start-ups. The creation of regional clusters can also trigger sudden advances in productivity, with latter-day examples including Silicon Valley in California and Kista in Sweden.⁵⁴

⁵⁴ Jaffe, Tratjenberg och Henderson (1993), Audretsch and Thurik (1999), The Economist (1997).

⁵¹ Krugman (1999) draws a striking historical parallel with the telegraph on the basis of Tom Standage's history of the telegraph.

⁵² Varian and Shapiro (1999).

⁵³ In the case of network externalities, the deceleration at the end of the S-curve may be exacerbated by another factor known as "look in". When a consumer opts to participate in a particular network, he rejects other solutions, and switching networks can be both inconvenient and expensive. Once a network producer has reached a critical mass in terms of numbers of participants, the producer can to some extent lock in many consumers and build such a dominant position that it can make it unattractive for the customer to switch to a competing network that may be more efficient. The network producer can then exploit its market position by charging high prices to locked-in participants and choosing not to allow other players into the network who threaten the position of the network producer. In this way efficiency gains can turn into a monopoly and economic stagnation. However, "closed" systems that do not allow initiation and interaction with other producers entail costs for the custom (1999) discuss the classic example of the battle between Apple's "closed" software solution that was gradually squeezed out of the market by Microsoft's "open" MS-DOS. Patents are, of course, important here, both rewarding innovation and, in time, opening up a product for imitation.

Is the acceleration of productivity growth temporary or permanent?

All of the new productivity-enhancing factors, whether stemming from technological advances or deregulation, are in principle of a one-off nature, even if they have arrived suddenly and with greater intensity. All of the new productivity-enhancing factors, whether stemming from technological advances or deregulation, are in principle of a one-off nature, even if they have arrived suddenly and with greater intensity. Many of the gains may prove very long-lasting and impact over a very long period of time – for example, trade liberalisation measures are

considered to have already had a growth-enhancing impact over several decades. The examples given by David and Romer illustrate how a group of innovations can boost growth over an extended period of perhaps 30–40 years. However, the S-curve still dictates that once the inefficiencies have disappeared, the technology has been exploited and the welfare gains have been discounted, the ascendant phase is over and deceleration can be anticipated.

Nevertheless, another possibility is that the new economy is not just a transitory increase in potential growth brought on by the efficiency gains and innovations of the age. It may represent a permanent increase in the actual rate of growth, which, in turn, reflects a more rapid rate of technological development. What the data show depends largely on the timeframe. Looking at the last century, few countries show a clear upward trend in their growth rate, but a longer historical perspective through a variety of economic paradigm shifts reveals that growth in the Western World has not been constant but accelerating.⁵⁵

Traditional growth theory allows for both of these possibilities. As mentioned earlier, high levels of saving and increasing amounts of capital employed per employee are not enough to explain growth in the longer term. If capital is to be employed effectively by the workforce, a technology factor (Solow residual) is needed to offer an ever better way of creating and exploiting capital.⁵⁶ The new growth theory (endogenous growth) defines this technology factor as innovations that constantly increase the productivity of both workforce and capital (associated primarily with Paul Romer) or as human capital, comprising all the knowledge that we can accumulate ad infinitum with a view to becoming more efficient and achieving increasingly high standards of welfare (Lucas).⁵⁷ According to this argument, growth depends on how many innovations are made, how efficiently they are exploited and

⁵⁵ Maddison (1982).

⁵⁶ See footnote 9.

⁵⁷ Lucas (1988).

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Figure 18. Growth in the world GDP per capita over the last millennium

how efficiently individuals accumulate and transfer knowledge.⁵⁸ If we believe in a constant rate of growth over the long term, we could imagine a steady, "natural" rate of innovation and knowledge acquisition leading to steady growth.

What then is the reason for the accelerating rate of growth? Whether we view the technology factor driving this growth as accumulated knowledge or innovation, this new information has externalities. Every new bit of knowledge and every new invention can be combined with previous ideas. Even if knowledge and inventions come at a steady rate, each new piece of the puzzle will bring

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new synergies with all the previous pieces, and growing cross-fertilisation may increase the rate of growth. This is reflected, for example, in Romer's example of the interaction between the transistor and other "old" technologies.

Some data suggest an exponential growth in the rate of innovation. For example, growth in the number of patents, which stagnated in the 1970s and 1980s⁵⁹, was almost 40 per cent higher in the 1990s.⁶⁰ Looking back over the last

⁵⁸ Several studies (for example, Goldin and Katz (1996) and Nelson (1990)) have cited the US education movements during the 20th century as one of the main reasons for various growth spurts, while Barro and Sala-i-Martin (1995) have cited education as an explanation for the growth gaps between countries.

⁵⁹ However, this is partly due to new procedures at the US Patent and Trademark Office, see Griliches (1994).

⁶⁰ OECD (1999c). The number of patents based on observations in published scientific articles also increased sharply during the 1990s, from 8,600 in 1987 to 47,000 in 1996, which could serve as a measure of increased patent "quality".

century (data from 1880 onwards), the number of patents registered in the US each year has increased far more rapidly than the country's population.⁶¹

Above all, we can see how new innovations have been integrated into society ever more quickly. Figure 19 shows how each new innovation absorbed has needed less time than its predecessors to secure a broad distribution in the US.



Figure 19. Years taken to reach 50 million users in the US

The other possible cause of a permanent shift in the growth rate is a change in the social and institutional picture.⁶² Such changes reflect a kind of improved "social technology" that impacts on the very core of the knowledge and innovation creation process: the behaviour of individual people. By better institutions we might mean a better climate for innovation and a better return on, or better subsidies for, the acquisition of knowledge.⁶³

The more open to competition a sector is, the higher its rate of innovation.

Deregulation and market structures also have a role to play. The more open a market is to competition, the greater the incentive to innovate. In a completely open market, inno-

vation is the only means of creating a temporary monopoly that can boost returns, while competition is otherwise squeezing returns down towards nil.

⁶¹ Griliches (1994).

⁶² For a discussion of the importance of institutions for growth, see North (1999).

⁶³ According to Romer (1990), knowledge subsidies can pay off if knowledge is a positive externality for society as a whole, since knowledge gradually spreads and becomes widely known. For example, the USA features one of the world's highest levels of investment in research and development per capita and highest numbers of researchers and patents per employee, yet almost 75 per cent of patents in 1993–94 were based on research that received some form of government subsidy. Even innovations such as the Internet, the modern World Wide Web reader and NMT were developed with government funding.

Empirical studies suggest, not unexpectedly, that the more open to competition a sector is, the higher its rate of innovation.⁶⁴

Purely theoretically, there is therefore a possibility that the rate of growth is permanently stepping up a gear, especially if the institutional picture is changing. However, short and uncertain time series do not lend sufficient credence to this, and so this hypothesis remains purely speculative.

Conclusion: There is a new economy in the USA (with some reservations)

Despite the considerable statistical uncertainty, we have been able to suggest that some form of new economy, in the sense of an increase in growth rate and productivity, has been putting down roots in the US.

Despite the considerable statistical uncertainty, we have been able to suggest that some form of new economy, in the sense of an increase in growth rate and productivity, has been putting down roots in the US.

One explanation is that after the 1970s and 1980s the US has simply returned to a

healthier economic policy line that has reduced the risk premiums and increased macroeconomic stability sufficiently for a high rate of growth to return. This in itself would have important implications for a number of economic estimations.⁶⁵

But there seems to be more to it than that. The high productivity growth seen since 1995 is remarkable considering that the US economy is so far into the business cycle and that unemployment has continued to fall during the period, with many of the new jobs created being unskilled, something which would normally tend to drag productivity downwards.

The new economy, with its combination of buoyant productivity and employment, can therefore also be seen as the result of three factors in the late 1980s and 1990s, each of which has played an important role in the scope of the upturn in growth and productivity and which have all gone hand-in-hand with each other: (1) domestic microeconomic deregulation, (2) reduced trade barriers

⁶⁴ Including Audretsch and Thurik (1999).

⁶⁵ An important implication of the new economy – and it seems that the stagnation during the 1970s and 1980s was the exception rather than the rule – is that the informational value of econometric models estimated on the basis of data from the 1970s and 1980s is limited. The risk is that gradual structural changes under way in the economy are being obscured by the cyclical changes that many economists are focusing on – in other words, a case of not seeing the wood for the trees. Representatives of the Federal Reserve admit that in recent years they have attached relatively little importance to models estimated on the basis of old data. Instead, monetary policy has been guided more by early warning indicators such as movements in monetary conditions, wages and profit margins. See, for example, IMF (1999b). Attempts have also been made to correct the time series. For a discussion of similar regime shifts, see, for example, Blix (1999) and Hamilton (1994).

The new economy, with its combination of buoyant productivity and employment, can therefore also be seen as the result of three factors in the late 1980s and 1990s, each of which has played an important role in the scope of the upturn in growth and productivity and which have all gone hand-in-hand with each other: (1) domestic microeconomic deregulation, (2) reduced trade barriers and globalised division of labour, and (3) technical innovations and faster information flows.

veys indicate that employees have not felt a sense of job security despite the high levels of employment.

Should the inflow of capital from abroad relent and the highly valued stock market see a major correction, this would most likely put a damper on the high rate of investment. and globalised division of labour, and (3) technical innovations and faster information flows. However, the key factor is the long-standing favourable climate for innovation and risk-taking in the US that has made possible a surge in technological development and productivity, the like of which has perhaps never been seen before. And we may be only at the very beginning of this process.

Macroeconomic stringency and microeconomic change have together transformed the US markets. In a climate of competition and unaccommodating monetary policy, businesses have shied away from hiking up the prices of their goods for fear of losing market share. At the same time, various sur-

It is worth making an important aside here. Many commentators have warned that the extremely high valuation of the US stock market is in fact a financial bubble based on unrealistic earnings forecasts. This would suggest temporary "overinvestment" in US

industry, even though the investment boom was built on market-based decisions.⁶⁶ History shows that improved economic fundamentals often go hand-inhand with speculation. Should the inflow of capital from abroad relent and the highly valued stock market see a major correction, this would most likely put a damper on the high rate of investment.⁶⁷

However, it is important to remember that the risk of a bubble in the form of excessive confidence in the US's listed companies and economy does not ultimately impact on the fundamental factors behind the country's growth potential. It is movements in productivity and not Nasdaq's near-term performance that will determine the long-term rate of growth.

⁶⁶ Although new information technology has sharply reduced the uncertainty surrounding investment decisions, partly by speeding up information flows, there is still a risk of misguided investments being made. For a discussion of overinvestment, see, for example, IMF (1998) or Krugman (1994).

 $^{^{67}}$ See IMF (1999c) and Zarnowitz (1999).

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Has the new economy come to Europe?

Having established that there are some signs of a new economy (in the sense of a surge in productivity growth) emerging in the US, the next question has to be: What about Europe?⁶⁸

At the time of writing, Sweden and the rest of Western Europe are in a phase of strong economic growth. At the same time, new technology, especially the Internet and

Sweden and the rest of Western Europe are in a phase of strong economic growth.

telecommunications, is gaining ground in many European countries. However, this favourable picture cannot hide the fact that the situation in Europe is very different to that in the US:

- The rate of economic growth in Europe during the 1990s was only half that in the US, and continued to lag behind even during the upswing seen towards the end of 1999. Between 1990 and 1998, the EU's 15 member states recorded average annual economic growth of 1.9 per cent and Sweden just 1.1 per cent, compared with 2.9 per cent for the US. Between 1997 and 1999, the EU 15 recorded average annual economic growth of 2.4 per cent and Sweden 2.8 per cent, compared with 4.2 per cent for the US.
- Europe has not seen anything like the same rapid increase in investment witnessed in the USA. While investment levels in Europe and the US largely mirrored each other between 1960 and 1989, investment stagnated in Europe during the 1990s while the US enjoyed its investment boom (see Figure 20). Since 1990 annual investment has increased more than twice as quickly in the US as in the euro area, and between 1990 and 1998 investment increased by 50 per cent in the US and less than 20 per cent in the euro area.⁶⁹
- Almost as clear-cut are the differences in productivity growth. 30 years of faster productivity growth from the beginning of the 1960s helped Europe to gain ground on the US, but since the beginning of the 1990s productivity growth has slowed somewhat in Europe and accelerated in the US (see Figure 21).
- The gap in productivity growth must also be considered in the light of the increase in employment stateside. While employment in the US has continued to rise from an already high level, therefore absorbing new groups of poorly qualified workers, employment stagnated in several European countries in the early 1990s and has recovered only slowly. In contrast to the US, employment

⁶⁹ OECD (1999e).

 $^{^{68}}$ Our comparison is based largely on the 15 EU member states (EU 15).



Figure 20. Fixed private non-residential investment volumes in the US and Europe 1960–1998





growth in Europe is drawing on a diverse pool of unemployed workers, many of whom are relatively well qualified.

 More mechanical econometric measures of potential GDP growth rates, such as those estimated by the IMF and the OECD, have also been markedly lower in Europe than in the US since the second half of the 1990s. According to the OECD, the potential rate of GDP growth for 1999–2001 is 3.4 per cent for the US and just 2.3 per cent for the EU.⁷⁰

70 OECD (1999e).

All in all, there are currently few, if any, signs in Europe of the investment boom or productivity surge associated with the new economy. A handful of countries – including the Netherlands, Ireland, the UK and, more recently, Sweden and Finland – have seen

All in all, there are currently few, if any, signs in Europe of the investment boom or productivity surge associated with the new economy.

strong growth in economic activity and employment, but, with the exception of Ireland, these countries have not enjoyed the same strong productivity growth as the US.⁷¹

Where should we try to find the reasons for the growing gap between Europe and the US? Could Europe be lagging behind the US in the technological cycle, and is the stage set for the new economy in the US to give Europe a boost at a later stage? To answer these questions we will now run through the factors cited as underlying the new economy in the US and test them in Europe:

Macroeconomic policy

On one point, conditions in Europe and the US should be relatively similar. Earlier we put forward the hypothesis that a return to a healthier and more stable macroeconomic policy may have contributed to a return to higher growth in the US. In this respect there has been an almost equally striking improvement in Europe. According to the OECD, between 1990 and 1998 inflation dropped from 5.4 to 1.7 per cent, almost identical to developments in the US, and inflation expectations fell almost as sharply. Improvements in fiscal policy were almost as marked during the period, with the EU 15 budget deficit shrinking from 6.3 to 1.6 per cent of GDP. Although budget deficits are on average larger in the EU than in the US, there is less of a gap when it comes to the primary and structural balances.

So both Europe and the US saw greater price stability and a rapid improvement in government finances during the 1990s. It is therefore hard to put forward a less favourable macroeconomic climate as the reason

So both Europe and the USA saw greater price stability and a rapid improvement in government finances during the 1990s.

for Europe trailing behind. Nor should monetary and fiscal policy prevent Europe in the future from putting in a performance on a par with that seen in the US.

⁷¹ Ireland is still considered to be in a rapid catch-up phase.

Microeconomic conditions

A review of microeconomic conditions makes the gap between the US and Europe clearer:

Regulated labour markets

When discussing the employment gap between Europe and the USA, reference is often made to the strict regulation of the European labour market in the late 1960s and early 1970s. When discussing the employment gap between Europe and the US, reference is often made to the strict regulation of the European labour market in the late 1960s and early 1970s, with job security, strong trades unions and regulated working hours. At the same time, unemployment benefits

were increased in several countries, reducing the incentive to find work. Although empirical studies are not uniform in their conclusions, most suggest a negative relationship between these labour market controls and growth and employment. With a few exceptions – such as the UK, the Netherlands and Denmark – no major steps have been taken to reduce the regulatory burden. Case studies from some large European companies suggest that even now it is difficult to exploit the gains from new technology when the labour situation is so heavily regulated. For example, the European car component manufacturers' trade association has found in comparative studies that the implementation of technical innovations takes much longer in Europe than in the US on account of labour controls.⁷² Against this background, there is a risk that Europe will find it difficult to realise the potential presented by the technological revolution in the form of a more efficient division of labour.

Regulated and fragmented product markets

The OECD's recently published comparison of the regulation of the product markets in the large industrialised nations shows that the US is currently one of those with the lowest regulatory burdens, while some of the large European economies are among those with the greatest, headed by Italy, France and Belgium (see Figure 22).⁷³ Only the UK is considered to have less extensive regulation than the US in this study. As a result, the potential exploited in the US remains largely untapped in many European countries.

⁷² Ferguson (1999).

⁷³ OECD Review of Regulatory Reform in OECD (1999e).

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Index, 6 =fully regulated, 0 =fully liberalised

One example is Europe's still protected and regulated airline industry, where regulation has led not only to a 40 per cent lower cabin factor than in the US but also to lower levels of IT usage.74 Another clear example is the government subsidisation and protection of the European microprocessor industry, which led to the collapse of Europe's global market share relative to its competitors in the US and Japan in just ten years. Another important factor stressed by the OECD is the high number of major European

Product market regulations have also helped to keep the European market fragmented along traditional national boundaries. The most obvious signs of this are the price differentials between EU member states of

The OECD's recently published comparison of the regulation of the product markets in the large industrialised nations shows that the USA is currently one of those with the lowest regulatory burdens, while some of the large European economies are among those with the greatest.

enterprises in technology-intensive markets that remain government-owned.

Product market regulations have also helped to keep the European market fragmented along traditional national boundaries.

around 20 per cent despite the introduction of the internal market back in 1992. Price differentials are 40 per cent higher in the EU 15 than in the US, and studies have found that neither transport costs nor tax differences are sufficient to explain

74 Ferguson (1999).

these differentials.⁷⁵ This fragmentation may have particular implications for new IT industries with network externalities. The absence of a homogeneous market meant that many European software companies were unable to develop as rapidly as their US competitors during the critical years of the mid-1980s.

December 1999 saw EU ministers agreeing on a new directive to facilitate electronic commerce in Europe. However, the 1990s did bring major advances in a number of Europe's product markets. Several countries have broken up government monopolies in the telecommunications market, which is of strategic impor-

tance to the IT industry, and privatised the state-owned telecom companies.⁷⁶ The transport and electricity markets have also been gradually deregulated, most notably in the UK and the Nordic region. Germany has liberalised its postal, telecommunications and railway markets, and Spain has deregulated telecommunications and electricity. In general, there has been greater deregulation in northern Europe than in southern Europe.⁷⁷ The launch of the euro is also expected to result in reduced fragmentation of Europe's markets and stiffer price competition. Moreover, the EU is attempting to introduce common regulations to promote a broader IT market: December 1999 saw EU ministers agreeing on a new directive to facilitate electronic commerce in Europe.

TRADE LIBERALISATION

However, developments in this area have not been as unambiguous as in the USA. Like the US, Europe has seen its growth potential enhanced by GATT rounds and the increasing internationalisation of the economy. However, developments in this area have

not been as unambiguous as in the US. Import penetration in the EU taken as a single market (excluding internal trade between member states) increased much more slowly than in the US during the 1980s, from just under to just over 10 per cent of manufacturing industry, according to the OECD (seeFigure 23). Furthermore, the sector exposed to international competition is now smaller than in the US (see Figure 24).

Administrative barriers for business start-ups

Competition in the product markets and the rate of innovation in Europe are also affected by the much higher barriers faced by business start-ups. According to the

⁷⁵ European Economy (1999a). Prices are particularly high in Denmark, Sweden and Germany and especially in the pharmaceutical, chemical, food and motor industries relative to the EU as a whole.

⁷⁶ Idem.

⁷⁷ European Economy (1999b).

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Figure 23. Import penetration in the manufacturing industry

Percentage





Percentage of economy exposed to foreign competition

OECD, it takes 12 times as long and costs four times as much to start up a new business in Europe than in the US. The main reasons for this lie in the higher administrative barri-

The impact of taxation on incentive structures is an important factor in this context.

ers for business start-ups (see Figure 25).⁷⁸ New small and medium-sized enterprises are also believed to find it harder to grow to the extent seen in the US, a factor christened the crisis of the "Mittelstand" in Germany and "the hourglass waist of industry" in Sweden.⁷⁹ From a technological perspective, studies of com-

⁷⁸ OECD Review of Regulatory Reform in OECD (1999e).

⁷⁹ Henrekson in Calmfors and Persson (1999).





Index: 5 = fully regulated, 0 = fully liberalised

Source. OLOD.

parable clusters of innovation businesses in Sweden and the US⁸⁰ have shown that American businesses grow substantially faster than their Scandinavian counterparts in their respective clusters.⁸¹ The impact of taxation on incentive structures is an important factor in this context.⁸²

VENTURE CAPITAL

Only in the UK are venture capital investment levels on a par with the USA.

Unlike their US peers, Europe's innovators do not have a large and broad-based venture capital market such as Nasdaq to fall back on. As recently as 1997 the venture capital

market as a percentage of GDP was five times bigger in the US than in the EU for business start-ups and twice as big for businesses at a later stage of growth.⁸³ In 1999 just 2.5 per cent of pension fund assets in the EU were invested in venture capital companies (see Figure 26), compared with three times this figure in the US.⁸⁴ Only in the UK are venture capital investment levels on a par with the US, and even then the primary focus is on more mature businesses. The launch of the euro and the harmonisation of Europe's equity and bond markets are expected to

⁸⁰ Braunerhjelm (1998).

⁸¹ However, these studies were conducted prior to the sudden eruption of new IT businesses in Sweden's Mälardalen region over the last two years.

 $^{^{82}}$ For an in-depth discussion of the link between research, innovation and entrepreneurship, see Henrekson and Rosenberg (2000).

⁸³ Braunerhjelm (2000).

⁸⁴ Summers (2000).



Figure 26. Venture capital in various countries

Source: Braunerhjelm (2000).

pave the way for a more extensive European venture capital market. In particular, Germany's Neuer Markt, whose capitalisation quadrupled in 1999 to DEM 112 billion, has emerged as a "European alternative" for venture capital.⁸⁵

Countries like Sweden and Finland have also boasted rapidly expanding venture capital markets over the last two years, and more and more European innovators are applying directly to Nasdaq.⁸⁶ Looking at the IT sec-

Countries like Sweden and Finland have also boasted rapidly expanding venture capital markets over the last two years.

tor in isolation, the supply of venture capital in Europe increased by 75 per cent in 1998 alone, according to a study by PriceWaterhouseCoopers.⁸⁷

However, both business angels and business incubators remain a rarity in Europe, including Sweden, relative to the USA.⁸⁸ Studies indicate that this is not due to the absence of private European wealth as a basis for serving as business angels for innovators so much as a result of tax rules that make it difficult for entrepreneurs to use their own knowledge and labour as starting capital in a partnership with the financier on the basis of, for example, equity options.⁸⁹

⁸⁶ The Economist (2000a).

⁸⁵ Wall Street Journal (1999).

⁸⁷ Connectis (1999).

⁸⁸ OECD (1999c).

⁸⁹ Henrekson and Rosenberg (2000), Braunerhjelm (2000).

HUMAN CAPITAL

Another key growth factor might be access to human capital, in the form of both an educated workforce and research resources. Another key growth factor might be access to human capital, in the form of both an educated workforce and research resources. Through country comparisons based on historical data, Barro och Sala-i-Martin⁹⁰ found

a human capital gap between the US and Europe, primarily at higher education level, which may have impacted on long-term growth potential. However, current data does not reveal any major gap in education levels. Mathematics tests suggest approximately the same standard of knowledge among upper secondary school pupils in Europe and the US.⁹¹ The number of pupils entering higher education doubled in the EU between 1975 and 1995 and is now almost on a par with the US as a proportion of the overall population.⁹²

However, investment in research and development (R&D) and, above all, the return on R&D remain slightly higher in the US on average than in Europe, according to a newly published OECD study.⁹³ When it comes to scientific articles and the number of researchers and engineers per employee, the US again outperforms the European average, although the gap is not particularly wide.⁹⁴

All in all, the US may possibly have a slight head-start on Europe in terms of human capital, but the gap is narrowing and does not appear to present any major obstacle to the emergence of a new economy in Europe. More important may be the synergies between universities and the private sector in the form of the clusters that are less widespread in Europe than in the US. However, micro-economic incentives and barriers probably play a greater role here than the actual standard of education.⁹⁵

Technological development

The rise of the Internet and ecommerce suggest yet another technological edge for the USA over Europe. The rise of the Internet and e-commerce suggest yet another technological edge for the US over Europe (see Figures 27 and 28), but at least on this level the European economies already seem to be making up

⁹⁰ Barro and Sala-i-Martin (1995).

⁹¹ National Science Board (1998).

⁹² The proportion of university-educated workers in Sweden is lower than in the leading EU countries, see National Science Board (1998).

⁹³ The same applies to private R&D expenditure as a proportion of sales. However, Sweden in isolation stands well clear of both the USA and the EU when it comes to RochD expenditure, something which cannot simply be explained away by statistical definitions, see OECD (1999d).

⁹⁴ National Science Board (1998).

⁹⁵ Braunerhjelm (2000).

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Figure 27. Percentage of population with access to the Internet at home or at work in 1998

Sources: Department of Commerce & IDC.



Figure 28. Internet users by region as of May 1999

Percentage

ground on the US. The lag in technological penetration, especially in terms of PC ownership and Internet use, seems to be narrowing gradually.

However, currently only 55.5 per cent of key personnel in European businesses have e-mail facilities and only 60 per cent have access to the Internet. According to various estimates, US customers accounted for as much as 80 per cent of world e-commerce in 1999, compared with just over 15 per cent for Europe. However, the number of Internet users is growing even faster than in the US, with e-commerce forecast to explode from just a few billion US dollars in 1999 to USD 250 billion in

2002 (see Figure 29).⁹⁶ Sweden and Finland are at the forefront in Europe and on a par with the US in terms of both Internet penetration and e-commerce, while France, Belgium and Italy seem to be lagging furthest behind.⁹⁷

The next generation of Internet applications is expected to involve mobile solutions, which puts Europe not only on a par with but actually ahead of the US in several respects. The proportion of mobile telephone users is much higher in most EU member states, and the majority of the first commercially significant mobile Internet applications (WAP technology) were launched in Europe before the US.⁹⁸



Figure 29. E-commerce in Western Europe and the World as a whole

Conclusions for Europe

All in all, the outlook for a new economy in Europe is less bright than in the USA. The emergence of a new economy in Europe will probably come later and have a lesser impact. All in all, the outlook for a new economy in Europe is less bright than in the US. The emergence of a new economy in Europe will probably come later and have a lesser impact.

The macroeconomic climate is just as stable in Europe and investment in education is on a par with the US. More and

more clusters of IT businesses are emerging in Europe, and the stage is set for

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⁹⁶ Andersen Consulting (1999) and IDC (1999).

⁹⁷ MORI Research and Intentia (1999).

⁹⁸ Financial Times (2000a and 2000b), Finanstidningen (2000).

Europe to benefit from the transfer of technology across the Atlantic and from a catch-up phase relative to the US's higher income levels.

Some commentators believe that the increase in growth in the US trailed the increase in investment by more than five years⁹⁹, and even longer when it comes to investment in human capital.¹⁰⁰ According to this argument, the nascent growth in investment in Europe over the last two years could have a positive impact in the future.

Nevertheless, there is much to suggest that Europe will not reap the same rewards of the new wave of technology as the US. Both product and labour markets remain more closely regulated, and the EU as a

There is much to suggest that Europe will not reap the same rewards of the new wave of technology as the USA.

whole is not yet a sufficiently open economy. As a result, the foundations are not in place for the efficiency gains and reorganisation of production factors that have generated the high rates of growth seen in the US.

Summary and conclusion

The purpose of this article was to assess whether any signs of a breakthrough of the new economy, defined as *an increase in the economy's growth potential as a result of more rapid productivity growth*, can be discerned in the US and Europe.

- Underlying the upswing in the US economy is an extremely strong growth in investment, primarily in information technology, which has resulted in production capacity being expanded, inflation being kept down and productivity increasing.
- In recent years productivity growth has accelerated in a way that appears to be a trend change away from the productivity slowdown seen in the 1970s and 1980s, even if it is still too early to draw any far-reaching conclusions. Total factor productivity (TFP) has begun to increase, which may be an indication that the new technology has begun to bear fruit. The conclusion here is that there seem to be signs of a new economy emerging in the US.
- To some extent the acceleration of productivity heralds a return to the Golden Age of the early post-war era before the beginning of the 1970s. But there does

⁹⁹ Julius (1999).

¹⁰⁰⁰ Svedberg in Calmfors and Persson (1999).

appear to be something "new" that goes beyond this and is related to new information technology.

- The key contributing factors to the upswing in the US seem to have been *a healthy macroeconomic policy, microeconomic reforms and healthy institutions*, which have created an economic climate that promotes risk-taking and innovation and has provided plenty of scope for a trend of accelerating technological development coupled with the ever more efficient international division of labour and globalisation.
- Although there seem to be signs of a new economy emerging, the US economy is not immune to downturns. There are major imbalances in the US economy, including a substantial current account deficit, which cannot keep on growing indefinitely. There may also be some signs, most notably the highly valued stock market, of a financial bubble building up.
- There are, as yet, few signs of the new economy emerging in Europe. The rate of investment during the 1990s was substantially lower than in the US and there was not the same acceleration of productivity growth.
- Europe has the necessary conditions to exploit the new economy at macroeconomic level but not at microeconomic level. Inflexible labour markets, heavily regulated and fragmented product markets and less mature financial markets mean that the economic climate for risk-taking and innovation is less favourable. However, technological maturity is advancing rapidly in some parts of Europe, notably Sweden.
- There is much to suggest that Europe is lagging slightly behind the US in the technological cycle and that the new economy will probably have a break-through in Europe too. Its impact will depend on how well Europe succeeds in reforming microeconomic policy.
- The new economy does not mean that the old laws of economics are in the process of disintegrating. However, it may mean that econometric models estimated on the basis of data from the 1970s and 1980s are now less helpful. It is therefore extremely important that a central bank remains attentive and that traditional models are supplemented up other indicators to create the best possible basis for the formulation of monetary policy.

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Macroeconomic indicators of credit risk in business lending

By Lena Lindhe*

The Riksbank monitors credit risk at the banks from a macroeconomic angle as part of its analysis of financial stability. This article attempts to quantify the relationships between a number of macroeconomic variables and business failures using econometric estimations. These relationships can then be exploited in the Riksbank's ongoing analysis to identify signs of financial imbalances at an early stage and assess movements in credit risk at the banks.

Background

The Swedish banking crisis in the early 1990s provides a good illustration of how a banking crisis can arise and the severe consequences it can have. A number of countries have been hit by acute banking crises over the last two decades. The Swedish banking crisis in the early 1990s provides a good illustration of how a banking crisis can arise and the severe consequences it can have. Both the Swedish

crisis and those elsewhere have also demonstrated how difficult it can be to detect problems in the banking sector in time.

Since banking crises are extremely costly to society, it would be useful to have an early warning system for increased vulnerability and impending crisis in the banking sector.¹ History shows that in modern times banking crises have often been triggered by changes in macroeconomic conditions: a drastic deterioration in the economy leads to large numbers of borrowers being unable to service their loans, resulting in substantial credit losses in the banking sector and so rocking

^{*} I am grateful for valuable input from Martin Andersson, Jesper Lindé, Staffan Viotti and Göran Zettergren.

¹ For example, the 1980s S&L crisis in the USA is estimated to have cost around 4 per cent of GDP, the Nordic banking crises between 5 and 7 per cent of GDP and the 1994 Venezuelan banking crisis 13 per cent of GDP (Kaminsky och Reinhart, 1996).

the entire banking system, with implications for both payment systems and credit provision. The historical information available on the banks' credit losses can be used to quantify relationships between macroeconomic factors and problems in the banking sector. These relationships, in turn, can provide an indication of the outlook for the banking sector.

The purpose of this article is to develop and explain the macroeconomic indicators that are already included in the Riksbank's analysis of credit risk. Historical relationships are identified and evaluated using basic econometrics. The article also explains how

The purpose of this article is to develop and explain the macroeconomic indicators that are already included in the Riksbank's analysis of credit risk.

these relationships are exploited in the Riksbank's ongoing analysis and how they can be used to attempt to predict future developments in the banking sector.

Previous research

The research undertaken into the econometric prediction of banking crises can be divided into two main approaches. In the 1980s researchers focused largely on bank-specific data, known as the CAMEL variables², using primarily variables from the banks' balance sheets as explanatory variables. The advantage of this type of study is that it takes account of variables such as the banks' earnings, asset quality, liquidity, and so on. The disadvantage is that these models function poorly when there are changes in the macroeconomic picture – and, as mentioned above, macroeconomic changes have proved one of the key contributing factors to banking crises.

This article takes the other main approach, which has become more common in recent times and entails explaining banking crises using macroeconomic variables. The purpose of the majority of these studies is to attempt to calculate the probability of a banking crisis developing. A number of criteria have been identified for the classification of an episode as a banking crisis and then used to estimate a model where the dependent variable assumes a value of one or zero (according to whether the episode is classified as a crisis or not)³, and various macroeconomic variables are used as explanatory variables.

One example of a study conducted in this manner is The determinants of bank-

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² CAMEL is an acronym for (i) capital adequacy, (ii) asset quality, (iii) management competence, (iv) earnings and (v) liquidity. See, for example, Atle Berg and Hexeberg (1994), who use these variables to try to find a model that can predict a banking crisis at an early stage.

³ Known as a logit model.

ing crises in developing and developed countries (Demirgüç-Kunt och Detragiache, 1998), which requires an episode to meet at least one of four criteria if it is to be classified as a banking crisis.⁴ Using these criteria, the authors have identified 31 episodes between 1980 and 1994 as banking crises (including the Swedish crisis in the early 1990s). The explanatory variables used are macroeconomic variables such as GDP, terms of trade (defined as export prices divided by import prices), interest rates, inflation and money supply. The study concludes that there is a link between banking crises and unfavourable macroeconomic conditions, such as low GDP growth. It also demonstrates that high real interest rates and a weak legal system increase the likelihood of a banking crisis.

Kaminsky och Reinhart (1996) use a similar definition of a banking crisis to identify indicators of, and relationships between, banking and balance of payments crises. They find that banking crises are often preceded by deregulation and/or rapid credit expansion. International developments also play a role: for example, many crises follow deterioration in the terms of trade.

Hardy och Pazarbasioglu (1998) also attempt to identify macroeconomic indicators of banking crises and ask whether the Asian crisis in the late 1990s was different. They find that, for example, real GDP growth, rapid credit expansion and sudden changes in foreign trade can explain the eruption of banking crises. The authors also conclude that it would have been difficult to identify the Asian crisis simply by studying traditional macroeconomic indicators, but that these still indicated an increase in the vulnerability of the financial system. Including the Asian banks' foreign borrowing and movements in exchange rates would have made it possible to predict the banking crises in the Far East with greater precision.

The Riksbank is currently embarking on a research project in conjunction with the big four Swedish banks with a view to estimating a credit risk model containing both macroeconomic and microeconomic variables. There have also been studies where banking crises are explained by a combination of macroeconomic and microeconomic variables, such as Gonzalés-Hermosillo (1999). First a model is estimated using microeconomic variables alone (CAMEL variables), and then macroeconomic variables are included too, leading to a considerable

increase in the model's explanatory value. The conclusion is therefore that both

⁴ These criteria are: 1) doubtful debts exceeding 10 per cent of total assets, 2) the cost of the rescue operation exceeding 2 per cent of GDP, 3) the problems in the banking sector leading to the nationalisation of a high proportion of banks, and 4) major bank runs (in other words, a sudden onslaught of depositors wanting to withdraw their money from a bank) or emergency measures such as freezing deposit accounts, closing banks or issuing governmentbacked general deposit guarantees.

categories are important when it comes to explaining banking crises. The Riksbank is currently embarking on a research project in conjunction with the big four Swedish banks with a view to estimating a credit risk model containing both macroeconomic and microeconomic variables.

What do we want to achieve?

Together with the Financial Supervisory Authority, the Riksbank is responsible for the stability of the Swedish financial system. History shows that a banking crisis poses a clear

threat to this stability and so it would be useful to find an indicator of the *likelihood* of a banking crisis. However, it is difficult to find a statistically quantifiable indicator – one problem is the limited availability of data since, fortunately, we have not been hit by very many banking crises in Sweden.

The idea is to identify a target variable that provides an indication at an early stage that there is an increased risk of instability in the financial system, instability that need not necessarily lead to a fully fledged banking crisis. Previous crises have often been preceded by heavy credit losses (as was the case in Scandinavia in the early 1990s). Studies have also shown that credit losses are the best indicator when it comes to forecasting bank failures.⁵ However, there are problems with the data on the Swedish banks' credit losses: there was a change in the way credit losses are reported in 1992, and statistics on realised credit losses are published after a considerable delay. These factors mean that using credit losses as an indicator variable is not ideal.

One variable that could serve as an approximation of credit losses is the number of business failures, which generally trigger credit losses for the banks that lent to these

businesses. This is confirmed by the strong correlation between business failures and the banks' credit losses (see Figure 1). Business failure statistics have the advantage of being more up-to-date than data on credit losses and available on a monthly rather than quarterly basis.

As a result, the number of business failures has been used as the target variable in our work on identifying macroeconomic indicators.⁶ As mentioned above, busi-

and the banks' credit losses.

This is confirmed by the strong

correlation between business failures

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It would be useful to find an indicator of the likelihood of a banking crisis.

⁵ See, for example, Reidhill and O'Keefe (1997).

⁶ Businesses are defined here as companies, partnerships and sole traders.

One weakness of business failure statistics worth noting is that they say nothing about the size of each failed business's debts. ness failures can serve only as an approximation of bad debts. One weakness of business failure statistics worth noting is that they say nothing about the size of each failed business's debts, which can be highly relevant to the im-

pact the failure has on the lending bank. Nevertheless, the historical data reveal that business failures can still serve as a good approximation of credit losses.



Figure 1. Credit losses and business failures (number and value in SEK million)

Note. Business failures expressed as a three-month rolling average. Credit losses expressed in 1991 prices.

Explanatory variables

The Riksbank is using macroeconomic variables to attempt to explain and predict developments in the banking sector, here approximated by business failures. This is performed using simple regression analyses where all the equations include just one indicator – in other words, business failures are explained by one macroeconomic variable at a time.⁷ The advantage of this straightforward approach is that the equations are easy to interpret and compare. The disadvantage is that it does not use all the information available as effectively as it could,

⁷ These regressions have been performed in the simplest possible way, in other words using the ordinary least squares (OLS) method. The equation can be expressed as $y_t = c + \beta x_{i,tep} + \epsilon_{p}$, where y is the dependent variable, x is the macroeconomic indicator, p is the number of lags, c is a constant and ϵ is an error term. The explanatory variable is lagged by one, four and eight quarters to obtain an indication of how far in advance the various macroeconomic variables capture a subsequent banking crisis. I have used quarterly data from the first quarter of 1982 until the third quarter of 1999. Most of the variables are logarithmically transformed and differentiated by quarter (to eliminate any seasonal patterns). Unless otherwise stated, the variables are real.
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since each indicator is considered in isolation. For example, the analysis does not pick up on the covariance likely to be found between the variables.

Those macroeconomic variables that could be expected to explain the number of business failures either directly or indirectly are discussed below along with the outcome of the econometric estimations performed using each of these variables. A wide range of variables could conceivably contribute to business failures and so, for reasons of space, these variables have been limited to those that are easy to obtain (published on a regular basis) and have helped to explain banking crises in previous studies.

ECONOMIC ACTIVITY AND PRICES

Some banking crises have been preceded by a downturn in *economic activity*. A general slackening of demand makes it hard for businesses to find a market for their products,

which can lead to payment difficulties and so failure. The most common measure of economic activity is gross domestic product (GDP).⁸ During the Swedish banking crisis, annual GDP growth was negative from the beginning of 1991 through to the end of 1993.

As can be expected, there is a negative relationship between GDP and business failures – in other words, an increase in GDP reduces the likelihood of business failures.

This seems perfectly reasonable: if the economy is booming, there is a limited risk of high levels of business failures. However, there is a positive relationship between the two when looking further ahead: an increase in GDP now means a rise in business failures in two years' time. This is presumably because an economic boom will normally trigger a large number of business start-ups, many of which will go under when the economy sinks back into recession.⁹

This result confirms that business failures are cyclically sensitive: we can expect more failures and so higher credit losses during a period of recession than during one of economic growth. This makes it important to be alert to move-

Some banking crises have been preceded by a downturn in economic activity.

If the economy is booming, there is a limited risk of high levels of business failures.

⁸ One alternative to using GDP growth is to look at the utilisation of resources in the economy. This can be done by studying the output gap, which measures the difference between the economy's actual output and the level that is sustainable in the long run – in other words, whether the economy's overall resources are overutilised or underutilised. Since sustainable output cannot be observed directly, the output gap is estimated indirectly using econometric methods. It emerges that the smaller the output gap (the fewer the unutilised resources in the economy), the fewer the number of business failures.

⁹ See, for example, Financial Market Report, Sveriges Riksbank, 1998.



ments in the banks' credit portfolios during a boom so that risk does not accumulate in a way that could cause problems once the economy peaks. This form of risk accumulation might, for example, arise if the banks fail to demand adequate security or extend credit without adequate analysis of borrowers.

High *inflation* is a sign of macroeconomic imbalances and overheating in the economy. High *inflation* is a sign of macroeconomic imbalances and overheating in the economy. The estimations suggest that prior to 1993 inflation was a good indicator of business

failures in Sweden, with a positive relationship between the variables.¹⁰ The reason why the econometric results are so good in this instance is probably that both variables changed sharply in the early 1990s, and so it is unlikely that inflation per se causes business failures so much as a rapid change in inflation. A sudden dip in inflation preceded the Swedish banking crisis and has been common before other banking crises. A rapid slide in inflation can cause payment problems for borrowers since they then lose the assistance of inflation in servicing their loans. Looking exclusively at the period after 1993, there is no longer a significant relationship between the two variables, probably because the introduction of the Riksbank's inflation target has brought low and stable inflation in recent years. This means that this indicator is unlikely to be of much use in the future either.

Inflation, or more accurately inflation expectations, also impacts on *real interest rates*. The real rate of interest is defined as the nominal rate adjusted for inflation expectations. Higher real interest rates should lead to an increase in business failures since this means an increase in a business's real cost of borrowing. Estimations using real interest rates do indeed reveal a positive relationship with business failures – in other words, the higher the real interest rate, the higher the number of such failures. The results for this variable too are not significant if we limit ourselves to the period after 1992, again presumably because it is not real interest rates per se that impact on business failures so much as rapid changes in them.

The *terms of trade* are a measure of the relationship between the prices of Swedish and foreign export goods. An increase in the terms of trade means that Swedish exports have become more expensive relative to other countries', making it harder for Swedish businesses to find a market for their products and so making them more likely to fail. The estimations show that this variable is not significant when considering the whole period, which is not that surprising considering how the terms of trade were affected by the devaluations of the 1980s and the switch to a new exchange rate regime when the krona was floated in 1992. The results

¹⁰ Inflation is measured here as the change in the consumer price index (CPI).

for the period prior to this change of regime are not significant, but those for the period after 1992 reveal a positive relationship between terms of trade and business failures, which ties in well with the argument above. The terms of trade have presumably become a better indicator of business failures in recent years than during the previous fixed exchange rate regime.

The *real rate of exchange* (TCW¹¹ adjusted for inflation) is an alternative measure of the relative pricing of Swedish and foreign goods.¹² The estimations suggest that a higher real TCW rate (a weaker krona and/or lower prices in Sweden than elsewhere) leads to a lower number of business failures. This seems reasonable since demand for Swedish exports should be boosted by a weaker krona or lower inflation in Sweden than in the rest of the world.

Various types of questionnaire-based surveys can be used to elicit a picture of how businesses themselves perceive the economic outlook, and their expectations have been

shown to covary quite closely with actual economic performance - in other words, businesses seem to have a good idea of how the economy will fare in the near term. One such survey is the National Institute of Economic Research's business confidence indicator, which is compiled from the answers of around 2.250 businesses to a series of questions about how they expect to perform in the immediate future. Estimations using this confidence indicator confirm that businesses seem to be able to predict accurately the development of the economy: the more positive businesses are, the fewer the number of business failures.

FINANCIAL VARIABLES

Looking at the financial variables, interest rates have a major role to play in a business's ability to service its loans. Since the bulk of business lending is at variable rates of interest, any change in interest rates will have a rapid

Looking at the financial variables, interest rates have a major role to play in a business's ability to service its loans.

impact on a business's cost of capital.¹³ Rising interest rates should therefore lead to an increase in business failures. There is indeed a positive relationship between

near term

Businesses seem to have a good idea

of how the economy will fare in the

¹¹ Trade-weighted exchange rate.

¹² However, the real rate of exchange is different from the terms of trade: the latter measures the relationship between export and import prices, whereas the real TCW rate is deflated by prices throughout the economy (as measured by the CPI).

¹³ High or rapidly rising interest rates (frequently resorted to in a bid to curb inflation) have often been seen in connection with banking crises. This can create problems for the banks since they generally lend on a long-term basis and finance their operations on a short-term basis: high interest rates make borrowing expensive, while long-term lending holds at lower rates, so undermining the interest margin and profitability.

nominal short-term interest rates and business failures – higher rates of interest lead to a greater number of such failures.

It is now unusual for businesses to raise much financing in foreign currency. Businesses that choose to take out financing abroad are affected by *exchange rates*. This was a problem during the Swedish banking crisis: Swedish businesses had borrowed in foreign

currency to secure a lower rate of interest but had their assets denominated in kronor, resulting in payment problems when the krona depreciated (Ingves och Lind, 1998). This reasoning suggests that a weak krona should push up business failures. However, it is now unusual for businesses to raise much financing in foreign currency, and so a weaker krona should in fact lead to fewer business failures by boosting the competitiveness of Swedish businesses (by making Swedish goods cheaper than foreign goods).

The nominal rate of exchange (measured as the TCW rate) is not significant in any of the estimations, but this is not so surprising considering that Sweden had a fixed exchange rate until November 1992. If we restrict ourselves to the period starting in January 1993, there is a significant negative relationship – a higher TCW rate (in other words, a weaker krona) leads to a drop in business failures.

Interest and exchange rate *volatility* can also be a problem for businesses, since an increase in volatility brings uncertainty and greater vulnerability. A business's exposure in this respect depends on its indebtedness and level of foreign financing. Export-dependent businesses may also have problems in areas such as pricing if exchange rates are highly volatile. When it comes to Swedish data, it is difficult to determine the importance of volatility on account of the change in regime in the Swedish economy in 1992. Sweden had a fixed exchange rate until 18 November 1992, which meant that exchange rate fluctuations were limited but that there was considerable interest rate volatility since interest rates were used to stabilise exchange rates. The exact opposite has applied since then: the krona was allowed to float and so became more volatile, and interest rates have been stabilised in their stead (see Figure 2). This should make the outcome of estimations covering the whole period insignificant or difficult to interpret, and these results are indeed not significant. If we restrict ourselves to the period after 1992, the results are significant, but this is a short period and so the results are associated with greater uncertainty. Nevertheless, it is possible that exchange rate volatility is a variable that may help to explain movements in business failures in the future.¹⁴

¹⁴ Large export-dependent businesses will hedge much of their exposure to this type of risk, making it most relevant to smaller businesses.



Figure 2. Exchange and interest rate volatility (TCW and three-month Treasury bills)

Note. Volatility calculated as standard deviation each month.

Source: Sveriges Riksbank.

The economic boom in the late 1980s combined with good credit availability fuelled rapid growth in *asset prices*. The ensuing crash demonstrated that speculation-driven growth in equity and property prices can have major

The economic boom in the late 1980s combined with good credit availability fuelled rapid growth in asset prices.

repercussions once a correction finally arrives. Property companies, finance companies and other players ran into major problems when the values of their asset portfolios collapsed.

The estimations reveal a negative relationship between *equity prices* (here defined as the Affärsvärlden general index, AFGX) and business failures – in other words, a drop in equity prices leads to an increase in failures. The results also indicate that movements in equity prices impact very rapidly on business failures.

A steep slide in *property prices* can also have severe consequences, but the econometric estimations find that property prices are not a good indicator of business failures. The causality appears to be the inverse, with business failures starting to increase before property prices turn. This applies to both commercial and residential properties and in both the big cities and elsewhere. A possible explanation is that when businesses go under they no longer need their premises, leading to a drop in demand and so a drop in property prices.¹⁵

¹⁵ Although property prices do not help to explain business failures, it is very important to monitor developments in the property sector. Speculation-driven surges in property prices often end in a crash, which hits not only those who have borrowed to invest in property but also the banks, since property mortgages account for a substantial proportion of their security. A slide in property prices can therefore cause problems in the banking sector.

Lending

The more highly geared a business, the more vulnerable it is to a rise in interest rates or fall in demand. One variable which could reasonably be expected to impact on business failures is the banks' business *lending*. Growth in lending followed by deterioration in macroeconomic

conditions could result in payment problems, especially if the lending is speculative. The more highly geared a business, the more vulnerable it is to a rise in interest rates or fall in demand. However, credit expansion is not necessarily a negative factor: if matched or exceeded by economic growth it is more a question of healthy demand for investment. Lending therefore needs to be related to a measure of economic growth, such as GDP.

This argument is confirmed by the estimations: growth in lending has indeed brought higher numbers of business failures. The results suggest that lending plays a major role in explaining movements in business failures, with business lending appearing to be the indicator with the greatest explanatory value on a four- and eight-quarter view. This result comes as no surprise since, everything else being equal, higher levels of lending will increase the vulnerability in the economy when the economy slips into recession. As mentioned above, an increase in lending per se does not have to be negative since it is only natural in a booming economy for businesses to loan-finance investments, and so on. However, there may be an accumulation of risk if the banks extend credit without careful credit checks and adequate security.

There is also a strong relationship for *lending relative to GDP*: if credit expansion exceeds economic growth, the risk of business failures increases.

To sum up, the simple regression analyses carried out at the Riksbank appear to suggest that the following variables could be used to provide indications of future movements in business failures: business lending, business lending relative to GDP, business confidence, terms of trade, interest rates, equity prices and GDP.

Forecasting accuracy

The discussion above looked at the relation between the selected variables and business failures. To assess how well the various indicators can predict future business failures, the equations have been estimated over a shorter period (up until 1997), and these estimations used to produce forecasts of movements in business failures in 1998 and 1999 for comparison with the actual figures observed (out-ofsample prediction). Figure 3 below illustrates one such forecast of business failures, in this case based on business lending relative to GDP.

One way of gauging the forecasting accuracy of an indicator is on the basis of the mean forecasting error, calculated as the root mean squared error (RMSE).¹⁶ The lower the forecasting error, the better the variable has proved at predicting movements in business failures. The RMSE can therefore be used to compare the forecasting accuracy of the various indicators, and it suggests that business lending, business confidence and business lending relative to GDP are the best indicators of future business failures. In other words, these variables boast the lowest level of forecasting error during the given forecasting period.

Figure 3. Predictions of business failures based on business lending relative to GDP (with four-quarter time lag)

Predictions with standard deviation and actuals



Annual percentage change

What do these indicators say about the future?

Figure 4 below presents business failure forecasts to illustrate how the indicators identified can be used. These forecasts are the indicators' predictions of business failures on a one-year view (interest rates and GDP are not included since they explain business failures over a shorter and longer term respec-

The variable that has proved best at predicting business failures – lending – suggests a slight increase in the next year on account of the growth in business lending in recent years.

¹⁶ % *RMSE* $\equiv \sqrt{\Sigma e_i^2 / Te_i} \equiv \frac{x_i - \hat{x}_i}{x_i}$, where x is the actual observation of the indicator at time t, \hat{x}_i is the estimated value of x at time t based on the regression estimations, and T is the size of the sample.

tively). If any conclusions are to be drawn from these results alone, it would appear that business failures are set to fall. Although the variable that has proved best at predicting business failures – lending – suggests a slight increase in the next year on account of the growth in business lending in recent years, this needs to be viewed against the background of the current economic upswing. Business lending relative to GDP provides a better indication of how lending has developed relative to the current phase of the business cycle and indicates a reduction in business failures over the next year.



Figure 4. Percentage change in business failures on a one-year view according to a selection of the indicators

Source: Sveriges Riksbank.

Note. Point estimate surrounded by confidence interval indicated by column. Predictions based on observations from the third quarter of 1999. Estimation using terms of trade based on relationships since 1993.

Summary and conclusions

Business lending and business lending relative to GDP have proved the best indicators. The review above has resulted in the identification of several indicators of future business failures. Business lending and business lending relative to GDP have proved the best

indicators: they explain a high proportion of failures and have been good historically at predicting future failures. Business confidence, terms of trade, interest rates, equity prices and GDP also seem to serve as indicators.

These variables should therefore be monitored and analysed from a financial stability angle with a view to obtaining indications of future business failures. In business failures we have identified a target variable that is published regularly and without a major time lag. Business failures have proved to covary well with credit losses, which, in turn, have been among the main causes of previous banking crises. Predicting future movements in business failures using the indicators identified here should therefore provide an early warning system for increased vulnerability in the banking sector.

If one indicator suddenly begins to suggest an increase in future business failures, this does not necessarily mean very much. However, if the majority of the indicators simultaneously begin to point towards higher business failures, there may be grounds to suspect a greater risk of business failures and.

If the majority of the indicators simultaneously begin to point towards higher business failures, there may be grounds to suspect a greater risk of business failures and. as a result. credit losses.

as a result, credit losses. The Riksbank should then be very much on its guard.

It should also be borne in mind that these indicators can provide only an idea of what will happen in the future. The unrefined statistical relationships behind forecasts based on these variables mean that the results need to be interpreted with a good deal of caution. The indicators identified here should therefore be seen as a means of backing up qualitative analysis and must be weighed up against other information, such as accounting and market data, to obtain an accurate picture of whether credit risk at the banks has risen or not.

Finally, it should be noted that a future banking crisis might look completely different to previous crises. It is by no means certain that a future crisis would be caused by

heavy credit losses triggered by macroeconomic developments, and even if this were the case it is dangerous to put too much faith in models based on historical relationships. Nevertheless, a quantitative analysis can provide an indication of where we are headed and an early warning of imbalances beginning to build up in the economy. A quantitative analysis can also provide the foundations and back-up for the qualitative discussion that is always needed when assessing the future performance of the financial system.

It is dangerous to put too much faith in models based on historical relationships.

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International portfolio investments

BY ROGER JOSEFSSON

The compilation of the individual results of a survey of international portfolio investment holdings (CPIS 97) by the International Monetary Fund (IMF) has created a unique opportunity to study international portfolio investments in equities and bonds in greater depth.¹ By breaking down each investing nation's portfolio investment assets by target country, the survey also provides a reflection of each nation's portfolio investment liabilities. A total of 29 countries took part in the survey, whose results have now been compiled. This is the first time that it has been possible to report external portfolio investments in Sweden by investing nation and instrument. The survey shows holdings at market value translated at the exchange rates ruling on 31 December 1997.²

Background to the survey

This IMF initiative was triggered by the major international discrepancies revealed by its portfolio statistics³, with the value of total world portfolio investment liabilities considerably exceeding total world portfolio investment assets.

The value of total world portfolio investment liabilities is considerably exceeding total world portfolio investment assets.

The primary aim of CPIS 97 was to obtain a comprehensive picture of the international pattern of portfolio investments, which it was hoped would create a good opportunity to verify the quality of each country's statistics.

¹ See IMF press release "Coordinated Portfolio Investment Survey", dated 25 January 2000.

² The 31 December 1997 closing rate of SEK 7.87 to the USD has been used to translate to SEK.

³ Portfolio investments are generally defined as investments where the holding is less than 10 per cent of the total capital. Foreign equities here denotes not only ordinary shares but also depository receipts and units in foreign-registered managed funds, while bonds denotes debt securities with a maturity of more than a year.



Methods and definitions used in CPIS 97

The instructions for the international survey gave each country the freedom to choose an approach focusing on (a) end-investors, (b) custodians or (c) both end-investors and custodians. The Swedish survey focused on end-investors and took the form of an aggregate survey.⁴ The international survey covered 29 countries, including most of the major investing nations. Countries included under "Not allocated" include Germany, Switzerland, Luxembourg and Hong Kong (SAR).⁵

Argentina	Australia	Austria
Belgium	Bermuda	Canada
Chile	Denmark	Finland
France	Iceland	Indonesia
Ireland	Israel	Italy
Japan	Korea	Malaysia
Netherlands	New Zealand	Norway
Portugal	Singapore	Spain
Sweden	Thailand	United Kingdom
USA	Venezuela	

Table 1. CPIS participants

Concentrated foreign ownership of Swedish financial instruments

Unsurprisingly the USA is by far the largest foreign investor in Swedish financial instruments.

Unsurprisingly the USA is by far the largest foreign investor in Swedish financial instruments. US investors have been attracted primarily by equities, with almost half of all

external investment in Swedish equities originating stateside. UK investors too have invested heavily in Swedish portfolio instruments, especially equities, where they account for 15 per cent of total international holdings. The Japanese investment pattern differs due to a predominance of bonds, with Japanese investors accounting for more than 17 per cent of total international holdings of Swedish bonds. The three largest investing nations – the USA, the UK and Japan – together account for exactly half of total external holdings of Swedish portfolio equities and bonds. The general conclusion that portfolio investments in Swedish financial instruments are concentrated between a small number of investing nations can therefore be drawn.

⁴ The Swedish survey was presented on 12 October 1998.

⁵ This item has been calculated as a residual between the IMF's balance of payments statistics and the results of CPIS 97.

Table 2	. International	portfolio	investments	in Sweden
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F	, ei	r c	ent	
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Country	Total	Country	Equities	Country	Bonds
USA	26.6	USA	48.4	Japan	17.1
UK	12.4	UK	15.0	USA	11.4
Japan	11.0	Denmark	2.4	UK	10.6
Denmark	2.7	Netherlands	2.3	France	3.1
France	2.4	Japan	2.3	Denmark	2.9
Netherlands	2.1	Norway	1.7	Netherlands	2.0
Norway	1.8	Canada	1.6	Norway	1.9
Italy	1.1	France	1.3	Italy	1.5
Finland	1.1	Finland	0.6	Finland	1.4
Belgium	0.8	Australia	0.6	Belgium	1.3
Canada	0.7	Italy	0.5	Bermuda	1.1
Bermuda	0.7	Ireland	0.5	Ireland	0.8
Ireland	0.7	Belgium	0.2	Spain	0.7
Spain	0.5	Bermuda	0.2	Austria	0.5
Austria	0.4	Austria	0.1	Portugal	0.2
Australia	0.3	Spain	0.1	Canada	0.1
Portugal	0.2	New Zealand	0.1	Australia	0.1
New Zealand	0.1	Singapore	0.0	New Zealand	0.0
Singapore	0.0	Portugal	0.0	Israel	0.0
Israel	0.0	Iceland	0.0	Singapore	0.0
Iceland	0.0	Israel	0.0	Malaysia	0.0
Malaysia	0.0	Malaysia	0.0	Iceland	0.0
Korea	0.0	Korea	0.0	Argentina	0.0
Argentina	0.0	Argentina	0.0	Chile	0.0
Chile	0.0	Chile	0.0	Indonesia	0.0
Indonesia	0.0	Indonesia	0.0	Korea	0.0
Thailand	0.0	Thailand	0.0	Thailand	0.0
Venezuela	0.0	Venezuela	0.0	Venezuela	0.0
Not allocated	29.9	Not allocated	22.0	Not allocated	35.4
SEFER/IO ⁶	1.8	SEFER/IO	0.0	SEFER/IO	3.1
BIS	2.7	BIS	0.0	BIS	4.6
Total	100.0	Total	100.0	Total	100.0

US and UK investors own a substantial slice of the Stockholm Stock Exchange

According to Statistics Sweden's annual survey of the ownership of Swedish listed equities, which is based in part on information from the Swedish Central Securities Depository (VPC), foreign investors account for 30.0 per cent of the Stockholm Stock Exchange's market capitalisation. Based on CPIS 97, US and UK holdings on the Stockholm Stock Exchange on 31 December 1997 can be estimated at almost one fifth of the exchange's capitalisation.

⁶ Foreign exchange reserves and international organisations; information that cannot be reported separately on account of its confidential nature.

Table 3. Leading foreign investors in Swedish listed ed	uities
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	Country	Share of total market capitalisation, per cent
1	USA	14.5
2	UK	4.5
3	Denmark	0.7
4	Netherlands	0.7
5	Japan	0.7

Swedish equities popular both with US investors...

In absolute terms, Sweden was the ninth largest target country for US investors. Sweden attracted more US capital than the Spanish, Australian and Hong Kong exchanges despite their higher market capitalisation. US investors also had larger holdings in Mexico, even though its capitalisation at the end of 1997 was no more than 60 per cent of Sweden's.⁷

Cou	ntry	Holdings (SEK million)	Holdings (%)	
1	UK	1 696 678	18.0	
2	Japan	1 064 638	11.3	
3	Netherlands	834 456	8.9	
4	France	663 661	7.0	
5	Canada	552 033	5.9	
6	Germany	507 623	5.4	
7	Switzerland	483 525	5.1	
8	Italy	324 795	3.4	
9	Sweden	302 956	3.2	
10	Mexico	272 861	2.9	
Oth	ers	2 720 675	28.9	
Tota	al	9 423 900	100.0	_

It would appear that US portfolio investments focus primarily on developed economies with efficient capital markets. Geographical proximity to Canada and Mexico can also explain the relatively high level of investment in these countries. The creation of "Export Processing Zones" in Mexico specifically to attract US investment may be another explanation for the high levels of US investments in portfolio equities in that country.

... AND WITH UK INVESTORS

In absolute terms, Sweden was the eleventh largest target country for UK investors. The differences between US and UK investment patterns seem to stem largely from economic policy and historical factors.

⁷ Source: International Federation of Stock Exchanges (FIBV).

Country		Holdings (SEK million)	Holdings (%)	_
1	USA	925 179	25.5	
2	Japan	493 972	13.6	
3	France	331 505	9.1	
4	Germany	231 086	6.4	
5	Spain	208 909	5.8	
6	Netherlands	192 019	5.3	
7	Switzerland	191 199	5.3	
8	Italy	176 025	4.8	
9	Hong Kong	141 079	3.9	
10	Australia	112 573	3.1	
11	Sweden	93 890	2.6	
Oth	ers	534 985	14.7	
Tota	al	3 632 424	100.0	

Table 5. UK investments in foreign equities

The free movement of capital within the EU seems to be reflected in the UK investment pattern, as are the traditional ties to former colonies.

In other words, CPIS 97 suggests that portfolio investments are more inclined to follow geographical and [sectoral/historical] tendencies than to conform to portfolio theory.

Foreign investments in Swedish bonds

Where it comes to bonds, Japanese investors stand out with more than 17 per cent of total external holdings. However, Japanese investment in Swedish bonds, while substantial, do not account for a particularly large propor-

Where it comes to bonds, Japanese investors stand out with more than 17 per cent of total external holdings.

tion of the overall stock of bonds in issue. Given that total external holdings of bonds at the time of the survey stood at just over 14.4 per cent of the total bond stock⁸, Japanese holdings of Swedish bonds accounted for just 2.4 per cent of the total. The percentage holdings of the five largest investing nations relative to the total bond stock are shown below.

Table 6. Leading	foreign	investors	in	Swedish	bonds
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Соц	untry	Share of total bond stock (%)
1	Japan	2.4
2	USA	1.6
3	UK	1.5
4	France	0.4
5	Denmark	0.4

⁸ Source: Sveriges Riksbank.

Japan's dominance can in part be explained by the Swedish National Debt Office's "road trips" whereby it has issued Swedish government bonds denominated in JPY and aimed primarily at Japanese investors.

It is harder to study the sensitivity of the bond market to external capital flows in greater depth since it is more segmented than the equity market, especially in terms of liquidity. The lack of data on external holdings broken down by currency provides a further obstacle to analysis.

JAPANESE INVESTORS PREFER BONDS

The survey reveals that the Japanese invest mainly in bonds, with the equity markets accounting for just 18 per cent of Japan's total portfolio investments.

Country		Holdings (SEK million)	Holdings (%)
1	USA	1 818 233	32.4
2	UK	553 904	9.9
3	Germany	453 250	8.1
4	Cayman Islands	398 502	7.1
5	Netherlands	292 749	5.2
6	Australia	215 255	3.8
7	Canada	210 591	3.8
8	SEFER/IO	209 737	3.7
9	France	154 984	2.8
10	Sweden	154 142	2.8
Oth	ers	1 143 357	20.4
Tota	al	5 604 706	100.0

Table 7. Japanese investments in foreign bonds

It is well known that Japanese investors prefer debt securities. One of the most common explanations is the high savings quota, which is in part a product of the Japanese pension system. Pension fund managers tend to be more risk-averse than other investors, and this is likely to be a key contributing factor to the Japanese investment pattern.

New CPIS survey

The IMF intends to carry out a more extensive survey in 2001, covering more countries and also including money market instruments.

Supplementary tables

	Country	Holdings (SEK million)	Holdings (%)
1	USA	3 365 046	14.8
2	UK	2 470 878	10.9
3	Japan	1 902 994	8.4
4	Netherlands	1 294 170	5.7
5	France	1 284 335	5.6
6	Germany	1 125 863	5.0
7	Switzerland	997 277	4.4
8	Luxembourg	829 628	3.6
9	Canada	642 212	2.8
10	Italy	611 354	2.7
11	Spain	527 800	2.3
12	Hong Kong	495 426	2.2
13	Sweden	487 969	2.1
14	Australia	425 736	1.9
15	Mexico	348 423	1.5
16	Brazil	340 977	1.5
17	Ireland	220 641	1.0
18	Bermuda	196 582	0.9
19	Finland	186 687	0.8
20	Netherlands Antilles	176 351	0.8
	Others	2 277 880	10.0
	Total	22 737 361	100.0

Table 8. CPIS 97 participants' holdings of foreign equities

Table 9. CPIS 97 participants' holdings of foreign bonds

	Country	Holdings (SEK million)	Holdings (%)
1	USA	6 975 376	25.9
2	Germany	3 211 269	11.9
3	UK	1 828 818	6.8
4	Canada	1 401 467	5.2
5	SEFER/IO	1 366 675	5.1
6	Italy	1 279 409	4.8
7	Japan	1 140 011	4.2
8	Netherlands	919 346	3.4
9	France	827 533	3.1
10	Cayman Islands	740 576	2.7
11	Sweden	581 504	2.2
12	Australia	493 066	1.8
13	Others	488 918	1.8
14	Spain	481 962	1.8
15	Mexico	379 576	1.4
16	Argentina	351 781	1.3
17	Luxembourg	320 380	1.2
18	Brazil	306 507	1.1
19	Denmark	303 749	1.1
20	Finland	280 879	1.0
	Others	3 252 227	12.1
	Total	26 931 135	100.0

Table 10. Foreign holdings of Swedish financial instruments SEK million

Country	Total	Country	Equities	Country	Bonds
USA	405 226	USA	302 956	Japan	154 142
UK	188 990	UK	93 889	USA	102 271
Japan	168 268	Denmark	14 764	UK	95 101
Denmark	40 845	Netherlands	14 331	France	27 978
France	36 218	Japan	14 127	Denmark	26 081
Netherlands	31 944	Norway	10 648	Netherlands	17 613
Norway	28 120	Canada	10 074	Norway	17 471
Italy	17 023	France	8 240	Italy	13 639
Finland	16 598	Finland	3 825	Finland	12 773
Belgium	12 946	Australia	3 549	Belgium	11 482
Canada	11 120	Italy	3 384	Bermuda	9 704
Bermuda	11 089	Ireland	2 920	Ireland	7 130
Ireland	10 050	Belgium	1 464	Spain	6 375
Spain	7 059	Bermuda	1 385	Austria	4 856
Austria	5 666	Austria	811	Portugal	2 211
Australia	4 502	Spain	685	Canada	1 047
Portugal	2 369	New Zealand	394	Australia	952
New Zealand	803	Singapore	236	New Zealand	409
Singapore	488	Portugal	157	Israel	307
Israel	354	Iceland	63	Singapore	252
Iceland	71	Israel	47	Malaysia	16
Malaysia	31	Malaysia	16	Iceland	8
Korea	8	Korea	8	Argentina	-
Argentina	-	Argentina	-	Chile	-
Chile	-	Chile	-	Indonesia	-
Indonesia	-	Indonesia	-	Korea	-
Thailand	-	Thailand	-	Thailand	-
Venezuela	-	Venezuela	-	Venezuela	-
Not allocated	456 698	Not allocated	138 029	Not allocated	318 669
SEFER/IO	28 057	SEFER/IO	-	SEFER/IO	28 057
BIS	41 632	BIS	-	BIS	41 632
Total	1 526 176	Total	626 000	Total	900 175

Notices

Riksbank transfers SEK 9.8 billion to the Treasury

The Governing Council of the Riksbank is proposing to the Riksdag that SEK 9.8 billion be transferred to the Treasury for the 1999 financial year, compared with SEK 7.6 billion for 1998. This transfer is based on the Riksbank's average result over the last five years, adjusted for exchange rate effects, etc. The Riksbank's profit for 1999 was SEK 3.9 billion, compared with SEK 21.9 billion in 1998. The decrease is primarily a consequence of the lower market value of its securities portfolios brought on by higher market interest rates.

Reportate raised 0.50 percentage points to 3.75 per cent

The Riksbank decided to raise the repo rate 0.50 percentage points from 3.25 to 3.75 per cent with effect from 9 February. The decision was based on the Riksbank's inflation assessment in the previous inflation report and its analysis of subsequent economic developments. The Riksbank's present monetary stance is expansionary, but will have to be made gradually less so during the course of the current economic upswing. The increase in the repo rate lays sound foundations for continued favourable economic development with stable prices, high growth and increased employment.

Economic statistics readily available on the Internet

January saw the Riksbank adding a new page to its website that brings together a wide variety of Swedish economic and financial statistics (www.riksbank.se/swedishstat). The page presents the latest Swedish economic and financial outcome data and is updated daily. The material is provided by the following sources: Statistics Sweden, Sveriges Riksbank, the National Debt Office, the National Financial Management Authority and the National Institute of Economic Research. The page includes links to the bodies that produce the statistics, so making Swedish economic statistics more accessible.

Banks raise lending and deposit rates

Sweden's banks increased their lending and deposit rates by 0.3 percentage points in the fourth quarter of 1999, according to the Riksbank's quarterly survey of interest rates set by the banks and mortgage institutions as at 31 December 1999. This means that the banks' interest rates largely mirrored the Riksbank's 0.35 percentage point increase in the repo rate in the fourth quarter. The banks raised both lending and deposit rates by an average of 0.3 percentage points to an average of 5.5 per cent for lending rates and 1.6 per cent for deposit rates. This gave a spread of 3.9 percentage points between lending and deposit rates, unchanged from the previous quarter. The six-month T-bill rose 0.34 percentage points during the fourth quarter.

Monetary policy calendar

1997-01-02 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.5 per cent as of 3 January 1997.

1997-04-01 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.5 per cent (unchanged).

1997-07-01 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.5 per cent (unchanged).

1997-10-01 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.5 per cent (unchanged).

1997-12-11 The *fixed repo rate* is increased by the Riksbank Governor from 4.10 to 4.35 per cent as of 17 December 1997. Due to the Christmas and New Year holidays, the repo rate set on 16 December will apply for four weeks until 14 January 1998.

1998-01-02 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.5 per cent (unchanged).

1998-04-01 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.5 per cent (unchanged).

1998-06-04 The *fixed repo rate* is lowered by the Riksbank Governor from 4.35 per cent to 4.10 per cent as of 9 June 1998.

1998-07-01 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 2.0 per cent as of 2 July 1998.



1998-11-03 The *fixed repo rate* is lowered by the Riksbank Governor from 4.10 per cent to 3.85 per cent as of 4 November 1998.

1998-11-12 The Riksbank lowers its *deposit and lending rates*, in each case by 0.5 percentage points, as of 18 November 1998, thereby setting the deposit rate at 3.25 per cent and the lending rate at 4.75 per cent.

1998-11-24 The *fixed repo rate* is lowered by the Riksbank Governor from 3.85 per cent to 3.60 per cent as of 25 November 1998.

1998-12-15 The *fixed repo rate* is lowered by the Riksbank Governor from 3.60 per cent to 3.40 per cent as of 16 December 1998.

1999-01-04 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 1.5 per cent as of 5 January 1999.

1999-01-05 The *fixed repo rate* is confirmed by the Riksbank Governor at 3.40 per cent. The decision is extended on 29 January 1999 to apply until 17 February 1999.

1999-02-12 The *fixed repo rate* is lowered by the Riksbank Governor to 3.15 per cent as of 17 February 1999.

1999-02-12 The Riksbank lowers its *deposit and lending rates*, in each case by 0.5 percentage points. The deposit rate is set at 2.75 per cent and the lending rate at 4.25 per cent. The decision takes effect on 17 February 1999.

1999-03-25 The *fixed repo rate* is lowered by the Riksbank Governor from 3.15 per cent to 2.90 per cent as of 31 March 1999.

1999-04-01 The *reference* (official discount) *rate* is confirmed by the Riksbank Governor at 1.0 per cent as of 6 April 1999.

1999-10-01 The *reference* (official discount) *rate* is confimed by the Riksbank at 1.5 per cent as of 4 October 1999.

1999-11-11 The *repo rate* is increased by the Riksbank from 2.90 per cent to 3.25 as of 17 November 1999.

2000-01-03 The reference (official discount) rate is confimed by the Riksbank at 2.0 per cent as of 4 January 2000.

2000-02-03 The *repo rate* is increased by the Riksbank from 3.25 per cent to 3.75 as of 9 February 2000.

Statistical appendix

Statistics from Sveriges Riksbank are to be found on the Internet (http://www.riksbank.se). Dates of publication of statistics regarding the Riksbank's assets and liabilities including foreign exchange reserves plus financial market and the balance of payments statistics are available on the homepage of the International Monetary Fund, IMF (http://dsbb.imf.org). Dates of publication can also be obtained from the Information Centre at Sveriges Riksbank.

Daily capital market interest rates (Table 13), daily overnight and money market interest rates (Table 14) and daily krona exchange rates (Table 16) can be ordered from the Information Centre at Sveriges Riksbank via e-mail: info@riksbank.se, fax: +46 8 787 05 26 or phone: +46 8 787 01 00.

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Riksbank's assets and liabilities

Assets

1

		Foreign exchange	Government securities	Lending to banks	Fixed assets	Other	Total
1999	Jan	113 875	36 086	1	1 162	44 617	195 757
	Feb	142 998	32 862	730	1 094	38 977	216 678
	March	130 172	33 376	1 997	1 104	52 872	219 538
	April	133 770	34 152	229	1 089	47 483	216 732
	May	140 671	33 279	98	1 090	42 424	217 568
	June	137 691	33 163	2 412	1 140	39 344	213 756
	July	141 359	32 712	65	1 140	36 802	212 085
	Aug	152 249	32 660	117	1 138	32 869	219 042

		Gold	Government securities	Lending to monetary policy counterparts	Receivables in foreign currency	Other	Total
	Sept	13 834	31 932	31 122	136 565	3 053	216 506
	Oct	13 834	31 728	31 929	135 222	2 220	214 933
	Nov	13 834	31 579	27 577	143 963	1 647	218 600
	Dec	13 834	31 332	45 633	139 153	1 775	231 727
2000	Jan	14 774	29 584	30 039	132 133	3 164	217 694
	Feb	14 774	28 833	39 558	126 231	2 984	212 380

Liabilities

		Notes and coins in circulation	Riksbank liquidity bills	Bank deposits in the Riksbank	Capital liabilities	Other	Total
1999	Jan	81 539	-	653	37 162	76 403	195 747
	Feb	80 470	_	95	49 848	86 265	216 678
	March	81 609	-	1 188	49 848	86 893	219 538
	April	81 738	_	1 007	49 848	84 139	216 732
	May	82 652	-	808	49 848	84 260	217 568
	June	83 024	-	2 301	60 487	67 944	213 756
	July	83 950	_	145	60 487	67 503	212 085
	Aug	84 525	-	3 792	60 487	70 238	219 042

		Notes and coins in circulation	Capital liabilities	Debts to monetary policy counterparts	Debts in foreign currency	Other	Total
	Sept	85 070	60 487	97	14 395	56 457	216 506
	Oct	86 161	60 487	61	11 421	56 803	214 933
	Nov	88 375	60 487	86	12 113	57 539	218 600
	Dec	98 421	60 487	4 457	9 829	58 533	231 727
2000	Jan	90 463	60 487	469	9 616	52 734	217 694
	Feb	88 254	60 487	392	6 507	52 812	212 380

Money supply

2

End-of-month stock

			Twelve mon	ths change in pe	er cent
	MO	МЗ		MO	МЗ
1997					
Jan	67 503	791 513	Jan	5.3	7.4
Feb	67 490	783 635	Feb	5.8	7.4
March	68 683	807 482	March	7.4	6.5
April	67 473	788 247	April	5.4	4.3
May	67 527	794 077	May	5.1	4.1
June	68 101	807 112	June	4.7	5.3
July	66 763	791 753	July	5.0	3.2
Aug	68 623	804 033	Aug	4.0	4.6
Sept	68 118	799 854	Sept	3.7	2.1
Oct	68 556	799 604	Oct	5.7	3.4
Nov	69 762	807 415	Nov	4.6	1.3
Dec	74 380	826 242	Dec	3.0	1.3
1998					
Jan	70 751	821 712	Jan	4.8	3.8
Feb	70 434	806 800	Feb	4.4	3.0
March	69 560	802 877	March	1.3	-0.6
April	70 181	807 368	April	4.0	2.4
May	70 783	814 796	May	4.8	2.6
June	71 118	829 968	June	4.4	2.8
July	71 369	835 079	July	6.9	5.5
Aug	73 042	835 199	Aug	6.4	3.9
Sept	71 954	838 568	Sept	5.6	4.8
Oct	73 041	846 579	Oct	6.5	5.9
Nov	73 929	852 805	Nov	6.0	5.6
Dec	78 139	843 416	Dec	5.1	2.1
1999					
Jan	74 940	855 180	Jan	5.9	4.1
Feb	74 621	853 298	Feb	5.9	5.8
March	75 302	853 557	March	8.3	6.3
April	75 533	861 790	April	7.6	6.7
May	76 532	868 965	May	8.1	6.6
June	76 413	879 325	June	7.4	5.9
July	77 050	872 482	July	8.0	4.5
Aug	78 067	889 400	Aug	6.9	6.5
Sept	78 475	899 641	Sept	9.1	7.3
Oct	79 413	930 834	Oct	8.7	10.0
Nov	80 681	915 960	Nov	9.1	7.4
Dec	87 481	926 954	Dec	12.0	9.9
2000					
Jan	82 625	921 000	Jan	10.3	8.6
Feb	81 421	930 806	Feb	9.1	9.1

3

4

Interest rates set by the Riksbank

Per cent

	-						
	Date	Repo rate	Deposit rate	Lending rate		Date	Discount rate
1996	08-14	5.40			1993	01-05	9.00
	08-21		4.75	6.25		04-02	7.00
	08-28	5.25				07-02	6.00
	09-11	5.15				10-08	5.00
	09-25	5.05			1994	01-04	4.50
	10-09	4.95				07-04	5.50
	10-23	4.80				10-04	7.00
	10-30	4.60	4.25	5.75	1995	07-04	7.50
	11-27	4.30				10-06	7.00
	12-11		3.75	5.25	1996	01-03	6.00
	12-18	4.10				04-02	5.50
1997	12-17	4.35				07-02	4.50
1998	06-10	4.10				10-02	3.50
	11-04	3.85			1997	01-03	2.50
	11-18		3.25	4.75	1998	07-02	2.00
	11-25	3.60			1999	01-05	1.50
	12-16	3.40				04-06	1.00
1999	02-17	3.15	2.75	4.25		10-04	1.50
	03-31	2.90			2000	01-04	2.00
	11-17	3.25					
2000	02-09	3.75	2.75	4.25			

Capital market interest rates

Effective annualized rate for asked prices. Monthly average, per cent

		Bonds issu	ies by:				
		Central go	vernment			Housing	(Caisse)
		3 years	5 years	7 years	9–10 years	2 years	5 years
1998	Jan	5.15	5.33	5.49	5.65	5.56	5.81
	Feb	5.02	5.19	5.36	5.53	5.37	5.63
	March	4.95	5.06	5.18	5.35	5.27	5.44
	April	4.88	4.99	5.05	5.21	5.16	5.31
	May	4.83	4.98	5.04	5.20	5.08	5.25
	June	4.46	4.70	4.79	4.97	4.70	4.96
	July	4.36	4.61	4.71	4.88	4.58	4.88
	Aug	4.39	4.60	4.66	4.80	4.68	4.99
	Sept	4.37	4.56	4.63	4.79	4.72	5.15
	Oct	4.35	4.53	4.68	4.75	4.71	5.30
	Nov	3.94	4.19	4.47	4.59	4.18	4.79
	Dec	3.64	3.86	4.12	4.25	3.89	4.46
1999	Jan	3.38	3.59	3.87	4.02	3.59	4.14
	Feb	3.36	3.67	4.01	4.18	3.52	4.13
	March	3.39	3.80	4.25	4.44	3.55	4.29
	April	3.12	3.53	3.99	4.24	3.26	3.99
	May	3.30	3.80	4.26	4.50	3.47	4.54
	June	3.72	4.28	4.67	4.87	3.82	5.09
	July	4.17	4.81	5.12	5.26	4.64	5.75
	Aug	4.43	5.09	5.39	5.49	5.02	6.15
	Sept	4.51	5.29	5.60	5.69	5.08	6.22
	Oct	4.70	5.53	5.83	5.92	5.22	6.33
	Nov	4.52	5.17	5.46	5.56	4.99	5.89
	Dec	4.61	5.26	5.49	5.59	5.05	5.93
2000	Jan	5.20	5.68	5.87	5.95	5.61	6.22
	Feb	5.36	5.76	5.86	5.90	5.81	6.35

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Overnight and money market interest rates

Monthly average, per cent

		Repo	Inter-	SSVX			Company c	ertificates
		rate	bank rate	3 months	6 months	12 months	3 months	6 months
1997	Jan Feb March	4.10 4.10 4.10	4.20 4.20 4.20	3.79 3.96 4.16	3.84 4.03 4.26	4.45	3.95 4.13 4.34	4.00 4.20 4.43
	April May June	4.10 4.10 4.10	4.20 4.20 4.20	4.06 4.12 4.08	4.18 4.23 4.18	4.47	4.24 4.30 4.28	4.35 4.40 4.37
	July Aug Sep	4.10 4.10 4.10	4.20 4.20 4.20	4.09 4.20 4.13	4.24 4.36 4.28	4.66	4.36 4.45 4.37	4.46 4.60 4.53
	Oct Nov Dec	4.10 4.10 4.19	4.20 4.20 4.29	4.26 4.33 4.45	4.44 4.54 4.73	5.16 5.09	4.49 4.59 4.70	4.68 4.79 4.99
1998	Jan Feb March	4.35 4.35 4.35	4.45 4.45 4.45	4.44 4.36 4.51	4.58 4.54 4.59	4.71 4.72	4.44 4.56 4.68	4.59 4.73 4.76
	April May June	4.35 4.35 4.16	4.45 4.45 4.28	4.50 4.52 4.23	4.61 4.54 4.23	4.48 4.29	4.66 4.18 4.39	4.76 4.23 4.38
	July Aug Sept	4.10 4.10 4.10	4.20 4.20 4.20	4.14 4.23 4.22	4.14 4.26 4.21	4.29	4.29 4.37 4.36	4.30 4.39 4.36
	Oct Nov Dec	4.10 3.83 3.51	4.20 3.93 3.61	4.20 3.82 3.45	4.18 3.75 3.51	3.53	4.36 4.00 3.65	4.34 3.96 3.69
1999	Jan Feb March	3.40 3.30 3.14	3.50 3.40 3.24	3.27 3.14 3.13	3.25 3.16 3.18	3.17	3.45 3.31 3.30	3.46 3.35 3.33
	April May June	2.90 2.90 2.90	3.00 3.00 3.00	2.87 2.92 2.97	2.90 2.96 3.03	3.26 3.37	3.04 3.11 3.18	3.07 3.15 3.22
	July Aug Sept	2.90 2.90 2.90	3.00 3.00 3.00	3.01 3.00 3.05	3.16 3.20 3.28	3.83 3.91	3.30 3.32 3.27	3.57 3.77 3.75
	Oct Nov Dec	2.90 3.06 3.25	3.00 3.16 3.35	3.23 3.38 3.41	3.55 3.63 3.73	4.26 4.24	3.87 3.83 3.71	4.00 3.91 3.95
2000	Jan Feb	3.25 3.61	3.35 3.71	3.57 3.90	3.86 4.22		3.77 4.11	4.05 4.43

Treasury bills and selected international rates

Annualized rate. Monthly average, per cent

	3-month deposits				6-mont	6-month deposits					
		USD	DEM	EUR	GBP	SSVX	USD	DEM	EUR	GBP	SSVX
1997	Jan Feb March	5.58 5.50 5.62	3.13 3.19 3.29		6.47 6.35 6.42	3.79 3.96 4.16	5.67 5.60 5.79	3.14 3.19 3.30		6.66 6.49 6.54	3.84 4.03 4.26
	April May June	5.81 5.80 5.77	3.25 3.20 3.16		6.48 6.54 6.77	4.06 4.12 4.08	5.99 5.97 5.89	3.29 3.26 3.22		6.74 6.72 6.91	4.18 4.23 4.18
	July Aug Sep	5.72 5.69 5.67	3.16 3.28 3.34		7.05 7.25 7.29	4.09 4.20 4.13	5.81 5.82 5.80	3.23 3.42 3.48		7.24 7.37 7.43	4.24 4.36 4.28
	Oct Nov Dec	5.73 5.83 5.89	3.65 3.78 3.76		7.36 7.71 7.69	4.26 4.33 4.45	5.80 5.87 5.94	3.78 3.89 3.84		7.46 7.77 7.77	4.44 4.54 4.73
1998	Jan Feb March	5.52 5.51 5.56	3.45 3.41 3.46		7.42 7.38 7.41	4.44 4.36 4.51	5.58 5.52 5.60	3.54 3.48 3.58		7.41 7.38 7.42	4.58 4.54 4.59
	April May June	5.57 5.57 5.59	3.58 3.54 3.49		7.39 7.34 7.59	4.50 4.52 4.23	5.62 5.64 5.63	3.66 3.65 3.59		7.39 7.32 7.65	4.61 4.54 4.23
	July Aug Sept	5.57 5.56 5.39	3.47 3.43 3.42		7.66 7.57 7.32	4.14 4.23 4.22	5.64 5.60 5.30	3.56 3.52 3.48		7.71 7.56 7.18	4.14 4.26 4.21
	Oct Nov Dec	5.18 5.24 5.14	3.48 3.56 3.26		7.05 6.79 6.27	4.20 3.82 3.45	4.97 5.06 5.00	3.45 3.51 3.22		6.83 6.55 5.97	4.18 3.75 3.51
1999	Jan Feb March	4.88 4.87 4.89		3.04 3.02 2.98	5.74 5.38 5.26	3.27 3.14 3.13	4.89 4.93 4.97		2.99 2.97 2.93	5.52 5.25 5.17	3.25 3.16 3.18
	April May June	4.87 4.90 5.09		2.63 2.51 2.57	5.17 5.20 5.08	2.87 2.92 2.97	4.94 5.01 5.28		2.62 2.51 2.63	5.12 5.18 5.09	2.90 2.96 3.03
	July Aug Sept	5.22 5.37 5.48		2.61 2.64 2.66	5.03 5.13 5.29	3.01 3.00 3.05	5.53 5.78 5.87		2.81 2.97 3.03	5.21 5.43 5.68	3.16 3.20 3.28
	Oct Nov Dec	6.11 6.01 6.07		3.29 3.38 3.38	5.85 5.72 5.91	3.23 3.38 3.41	6.02 5.96 5.09		3.33 3.40 3.46	5.95 5.88 6.10	3.55 3.63 3.73
2000	Jan Feb	5.93 5.99		3.28 3.47	6.00 6.09	3.57 3.90	6.14 6.24		3.50 3.67	6.25 6.27	3.86 4.22

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Krona exchange rate: theoretical ECU index, TCW-weighted index and MERM-weighted index; selected exchange rates

Annual and monthly averages; annual highs and lows

					SEK p	K per		USD per	
		ECU index	TCW index	MERM index	USD	100 DEM	100 JPY	DEM	JPY
1997	Jan Feb March	115.89 116.63 119.00	118.02 119.55 122.20	117.84 120.15 123.07	7.06 7.40 7.65	440.02 442.22 450.95	5.99 6.02 6.25	1.60 1.67 1.70	117.83 122.93 122.57
	April May June	118.83 119.17 119.03	121.85 122.40 122.79	122.56 123.29 124.04	7.68 7.67 7.74	449.31 450.73 448.77	6.12 6.47 6.78	1.71 1.70 1.73	125.56 118.61 114.29
	July Aug Sept	116.60 115.74 114.49	121.06 120.63 118.62	122.82 123.09 120.47	7.81 8.00 7.70	436.41 433.89 430.56	6.78 6.78 6.38	1.79 1.84 1.79	115.24 117.91 120.73
	Oct Nov Dec	114.58 116.47 116.94	118.36 119.62 120.44	119.78 120.29 121.55	7.57 7.56 7.78	430.99 436.58 438.03	6.26 6.04 6.01	1.76 1.73 1.78	120.96 125.18 129.49
1998	Jan Feb March	117.80 118.84 116.74	121.66 122.89 120.65	123.30 124.62 122.35	8.01 8.08 7.97	441.19 445.30 436.38	6.18 6.43 6.18	1.82 1.81 1.83	129.50 125.69 129.00
	April May June	115.32 115.33 117.70	118.81 118.17 120.47	120.23 119.21 121.43	7.82 7.69 7.91	431.28 433.46 441.36	5.93 5.70 5.62	1.81 1.77 1.79	132.13 134.96 140.15
	July Aug Sept	118.46 121.04 123.25	121.22 123.41 124.88	122.20 124.08 124.68	7.98 8.13 7.91	444.30 447.56 464.26	5.68 5.61 5.88	1.80 1.79 1.70	140.63 144.68 134.57
	Oct Nov Dec	126.56 125.74 127.70	128.03 127.97 129.83	127.40 128.06 129.79	7.85 7.99 8.05	479.02 475.49 482.79	6.49 6.64 6.86	1.64 1.68 1.67	120.78 120.35 117.24
1999	Jan Feb March	122.57 120.37 120.81	125.46 124.00 125.43	125.95 125.18 127.09	7.82 7.95 8.22	464.45 455.54 457.34	6.92 6.82 6.87	1.69 1.75 1.80	113.16 116.72 119.64
	April May June	120.49 121.24 119.34	125.75 126.87 125.69	127.91 129.16 128.56	8.32 8.44 8.51	455.88 458.97 451.67	6.97 6.93 7.05	1.83 1.84 1.88	119.72 122.05 120.76
	July Aug Sept	118.16 118.26 116.66	124.40 124.17 123.42	127.41 126.77 126.41	8.46 8.26 8.22	447.31 447.81 441.40	7.07 7.29 7.67	1.89 1.84 1.86	119.54 113.25 107.01
	Oct Nov Dec	117.93 116.65 116.03	124.35 124.14 124.42	126.85 127.61 128.48	8.15 8.34 8.48	446.30 441.27 439.16	7.69 7.96 8.27	1.83 1.89 1.93	106.03 104.70 102.59
2000	Jan Feb	116.13 115.01	124.54 123.85	128.38 128.28	8.47 8.65	439.49 435.17	8.07 7.91	1.93 1.99	105.10 109.45

Note. The base for the ECU index is the central rate with the ecu on 17 May 1999; for the MERM-weighted and the TCW index it is 18 November 1992.



Note. The base for the ECU index is the central rate with the ECU on 17 May 1991; for the MERM-weighted and TCW index it is 18 November 1992.

Forward foreign exchange market

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Forward net position with authorized currency dealers. SEK million, period ends

		Non-bank pub	llic	Bank abroad	Riksbank	Total	
		Resident (1)	Non-resident (2)	Net (3)	Net (4)	(1+2+3+4)	
1998	Jan	-212 998	-22 001	140 364	- 262	- 94 897	
	Feb	-186 583	-18 304	119 476	1 382	- 84 029	
	March	-192 115	-19 175	142 227	5	- 69 058	
	April	-186 239	-17 669	122 320	397	- 81 191	
	May	-174 575	-47 495	133 608	0	- 88 462	
	June	-220 387	-23 274	112 675	0	-130 986	
	July	–218 997	-22 052	129 587	0	-111 462	
	Aug	–284 131	-27 586	201 845	0	-109 872	
	Sept	–239 370	-26 312	178 740	0	- 86 942	
	Oct	-283 253	-29 446	157 158	0	–155 541	
	Nov	-304 235	-26 910	158 008	0	–173 137	
	Dec	-274 469	-16 164	129 535	0	–161 098	
1999	Jan	-251 675	-11 774	117 395	0	–146 054	
	Feb	-252 950	-12 878	93 133	0	–172 695	
	March	-272 142	-11 752	131 858	0	–152 036	
	April May June	-274 127 -289 324 -283 220	- 9 540 - 4 744 - 1 091	127 642 150 131 129 813	0 0 0	–156 025 –143 937 –154 498	
	July Aug Sept	-279 761 -271 051 -262 300	- 2 317 4 393 -11 669	147 386 143 815 156 294	0 0 0	–134 692 –122 843 –117 705	
	Oct	-258 628	- 6 778	174 294	0	- 91 112	
	Nov	-272 818	- 327	185 332	0	- 87 159	

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