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The general government structural budget balance

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It can be politically tempting to use large budget surpluses in good times for what are intended to be permanent reforms involving increased expenditures, for example. If the surpluses are largely due to a favourable economic situation, so that when this normalises they will be greatly diminished, scope for such reforms does not exist. A calculation of the cyclical balance aims to indicate how large part of the general government balance (net lending) is due to the current cyclical position. Subtracting the cyclical component from the actual budget balance leaves a measure of the general government structural balance. This measure can be used to assess whether or not proposed tax and expenditure reforms are sustainable in the medium term, as well as whether the government can meet the target for the general government budget surplus that was set up in 2000. In this article it is described how the structural balance can be calculated and the problems the various methods pose. One conclusion is that there are good grounds for being cautious when interpreting the structural balance measured with one single method. Still, an overall assessment based on an analysis of a number of different methods indicates that if the government's targeted surplus is to be achieved, the structural balance is too small. This applies in particular if, contrary to the intentions behind the Budget Act, the budgeting margin below the spending ceiling continues to be used for expenditure reforms.

Introduction

Calculations of the general government structural budget balance are produced in Sweden by the Riksbank, the Ministry of Finance and the National Institute of Economic Research (KI), as well as by international organisations such as the European Commission, the European Central Bank (ECB), the OECD and the IMF. This measure of the general government's financial position is used, for instance, in assessments of whether

Calculations of the general government budget balance are produced by a number of institutions.

or not the government finances in EU countries comply with the stipulations in the Stability and Growth Pact. For Sweden the measure has also come to the fore in connection with the targeted surplus for the general government finances that the government introduced in 2000. The aim of this article is to briefly describe what is meant by structural balance, what it can be used for, the available methods for calculating the balance and the problems connected with the different methods and the interpretation of results. The first part of the article is intended for those who want to learn what is meant by structural balance and what the concept can be used for. The other part is more technical and designed for those who are also interested in gaining an *insight* into the various methods that can be used to calculate the structural balance. Moreover, the general government structural balance in Sweden is estimated with a number of different methods and the results are applied in an assessment of whether the government will achieve the targeted surplus.

What is a structural balance?

Estimations of the structural balance all start by calculating the general government balance, that is, the difference between the revenues and expenditures. Revenues and expenditures vary with the business cycle. A major expenditure category that fluctuates in this way is unemployment benefits. On the revenue side there are cyclical fluctuations in most tax categories, for instance social security contributions (dependent on wage bill), income tax (dependent on income flows) and VAT (largely dependent on private consumption). While the government finances are sensitive to cyclical fluctuations, they also automatically tend to smooth fluctuations in domestic demand. An economic slowdown is associated with falling tax receipts and rising government expenditure, which helps to sustain demand. Similarly, the system of taxes and transfers helps to subdue demand in an economic upswing. These cyclically sensitive taxes and expenditures are therefore commonly referred to as "automatic stabilisers".

The structural balance indicates what the financial position of general government would be if the utilisation of the production factors were at a "normal" level. In other words, it represents the difference between revenue and expenditure in a notional cyclically normal situation, that is, with the business cycle midway between a boom and a recession. The structural balance represents actual net lending excluding cyclical factors, that is, the effects of the automatic stabilisers. Given unchanged tax and expenditure rules, a positive structural balance indicates that in a cyclically normal situation, total general government revenue would exceed total

expenditures. Thus, it indicates that the general government finances show an underlying surplus independent of the cyclical situation. Similarly, a negative structural balance indicates that there is an underlying deficit in the goverment finances independent of the cyclical situation.

The impact of the business cycle on net lending – the balance's cyclical component – is usually estimated with the aid of the output gap and the budget elasticity. The output gap is a measure of resource utilisation in the economy and thus also of the cyclical position. The level of output or GDP that is associated with normal resource utilisation is generally known as potential GDP. When resource utilisation is normal, the output gap is said to be closed. In a boom, with resource utilisation above the normal level, the output gap is said to be positive. The output gap is usually expressed as a percentage of potential GDP, so an output gap of +1 per cent indicates that actual output is 1 per cent larger than the level associated with normal resource utilisation. In a recession, with resource utilisation below the normal level, the output gap is said to be negative. An estimated output gap of –1 per cent of potential GDP implies that actual output is 1 per cent smaller than it would have been with normal resource utilisation.

The budget elasticity indicates the average change which net lending, expressed as a percentage of GDP, undergoes when the output gap changes by 1 percentage point. The Riksbank usually assumes a budget elasticity of around 0.75.[1] This means that a change in the output gap of 1 percentage point is judged to alter net lending by 0.75 percentage points.

The following example illustrates how the cyclical component of net lending and hence the structural balance can be calculated. Assume that in a boom, net lending amounts to 3.5 per cent of GDP and that the output gap is judged to be 2 per cent of GDP. The cyclical component of the balance can then be calculated to be 1.5 per cent of GDP (0.75x2=1.5). The structural balance is obtained by subtracting the cyclical component from the overall balance, so in this example it is calculated to be 2 per cent (3.5–1.5=2).

The structural balance was defined above as net lending minus the effects of the automatic stabilisers. A broader definition states that the structural balance represents net lending based on permanent trends (or adjusted for temporary flows). However, distinguishing between perma-

The business cycle's impact on net lending is usually estimated with the aid of the output gap and the budget elasticity.

A broader definition of the structural balance is that it should represent net lending based on permanent trends.

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[1] The Swedish Finance Ministry assumes an elasticity of 0.70. Different empirical studies have arrived at different estimates. Assarsson et al. (1999) obtained an elasticity of 0.98; some other results are 0.75 from Bouthevillain et al. (2001), 0.60–0.80 from Braconier & Holden (1999), 0.90 from Fall (1996), 0.75 from Lindh & Ohlsson (2000), 0.70 from *Public Finances in EMU 2002*, 0.80 from Ohlsson (2002) and 0.68 from the OECD.

nent and temporary factors is not always straightforward, besides being dependent on the purpose of the study and the relevant time perspective. For calculations of the structural balance in the short and medium term it is reasonable to treat the cyclical impact in the form of the automatic stabilisers as a temporary flow.[2] In such a time perspective there may also be grounds for excluding discretionary fiscal measures of a one-off kind. A case in point is the temporary bank support in Sweden in the early 1990s. Another relevant question is whether temporary discretionary measures of stabilisation policy should also be treated as belonging to the cyclical balance and therefore excluded. If the study aims to predict the room for discretionary stabilisation policy measures in an economic slowdown, given a limit to the level of the general government deficit (for example the Maastricht criterion's 3 per cent, see the next section), then the cyclical component should be limited to effects of the automatic stabilisers. If the aim instead is to analyse normal cyclical variations in the government finances, the cyclical component should also include discretionary fiscal measures that are a normal feature of stabilisation policy (e.g. measures of labour market policy).

Possible uses for the structural balance

There a number of reasons for ascertaining cyclical variations in the government finances and calculating the structural balance.

■ One of the Maastricht criteria stipulates that under normal circumstances the general government deficit (measured in terms of net lending) shall not exceed 3 per cent of GDP. If the government finances are sensitive to cyclical factors and net lending is not sufficiently strong under normal cyclical conditions, then a protracted slowdown will be liable to lead to a deficit of more than 3 per cent of GDP. In order to reduce the risk of this happening, in the Stability and Growth Pact the EU countries have undertaken to adhere to the medium-term objective of budgetary positions close to balance (the close-to-balance criterion).[3] Countries such as Sweden where the government finances are cyclically sensitive need to maintain a larger margin than those where this sensitivity is less.[4] That is one of the reasons why since 2000 and with the Riksdag's approval the govern-

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[2] In order to clarify that it is precisely the cyclical factors that are excluded, the common technical term for what is referred to here as the "structural balance" is "cyclically-adjusted budget balance" (CAB).

[3] See also Fischer (2004) in this issue of *Sveriges Riksbank Economic Review*.

[4] For assessments of the financial balance that this requirement implies for Sweden, see SOU 2002:16, Ohlsson (2002), *Public Finances in EMU – 2002* and Dalsgaard & de Serres (2000).

ment has implemented a surplus target stating that actual net lending shall amount to 2 per cent of GDP on average over a business cycle.[5] This means that in years when the cyclical position is neither high nor low, net lending is to be around 2 per cent of GDP. Under favourable economic conditions the surplus should accordingly be above 2 per cent of GDP in order to allow for a level below 2 per cent of GDP in a recession. Measurements of the structural balance can be used to evaluate compliance with this target.

■   It can be politically tempting to use large general government surpluses in good times for permanent reforms, e.g. lower tax rates. If the surpluses are largely due to a favourable economic situation, so that when this normalises they will be greatly diminished, the financial scope for such reforms does not exist. Excluding the component of the budget that comes from the strong economic activity leaves an adjusted balance that indicates whether there is sustainable financing for such reforms.

■   Measurements of the structural balance can accordingly be used to assess the sustainability of the government finances in the *medium run*. The level of the structural balance is sometimes used as an indicator of the government finances' sustainability in the *long term*. However, the structural balance as it is usually calculated is not appropriate for this purpose. The reason why this is the case is provided later on in the article.

■   Provided the cyclical component of net lending is restricted to effects of the automatic stabilisers (instead of also including regular discretionary measures of stabilisation policy), calculations of the annual *change* in the structural balance can indicate fiscal policy's direction, which can be expansionary, neutral or contractive. A neutral direction is represented by an unchanged structural balance and implies that fiscal policy is not influencing domestic demand. A deteriorating structural balance is taken to indicate that fiscal policy is expansionary, with a stimulatory effect on demand. Conversely, a growing structural balance is said to represent a contractive fiscal policy with a restraining effect on demand. Note, however, that, measured in this way, the direction of fiscal policy does not say anything about how demand is being influenced more precisely. More advanced economic and statistical models have to be used to determine how different

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[5]   Another purpose behind this targeted surplus, which in Sweden's updated convergence programme is assumed to apply up to 2015, is to reduce government debt in advance of the decreased revenues and increased expenditures that are foreseen in connection with future demographic trends. In addition, the target is intended to provide room for discretionary measures of stabilisation policy.

fiscal measures affect household behaviour, GDP and the price level. Changes in the structural balance serve in the first place as an *indicator* of the demand stimulus from fiscal policy.[6]

Which factors affect the structural balance?

Discretionary fiscal decisions affect the structural balance.

Discretionary fiscal measures such as, for example, increases to certain tax rates or cuts in certain levels of compensation in social security systems, affect the structural balance. Fiscal policy decisions are usually referred to discretionary changes in revenues or expenditures that affect the central government budget. However, the structural balance can also be affected by rule changes in the local government and social security sectors. All else equal and unless they follow the business cycle, increases to local taxes, for instance, tend to strengthen the structural balance. Other effects on the structural balance can come from structural shifts in the economy, occasioned for example by demographic and behavioural changes such as an altered propensity to take sick leave.

So do interest rate adjustments that affect net interest expenditure on government debt.

The structural balance is likewise influenced by interest rate adjustments that affect net interest expenditure on government debt. If government net interest payments are negative (interest expenditures exceed interest income), an increased level of interest rates will tend to weaken the structural balance. When the change in the structural balance is being used primarily to indicate the discretionary direction of fiscal policy, there may be grounds from excluding net interest expenditure from the calculation of net lending. Otherwise an improvement in the balance that comes from a lowered level of interest rates is liable to be interpreted erroneously as a tightening of fiscal policy. On the other hand, when the level of the structural balance is used to indicate fiscal policy's medium-term sustainability, there may be a case for including net interest expenditure in the calculation. If, for this reason, net interest expenditure has not been excluded in advance, the change in this item should at least be noted separately when analysing the change in the structural balance.

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[6] Changes in the structural balance give, at best, an indication of the qualitative impact that changes in fiscal policy have on demand from year to year. However, changes in the structural balance should not be analysed without reference to the level of net lending. Even if, through tax cuts, for example, fiscal policy is given an expansionary realignment from one year to the next, its overall economic impact will still be restrictive if net lending including the new measures is positive, that is, if revenues exceed expenditures.

Applications – two examples

After this presentation in general terms, some concrete examples may be in place to illustrate how the structural balance can be used and interpreted in practice.

EVALUATING TARGET PERFORMANCE

Compliance with the target for the Swedish budget surplus can be evaluated with a calculation of general government net lending for a complete business cycle. A surplus that averages around 2 per cent of GDP can be said to fulfil the target. But if, as is often the case, the period being studied does not cover a complete business cycle, a simple average is liable to be misleading. This applies to retrospective evaluations as well as to assessments based on predictions. An alternative approach involves estimating the structural balance, as this indicates the level of net lending adjusted for cyclical factors. To comply with the targeted surplus, the structural balance should normally be around 2 per cent in every year.[7]

To comply with the targeted surplus, the structural balance should normally be around 2 per cent of GDP in every year.

TABLE 1. GENERAL GOVERNMENT STRUCTURAL BALANCE
PER CENT OF GDP

	2000	2001	2002	2003	2004	2005
Net lending	3.4	4.6	1.1	0.5	0.9	1.5
Periodisation of taxes	1.5	−2.0	−0.9	0.2	0.1	0.2
Net lending with accrual taxes	4.9	2.5	0.2	0.7	1.0	1.7
Output gap	1.2	−0.1	−0.4	−1.1	−1.2	−0.7
Structural balance	4.0	2.6	0.4	1.5	2.0	2.3

Sources: The Riksbank, Statistics Sweden and the Swedish Ministry of Finance.

Table 1 shows the structural balance for the years 2000–05 as calculated in the Riksbank's *Inflation Report* 2003:4 (pages 40–45).[8] Reliable comparisons of the structural balance in different years call for an adjustment of (actual) net lending to allow for periodisation effects; the balance adjusted in this way is called net lending with accrual taxes.[9] The calculations indicate that the structural balance was markedly above the target the year the target was introduced (2000) and the following year. In 2002, however, the balance was considerably below the target and is also

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[7]   Note that situations may arise that elicit government measures of stabilisation policy. If the budget elasticity refers solely to effects of the automatic stabilisers and thus ignores systematic measures of stabilisation policy (for a fuller discussion of this issue, see the section on methodological problems), it is in such situations permissible for the structural balance to deviate from the 2 per cent target. A surplus above or below 2 per cent can also be justified in a single year if the previous year's balance deviated markedly from the target and an unduly rapid adjustment would entail excessively large effects on demand.

[8]   The figures may have to be adjusted in the next *Inflation Report*, scheduled for the beginning of April 2002.

[9]   After *Inflation Report* 2003:4 had been presented, Statistics Sweden altered the presentation of net lending in the National Accounts; it now shows periodised net lending, that is, with accrual taxes.

calculated to have been on the low side in 2003. In 2004 and 2005 it is estimated to be in line with or above the target.[10] Note, however, that these results were obtained with a particular method and that other measurements point to the structural balance being considerably lower in 2003–05.[11] Moreover, the result for 2005 presupposes that the budgeting margin under the expenditure ceiling is not used for reforms that increase expenditure (see section "Indicator-based models" on pages 24–25).

DIRECTION OF FISCAL POLICY AND AN INDICATOR OF THE FISCAL IMPULSE

As mentioned earlier, the change in the structural balance is commonly used to indicate the direction of fiscal policy. Table 2 presents the change figures for the years 2002–05 as calculated in *Inflation Report* 2003:4. Measured as the change in the structural balance, in 2002 fiscal policy was expansionary, whereas for the years 2003–05 it is estimated to be contractive.

Besides showing the change in the structural balance, Table 2 presents various factors that affect the balance. The item "other factors" represents the part of the change in structural balance that is not attributable to either discretionary fiscal policy, changes in local government tax rates or changes in capital costs for government debt. This "errors and omissions" item catches demographic and structural changes as well as behavioural effects unconnected with economic activity; it also represents composition effects.[12] From 2001 to 2002 the structural balance deteriorated, mainly because central government budget policy was expansionary (with, for example, sizeable income tax cuts for households). Although the spring budget bill in 2003 included restrictive measures, reforms that had been approved earlier meant that central government budget policy remained expansionary. The same applies in 2004. Notwithstanding this expansionary direction of central government fiscal policy, the structural balance improved in 2003 and is continuing to do so in 2004 and 2005. Contributions to this in 2003 came from local government tax increases, lower capital costs and the item "other factors". A minor part of the improvement in 2004 is coming from further local tax increases and the major part from the item "other factors". In 2005 the marginal improve-

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[10] A similar analysis based on the Finance Ministry's forecasts will be found in *Budgetproposition för 2004*, bilaga 2 (Budget Bill for 2004, Annex 2). See also Sweden's updated Convergence Programme, November 2003.

[11] Results with some alternative methods are discussed further on.

[12] Different types of economic shock affect the government finances in different ways. If the calculation of the structural balance is based on an aggregated output gap without taking the type of shock into consideration, to some extent the shock is liable to be caught even in the structural balance (this is what is called the composition effect). This matter is discussed further on together with other methodological issues.

TABLE 2. INDICATOR OF FISCAL IMPULSE
CHANGE AS PER CENT OF GDP

	2002	2003	2004	2005
Net lending	**−3.5**	**−0.6**	**0.5**	**0.5**
Periodisation of taxes	1.1	1.1	−0.1	0.1
Net lending with accrual taxes	**2.4**	**0.5**	**0.4**	**0.7**
Output gap	−0.3	−0.7	−0.1	0.5
Automatic stabilisers	**0.2**	**−0.6**	**−0.1**	**0.4**
Structural balance	**−2.2**	**1.1**	**0.5**	**0.3**
of which:				
Discretionary fiscal policy in central government budget	−1.8	−0.6	−0.2	0.1
Local government tax increases	0.0	0.4	0.2	0.0
Capital costs. Net	−0.1	0.6	0.0	0.0
Other factors	−0.3	0.7	0.5	0.2

Sources: The Riksbank, Statistics Sweden and the Swedish Ministry of Finance.

ment in the structural balance stems from a contractive central government fiscal policy and from the item "other factors".[13]

For assessing the overall fiscal impulse, the relevant concept is the change in actual net lending. This means that the impact of the automatic stabilisers must be taken into account in addition to the discretionary measures that affect the structural balance. This impact has been calculated for Table 2 as the change in net lending's cyclical component (the change in the output gap multiplied by the budget elasticity). The prospect of declining resource utilisation in the period 2002–04 implies that the fiscal impulse from the automatic stabilisers is stimulatory. In 2005 resource utilisation is predicted to improve and the automatic stabilisers will then tend to restrain demand.[14]

For assessing the overall fiscal impulse, the relevant concept is the change in actual net lending.

Problems of application

A number of difficulties associated with the use of the structural balance have been identified in the literature. One issue is whether the change in the structural balance is an appropriate indicator of fiscal policy's discretionary direction since it may also catch other factors, for example structural changes (see e.g. Blanchard (1990), Braconier & Holden (1999) and Larch & Salto (2003), who also present alternative indicators).

A question concerning the change in the structural balance as an indicator of the impulse from discretionary fiscal policy is whether this is at all informative in that it does not really tell us anything about the actual

A number of difficulties associated with the use of the structural balance have been identified in the literature.

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[13] This appraisal, however, may be revised in future Inflation Reports.
[14] See note 10.

effect on demand. Murchison & Robbins (2003) and Chalk (2002) present alternative indicators of the fiscal impulse that estimate the actual effect on demand more directly.

Contrary to the case for a demand indicator, when the structural balance is used to indicate the sustainability of fiscal policy it ought to include structural changes. For instance, all else equal, an expected sizeable decrease in sickness rates that is seen as permanent should be mirrored in a higher future structural balance. Such structural changes invariably show up ex post in both the actual and the structural financial balance. A *forecast* structural balance will mirror structural changes only in so far as these have been incorporated in the forecast of actual net lending.

As mentioned earlier, medium-term forecasts (3–5 years) are sometimes used to assess fiscal policy's long-term sustainability. However, such forecasts are not appropriate for this purpose because they do not catch more long-term structural and demographic changes that may have a major impact on the government finances (see e.g. Blanchard et al. (1990)). An indicator of fiscal policy's long-term sustainability that does allow for long-term demographic changes is presented and applied in Blanchard et al. (1990). The long-term impact of demographic trends on the government finances can also be analysed by projecting government debt over the next 30–50 years on the basis of assumptions about such factors as potential growth and the long-term real interest rate.[15]

Another topic in the literature is the problems associated with the statistical estimation of the structural balance. The rest of this article is devoted to describing methods that are commonly used to estimate the structural balance and the main problems they pose.[16] The next section outlines a traditional approach to estimating the budget elasticity and the structural balance with a two-step method, assuming that the output gap or trends are estimated or known in advance.

Statistical estimation of the structural balance

Net lending or the budget balance (*B*) can be expressed in general terms as

(1) $B = R - E$

[15] See e.g. Sweden's updated Convergence Progamme (November 2003), *Budgetproposition för 2004*, bilaga 2 (Budget Bill for 2004, Annex 2), and Flodén (2002).

[16] See also Banca d'Italia (1999) for a number of papers by various authors, describing the methods used by different countries and organisations.

where R is general government revenue and E is expenditure. Net lending can be decomposed into structural (B^S) and cyclical (B^C) components:[17]

(2) $\qquad B = B^S + B^C.$

The cyclical component (B^C) is assumed to represent the effect on net lending from the automatic stabilisers. Actual net lending is observable – it can be read off directly and does not have to be estimated statistically – whereas both the cyclical and the structural component must be estimated. The first step in the usual approach involves estimating the government finances' sensitivity to fluctuations in the business cycle. This provides a measure of net lending's cyclical component. An indicator of the structural balance can then be obtained residually in a second step as

(3) $\qquad B^S = B - B^C.$

This reduces the problem to determining the extent to which the government finances vary with the business cycle. Some methods that can be used to estimate the cyclical sensitivity of the government finances are described below.

AGGREGATED METHODS

Perhaps the simplest method (in terms of the calculations as well as the data requirements) is to estimate the equation:[18]

(4) $\qquad \dfrac{R_t - E_t}{PY_t} = \alpha + \beta \dfrac{Y_t - Y_t^*}{Y_t^*} + \mu_t$

where Y is actual real GDP, P is the general price level, PY is nominal GDP, Y^* is potential GDP and $(Y - Y^*)/Y^*$ is the output gap expressed in per cent of GDP. The left-hand term is actual net lending expressed as a percentage of nominal GDP. β is the budget elasticity and in this case indicates the extent to which a change in the output gap affects net lending expressed as a percentage of GDP.[19] Here β is assumed to catch the aggregated impact of the automatic stabilisers. The equation is usually

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[17] Here it is *actual* net lending that is decomposed into a cyclical and a structural component. There are instances where it may be appropriate to exclude interest expenditure (see e.g. Braconier & Holden (1999)).

[18] See also Assarsson et al. (1999).

[19] Estimated in this way, the parameter β is not an elasticity in the strict mathematical sense.

estimated with OLS. Using the estimated equation, the structural balance expressed in per cent of GDP can be calculated as

$$(5) \qquad \frac{B_t^S}{PY_t} = \frac{R_t - E_t}{PY_t} - \hat{\beta} \frac{Y_t - Y_t^*}{Y_t^*}$$

where $\hat{\beta}$ is the estimated budget elasticity and

$$(6) \qquad \hat{\beta} \frac{Y_t - Y_t^*}{Y_t^*} = \frac{B_t^C}{PY_t}$$

is the cyclical component of net lending expressed in per cent of GDP. In principle it is this equation that was used to calculate the structural balance in the example on page 7.[20]

"SEMI-AGGREGATED" METHODS

The method described above is designed to estimate an aggregate budget elasticity that indicates the extent to which cyclical fluctuations affect net lending. In that the impact of cyclical fluctuations is liable to vary between different revenue and expenditure categories, it may be of interest to take this into account when estimating the cyclical sensitivity of the government finances. One way of doing so is to estimate the following equation for each revenue and expenditure category:

$$(7) \qquad \frac{X_t^i}{P_t Y_t} = \alpha^i + f(t) + \beta^i \frac{Y_t - Y_t^*}{Y_t^*} + \mu_t^i$$

where X_t^i represents a particular tax or expenditure category. $f(t)$ is a function that allows for the fact that, expressed relative to GDP, most tax and expenditure categories followed a rising trend in much of the period to which the data refer.[21] The parameter β^i, for example, represents the relationship between revenue from indirect taxes and the size of the output gap.

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[20]   It may also be of interest to estimate how *primary* net lending covaries with the business cycle. Another relevant matter may be to estimate a more dynamic model that allows for the fact that an initial cyclical fluctuation is liable to affect net lending for more than a single year. See Braconier (2001) for empirical models that take both these factors into account.

[21]   In Sweden there were rising trends for tax revenue and expenditure relative to GDP until 1991 and 1993, respectively. This circumstance would be caught by, for example, the function $f(t) = D\gamma t$, where $D = 1$ through 1991 and 1993, respectively, and $D = 0$ after that. Alternative specifications can also be made.

Even when separate budget elasticities are estimated for different categories of revenue and expenditure (as in the "semi-aggregated" method described above), they are often weighted together to form an aggregated budget elasticity with which net lending's cyclical component and the structural balance are then calculated.[22] This method entails the problem of not recognising that different types of economic shock may differ in their effects on the *bases* for different revenue and expenditure categories. An export-led economic slowdown, for instance, does not affect tax revenue as much as a slowdown that stems from lower domestic private consumption; the reason for this is that taxation is lower on exports than on private consumption. In other words, using an aggregated budget elasticity and an output gap to calculate the structural balance disregards the forces behind the business cycle and the composition of economic growth.[23] Such composition effects can be taken into account by calculating the structural balance with separate estimated gaps and elasticities for each revenue and expenditure category.[24] The ESCB uses such a method and so, in Sweden, does the National Institute of Economic Research. The ESCB's method, which differs in some respects from that of the National Institute of Economic Research, can be summarised in the following equations:[25]

(8) $$B_t^S = B_t - \sum_i X_t^i \varepsilon_{X^i V^i} v_{c,t}^i$$

where

(9) $$v_{c,t}^i = \frac{\overline{V_t^i - V_t^{i*}}}{V_t^{i*}}$$

where the elasticities (ε_i) have been estimated, as far as possible, with regression equations that relate each tax or expenditure category to its relevant base. Each underlying tax or expenditure base V^i is decomposed into a trend and a cyclical part, using the Hodrick-Prescott (HP) filter (the HP method is described further on). This means that a separate "gap" is estimated for each underlying tax or expenditure base (in contrast to the aggregated and the "semi-aggregated" methods, which only estimate the GDP trend). The term $v_{c,t}^i$ is the "gap" in year t for the ith tax or

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[22] This approach is used by, for instance, the OECD.
[23] In an empirical study, Braconier & Holden (1999) found that the impact on the government finances was greatest from shocks in domestic saving and least from shocks in export demand.
[24] The magnitude of composition effects in practice is an empirical matter.
[25] For a more detailed account of the ESCB's method and the definition and estimation of the elasticities, see Bouthevillain et al. (2001). The method of the National Institute of Economic Research is described in Braconier & Forsfält (2004).

expenditure base (for simplicity, the same index has been used for the tax and its base). The index i can, for example, represent total private consumption as the base for indirect tax revenue. Thus, this method has the advantage of allowing for the fact that different types of macroeconomic shock can differ in their impact on the government finances. A possible drawback is that the results cannot be related in a simple way to economic development expressed in terms of GDP.

SOME METHODOLOGICAL PROBLEMS

Estimated on annual data, the budget elasticity may give a misleading picture of the government finances' present cyclical sensitivity.

In that quarterly data are often lacking for the entire general government sector, the equations from which the budget elasticity is derived have to be estimated from annual data. This calls for relatively long time series. A reasonable assumption is that during such a period the tax and expenditure rules will have been changed substantially a number of times, which implies that in practice the budget elasticity has varied over time. If the equations are estimated without allowing for this, the estimated budget elasticity will represent the average elasticity for the period in question and will therefore give a misleading picture of the government finances' *present* cyclical sensitivity. This problem is particularly great if the estimated budget elasticity is being used to predict the future structural balance. It can be handled by identifying sizeable tax and expenditure reforms and allowing for them when estimating the equations.

Estimated with the total tax ratio, the budget elasticity will not reflect effects from the specific construction of the tax and benefit system.

A very simple approach to calculating the budget elasticity is to assume that it should approximately correspond to the GDP ratio for total tax revenue. The EU Commission has shown, that the revenue share of GDP correlates strongly with the econometric estimates of the budget elasticity.[26] However, a budget elasticity estimated with the total tax ratio disregards the possibility of the elasticity also being affected by the specific construction of the tax and benefit system. A further alternative is therefore to gauge the budget elasticity by studying the present construction of the tax and benefit system. With a proportional tax system, it may be reasonable to assume that the elasticity of tax revenue in relation to the tax base is close to 1, that is, a 1 per cent increase in the tax base means that tax revenue also rises by 1 per cent. With a progressive tax system, on the other hand, a reasonable assumption is that the elasticity is somewhat larger than 1.[27]

Another problem with the budget elasticity is that if it is intended to catch just the effect of the automatic stabilisers and not regular discre-

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[26]   See the Commission's annual report *Public Finances in EMU – 2002*, chapter 3.
[27]   For a survey of different methods that can be used to calculate the budget elasticity, see also Van den Noord (2000).

tionary measures of stabilisation policy as well, then discretionary fiscal measures should be controlled for when estimating the budget elasticity.[28] Otherwise the estimated budget elasticity will be liable to exaggerate the automatic stabilisers' impact on net lending.[29] For other purposes, however, it may be appropriate to let the budget elasticity – and thereby the cyclical component of net lending – catch also regular discretionary measures of stabilisation policy (see, e.g., Hokkanen (1998), who deliberately allows the cyclical component to include the impact of automatic stabilisers as well as cyclically conditioned discretionary measures of stabilisation policy).[30]

There are a couple of approaches to making allowance for discretionary fiscal measures. One involves calculating the budgetary impact of all rule changes that affect general government revenues and expenditures in the years covered by the time series. No such data series is available and creating one would probably be very laborious and time-consuming.[31, 32] However, there is another approach that is much simpler, though less precise. The method presented by Braconier & Holden (1999) assumes that in relation to their relevant bases, tax and expenditure categories are constant for unchanged rules. For instance, given unchanged rules, direct tax revenue is assumed always to amount to a constant share of household and corporate income (before tax). Similarly, VAT is assumed always to amount to a constant share of private consumption. On the expenditure side, with unchanged rules, the GDP share for government expenditure is assumed to be constant and unemployment benefits proportional to the level of unemployment. If government revenues and expenditures, measured as shares of the relevant bases, change from year to year, the changes – given these assumptions – are said to represent discretionary fiscal decisions. The method provides an approximate indication of the impact that discretionary fiscal measures have on net lending. It should be noted once again that this approach presupposes that tax revenue and expenditure relative to the relevant bases are constant when discretionary fiscal policy is unchanged. In practice, however,

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[28] Such an approach may be suitable, for example, when predicting the scope for discretionary stabilisation measures in an economic slowdown given a stipulated limit to the general government deficit (e.g. the Maastricht criterion of 3 per cent).

[29] Discretionary changes in taxes and expenditures are often based on forecasts of both macroeconomic variables and the government finances. Studying how actual net lending varies with the business cycle, measured with outcome data, can therefore give a misleading picture of fiscal policy's "reaction function". See Ohlsson & Vredin (1996), who use data from Sweden's former National Audit Office on forecasts, outcomes and revisions to forecasts to estimate fiscal policy's "reaction function".

[30] Such an approach may be appropriate in a historical study of how the government finances, including automatic stabilisers as well as discretionary fiscal measures, *normally* vary with the business cycle.

[31] For some years now the annual Budget Bill includes a summary table showing the effects on the *central government budget* of all rule changes in the tax and benefit system, though only for the years to which the budget refers.

[32] To some extent this was done by Frank, Ohlsson & Vredin (1993).

this assumption may not hold, for instance when the tax system contains progressive elements.[33] Changes of a structural (e.g. demographic) as well as a behavioural (e.g. sickness propensity) nature may also result in the tax and expenditure shares of the relevant bases not being constant over time even when discretionary fiscal policy is unchanged. As a result, a shift from year to year in the GDP shares for revenue and expenditure as a result of demographic changes may be wrongly interpreted as a consequences of discretionary fiscal policy. However, these problems should be weighed against those that arise when the budget elasticity is estimated without making any allowance for discretionary fiscal policy's impact on net lending.

Calculating the "gap" and trends

Both the aggregated and the "semi-aggregated" method require some form of prior estimate of the output gap. For the disaggregated method it is necessary to calculate the trends for the various tax and expenditure bases. This section outlines some of the most common methods briefly and in general terms. A complete account of the advantages and the drawbacks of the different methods is not presented.

THE HP METHOD

The Hodrick-Prescott method is used to estimate the trend and thereby the gap by filtering the original series.

The Hodrick-Prescott (HP) method is used to estimate the trend and thereby the gap by filtering the original series. The filtering, which is based on a form of moving average, fits a trend to the time series. A trend smoothing coefficient serves to adapt the trend so that it is either entirely linear or tends to follow the variation in the original series.[34] If this method is applied to estimating potential GDP, for instance, a completely linear trend would imply that the growth of potential output is the same in every year. According to some economic theories, however, to some extent the growth of potential GDP ought to follow that of actual GDP.[35] The ESCB and the Swedish National Institute of Economic Research use the HP method to estimate trends or "gaps" for the various revenue and expenditure bases.

The main advantage of the HP method is it simplicity for identifying a growth trend that is permitted to vary over time. But it does have the drawback of not saying anything about the driving force behind the result, which impedes an economic interpretation. It can also be shown

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[33] For a fuller discussion of this problem, see Braconier & Forsfält (2004).
[34] A more formal description is provided in the appendix to this article.
[35] If potential GDP is permitted to covary with actual GDP, the structural balance will also covary with the business cycle.

(for details see the appendix) that the estimated trend is less accurate at the beginning and end of the sample period. This is known as the end-point problem. It is indeed a problem if the aim is to *forecast* the structural balance. Moreover, as the HP method is based on moving averages, it is not adept at handling structural changes in the economy; a structural change that actually affects potential output immediately will be spread erroneously over a number of years. In the event of a major structural change, this can result in considerable errors in the estimation of potential output in the preceding and succeeding years. The more linear the trend, the greater this problem.[36]

<div style="float:right; width:30%;">**The main advantage of the HP method is its simplicity for identifying a growth trend that is permitted to vary over time.**</div>

THE UNOBSERVED COMPONENT METHOD

Potential GDP growth is defined in various ways. A common definition is the growth rate that is compatible with a stable rate of inflation. Potential growth is also frequently defined in terms of the level of unemployment that can be combined with unchanged inflation (usually known as the NAIRU). These definitions are applicable when the output gap is estimated with what is known as the unobserved component or UC method.

The UC method has the advantage over the HP method that it is simple to use in a specification whereby both inflation and real variables are taken into account in the estimation of the gap.[37] But like the HP method, the UC approach does not say anything about what is driving the change in potential growth.[38]

<div style="float:right; width:30%;">**An advantage with the UC method for estimating the gap is its simplicity for taking both real variables and inflation into account.**</div>

THE PRODUCTION FUNCTION METHOD

Unlike the HP and UC methods, the production function (PF) approach is based on a model that to some extent can be used to interpret a change in the output gap in economic terms. The PF method starts from a statistical estimation of an aggregated production function with two production factors: labour (usually measured as hours worked) and real capital. The statistically estimated production function indicates the extent to which output is affected by a change in hours worked, the capital stock or total factor productivity (TFP). An increase in hours worked, in capital utilisation or in TFP leads to an increase in actual output. The calculation of

<div style="float:right; width:30%;">**The production function approach serves to some extent to interpret a change in the output gap in economic terms.**</div>

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36 For a fuller discussion of the pros and cons of this method, see e.g. Bouthevillain et al. (2001).
37 On the other hand, neither this nor other available models explicitly catch the part that cyclical deviations from the long-term price trend play for the structural balance. Such fluctuations can be of major importance for the government finances in that tax revenues rest to a large extent on nominal rather than real bases. Moreover, certain expenditures are linked to the development of inflation. This need not be a major problem when inflation and GDP covary; otherwise it can be.
38 See the appendix for a more formal account of the UC method.

potential output is based on an estimation of the potential labour force and a smoothed TFP trend. The potential labour force is assumed to change over time as a consequence of demographic trends together with changes in the NAIRU and in mean working time. The item potential hours worked is often calculated by using the HP method to arrive at the trends for average working time and labour force participation. The contribution to GDP growth from TFP is obtained residually; it is assumed to catch all the factors behind GDP growth apart from the contributions from changes in hours worked and the capital stock.[39]

Perhaps the main advantage of the PF approach is the clear connection between potential output and its long-term determinants (changes in hours worked, productivity and capital). But the PF approach also has a number of considerable drawbacks. One is the high data requirement. Another is major measurement problems, above all in respect of the capital stock. And as many of the variables undergo HP filtration, to some extent the PF approach involves the same problems as the HP method by itself.

> **The main advantage of the PF approach is the clear connection between potential output and its long-term determinants.**

Factors whereby the cyclical balance is underestimated

THE PROBLEM OF SIMULTANEITY

The traditional methods described above for calculating the structural balance start by in some way estimating the output gap or the trends for the bases for revenue and expenditure categories. The results are then used as inputs in an OLS estimation of the aggregated budget elasticity or of the disaggregated budget elasticities. A major problem with this approach is that it disregards the simultaneity of fiscal policy and the business cycle.

> **A major problem with the traditional methods is that they disregard the simultaneity of fiscal policy and the business cycle.**

Changes in business activity affect the government finances at the same time as fiscal measures, at least in the short run, can affect aggregate demand and thereby resource utilisation.[40] If the budget elasticity is estimated without taking this into account, the cyclical component of net lending will be underestimated (see Blanchard (1990) and Murchison & Robbins (2003)). This is one of the reasons why the structural balance calculated with the traditional methods is often found to covary with actual net lending. All else equal, this problem leads to the structural balance being overestimated in boom years and underestimated in a recession. One solution lies in defining the structural balance differently. Another is to use statistical methods that take the problem of simultaneity into

> **This is one of the reasons why the structural balance calculated with the traditional methods is often found to covary with actual net lending.**

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[39] See the appendix for a more formal description of the PF method.
[40] For an analysis of fiscal policy's impact on resource utilisation, see e.g. Blanchard & Perotti (2002).

account in the estimation of the model. These approaches are described below.

The model used by Bouthevillain & Quinet (1999) to estimate the structural balance is known as a bivariate structural VAR model (SVAR model). It involves the *assumption* of no correlation between net lending's cyclical and structural components. This method of estimation gives a cyclical component that is considerably larger than is obtained with the more traditional two-step methods. The discrepancy is partly attributable to the structural balance being defined differently in the SVAR model. Whereas the traditional two-step models take the total variation in GDP into account in the calculation of the structural balance, the SVAR model excludes the part of the variation in GDP that is occasioned by fiscal measures. This leads to a variation in the structural balance that is considerably smaller than with the traditional methods.[41] But even this approach entails some problems. The characteristics of the model are heavily dependent on the assumptions that are made about the variables' shock terms. And like the HP and UC methods, neither does this approach say anything about what is driving the results.[42]

In order to estimate the structural balance and the output gap (strictly speaking the NAIRU) simultaneously, Hokkanen (1998) uses the UC approach. The model is estimated with FIML (Full Information Maximum Likelihood) and a Kalman filter. Estimated in this way, the structural balance and actual net lending are considerably less correlated than with the more traditional approaches.[43] There are two explanations for this: one is that the simultaneous estimation of the output gap and the structural balance solves simultaneity problem and the other is that, as specified by Hokkanen, the UC model's estimation of the cyclical component of net lending also includes frequent discretionary fiscal measures to do with stabilisation policy and not just the effect of the automatic stabilisers.

The problem of simultaneity is tackled by Murchison & Robbins (2003) with another econometric technique known as GMM (Generalized Method of Moments).[44] The model is estimated on quarterly data for the period 1973–2001. As estimated with this model, net lending's cyclical component is more than twice as large as the result with an OLS estimation that disregards the problem of simultaneity.

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[41] See also Hjelm (2003), who estimates the structural balance for Sweden in a trivariate SVAR model where the NAIRU, the output gap and the structural balance are estimated simultaneously.
[42] For further details see Hjelm (2003).
[43] The UC model as specified by Hokkanen (1998) is described in the appendix.
[44] For a description of GMM see e.g. Davidson & MacKinnon (1993).

The business cycle tends to be accentuated by fluctuations in asset prices (boom-bust cycles). For a country (like Sweden) with a relatively high taxation of assets, large asset price fluctuations are also liable to have a relatively marked impact on net lending. Besides demonstrating this, Eschenbach & Schuknecht (2002) and Jaeger & Schuknecht (2003) show that if it is not taken into account, the budget elasticities will underestimate the government finances' cyclical sensitivity. This can then be an additional explanation for the calculated structural balance's tendency to covary with actual net lending. Moreover, the structural balance calculated without allowing for this is liable to be a misleading indicator of the government finances' medium-term sustainability. In Sweden, the National Institute of Economic Research makes some allowance for this problem when assessing the structural component of revenue from capital gains tax (see Braconier & Forsfält (2004)).

Indicator-based models

The methods and models described so far are mechanical in the sense that the estimated structural balance is the product of a specific statistical method or model. They all entail certain (simplified) assumptions about the real world and therefore probably fail to capture all the structural balance's pertinent factors. Therefore, it can be reasonable to estimate the structural balance also with a qualitative analysis based on assessments of diverse economic indicators such as wage and price inflation, inflation expectations, the labour market situation and structural changes.

To gauge the size of the output gap, the Riksbank uses mechanical methods (the HP, PF and UC methods) as well as a qualitative method based on indicators (the latter method lies behind the calculation of the structural balance in Tables 1 and 2). Regardless of how the output gap is calculated, however, the calculation of the structural balance assumes that the budget elasticity is 0.75. In addition, the Riksbank calculates the structural balance with the ESCB's disaggregated method.

Table 3 presents the level of the structural balance (with accrual taxes) as estimated with the methods used by the Riksbank (the PF method excluded). It will be seen that the different methods can result in relatively large discrepancies in both the level of the balance and its changes. The discrepancies between the methods that start from an estimated output gap (the HP and UC methods and the method based on indicators) are entirely due to different estimates of resource utilisation. A part of the dis-

	2001	2002	2003	2004	2005
Indicator-based method	2.6	0.4	1.5	2.0	2.3
UC method	2.3	0.0	0.8	0.8	1.1
HP method	1.6	−0.2	1.0	1.6	2.1
ESCB's method	1.2	−0.4	1.0	1.2	1.8
Average	1.9	0.0	1.1	1.4	1.8

Source: The Riksbank.

Note. The forecasts in *Inflation Report 2003:4* were used to obtain these results except for those with the ESCB's method, which are based on the forecasts in *Inflation Report 2003:3*. As the changes in the forecasts between these two Reports were only marginal, the results should be comparable.

crepancies between these methods and the ESCB's method can be attributed to composition effects.

From these results it can be concluded that there are good grounds for interpreting a single measure of the structural balance with caution. But all in all, this analysis does suggest that in 2001 the structural balance was in line with the targeted surplus. The results for the years 2002–03 indicate a very low structural balance in relation to the target. A structural balance on the low side is also expected in 2004. For 2005, on the other hand, the calculations point to the target being within reach.[45] The latter conclusion presupposes, however, that the government refrains from using the budgeting margin for reforms entailing additional expenditure. If the budgeting margin for 2005 were to be as small as in recent years, the structural balance will be closer to 1 per cent than to 2 per cent of GDP.[46] In that case the structural balance will have been too low in relation to the government's targeted surplus throughout the period 2002–05.

> From these results it can be concluded that there are good grounds for interpreting a single measure of the structural balance with caution.

Concluding comments

As this article indicates, there are a number of different methods that can yield markedly divergent results, so a single measure of the structural balance should be interpreted with caution. Whichever method one uses, a calculated structural balance is highly uncertain. For a given purpose one method can be preferable to another. Moreover, different methodological problems can be more crucial for some purposes than for others. There is no method that is capable of resolving every problem. This may be an

> Whichever method one uses, a calculated structural balance is highly uncertain.

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[45] This appraisal may have to be revised in future Inflation Reports.
[46] Calculations presented in *SOU 2002:16* show that, contrary to the intentions behind the Budget Act, in recent years the budgeting margin has been used for reforms that entail increased expenditure. The figures show that, as presented in the Budget Bill for the relevant fiscal year, the budgeting margin has averaged only SEK 2 billion.

argument for gauging the structural balance by an analysis based on several different methods. Another consideration when selecting a suitable indicator of the structural balance is the importance of transparency and simplicity compared with precision. This may be particularly relevant if the result is to be used in political contexts. Still, the major problems associated with estimating the structural balance should not lead to the conclusion that the result is so poor that the method ought not to be used for this purpose. Without an estimate of the structural balance it is difficult to determine whether or not the government finances are sustainable in the medium term. It is not self-evident, on the other hand, that indicators of the change in the structural balance should be used as pointers to the fiscal impulse. Alternative indicators are available for that purpose.

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Appendix

THE HP METHOD

Actual GDP (Y) is decomposed as

(A:1) $$Y_t = Y_t^* + Y_t^C$$

where Y_t^* is potential GDP and Y_t^C is GDP's cyclical component. Y_t^* is determined with the following optimisation procedure:[47]

(A:2) $$\underset{\{Y_t^*\}}{Min} \sum_{t=1}^{T} (\ln Y_t - \ln Y_t^*)^2 + \lambda \sum_{t=2}^{T-1} ((\ln Y_{t+1}^* - \ln Y_t^*) - (\ln Y_t^* - \ln Y_{t-1}^*))^2$$

This formula fits a trend to the original data series by minimising the sum of the deviations of actual GDP from its trend (the first term in the formula) and the variability of the trend (the second term). The value of the parameter λ sets the weight accorded to the variability of the trend: a very high value of λ gives an entirely linear trend, while a λ of zero implies that the trend invariably follows the original series. This parameter is not estimated statistically; it is set instead in accordance with certain criteria. A high value is usually chosen for quarterly data and a relatively low value for annual data. For a discussion of an appropriate level of λ see Hodrick & Prescott (1980), Baxter & King (1999) and Bouthevillain et al. (2001). In Table 3 a value of 6,400 has been used for the aggregated HP method (estimated on quarterly data) and a value of 30 for the HP estimation of trends with the disaggregated method (based on annual data). The HP filter gives a trend that in practice is a weighted moving average based on a series of actual values of the filtered variable, in this case GDP. The higher the value of λ, the greater the number of observations that are included in the calculation of the moving average. Higher weights are assigned to the GDP data that are close to the reference year (the year for which potential GDP is being calculated). Moreover, the filter is symmetric, which means that, for example, the same weight is assigned to GDP three years before and three years after the reference year. This gives rise to end-point bias. The number of observations at the beginning and end of the series does not suffice to provide a symmetric average. This is a major problem, particularly for forecasting. It is usually solved by extending the sample period with forecasts for the number of years that are needed to obtain a symmetric average. But the longer the forecast horizon, the greater the uncertainty.

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[47] See Hodrick & Prescott (1980).

The UC model comprises two distinct systems of equations: a measurement system that relates observable to unobservable variables, and state equations that show the statistical properties which the unobservable variables are assumed to possess. There are various ways of specifying a UC model; the one presented here was used by Hokkanen (1998).

The measurement equations are defined as follows:

(A:3) $$Y_t = Y_t^* + \theta(l)(U_t - U_t^*) + \mu_t^{YC}$$

(A:4) $$\Delta\pi_t = f(l)(U_t - U_t^*) + \mu_t^{\pi}$$

(A:5) $$B_t = B_t^* + \delta(l)(U_t - U_t^*) + \mu_t^{BC}$$

where l is a lag operator. Equation (A:3) relates the cyclical component of unemployment $(U_t - U_t^*)$ to the cyclical component of GDP $(Y_t - Y_t^*)$; this relationship is usually referred to as Okun's law. Thus, unemployment is used here as an indicator of resource utilisation. Equation (A:4) is a representation of the Phillips curve which relates inflation to unemployment.[48] Equation (A:5) relates the cyclical component of unemployment to the cyclical component of net lending. The parameters $\delta(l)$ catch the effect of the automatic stabilisers as well as of the discretionary fiscal measures that often follow the business cycle, e.g. active labour market policy and other measures to do with stabilisation policy.

The state equations in the UC model are defined by Hokkanen as follows:

(A:6) $$Y_t^* = \alpha + Y_{t-1}^* + \mu_t^{Y*}$$

(A:7) $$U_t^* = U_{t-1}^* + \mu_t^{U*}$$

(A:8) $$U_t - U_t^* = \phi(l)(U_t - U_t^*) + \mu_t^{UC}$$

(A:9) $$B_t^* = B_{t-1}^* + \mu_t^{B*}.$$

Equation (A:6) uses the assumption that potential GDP follows a random walk with drift, while equations (A:7) and (A:9) assume that the NAIRU and the structural balance, respectively, follow a random walk without drift. In equation (A:8) the cyclical component of unemployment is

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48   See also Apel & Jansson (1999a, b).

assumed to follow an autoregressive process. Certain additional assumptions have to be made about the correlation between the different error terms.

The model is estimated with Full Information Maximum Likelihood (FIML) and a Kalman filter.[49] This technique has the great advantage of estimating the system of equations simultaneously, thereby solving the problem of simultaneity that was mentioned earlier. However, the results from the model are heavily dependent on the assumptions that are made when setting up the state equations.[50]

THE PF METHOD

There are also various ways of specifying the production function (PF) method; the approach described here is the one used by the European Commission. It assumes that aggregated output can be described with a Cobb-Douglas function:

$$(A:10) \qquad Y_t = TFP_t(L_t)^{\omega}K_t^{1-\omega}$$

where TFP is total factor productivity, L is labour input and K is the capital stock. Given certain conditions, the coefficients ω and $1 - \omega$ can be interpreted as each production factor's contribution to total output. The Commission assumes that these parameters are the same for all EU countries; ω is assumed to be 0.63 and $1 - \omega$ is accordingly 0.37. TFP and labour input are then transformed into their trend or potential levels, while the capital stock is assumed to be constantly at its potential level. The trend component of TFP is calculated with the aid of the HP method. Labour supply is assumed to be a function of the active population (N), labour force participation (ρ) and unemployment (η). HP filtering is used for labour force participation, while the active population is assumed, like the capital stock, to be constantly at its potential level. ρ^*N can then be interpreted as the trend labour force. The trend component of unemployment is calculated by estimating a Phillips curve with a UC model.[51] Under these conditions, potential GDP can be calculated from

$$(A:11) \qquad Y_t^* = TFP_t^*\big((l - \eta^*)\rho^*N_t\big)^{0,63}K_t^{0,37}.$$

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[49] For an introduction to the Kalman filter, see e.g. Harvey (1989) and for a description of FIML see e.g. Davidson & MacKinnon (1993).
[50] For a more detailed discussion of this problem, see Hokkanen (1998).
[51] Due to a lack of data in certain countries, the European Commission (unlike the Riksbank) measures employment in terms of the number employed instead of as hours worked. The Riksbank, but not the Commission, assumes that the NAIRU (the level of employment that is compatible with non-accelerating inflation) is constant.

As certain steps in the PF method use both the HP and the UC method, in at least some respects it shares their advantages and drawbacks. But as noted earlier, the PF method has the advantage over the other two methods of providing some information about the factors that are driving potential growth.[52]

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[52] For a more detailed account of the European Commission's PF method, see the appendix to Public Finances in EMU – 2002.

The peaks and troughs of the Stability and Growth Pact

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The stability and growth pact is an intrinsic part of the EMU set-up and has now been in place for five years starting in 1999. The operation of the EU budgetary framework has developed with experience, but the last few years have been turbulent. Member state budget deficits have deteriorated and approached or even exceeded the agreed limits. The debate on the performance and design of the framework has become increasingly lively, with plentiful inputs from academics and policy makers. Additional fuel was provided recently as tensions within the framework reached a new peak when the Ecofin Council decided not to continue up the Pact's decision ladder and take France and Germany one step closer to sanctions. The Council decided instead to "freeze" the formal procedure and make an intergovernmental agreement outside the regular framework. Besides heightening tensions, this outcome raised questions about the status of the framework.

Introduction

The aim of this article is to outline the phases of the Pact and the Maastricht budgetary rules so far, present some of the main issues and arguments in the debate on the Pact and indicate some areas that are likely to appear in a discussion on the future of the framework.

The first section recalls the basic arguments for introducing budgetary co-ordination at EU level. The following section overviews the current rules. This is followed by a description of the main economic developments and the procedural steps within the budgetary framework since the start. After that I look at the performance of the Pact with reference to the design of the numerical rules, assessment tools and implementation mechanisms in order to see what has worked well and where problems have been greater. On this basis, the concluding section points to some priorities for a debate on reform.

The need for EU budgetary rules

The ambition behind the overall EMU framework is to promote a stability oriented macro-economic environment characterised by low and stable inflation and sound budgetary positions. Stable macro-economic conditions reduce risk and uncertainty and facilitate planning by economic agents and are thus helpful for economic growth.

A specific feature of the EMU set-up is that monetary policy is centralised while fiscal policy remains decentralised. The independent central bank, the ECB, has the authority to ensure stable prices in the euro area, while fiscal policy is the responsibility of the individual member states. The set up increase the demands on stringency and flexibility on national fiscal policy. The achievement of stable and sound budgetary positions in member states and in the area as a whole is a valuable common good and is important for conducting an efficient common monetary policy. Experience shows that unsustainable public finances tend to trigger periods of high inflation. Indeed, a key criteria[1] for EMU participation are sufficiently low deficit and debt levels. At the same time, the common monetary policy may not be able to react to country specific shocks. Thus, national fiscal policy needs to be flexible enough to meet the increased responsibility for national stabilisation policy.[2]

According to the "subsidiarity principle", co-ordination at EU level should take place only when a certain target can not be met through national policy. While fiscal policy remains the responsibility of member states, there are arguments that favour a framework of common fiscal rules at EU level. Equal treatment requires that rules apply equitably to all member states, regardless of economic weight. For this reason, it is in the interest of all members to have a common framework that ensures that other members behave appropriately and that the risk of unbalanced situations is minimised. Overall, the arguments for a centralised framework stem either from concerns to internalize cross-country spillovers or from the protection of national interests (Beetsma (2001) and Buti & Giudice (2002)).

Spillovers in EMU may materialise either directly between fiscal authorities or indirectly through an impact on the common monetary policy. Direct spillovers occur when unduly expansionary/contractionary

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[1] A necessary condition for EMU membership is that four economic convergence criteria are fulfilled (Treaty article 121). The criteria, which relate to inflation, sustainability of the government financial position, exchange rate stability and long-term interest rates, are detailed in a Treaty protocol. The criterion for the sustainability of the government financial position is that the member state does not have an "excessive deficit" in the EDP (Article 104, see section 2 for a description of the rules).

[2] The increased role of national fiscal stabilisation policy in a monetary union was a key issue in the debate ahead of the Swedish EMU referendum 2003. The second government EMU report especially focused on this issue (see SOU 2002:16 and the Riksbank statement on the report).

budget positions feed into demand and trade flows. Such spillovers are not EMU specific but in a currency area they may be augmented because there is no bilateral exchange rate that can move to balance the situation. Also, an unbalanced budgetary position in one country may increase the cost of borrowing in that country, which in turn may affect the cost of borrowing in the whole area.

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However, the more fundamental arguments relate to the channels through which the common monetary policy operates. First, sustainable public finances are important for the functional independence of the ECB. As mentioned above, experience suggests that budgetary positions which are not sustainable in the long-term have often been solved by printing money and creating inflation. In the EU, however, central banks or other EU-governments are not allowed to bail out a government in crisis by buying government bonds, either directly or indirectly on the secondary market ("no bail-out clause", Treaty article 101). Even so, in the event of unsustainable levels of public debt, central banks may face pressure to arrange a bail-out through other channels, either ex-ante by abstaining from raising interest rates despite inflationary tensions or ex-post by allowing inflation to deflate real debt (Buti et al. (2003)).

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In addition, in EMU, national budgetary authorities may be more tempted to embark on unduly expansionary budget policies than they would be with a national currency. This is because the costs involved, in terms of adverse effects on interest and exchange rate markets, are reduced by the impact being spread all over the area. Thus, the financial markets are less able to act as a watchdog on individual members. If one member state "behaves badly" the euro area impact may be marginal but if a group of countries move in the same direction the impact could be larger.

Also, in a close political co-operation like the EU, there are "political spillovers". Turbulence in one country due to large fiscal imbalances auto-matically becomes the problem for everyone in that it will dominate the policy agenda and crowd out other issues.

External constraints in the form of fiscal rules can help to adapt the behaviour of budgetary authorities and restore the room to manoeuvre also for fiscal stabilisation policy.

The need for common principles is also motivated from national interest. When the Maastricht process was initiated in the early 1990s, almost every country had unbalanced budgetary positions with large deficits and high debt levels. Three "classical fiscal policy failures" can be held responsible for the situation (European Commission (2000)). First, high structural budget deficits led to constantly rising public debt levels. Second, the continuous increase in expenditure ratios led to a similar increase in tax ratios, especially on labour, with negative effects on employment. Third, fiscal policy was often pro-cyclical, expansionary in good times and restrictive in bad, thus exacerbating instead of smoothing

swings in GDP. Against this background, some external constraints in the form of fiscal rules can help to adapt the behaviour of budgetary authorities and restore the room to manoeuvre also for fiscal stabilisation policy.

The need for sound budgetary positions and reduced debt levels is even more pronounced in view of the budgetary costs from ageing populations. Recent calculations (EPC (2003)) indicate that, if no corrective action is taken, annual costs related to ageing (i.e. pensions, health care and long-term care) will increase by 3 to 7% of GDP by 2050. The increase in costs will be evident already by 2010 and will peak between 2010 and 2030. If this development proceeds unchecked, without efficient pension system reforms and higher labour market participation, there is a risk that budgetary positions will not be sustainable with negative implications for the prospects of safeguarding low and stable inflation. Thus, it is helpful to have external constraints that strengthen the incentives to tackle this challenge at an early stage while there is still time to act.

Considering the budgetary costs from ageing populations, there is a pronounced need for sound budgetary positions and reduced debt levels.

A brief overview of the rules and how they developed

A a rule-based framework for promoting budgetary discipline may build either on procedural rules for budget execution or on numerical constraints. Given the differences across countries, the more straightforward solution in the EU is common numerical rules. The issue then is how the long-term concerns about sustainability and good fiscal behaviour are to be translated into numerical rules that appropriately guide fiscal policy. As the key instrument for guiding fiscal policy is the annual budget, an annual budget deficit constraint coupled with a debt target was chosen (see below for a discussion of the qualities of the EU numerical rules).

The EMU framework was set up in the Maastricht Treaty that came into force in 1993. Article 104 outlines the "Excessive Deficit Procedure" (EDP). The EDP requires member states to avoid "excessive deficits". As mentioned above, not being in an "excessive deficit" position is a necessary condition for EMU membership. Two criteria were adopted for identifying an excessive deficit. First, the general government budget deficit should not exceed 3% of GDP. However, a deficit above 3% may be allowed in case the overrun is "exceptional and temporary" and the deficit remains close to 3%. Second, the general government gross debt ratio to GDP should not be above 60% of GDP but, if it is, it must be on a decreasing trend at a "satisfactory pace". These two reference values,

Two criteria were adopted for identifying an excessive deficit: the government budget balance must not be above 3% of GDP and the gross debt:GDP ratio should not be above 60%.

3% for the deficit and 60% for the debt, are the cornerstones of the EU budgetary framework.[3]

To promote comparability and equal treatment it was agreed to use a common economic accounting system, the ESA, for the compilation of budgetary data. At the time, most countries used disparate conventions in their national economic accounts and the coverage and standards in the public budget accounts also diverged a lot. Today, the ESA is law and all countries must produce full national accounts on the ESA basis.

The EDP also specifies the reporting requirements and the decisions the Commission and the Council should take if a country does not meet the requirements. Budgetary statistics (and plans for the current year) on deficits and debts must be reported to the Commission by member states twice a year (end February and end August). On the basis of these reports, the Council then assesses the situation.[4] If an excessive deficit is identified, the country receives a recommendation to take action and get back below 3%. At the end of the procedure, if no effective action has been taken in response to the recommendations, the Council may apply various sanctions to the country concerned. (Article 104.11, se also below on the SGP for more details). Sanctions can only apply to countries that are EMU members.

In connection with the start of Stage Three of EMU in 1999 there was concern that members would relax budgetary discipline once EMU membership had been secured. The formulation of EDP in the Treaty leaves room for discretion on whether or not to take action and there were fears that the difficult decisions would not be taken. Therefore, the EDP was supplemented with the Stability and Growth Pact (SGP).[5] The SGP's overall purpose is to make the EDP more automatic, thus forcing policy makers to take decisions and go through the steps in the procedure in a timely way if a member state fails to abide by the rules and take the stipulated correctives. To this end, the SGP reinforces the EDP by introducing additional preventive and dissuasive elements.

A key preventive element in the SGP is the requirement to achieve a medium term budgetary position that is "close to balance or in surplus". The idea is to build in a safety margin to the 3% ceiling so as to allow for

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[3]   The relevant deficit is net borrowing. As the ESA did not have a definition of general government debt, this was defined separately but based on ESA classifications of assets. The debt ratio is gross, implying that only government liabilities held within government are netted out. General government comprises central government, state government, local government and the social security sector. In particular, public corporations are not included.

[4]   It should be noted that while the statistics are reported by member states, it is the Commission that is ultimately responsible for providing the Council with EDP statistics. The Commission is therefore entitled to revise a figure reported by a member state if this is deemed to be necessary.

[5]   The Stability and Growth Pact consists of two Council Regulations (CR) and a European Council resolution: CR 1466/97 introduces the preventive elements of the SGP; CR 1467/97 speeds up and clarifies the implementation of the EDP; the resolution gives the political and behavioural commitments from Member States, the Commission and the Council.

the budget to play its stabilisation role without going into excessive deficit. In this way it can be argued that budget stringency over the cycle permits flexibility within the cycle.

To illustrate how positions "close to balance or in surplus" are to be achieved and maintained and provide a basis for forward-looking surveillance, euro area members must annually present a stability programme (non-euro area members present similar convergence programmes) outlining medium term budgetary plans. The programmes are assessed by the Commission and the Council. The Council issues an opinion on the programme giving its conclusions.

The preventive provisions also include an "early warning" mechanism. The Commission should notify when divergence from programme targets implies that a risk of an excessive deficit exists and make a recommendation to the Council to recommend that the country concerned acts to avoid an excessive deficit. The draft for a new EU constitution envisages that the Commission shall be able to issue "early warnings" directly to the country concerned without going through the Council. However, the responsibility for the policy advice on what action to take will still rest with the Council.

The dissuasive component of the SGP consists of speeding up the EDP, defining the exceptional circumstances when the deficit may exceed 3% and specifying sanctions. Speeding up is done by setting maximum deadlines for the steps in the EDP. In the standard case, in March of year t a member state reports statistics on the outcome for year $t-1$. If an excessive deficit is reported, it should first be identified[6] and a recommendation for action given together with a deadline for its correction (article 104.7). If the member state takes no action (article 104.8) and persists in failing to do so, a further notice for action is given by the Council (article 104.9). As for the excessive deficit, it should normally be corrected the year after its identification. So, if in 2004 statistics lead to a decision that an excessive deficit existed in 2003, this should be corrected by 2005. The escape clause, "exceptional circumstances", is reserved for very poor outcomes. A deficit above 3% is allowed only if growth is negative and below –2% on an annual basis. The deficit can then only be above 3% in that particular year. However, negative growth below –0.75% entitles the country to raise the issue for discussion.[7]

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[6] Article 104.3–104.6. The identification of an excessive deficit takes place against the deficit and debt reference values as described above. That is, whether the deficit is above 3%, if it is, whether it is exceptional and temporary and if the debt ratio is below or approaching the 60% level at a satisfactory pace. In addition, the assessment shall also take government investment into account and the medium term budgetary position.

[7] The EDP allows for the 3% limit to be exceeded in "exceptional circumstances". CR 1467/97 defines "exceptional" as growth below –2% of GDP but it may take into account further evidence provided by the country concerned. In the political declaration on the SGP, Member States agree not to ask the Council to look at further evidence unless growth is below –0.75% of GDP.

If an EMU member is in an excessive deficit for three years in a row then, as a rule, there should be a sanction (article 104.11). The initial sanction would be an interest-free deposit. The financial cost at this stage is the loss of interest on the deposit. The deposit has a fixed component of 0.2% of GDP plus a variable component equal to 1/10th of the distance to the 3% threshold up to a maximum of 0.5% of GDP. If additional deposits are required only the variable component will apply. Hence, if the deficit is 4% of GDP, the deposit is 0.3% of GDP (0.2+1/10*(4-3)= 0.3). If the excessive deficit is not corrected within two years after the deposit has been made then, as a rule, it is converted into a fine. Note that in the standard case there is plenty of time to address the situation before a deposit becomes a fine. If a country first shows an excessive deficit in 2004 and then also in 2005 and 2006, a deposit would be required in early 2007 and would be converted into a fine in 2009 if the excessive deficit has not been corrected by then. Fines are therefore the end point in a long process primarily aimed at countries that do not take measures or when measures taken are not effective. That is also the argument why the sanctions need to be substantial to have effect.

These basic rules have been supplemented with agreements on the specification and measurement of key variables and assessment tools. For example, statistical authorities are working continuously to improve the ESA definitions on deficit and debt and make them more complete. This is necessary when it shows that countries use different conventions to record similar items or when the ESA does not give clear guidance on how to record new types of budgetary operations. Agreements have also been made on how to measure what is "close to balance or in surplus" over the cycle (I will discuss this in some more detail below). A lot of work has gone into developing a common method for adjusting budget deficits for the impact of the cycle ("cyclically-adjusted budget balances" or CABs). CABs are used to assess whether or not budget plans conform to the "close-to-balance" requirement. The key problem is that neither the business cycle nor its budgetary impact are directly observable and therefore have to be estimated. The numerous technical problems involved in calculating CABs are discussed by Boije in a separate article in this issue.

The events: an overview of economic developments and procedural steps

Budgetary performance during the lifetime of the EU framework has been mixed, across both time and countries. In the period leading up to the assessment of EMU qualifications, most countries made impressive progress towards the budgetary convergence criteria. In 1993, budget

deficits in EU15 averaged 5.6% of GDP and the debt level 67 % of GDP (Table 1). In 1996, one year before the membership assessment, a majority of the countries still had deficits clearly above the 3% level. But in the following year, which was the basis for deciding EMU membership, the average deficit was down to 2.6%. However, the debt level had moved up to 75% of GDP[8] clearly higher than in 1993. Nevertheless, it had stopped rising and was predicted to decline, which overall was considered to be sufficient to fulfil the convergence criteria also in those countries with debt levels above 60% of GDP. Taking growth conditions and various one-off budget operations into account would not change the overall impression that important consolidation measures were indeed taken.

In the first few years of EMU, the main policy objective was to generate a safety margin to the 3% threshold and reach the SGP's "close to balance requirement". However, when the incentive to acquire EMU membership disappeared, the pace of underlying fiscal consolidation lost momentum. Even so, budget balances continued to improve automatically as growth accelerated above potential rates and the debt interest burden was reduced. In 2000, the average budget position in the EU was a surplus of 0.9% of GDP. However, this included sizeable one-off receipts from the sale of UMTS licences in several countries; netting out UMTS resulted in a deficit of 0.3% of GDP. Eight countries showed budget surpluses. Only Greece, France, Italy and Portugal still had deficits close to or above 1.5% of GDP.

However, the improvement of actual deficits concealed the fact that underlying budgetary positions did not improve as much. Effectively, budget targets set in actual terms were surpassed without difficulty and so as not to be bound by the targets, some countries were arguably over-cautious in their stability programmes. A debate started on how to make the framework binding also in good times. Some commentators, including the Commission, argued that it would be better to pay more attention to cyclically-adjusted budget figures. Nevertheless, maintaining pressure was difficult when actual budget deficits were some way from the 3%-threshold; many countries had been running tight policies for a number of years and were now feeling some "consolidation fatigue". The feeling in many quarters was that the time had come to "reap the benefits" of the many years of building EMU. More attention was paid to increasing the "quality" of public budgets as the room for manoeuvre was seemingly regained. Some countries started to implement useful but costly tax

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[8]   These figures are on an ESA95 basis. In 1998, at the time of the convergence assessment on 1997 outcomes, the relevant accounting framework was the previous version, ESA79. These figures are therefore not entirely comparable with those used in the assessment in 1998. It can be noted that today the 1997 deficit figures for Spain and Portugal are above 3%, and for France at 3%.

General government	Budget balance							Gross debt		
	1993*	1997	1999	2000	2001	2002	2003	1993	1997	2003
Belgium	−7.2	−2.0	−0.4	0.2	0.6	0.1	0.2	138	125	104
Germany	−3.5	−2.7	−1.5	1.3	−2.8	−3.5	−4.2	47	61	64
Greece	−13.6	−4.0	−1.8	−1.9	−1.5	−1.2	−1.7	110	108	101
Spain	−6.7	−3.2	−1.2	−0.8	−0.3	0.1	0.0	59	67	51
France	−5.6	−3.0	−1.8	−1.4	−1.5	−3.1	−4.2	45	59	63
Ireland	−2.3	1.4	2.3	4.4	0.9	−0.2	−0.9	96	65	33
Italy	−9.4	−2.7	−1.7	−0.6	−2.6	−2.3	−2.6	118	120	106
Luxembourg	−1.5	3.2	3.5	6.4	6.2	2.4	−0.6	6	6	5
Netherlands	−3.1	−1.1	0.7	2.2	0.0	−1.6	−2.6	79	70	55
Austria	−4.2	−2.0	−2.3	−1.5	0.3	−0.2	−1.0	62	65	66
Portugal	−5.9	−3.6	−2.8	−2.8	−4.2	−2.7	−2.9	59	59	58
Finland	−7.9	−1.3	2.0	7.1	5.2	4.2	2.4	56	54	45
Euro area	*−5.6*	*−2.6*	*−1.3*	*0.2*	*−1.6*	*−2.2*	*−2.8*	*67*	*76*	*70*
Denmark	−2.8	0.4	3.3	2.6	3.1	1.9	0.9	78	61	43
Sweden	−11.5	−1.7	1.5	3.4	4.5	1.3	0.2	71	70	52
United Kingdom	−7.7	−2.2	1.1	3.9	0.7	−1.5	−2.8	45	51	40
EU	*−6.0*	*−2.5*	*−0.7*	*1.0*	*−0.9*	*−1.9*	*−2.7*	*65*	*71*	*64*

Source: European Commission.

* On ESA 79 basis.

reforms (for example Germany) that at best were only partly funded and which turned out to have a permanent negative impact on the budget.

To be fair when assessing the lack of consolidation during these years it should be taken into account that the bright economic outlook in 2000 was a general perception and not only a biased interpretation by the member states concerned. For example, in the 2001 outlook in the Commission's Public Finance Report of 2000 (presented in spring 2000), potential growth rates in the euro area were estimated to be around 2.5% of GDP and growth in 2001 was forecast at 3.1%. We now know that growth amounted to only 1.5% and current potential growth estimates are closer to 2%.

The lack of pressure for continued consolidation and proper funding of reforms during the "good years" underlies many of the problems that have emerged in recent years.

With hindsight, the lack of pressure for continued consolidation and proper funding of reforms during the "good years" underlies many of the problems that have emerged in recent years. Still, a distinction should be made between countries. There is a clear difference between smaller and the larger member states, making up the bulk of the EU economy. In larger member states consolidation efforts have been less ambitious. Figure 1 shows the contributions to the change in the budget balance over the 1999-2003 period stemming from: 1) the reduction in the interest burden, 2) the estimated impact of the cycle and 3) other non-cyclical factors ("structural" in the figure). In all member states, budget balances have benefited from the reduction in the debt interest burden explained

Figure 1. Contributions to change in budget balance over 1999-2003 period
Per cent of GDP
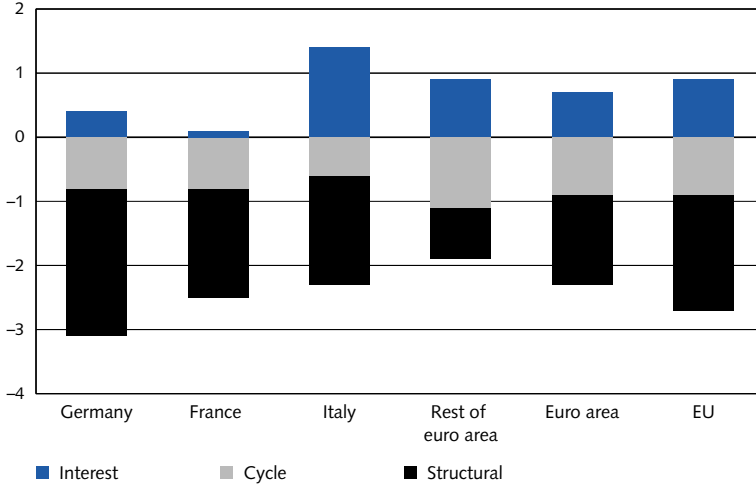
Sources: Own calculations and the European Commission.

by the impact from lower interest rates (in particular high debt countries like Italy). On the other hand, the downturn has implied that cyclical tax revenues have decreased and unemployment expenditures increased. Structural developments have also contributed to increase deficits. Such factors may be expansive fiscal policies and underlying trends on the government expenditure and revenue side. The negative budget impact from structural factors is substantially higher in the large countries than in the rest of the euro area thus indicating a lack of consolidation efforts in these countries.

As said above, growth slowed markedly in the second half of 2001 and since then the downturn has continued. As a result, budgetary positions have deteriorated and the weakness of underlying budget positions has started to surface. A general observation is that many member states, instead of resuming consolidation, have gambled on a relatively quick turnaround in the business cycle that would save the day. This has not happened and in several countries with an inadequate safety margin, deficits soon approached the 3% limit again. In contrast to earlier years, programme targets have been continually undershot in connection with growth assumptions that have turned out to be optimistic while policies have often continued to be expansive (maybe in particular in 2002). A cynic might observe that in their assessment of budget outcomes, member states have been more prone to take the cycle into account in the downturn than they were in the previous upturn.

But while the gradual accumulative loosening of fiscal positions since

Programme targets have been continually undershot in connection with growth assumptions that have turned out to be optimistic while policies have often continued to be expansive.

the start of the SGP should not be glossed over, it can be noted that the euro area fiscal stance (measured as the annual change in the cyclically-adjusted primary balance, see Boije) has been more or less neutral (±0.5%) over the period. Thus, the pact has been successful in the sense that fiscal policy in the euro area has not been overly unbalanced and burdened monetary policy.

Signs of procedural alarm started to show early in 2002 as the first steps were taken to implement the SGP. Early that year the Commission proposed that the Council should issue an "early warning" to Germany and Portugal that their deficits were quickly approaching the 3% limit. The Council, however, decided not to follow the Commission's suggestion. There were several reasons for this, one being that this was the first instance of such a warning and the political signal would be strong. In particular, elections were due in Germany and the government there sent clear signals that a warning would not be welcome, while fellow ministers within the Council were reluctant to cause a disturbance. Moreover, it is probably fair to say that many smaller member states believed they would benefit from not warning Germany because it would then be more difficult to give them a warning should such a situation arise. However, by autumn 2002 it was already clear that both Germany and Portugal would breach the 3% deficit limit and the situation in France was deteriorating rapidly.

After this, things moved quickly in 2003 and given the attention they have received, it may be worth describing the main procedural events. An excessive deficit was established for Portugal in November 2002 and for Germany in January 2003. France received an "early warning" in January 2003 and an excessive deficit was established in June. All three countries were told by the Council to take action to get the deficit below the 3% threshold, in 2003 for Portugal and in 2004 for Germany and France. Germany presented measures worth some 1% of GDP in spring 2003. Towards the autumn of 2003, however, it was clear that the German efforts had not had the desired effect on account of some budgetary slippage and a further deterioration of growth conditions. Moreover, the 2004 budgets, presented during autumn, showed that Germany and France would fail to get below the 3% limit in 2004 as required. At this stage the Commission asked the Council to issue a new recommendation to the two countries, requesting further action on top of that included in the 2004 budgets while at the same time postponing the deadline for getting below 3% one year, to 2005, in view of the weak economic outlook.

However, at the meeting on 25 November the Council decided not to adopt formal recommendations and instead put the procedure on hold.

The decision was not unanimous. Most of the smaller member states (incidentally usually fulfilling the "close to balance" requirement) voted in favour of the Commission's recommendation but the larger countries (France, Germany, Italy and the UK) formed a blocking minority. In contrast to the proposed "early warning" to Germany and Portugal in early 2002, it may be speculated that on this occasion especially the smaller member states appreciated the Pact as an instrument for exerting pressure on the larger member states.

Instead of making a recommendation, the Council adopted conclusions to the effect that Germany and France should take some action and get below 3% in 2005; this broadly corresponded to what the Commission had requested. The crucial point is procedural. Had the Council adopted the Commission's recommendation and France and Germany had failed to comply, the next step would have been sanctions in the form of a deposit (which may be converted into a fine after two years if the deficit remains excessive). In that the formal procedure was dropped in favour of an intergovernmental agreement, the increased pressure inherent in moving closer to sanctions did not materialise. The Commission has asked the Court of Justice to bring clarity to the procedure by assessing whether the Council had the right to take this decision in this format.

Turning to future prospects, updated stability and convergence programmes were presented by member states late in 2003. The budgetary outlook is not that bright and many member states may approach or remain in the risk zone. According to the programmes, the average euro area deficit in 2004 will be about 2.4% of GDP. France and Germany target deficits above 3% of GDP and Italy, the Netherlands, Portugal and the UK above 2%. For 2005, all countries have targets below 3%. Only the Nordic countries project surpluses. In the subsequent years a gradual improvement is foreseen towards deficits of 1% on average in the euro area. However, growth assumptions are relatively optimistic, above potential growth rates, implying a risk of negative surprises. Thus, tensions around the deficit ceiling will probably persist for a couple of years unless there is a strong economic recovery.

Assessing the Pact's functional performance: the design and specification of rules and figures and mechanisms for implementation

A credible and effective rule-based framework is characterised by well-designed rules and strong enforcement mechanisms. Against this background, the qualities of the EU rule-based framework have been assessed

and discussed in several contributions.[9] Below are some comments on: (i) the design of the numerical rules; (ii) aspects of the technical specification of statistics and rules, and (iii) implementation procedures and enforcement mechanisms.

THE DESIGN OF THE EU NUMERICAL BUDGET RULES

A credible numerical rule has a number of desirable features (Kopits (2001), European Commission (2001, 2003)). First, a good rule should be adequate in the sense that it contributes to the desired policy goals while being consistent with other policy objectives. Second, it should be operationally simple, that is, easily understood, well defined, transparent and enforceable. Third, it should be flexible so that it is sufficiently robust to apply to changing economic circumstances. At the same time there are trade-offs. Simplicity may come at the expense of flexibility. A high degree of adequacy may require relative complexity at the expense of simplicity. Also, a high degree of flexibility may make a rule less enforceable. These trade-offs and the weight assigned to different features are often at the heart of the debate. Unfortunately, no rule is perfect and a choice has to be made.

A recognised strength of the EU numerical rules is their relative simplicity.

A recognised strength of the EU numerical rules is their relative simplicity. The deficit and debt rules are straightforward and easy to communicate to the public. As concepts, deficit and debt are clearly defined in the ESA. The close-to-balance rule over the cycle is more difficult to define but nevertheless easy to understand and communicate conceptually.

The debate has focused more on the rules' degree of adequacy and flexibility.

The debate has focused more on the rules' degree of adequacy and flexibility. On adequacy it is often pointed out that the 3 and 60% reference values are ad hoc and lack a scientific foundation.[10] Nevertheless, the rules are arguably adequate in the sense that the combination of a deficit ceiling, a debt target and the close-to-balance objective promotes budgetary prudence and reduces the risk of unsustainable budget positions.

The rules may be too lenient and short-term and do not efficiently address long-term sustainability.

Criticisms follow two lines. On the one hand it can be argued that the rules are too harsh. If a position close to balance over the cycle is upheld, then in the long-term the rules imply that debt ratios will converge to zero, which seems overambitious.[11] On the other hand, the actual deficit and the definition of debt do not capture the cost pressures

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9   Notably, in November 2002, the Commission presented a Communication on this topic. Other contributions, to list a few, are Buti et al. (2003), EEAG (2003), and Fatas et al. (2003).

10 It has been argued that the values were chosen because at the time of the Maastricht treaty these figures represented the current average deficit and debt ratios. Another justification has been that the deficit and debt values are internally consistent in that with 3% deficits, 2% inflation and 3% real trend growth, the debt ratio will converge to 60% (0,6/(1+0.02+0.03)+0,03%=0,6).

11 If the deficit is balanced over the cycle, it will be zero on average, implying that the ratio of debt to GDP will converge to zero as the denominator GDP grows.

associated with ageing. The expected future increases in pensions and health care are not yet reflected in today's budget balance. It is rather the case that today's budget balance benefits, in that most pension systems still show a surplus.[12] Moreover, the definition of debt does not include the contingent liabilities inherent in future pension commitments. In this way the rules may be too lenient and short-term and do not efficiently address long-term sustainability.

Another criticism has been that the deficit rule does not allow productive investments to be treated differently from government consumption and that this represents a negative incentive for government investments (as it often is the easiest to restrict in the short term from a political perspective)[13], running counter to the general ambition to increase investments.[14] It is suggested that a budget balance rule net of capital investment could be used instead (the "golden rule"[15]). The counterargument is that, given the need to reduce debt, investment is better financed by adjusting expenditure priorities below the deficit limits rather than on top. A technical problem with treating investment separately in the rule is that the national accounts definition of investments relates to physical investment (roads, buildings etc.), which is too narrow a concept for policy purposes (consider, for example, investment in human capital). A numerical rule on this basis would therefore give biased incentives across classes of investment.

Arguments about the flexibility of the rules also differ. The deficit ceiling is criticised for being fixed and set in nominal terms, so that it does not vary with the cycle. A country with a budget problem may therefore have to take pro-cyclical measures in bad times to stay below the ceiling. However, this argument is limited since the close-to-balance requirement, if achieved, should allow the budget balance to fluctuate freely over the cycle without exceeding the limit.[16] In this way it may be argued that the

The deficit ceiling is criticised for being fixed and set in nominal terms, so that it does not vary with the cycle.

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[12] For example, in Sweden the general government budget balance is now in surplus, despite deficits at general and local government level, because the surpluses in the government pension systems amount to 2% of GDP.

[13] Support comes from the fact that in the EU the ratio of general government investment to GDP has shown a declining trend since the EU framework was set up. However, the driving forces behind the decline in government physical investment are very difficult to assess because they have to be seen in the context of overall investment in the economy, the need for additional government physical investments and new financing options (for example public-private partnerships). Even so, there is some evidence that in the run-up to EMU, some countries consolidated their budget positions through reductions in investments.

[14] Increased investments are part of the Lisbon agenda for higher growth in the EU. The argument may be stronger in relation to the new member states, where – given the process of catching-up – the need for government investment is relatively greater than in the current member states.

[15] The "golden rule" is that consumption should be financed through taxes paid by the current generation, while investments can be debt-financed by future generations as they consume the benefits from the investments.

[16] If GDP growth is 1 percentage point below the potential rate, on average in the EU the estimated impact on the budget balance is 0.5% of GDP. Thus, with a 3% safety margin to the threshold in normal circumstances, GDP growth can be 6 percentage points below the potential rate before the ceiling will be passed (6*0.5=3). An output gap of 6% implies a very severe downturn.

rules allow for stringency over the cycle but flexibility within the cycle. But, of course, there is a time inconsistency problem here in that, to avoid pro-cyclical policies in bad times, the close-to-balance requirement must be reached in advance when times are good. This indicates that to be consistent, the rules may benefit from stronger incentives to behave well in good times, something that will be further discussed below.

Another aspect of flexibility is "escape clauses". The EU framework is very tight; the deficit may exceed 3% only if growth is markedly negative ("exceptional circumstances"). Note that growth during the downturn in recent years has been positive and not even close to being "exceptional".[17] Neither can the rules be easily overridden or changed as they have a legal base. Thus, the escape clauses are very tight, implying that the rules are operating under most circumstances. It may even be asked whether the escape clauses are too tight to be credible? For example, it may appear to be more logical to relate what is an exceptional situation to the output gap, which measures the overall position of the economy in the cycle. Negative growth in a situation with a positive output gap is a different matter from negative growth when the gap is also negative. Also, several years of weak growth can be more severe than one year of very poor growth. Again, 1% positive growth in an economy with a 5% growth potential may be worse than slightly negative growth in a country with a low growth potential. Relating to the output gap would also be consistent with the general approach of analysing the public finances more closely in relation to the cyclical position. At the same time of course, there is the measurement problem that the business cycle is not observable.

Another debated issue is that the EU deficit and debt ceilings apply uniformly to all member states, regardless of their general economic situation. The argument for this is that all member states face similar challenges as regards the need for further consolidation and reduced debt levels. Against this it can be said that a country with a very low debt level or only minor ageing problems should not be subject to the same limitations as a country with high debt and major pension problems. Applied uniformly to countries in similar situations, more flexible rules could cope better with different economic circumstances. This will be discussed more in detail in the last section. With 25 member states this consideration may be even more important.

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[17] However, growth in Portugal in 2003 may have been close to –0.75, allowing Portugal the right to argue that the 2003 deficit outcome, if above 3%, was exceptional. In the 2004 stability programme, Portugal gives a figure of –2.9% for 2003. An official outcome figure will be reported in the EDP at end February.

Efficient and credible numerical rules should be clearly defined and enforceable. With numerical rules, the procedure is driven by numerical compliance. Since the figures trigger semi-automatic decisions taken with tight deadlines, there are incentives for "creative accounting". Creative accounting implies that in order to reach a target, a country resorts to a budget operation on its statistical rather than its economic merits. There is also an asymmetry of information across countries. Each country has very detailed knowledge about its own economy but less about others, even though the Commission provides support with analysis and surveillance. In this setting, a common technical ground on which decisions can be taken is important also for equal treatment. Thus, in the SGP the technical specifications of figures and rules have become particularly important.

Efficient and credible numerical rules should be clearly defined and enforceable.

Work is being done continuously to streamline and improve the quality of deficit and debt figures.[18] Eurostat, the statistical arm of the Commission, is the responsible authority. Member states' statistical offices and central banks contribute through the many committees and task forces that have been set up for this purpose alone. Member states' figures are continuously assessed in connection with each EDP report. There is also a cycle of country missions whereby the Commission calls on member states to discuss the EDP statistics. Moreover, member states may consult Eurostat if there is uncertainty about how to record a specific transaction according to the ESA. If recording issues have EU-wide implications, task forces are set up to address them.

Work is being done continuously to streamline and improve the quality of deficit and debt figures.

Despite progress, efforts are still required to improve the statistical material for EDP decisions. This applies in particular to the end-February reporting, which is the first reporting of outcome figures for the previous year and thus the key phase of the EDP procedure. However, in February statistical offices often do not have a full data set (especially not on local government developments), a considerable proportion of the statistics may be estimates and it is not uncommon that the figures have to be revised substantially in the September reporting. Another issue is the provision of methodological guidance from Eurostat. It is important that this is done quickly in order to avoid uncertainty. However, decisions involve consultation procedures with member states and the time lag before they are made has often been long. Still, measures have been taken to speed this procedure up and it should now take not more than six weeks.[19]

Efforts are still required to improve the statistical material for EDP decisions.

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[18] For an overview of the statistical work done in the EDP context in recent years and a discussion of challenges, see European Commission (2003).

[19] On 18 February 2003, the Ecofin Council agreed a "Code of best practice" for the compilation and reporting of EDP data (COM (2002) 670 final).

The conceptual ESA recording questions tend to concern three dimensions: the delimitation of general government, the financial/non-financial nature of a transaction and the time of recording a transaction. In national accounts a distinction is made between the government acting in its role as public administrator and as a corporation. Public corporations are accordingly classified in the corporate sector and do not form a part of general government. Classification questions have arisen as regards special government entities set up to manage or sell government assets (for example buildings or the privatisation of public corporations). Also, there are many transactions and flows between government and public corporations where it is not always clear whether they are financial flows (with no impact on the deficit) or transfers (with an impact on the deficit). For example, if the government makes a large payment to a public corporation presented as a purchase of shares, it may still not be clear whether this should be recorded as a financial transaction or a transfer. Normally, the purchase of shares is a financial investment but if the operation is merely a way to cover for losses it is another issue. Conversely, if a government corporation makes a large payment to the government, is this a dividend (non-financial) or a withdrawal of equity (financial)? It depends on what can be regarded as a normal dividend. Similarly, it may be unclear whether a government payment to a private corporation presented as a loan is in reality a grant. It depends on the terms. As a general principle, the key issue to analyse is who takes the real economic risk, that is, whether or not the government payment/receipt can be defended on business grounds.

A problematic issue has been the practical application of the accruals principle, which states that transactions are recorded at the time of the underlying economic event, not at the time of payment. For example, if the government makes a large investment that extends over five years, the recording in the accounts should be spread over the five years regardless of whether actual payments are made up-front, after or during the period. Without payments data, however, it can be difficult to know what amounts to record. This increases uncertainty and the likelihood of large statistical revisions. A pertinent example is corporate taxes, which are often collected the year after the income year to which they refer and are liable to fluctuate considerably from year to year.

Another technical issue has been how to make operational the medium-term target of being "close to balance or in surplus", as required in the SGP. The issue involves two questions. First, how to interpret what is meant by the medium term. Second, how to assess what can be considered "close". As regards the first issue, the approach used is to look at what the annual budget balance is if the medium term budgetary impact

of the business cycle is neutralised. An alternative approach could be to simply take the average budget balance over the cycle. An important difference between the two approaches is that with the first approach it is possible to make up for current deficits by aiming for higher surpluses in the future, so that consolidation can be continuously rolled over. Alternatively, high surpluses in the past can be used to cover for large deficits today.[20]

On the second question, as said earlier, the logic behind this requirement is to have a sufficient safety margin to the 3% threshold. The issue has been how large such a safety margin needs to be to be considered "close". It has been estimated that a safety margin around 2–3% is sufficient to allow the automatic stabilisers to operate freely even in rather severe downturns and make some accommodation for budget surprises (see footnote 16 and European Commission (2000), (2001)). The current understanding is that the target should be understood as balanced budget in cyclically-adjusted terms (=0) but to allow for measurement uncertainty a medium-term balance of –0.5% is regarded as sufficient. Of course, a country may consider that a more ambitious medium term target is more appropriate taking into account the expected budgetary impact of ageing and preferences for additional room of manoeuvre for fiscal stabilisation policy (Eckefeldt & Fischer (2002)). For example, with a reference to such arguments the Swedish government target a 2% surplus over the cycle.

Lastly, one of the most debated issues has been the best way of adjusting the budget balance for the cycle, that is, how to calculate the cyclically-adjusted budget (CAB) position, a key indicator in the SGP. As already said, neither the business cycle nor its budget impact is directly observable and needs to be estimated. In the EU, for reasons of equal treatment, the aim has been to develop a single method that is applicable to all countries and can be used as the basis for the common assessment. Consequently, the agreed method should not be unduly complicated, neither can it take country-specific elements into account.[21] At the same time, most countries have their own methods and CAB figures are also provided by other international institutions, such as the OECD and the IMF. This leaves room to debate results, especially when different methods give different policy conclusions. The unavoidable dilemma is that

Lastly, one of the most debated issues has been the best way of adjusting the budget balance for the cycle.

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[20] This distinction is pertinent in relation to the assessment of the national 2% surplus target over the cycle applied by the Swedish government. In the 2004 budget, the government assesses the 2% target by taking the average surplus over the period 2000–06. This gives a surplus of 1.7% (given the large surpluses in 2000/2001), which is deemed to be in compliance. However, the cyclically-adjusted budget balance in 2004 is only around 1%, quite a way from 2%.

[21] To estimate the cyclical budget component, the output gap is multiplied by a set of revenue and expenditure elasticities to the output gap. The production function has been agreed between member states and the Commission, while the elasticities have been calculated by the OECD (see European Commission (2002c)).

while no CAB figure can be more than indicative, giving a broad picture of trends over time, the application of the numerical rules requires certainty about the precise annual figures in order to assess compliance with numerical targets. Development work on the CAB estimation methods continues but there is no way round this fundamental dilemma. Possibly, rather than putting more effort into making marginal technical improvements to a single indicator that will never be more than a rough pointer, it may be preferable to develop a common analytical framework for how to assess underlying budgetary trends, taking many indicators into account.

PROCEDURES AND MECHANISMS FOR IMPLEMENTATION
AND SURVEILLANCE

Good implementation requires efficient surveillance, follow-up procedures and enforcement mechanisms.

One of the framework's key deficiencies has been the poor implementation record. Good implementation requires efficient surveillance, follow-up procedures and enforcement mechanisms. As outlined above, the main procedures for surveillance and follow-up are the steps in the EDP procedure, the handling of the cycle of stability and convergence programmes and the early warning mechanism in the SGP. The main enforcement mechanism is peer pressure coupled with sanctions. During the first years with the Pact, the practical application of the procedures has been developed step by step in a process of learning by doing.

From a procedural perspective the EDP has been working; reports and decisions have been taken within the time-limits specified in the legislation.

As regards the EDP, the full procedure has not yet been applied. In the years of the convergence process leading up to EMU, most countries were in an excessive deficit position but then the sanctions part of the EDP was not in force. The cases against Portugal, France and Germany have gone furthest in the procedure, stopping one step before sanctions (as decided by the Council on November 25). Leaving this experience aside, it must be said that from a procedural perspective the EDP has been working; reports and decisions have been taken within the time-limits specified in the legislation. Nevertheless, how to go forward on each step has not always been clear and there has been room for discussions at legal level. Nevertheless, today there is some "case law" to refer to. Further clarification will be provided by the forthcoming ruling of the Court of Justice.

Concerning the reporting of data in the EDP, a major issue in the years leading up to 1998 was the quality and timeliness of the data. Today, most countries have no difficulty in delivering the required data on time and delays, if any, are small. Even so, at times revisions are still

important.[22] However, reporting is still an issue as regards the new member states that will formally report data for the first time in February 2004. The "early warning" mechanism has not worked well and could be improved: to be effective it needs to be more forward looking and "daring".

One problem with the EDP procedure may have been that, because it operates on outcomes rather than forecasts, the formal procedure starts too late. The SGP "early warning" mechanisms have a role to play here. In principle, a country should be given an early warning if a significant divergence from plans implies a risk of an excessive deficit. The Commission's initiative to propose that Portugal and Germany should receive an early warning in early 2002 failed since the Council did not act on the proposal. Later, France has been given an early warning. Generally, the early warning procedure has been initiated too late, relating more to outcomes than plans, and not early enough to have an impact on the budget. In this sense, the "early warning" mechanism has not worked perfectly and could be improved; in particular it must become more forward looking and "daring" to be effective.

The cycle with stability and convergence programmes is the main surveillance procedure and is gradually becoming more streamlined (see Fischer & Giudice (2001)). In July 2001, the Council agreed on a new "code of conduct" to improve the content and comparability of the programmes. Member states submit their programmes in a cluster towards the end of the year and the content has a common structure and coverage. The programmes should describe medium-term budget plans, give information on the overall strategy, specify measures and structural reforms and deal with the long-term implications of ageing. With reference to equal treatment, the Council produces conclusions on all programmes (though it is not required to do so). Programmes are public, as are the Council's conclusions and now also the Commission's assessment. However, the arrangement means that the Council and Commission have to deal with 15 programmes (soon to be 25) at basically the same point in time, which is a challenge if the exercise is to remain in depth.

The main enforcement mechanisms are peer pressure and the application of sanctions. Peer pressure presupposes that member states are willing to accept it and exert it responsibly with the common good in mind. The history of the Pact shows that peer pressure has not been used

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[22] A noteworthy example relates to the 2001 deficit in Portugal. In February 2002 Portugal reported a deficit of 2,2% of GDP for 2001. In July the same year, after a revision of the figures (made by a task-force led by Bank of Portugal), the Portuguese authorities revised the figure upwards to 4,1% of GDP, 1,9% higher! The figure was confirmed in the September EDP reporting. Most of the revision was due to a new way to record tax receipts (i.e. recorded taxes must not be higher than collected taxes). In November 2002, the Council decided that an excessive deficit existed in Portugal.

effectively to protect the framework. The Council has not exerted enough pressure in good times and have not been able to take difficult decisions that went against the larger member states in bad times. Clearly, the 25 November decision weakened the credibility of peer pressure as an enforcement mechanism and questioned whether financial sanctions are ever to be applied. With this decision as a guide and knowing that equal treatment is crucial, it is difficult to see how the situation can be rectified in the short term as the Council may have lost the "benefit of the doubt" to external observers. In time, with good behaviour and firm action when necessary, credibility can be restored.

A suggestion has been to introduce an external body to decide sanctions, for example, the Court of Justice.

A possible way to address the lack of credibility is to transfer the power to assess compliance with the rules and decide sanctions from the Council to a neutral third party. This may contribute to solve the incentive problem that arises because member states both decide the rules, form budget plans and, through the Council, assess these plans and decide on compliance and sanctions. The third party could for example be the Court of Justice (see EEAG (2003)). Alternatively, an enhanced role could be assigned to the Commission or to some "council of independent experts" which also have been suggested. An argument for such a separation between politics and technical implementation of fiscal policy is that this has already successfully taken place with monetary policy, so it could also be done to areas of fiscal policy. A counterargument however is that unlike monetary policy, where a single instrument (the interest rate) is assigned to achieve a single target (price stability), fiscal policy measures are usually more complex with have many different simultaneous objectives that need to be reconciled in a political process. Overall, the political acceptance of such a transfer of power appears low at the moment and the democratic validity therefore remains questionable. Even so, there is an ongoing debate on whether and how, in particular fiscal instruments for stabilisation policy, can be separated from other fiscal measures and assigned to a "technocratic" rule[23].

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[23] Such a separation was elaborated on in the Swedish government report on stabilisation policy in EMU (SOU 2002:16). A further discussion can also be found in Sveriges Riksbank's views on the report. It is for example suggested that the VAT rate could vary as a stabilisation tool or alternatively the tax on capital income (the latter would change the real interest rate after tax similarly to a change in nominal interest rates).

What issues are likely to stand in focus in a debate on changes to the Pact?

On the basis of the deliberations above, some areas can be identified that are likely to be in focus in an upcoming discussion on reforms to the EU budgetary framework.

A first priority may be how to strengthen the link between the rules and the assessment of long-term sustainability. The degree to which sustainability is achieved can be more directly reflected in the budgetary restrictions implied by the rules. An obvious possibility would be to directly link the deficit ceiling to the debt level so that an overachievement of the debt target implies a less restrictive deficit ceiling. Another possibility would be to more actively use the excessive deficit procedure when the debt ratio is not decreasing at a "satisfactory pace" (even if the deficit is below the ceiling). Of course, this requires a more elaborated definition of what a "satisfactory pace" actually is, especially for high debt countries. Indeed, a perceived problem so far has been that the rules have not put enough pressure on high-debt countries to reduce debt or on countries with pension problems to enact reform. Instead, countries are caught in the net on account of short-term budgetary problems.

In this context, a technical aspect to be addressed concerns a more complete assessment of debt sustainability. The concept of government liabilities used in the assessments may be made more comprehensive, going beyond current financial debt to include also contingent liabilities, in particular those linked to the ageing of populations. This, however, requires that efforts are made to identify and measure contingent government liabilities, currently not recognised in the national accounts.

Moreover, account could be taken that potential growth is estimated to be substantially lower than when the Maastricht Treaty was signed. In the long-term, potential growth rates are likely to be even lower, given the impact of the ageing process. Lower growth rates imply greater difficulties in servicing a given level of debt. To illustrate, if 60 % of GDP is assumed to be a sustainable debt level, then with 3% deficits on average, 2% inflation and a potential real growth rate of 2%, debt ratios will converge to 78% of GDP (rather than 60% as is the case with 3% real growth, see footnote 10). Alternatively, to remain consistent with a 60% of GDP debt level, deficit requirements should be made more ambitious. Lower potential growth rates will also feed into lower growth of tax bases and thus increased pressure for expenditure reform and/or increased tax rates. Overall, public finances will be under additional strain and there will be growing pressure for reform to adapt welfare systems.

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elements in the framework will be an issue. However, flexibility must not be an end in itself but be linked to the level of overall sustainability. As argued above, a low debt may allow for less restrictive deficit rules. Beyond debt, country differences in potential growth rates could also be integrated in the equation. All else equal, a member state with a high potential growth rate will be able to service a higher debt ratio than a country with a low growth potential. In particular, the new member states tend to have substantially higher potential growth rates than the core of the current EU members.

Country specific elements could also be taken into account by allowing more discretion in the assessments, integrating quality aspects such as sources of financing and links to structural reform. A high-quality budgetary strategy could be a reason to allow a higher risk of an excessive deficit. A main difficulty, of course, would be to clearly identify and measure the impact of such aspects. Moreover, a higher weight on mediumterm budget trends over the cycle rather than annual changes in actual deficits within the cycle could introduce more short-term flexibility.

Thirdly, preventive
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times.

Thirdly, the preventive elements should be strengthened, in particular the incentives to behave well in good times. This is crucial since experience shows that it is a lack of stringency in good times that often lies behind the problems in bad times. Both carrots and sticks may be envisaged. A stronger link between long-term sustainability and the deficit restrictions could be used to improve incentives. A lack of sustainability would be a reason for maintaining pressure all over the cycle while a high degree of sustainability would be a reason to be more lenient. Furthermore, a focus on budget balances net of the cyclical impact could help identifying pro-cyclical expansions and thus promote incentives to behave well in good times.

A complementary track may be to introduce sticks in good times. As a thought, rather than applying sanctions for large deficits in bad times, it may be an idea to apply sanctions for not having strong enough balances in good times. In good times resources are relatively more ample and sanctions would in theory be counter-cyclical rather than pro-cyclical. However, in good times rallying political pressure is more difficult. In addition, the negative spillovers appear when deficits are high which tend to be in bad times. It will thus be in bad times that there is a clear mandate for the centre to impose restrictions on the national level.

In any event, it is imperative that the preventive component of the framework is strengthened so that major problems are signalled in good time. In particular, the "early warning" mechanisms must ensure that problems are highlighted early enough for there to be time in which to act. This may imply that forecasts, with all their inherent uncertainties,

rather than outcomes, could play a greater role as a trigger in the system. Also, the country surveillance could be strengthened. One aspect is that countries with short-term budgetary problems tend to be in focus, crowding out the time spent examining other countries. This risk neglecting countries that look unproblematic in the short-term while in reality it is exactly then peer pressure should be exerted to avoid future problems.

Fourthly, the mechanisms of peer pressure and sanctions as the anchor for credibility need to be seen over. A lack of obvious alternatives means that this may be the most difficult area. The Council's "political ownership" and responsibility for the overall framework needs to be strengthened. But this is probably feasible only through proven action, which will take time even if there may be opportunities of showing strength already in the short term as several countries still have budgetary problems. Another possibility would be to look for alternative mechanisms such as allowing a third party certain powers within the framework. However, as discussed earlier, politically this does not seem to be a feasible way forward at the moment. Even so, a strengthened third party that assess situations and give advice that calls for a public response from member states could be possible. In principle, such a third party already exists in the form of the Commission.

As regards sanctions, it may be that the current system of sanctions appears to "draconian" to be credible. It has always been a concern that the fines are so heavy that they will never be applied in practice. Recent experience seems to confirm this even though it may be argued that making an interest free deposit is not a very heavy sanction. Nevertheless, the SGP may have appeared to have worked as somewhat of a 0 or 1 game: "no problems" or "heavy sanctions". The marginal step to apply sanctions could be too large. An alternative could therefore be to have a more gradual sanction system where a member state quickly has to pay a financial sanction. For example, if a country is not at "close to balance" some sanction could automatically be given. The sanction should be small in the beginning but then gradually increase as the situation worsens. This may reduce the reluctance to impose sanctions at the initial stage and simultaneously provide more direct incentives to show budgetary prudence in general.

However, if all the considerations above would be included in a reformed framework the degree of complexity would increase substantially. Therefore, the possible advantages from introducing changes must be weighted against the need to keep the framework simple, transparent and enforceable. The value of safeguarding the simplicity in the current framework should not be underestimated.

Another issue to consider when making proposals for changes is the

Fourthly, the mechanisms of peer pressure and sanctions as the anchor for credibility need to be seen over.

available room for manoeuvre in practice. It is one thing to make suggestions irrespective of the current framework. However, the Excessive Deficit Procedure is a part of the Treaty and has been incorporated as it stands in the Convention's draft for a new EU constitution. There are no plans to change this in the on-going intergovernmental conference, so it is a limitation that must be taken into account. Introducing reforms by amending the secondary legislation of the SGP might be "easier". This has been firmly rejected to date in view of the prospect of difficult political negotiations and the risk of losing what has been achieved if "Pandora's box" were to be opened. However, if the current legal framework must be left unchanged, then only marginal changes confined to the framework's interpretation appear possible. In the current situation it seems necessary to be open for relatively substantial changes.

In the end, as a general reflection given the many trade-offs and fiscal policy objectives, it might be worthwhile to limit the expectations on what the framework should do. Broadly speaking, in the current set-up the deficit rule has to carry many burdens. Besides being expected to provide good incentives to promote sustainability it is expected to generate incentives to behave well in both the long and the short term, as well as in both bad times and good; moreover, it should contain incentives to enact structural reform, raise investments while being fiscally prudent, etc. As a rule, a single instrument cannot be designed to solve multiple objectives that are not internally consistent. The task assigned to one target to deliver on all these policy aspects has led to long arguments about how best to compile indicators, depending on the most pressing policy objective at hand. To some extent, these technical discussions have crowded out the policy debate. In some ways, the mechanics has become policy and policy has become mechanical. Credibility would be enhanced by not aiming for more than can actually be delivered.

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Lessons from the past: What can we learn from the history of centralized wage bargaining?

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The rise and fall of centralized wage bargaining in Sweden has, over the years, been the subject of much discussion and debate. In this article, we review the history of Sweden's experience with centralized wage determination in an attempt to use lessons from the past to inform present day policy makers. Specifically, we argue that representatives of labour and management engaged in the current round of wage negotiations should proceed cautiously when considering proposals that seek to compress wage differentials excessively. History would seem to suggest that severe compression of inter-occupational wage differentials may result in a number of undesirable and unintended consequences for firms, workers and the economy as a whole.

Introduction

Within the next six months or so, all central government employees and a large percentage of private sector workers in Sweden will enter a new round of wage negotiations. One might expect that negotiated wage increases will be modest: rates of open unemployment are relatively high by Swedish standards and, according to the Sveriges Riksbank's Inflation Report, the two most recent bargaining rounds (1998 and 2002) were models of social cooperation. There are, however, also reasons for concern. First, the higher than anticipated rate of inflation over the past two years may prompt workers to seek large, potentially inflationary, wage increases in the current round. Second, and much more significant, LO, TCO, and Saco intend to make a reduction of inter-occupational wage differentials, excessive according to them, a major issue in the current round. This, we argue below, may have consequences for unemployment and labour productivity.

As we show in this article, centralized wage bargaining and wage compression have a long and not so distinguished history in post-war Sweden. To be more precise, between 1956 and 1983, the core period of centralized wage bargaining, Sweden went from one of the more successful OECD countries in terms of output growth, unemployment, and inflation to one of the least successful.[1] Our research suggests that both the early success and the subsequent failure can be attributed to centralized bargaining and changes in wage relativities.[2] In what follows, we attempt first to explain the links between centralized negotiations, wage compression, and economic activity in Sweden in the period 1956–83 and then to reflect on the lessons of the past for the present.

It is often argued that centralized wage negotiations promote wage moderation and thus low rates of inflation and unemployment and high rates of economic growth.[3] The link between centralized bargaining and wage moderation is usually attributed to one or the other of the following. According to some, if organized labour as a whole negotiates wage increases, labour will have an incentive to moderate its wage demands because it will internalize the impact of the wage bargain on employment.[4] Although the case is most compelling if labour is forced to assume the full burden of unemployment insurance, it can be shown to hold even if this is not the case. Others maintain, instead, that centralized negotiations enhance the ability of labour and management to enter into an implicit contract in which labour agrees to moderate its wage demands in return for management's commitment to invest the increased profits to ensure growth of output and employment.[5] There is a time inconsistency problem in this agreement: firms have an incentive to shirk on their investment promises once labour curtails its wage requests, while labour is similarly inclined to push up its wage demands once management fulfils its investment obligations.[6] It is usually assumed that the government plays the role of enforcer, using taxes, subsidies, and benefits to guarantee compliance.[7] Centralized wage bargaining is viewed as crucial to the process because it reduces the scope for opportunistic behaviour on the part of individual groups of workers and/or firms. Moreover, because cen-

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[1]   It is worth noting that some form of centralized wage bargaining was introduced in the early 1950s and persisted into the 1990s. While most agree that the first phase was successful, there is a general consensus that, from the early 1970s, the system failed to deliver wage moderation, and low rates of unemployment and inflation.

[2]   See Alexopoulos & Cohen (2003, 2004).

[3]   See Kindleberger (1967) and Temin (2002) for a more general discussion of wage moderation in the context of early post-war Europe.

[4]   Calmfors & Driffil (1988); Freeman & Gibbons (1995).

[5]   Eichengreen (1996); Eichengreen & Iversen (1999).

[6]   Eichengreen (1996); Temin (2002).

[7]   See Edin & Topel (1997). The government also helped to encourage compliance with subsidies, tax breaks, and welfare payments contingent on good behaviour.

tralized bargaining seems to be associated with wage compression, workers have some assurance that the future gains from current abstinence will be distributed fairly.[8]

While elements of the internalization and implicit contract explanations of the rise and decline of centralized bargaining are compelling, there are also aspects of the Swedish case that seem to be incompatible with them. First, wage compression and centralized bargaining seemed to go hand in hand in Sweden, an outcome that was neither necessary (see Austria) nor predicted by the conventional explanations of its adoption. Second, there are strong indications that the most vigorous proponent of centralized bargaining was SAF, especially the large, export-oriented firms, not LO. Third, the LO unions representing skilled workers, especially the metal workers and building trades, were at best lukewarm in their support of centralized wage determination from the 1950s. Neither the implicit contract nor the internalization arguments would lead us to expect such a mixed response from labour and such a strong endorsement on the part of management. Finally, unless changes are made to the simple models, neither the internalization nor the implicit contract argument helps us understand key features of the post-1970 period: the sharp drop in productivity and profits, the ballooning budget deficits, and the mounting dissatisfaction of skilled workers and large, export-oriented firms with centralized bargaining.

In this article, we summarize our efforts in Alexopoulos & Cohen (2003, 2004) to develop alternative explanations for the rise and decline of centralized bargaining in Sweden. We try to answer four questions: why was the institution adopted, how did it contribute to wage moderation, why was it abandoned in 1983, and what can we learn from the past for the current round of wage negotiations? Before summarizing our answers to these questions, it is useful to review briefly the history of wage determination in Sweden in the post-war period.

The first step toward centralized wage negotiations dates from the Saltsjöbaden Agreement in 1938 in which, as Olsson & Burns (1987) argue, cooperation and coordination replaced confrontation as the basis for bargaining between capital and labour. It also represented the first peak-level agreement, in that SAF and LO negotiated on behalf on their member organizations. An initial attempt to hammer out a centralized wage bargain between SAF and LO (not all LO unions were willing to participate) was made in 1952, followed in 1956 by a comprehensive

Wage compression and centralized bargaining seemed to go hand in hand in Sweden and there are strong indications that the most vigorous proponent of centralized bargaining was SAF, not LO.

We try to explain why centralized bargaining was adopted, how it contributed to wage moderation, why it was abandoned, and what we can learn from the past.

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8   See Eichengreen & Iversen (1999).

wage agreement between the two umbrella organizations.[9] SAF negotiated similar contracts with groups representing white collar workers; by the end of the 1950s, wages of almost all private sector workers were determined by centralized bargaining. In 1966, public sector workers obtained the right to negotiate collectively with government.

Private sector bargaining took place in three stages. Peak-level associations negotiated wage agreements in which maximum and minimum increases were determined. This was followed by ratification at industry level, and subsequently by modification and implementation at the local level.[10] It is important to note that during the early years, wage increases set at the peak were often pushed up, especially for skilled workers, at the plant level. There was, in other words, considerable scope for wage drift, often amounting to over 50 per cent of total wage increases.

In answer to our first question – why was centralized wage bargaining adopted – we argue that it helped ease a serious labour supply problem faced by dominant members of SAF, the rapidly growing, export-oriented firms such as Volvo, ASEA, and Saab. In effect, centralized negotiations facilitated the reallocation of labour from slow growing, low-productivity sectors to fast growing, high-productivity ones without pushing up production costs. Our reallocation hypothesis is based on a development model for the post-war Swedish economy conceived by two labour union economists, Gösta Rehn and Rudolph Meidner.[11] A key feature of the model was wage compression from below, that is, wage increases for lower paid workers in excess of increases for those higher up on the pay scale.[12] The two argued that wage compression would force low productivity firms to boost productivity or, more likely, close down, thus freeing their workers for employment in the fast growing sectors. It was envisioned that the labour transfer would be facilitated by an active labour market policy on the part of the government. In the Rehn-Meidner plan, centralized wage bargaining was necessary to achieve wage compression from below and thus to increase the supply of labour to the more dynamic sectors. Wage moderation in the model was strictly sector-specific: those at the high end of the productivity scale would enjoy wage mod-

> In the Rehn-Meidner plan, centralized wage bargaining was necessary to achieve wage compression from below and thus to increase the supply of labour to the more dynamic sectors.

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[9] It is worth noting that in 1957, a number of unions representing skilled workers tried to withdraw from the peak-level bargaining scheme but met with fierce resistance from their employers. Their failure to secure decent wage settlements through decentralized bargaining forced them back into the fold, much to the satisfaction of management but not to their members. We take up this issue again in the section entitled "Wage relativities and the end of centralized wage bargaining".

[10] See Hibbs & Locking (2000), p. 112.

[11] Rehn and Meidner's objective was in keeping with the social democratic principles presented at some length in Beveridge (1967). The precise details of their model can be found in The Swedish Confederation of Trade Unions (1953), Johnston (1962), Rehn (1952), Lundberg (1985), Pontusson (1992) and Martin (1995).

[12] They stressed that it would be necessary for the government and the central bank to pursue a mildly restrictive fiscal and monetary policy to ensure that wage gains did not lead to inflation.

eration, those at the bottom would not. This is quite different from the kind of wage moderation implied by the other explanations and thus provides us with a clear-cut testable prediction.

Centralized wage bargaining found favour with most LO members and SAF because it facilitated realization of the Rehn-Meidner plan: wage solidarity for workers, wage moderation for the high-growth, export-oriented firms. It was, in other words, a means to an end, not an end in itself. Moreover, in response to our second question – how did centralized bargaining contribute to wage moderation – we maintain that it did so through wage compression and labour release, not through the internalization of externalities or implicit contracting.

Why did the system of wage determination that seemed to work so well in the 1950s and 1960s lose its touch in the 1970s? The literature offers four broad explanations for the inability of centralized bargaining to continue to deliver wage moderation during the 1970s and 1980s.[13] Those who favour the internalization argument maintain that by the 1970s the proliferation of bargaining units within the Swedish labour movement rendered internalization unfeasible. According to those who subscribe to the implicit contract/cooperation position, changes in production technology at the end of the 1960s and thus in the demand for labour undermined the ability and willingness of labour and management to act cooperatively. Edin & Topel (1997) argue, instead, that the wage compression associated with centralized bargaining in Sweden discouraged investment in human capital and, over time, led to a serious shortage in the supply of skilled labour. Hibbs & Locking (2000) also focus on wage compression but stress its negative impact on productivity, especially after 1969 with the sharp reduction in intra-industry and intra-firm wage differentials.

Although it is likely that many factors contributed to the inability of centralized bargaining to continue to sustain wage moderation, our explanation is based on an extension of Akerlof & Yellen's (1990) fair wage hypothesis where workers are concerned not only with their absolute pay but also with their remuneration relative to those above and below them on the pay scale.[14] The intensification of wage compression from below after 1969 caused wage differentials to collapse. As a result, the morale and effort of skilled workers were negatively affected, wage inflation jumped, and profits and capital formation slumped. By 1983, the costs of

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[13] Other factors that are sometimes identified as contributors to its failure include: the collapse of Bretton Woods, soaring marginal income tax rates, welfare system reforms, and changes in labour market legislation.

[14] Hibbs & Locking (2000), in a related article, reject an extension of Akerlof & Yellen's (1988) argument that wage compression fosters greater effort on the part of workers.

centralized bargaining to firms such as Volvo and to skilled workers such as those represented by Metall were simply too high to tolerate; hence their decision to negotiate outside the frame agreement.[15] In answer to our final question – what can the past teach us about the present – we argue that if our theory is correct, attempts to reduce inter-occupational wage differentials in the current round of negotiations may have effects similar to those that flowed from wage compression in the 1970s.

We proceed as follows. We first offer evidence to support the argument that the high-wage, high-productivity firms, dominant within SAF, faced a serious labour supply problem and thus endorsed the Rehn-Meidner plan to help resolve it. Second, we show that centralized wage bargaining did foster wage moderation through wage compression, structural change, and an increase in the flow of labour to high-growth sectors. Firms in these industries enjoyed wage moderation even as they expanded their work force. In the next section, we summarize our modified version of the fair wage hypothesis and show how it helps us link the collapse of wage differentials after 1969 to the rise in inflation, explosion of absenteeism, and the drop in productivity and profits, especially among export-oriented firms.[16] We summarize our results and review their implications in the final section.

Labour supply and demand in post-war Sweden

The Rehn-Meidner plan found favour at least initially with LO unions because it promoted wage solidarity.

We argue that the Rehn-Meidner plan found favour at least initially with LO unions because it promoted wage solidarity, that is, equal pay for equal work.[17] Endorsement by SAF was, however, crucial to its success. The question, of course, is why were SAF members, especially the large, export-oriented capital goods firms such as Volvo, vigorous supporters of the plan and of centralized wage bargaining right from the beginning? The answer we believe lies in the conditions of the Swedish labour market in the early post-war period. Swedish manufacturers, especially capital goods producers, experienced rapidly growing demand for their products both at home and abroad but also confronted a very tight labour market. The opportunities were substantial but so were the constraints. Centralized wage bargaining in a Rehn-Meidner context promised the best of both worlds – output growth with wage moderation. To make the case,

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[15] Our analysis is perfectly compatible with that of Edin & Topel (1997). The difference is that they tend to stress the longer run effects of wage compression – a reduction in investment in and thus in supply of human capital, while we focus on more short-run consequences.

[16] The change in Swedish income taxes during the period served to exacerbate the wage compression. See The Wall Street Journal (1979) for a concise description of the effects of the change in the income tax system.

[17] Although equal pay for equal work, for the most part, is compatible with the neoclassical model of wage determination, adherence to the model was not a main consideration for the labour union economists.

we attempt in the next two subsections to document the growth of
demand and the labour supply shortage.

LABOUR DEMAND

The macroeconomic data on Sweden between 1950 and 1970 indicate the
following. First, GDP grew at a faster rate than in other OECD countries.
Second, as was the case elsewhere in Europe, the economy underwent
substantial structural changes: output and employment expanded rapidly
in manufacturing, commerce, and services while it contracted in textiles,
agriculture and related activities (see Table 1 and Figure 1).[18] If we focus
on two-digit manufacturing industries, we find that employment and out-
put growth was particularly swift among the high-wage, export-oriented
sectors and slow or negative among low-wage sectors (see Table 2).

**Between 1950 and
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TABLE 1. SWEDISH EMPLOYMENT, 1945–75

Industry	Year					
	1945	1950	1960	1965	1970	1975
Agriculture, forestry, hunting and fishing	732 682	639 832	433 465	407 560	276 505	227 751
Mining, construction and manufacturing	1 142 084	1 257 444	1 427 532	1 452 572	1 347 435	1 313 717
Commerce	430 792	484 804	438 526	534 243	658 909	707 012
Transport, storage and communication	219 790	249 983	241 858	246 634	247 056	254 366
Services (including electricity, gas, water and sanitary services)	462 996	467 655	643 315	795 573	874 033	1 036 699
All industries	2 988 344	3 099 718	3 244 084	3 449 897	3 412 668	3 539 545

Source: Alexopoulos & Cohen (2003).

Even at the two-digit level, however, aggregation creates problems since
differences across firms within a sector were substantial and thus dampen
observable inter-industry differences. For this reason we compiled output
and input series for Volvo from the company's annual reports.[19] We
selected Volvo because it was the perfect representative of the export-
oriented, high-growth, high-productivity firm, it was a strong supporter of
centralized wage bargaining in the beginning and an equally aggressive

**Output and
employment seem to
confirm our priors:
Volvo and the other
high-wage, export-
oriented firms were
expanding rapidly in
the early post-war
years and much in need
of workers.**

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[18] Henrekson, Jonung & Stymne (1996).
[19] Volvo, founded in 1927, experienced explosive growth in output, employment, productivity, productive
capacity and profits during the first two decades following the second world war. For example, real
turnover at AB Volvo, measured in 1947 kronor, increased over 600 per cent from 1945–55, and increased
an additional 200 per cent from 1955–68. The changes in employment tell the same story of phenomenal
growth. From 1947–68, AB Volvo's employment increased from 2,840 to 14,519 workers (an increase of
410 per cent). A large portion of this growth can be attributed to an increased demand for Volvo's goods
abroad. As trade restrictions eased after the war, Volvo's exports soared and by 1968, statistics in their
annual reports suggest that exports represented roughly 60 per cent of total sales. If anything, these num-
bers underestimate the amount of Volvo's sales abroad since, by 1968, the company had become a multi-
national with operations in Europe, North America and Oceania.

Figure 1. Real GDP per sector
Billions of 1959 Kr

- ■ Community social and personal services
- ■ Finance, insurance and real estate
- ■ Transportation, storage and communications
- ■ Wholesale and retail trade
- ■ Construction
- ■ Electricity, gas and water
- ■ Manufacturing
- ■ Mining and quarrying
- ■ Agriculture, hunting, forestry and fishing
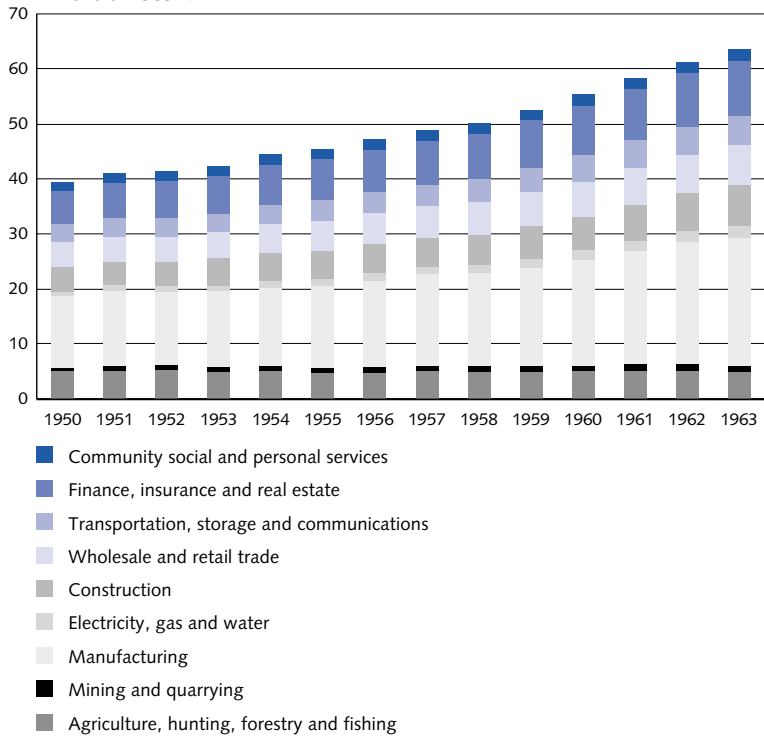
Source: The statistics on one-digit industries were made available from the National Accounts Section of Statistics Sweden (SCB).

opponent at the end, and, finally, because being a public company, its records are part of the public domain. The numbers in Table 2 on output and employment would seem to confirm our priors: Volvo and, we assume, the other high-wage, export-oriented firms such as Saab, ASEA, Electrolux, Aga, and Ericsson were expanding rapidly in the early post-war years and were, therefore, much in need of workers.

Export data provide additional corroboration. For example, the real value of Swedish exports of automobiles and car parts jumped over 550 per cent between 1947 and 1958 while that of telephonic and telegraphic equipment grew approximately 260 per cent.[20] The challenge for these exporters, especially as competition from old rivals such as Germany intensified, was to hold labour costs down as output grew; in short, to ensure that wage inflation did not choke off expansion.[21]

> **For example, the real value of Swedish exports of automobiles and car parts jumped over 550 per cent between 1947 and 1958.**

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[20] Data taken from the Swedish Statistical Yearbooks, various years.

[21] Olsson & Burns (1987) and Pontusson (1992) among others recount the efforts made by the government and management to persuade labour to moderate its wage demands in the face of a very tight labour market. It is worth noting that a theoretical alternative to wage moderation was devaluation of the krona. This, however, was not considered a viable option by policy makers in the early years largely, we surmise, because it violated the spirit (if not the letter) of the Bretton Woods agreement on exchange rates. It was only with the collapse of the fixed exchange rate regime in the early 1970s that exchange rates were viewed and used by the Swedish government as an additional policy instrument.

TABLE 2. CHANGES IN EMPLOYMENT AND OUTPUT

Yearly changes in total employment, per cent

Year	High wage				Low wage					
	Metal and engineering	Manufacture of chemicals and chemical products	Printing	AB Volvo	Manufacture of wood and cork	Pulp and paper industry	Beverage and tobacco industry	Manufacture of textiles and wearing apparel	Manufacture of leather, furs and rubber products	Total industry
1953–54	4.40	4.21	5.49	23.18	10.48	4.07	-1.18	-0.01	2.84	4.15
1954–55	5.91	3.74	3.44	17.51	1.57	3.94	2.71	-2.50	-0.56	3.26
1955–56	2.39	3.65	1.89	4.68	-5.31	2.23	-0.35	-2.17	0.13	0.72
1956–57	1.36	2.59	0.08	4.56	-2.15	1.00	-5.51	-4.10	0.71	-0.01
1957–58	0.05	0.36	1.49	16.74	-1.08	0.38	-2.16	-6.08	-2.04	-0.91
1958–59	1.72	2.16	-0.61	10.60	-0.79	2.67	-1.13	-0.37	1.86	1.07
1959–60	7.26	5.05	3.44	10.92	5.13	4.53	2.62	2.28	3.01	5.29
1960–61	6.57	3.72	3.00	3.50	-0.27	3.65	-2.77	-0.46	-0.04	3.93
1961–62	2.60	2.19	1.01	5.12	-1.59	-0.53	2.65	-2.86	-2.26	1.01
1962–63	-0.18	2.05	1.26	6.46	2.31	-1.02	-5.69	-1.84	0.92	-0.12
Average	3.21	2.97	2.05	10.33	0.83	2.09	-1.08	-1.81	0.46	1.84

Change in real output, per cent

Year	High wage				Low wage					
	Metal and engineering	Manufacture of chemicals and chemical products	Printing	AB Volvo	Manufacture of wood and cork	Pulp and paper industry	Beverage and tobacco industry	Manufacture of textiles and wearing apparel	Manufacture of leather, furs and rubber products	Total industry
1953–54	9.60	11.19	10.97	26.87	22.03	31.47	4.29	0.83	11.98	9.70
1954–55	7.50	4.47	5.86	6.58	3.99	6.92	-0.04	-1.59	3.03	6.08
1955–56	5.88	7.10	2.48	0.76	-8.10	-0.35	-7.26	-0.98	-2.35	3.16
1956–57	5.43	5.21	0.59	25.28	5.89	0.70	-4.30	0.98	4.02	3.78
1957–58	-0.71	0.62	2.45	15.95	-4.12	-6.39	6.17	-4.92	-3.39	-1.72
1958–59	7.85	11.02	3.86	10.54	11.57	3.77	4.34	2.34	5.05	6.39
1959–60	6.50	7.06	5.70	14.88	3.85	10.12	-5.04	5.33	-1.22	5.86
1960–61	15.72	5.09	6.69	3.91	6.01	-3.82	3.20	6.51	9.85	9.60
1961–62	3.01	4.80	5.87	29.72	-1.20	-10.83	0.74	-1.35	-2.26	1.21
1962–63	1.29	3.42	7.17	4.50	9.75	11.71	8.80	5.67	5.84	3.63
Average	6.21	6.00	5.16	13.90	4.97	4.33	1.09	1.28	3.06	4.77

Sources: Statistics Sweden Yearbooks and AB Volvo Annual Reports, various years.

Data from a number of sources support the notion that Swedish employers faced a very tight labour market during the early post-war years. First, while a number of countries (for example, Germany, Italy, and Japan) were able to rely on a steady stream of immigrants or internal migrants to meet the growing demand for workers, immigration into Sweden was very modest, certainly well short of the growth in employment.[22] Second, according to the estimates contained in Figure 2, based on data drawn from the Historical Yearbooks of Sweden, unemployment rates among union members dropped sharply in the 1940s and hovered around 1.5 per cent for much of the 1950s and 1960s; unemployment rates were even lower among members of Metall.[23] Moreover, the ratio of vacancy rates to job applicants jumped at the war's end, remained on average above 1.6 vacancies per applicant until the introduction of centralized bargaining in 1956 and even after that consistently exceeded 1.5 to 1.

There are, finally, data on wages that would also seem to confirm the existence of a tight labour supply. LO member unions negotiated significant wage increases in 1946 and 1947, in part, perhaps, as compensation for limited increases during the war but, without doubt, an indication of a robust demand for workers.[24] Wages jumped again in 1950 and would have continued their steep ascent had the social democratic government not been able to persuade the unions to accept a wage freeze.[25] The arrangement was, however, temporary and, in any case, did nothing to alleviate the supply shortage, especially for the high-growth sectors. The risk, of course, was that competition among firms for workers would continue to drive up labour costs, reduce profits, and choke off expansion.[26] It was in this context that the Rehn-Meidner plan was conceived and, we contend, quickly embraced by SAF.

Wage compression, wage moderation, and labour release

In this section we review data on wages, productivity, output, and employment by sectors and by regions to illustrate that wage compression from below did push up costs for low-wage, low-productivity firms and did lead to a drop in the number of firms and employees in these sec-

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[22] See Alexopoulos & Cohen (2003) for the numbers.

[23] It should be noted that since roughly 80 per cent of Swedish workers were union members, the numbers in Figure 2 provide an accurate estimate of actual rates of unemployment.

[24] Olsson & Burns (1987), p. 187.

[25] Part of the 1950 wage increase was likely due to the sharp spike in inflation associated with the outbreak of the Korean War.

[26] Pontusson (1992), p. 59.

Figure 2. Labour market indicators

Unemployment rates in Sweden, 1943-67
Per cent

— Total union unemployment rate   ▪ Unemployment rate for Metall
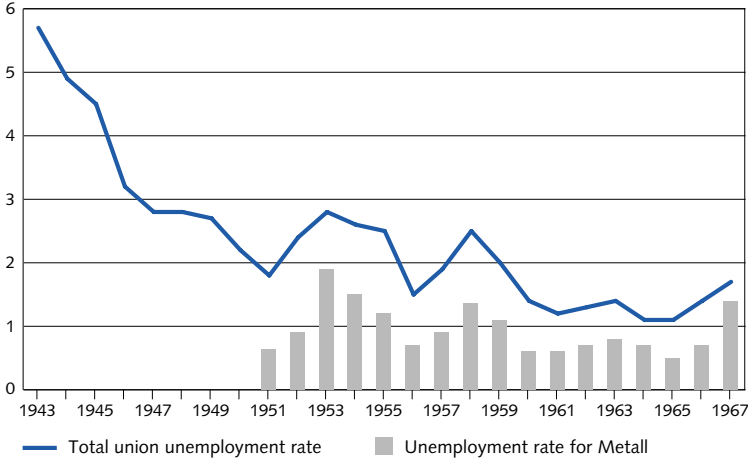
Vacancies per job applicant in Sweden, 1943-67
Numbers
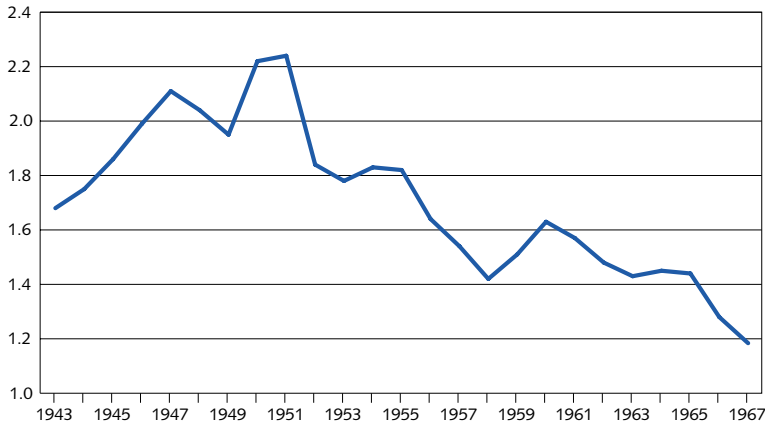
Source: Alexopoulos & Cohen (2003).

tors. This, in turn, freed up labour for employment elsewhere in the economy and, in effect, reduced the labour supply constraint faced by the rapidly expanding, export-oriented firms. It was, in short, wage moderation at the top and wage immoderation at the bottom. Wage compression had another important consequence – a sharp reduction in inter-industry wage differentials. We examine the implications of the latter in the following section.

Wage compression from below did push up costs for low-wage, low-productivity firms and did lead to fewer firms and employees in these sectors.

Wage moderation and wage compression

If we define wage moderation as increases in total factor productivity in excess of increases in the real wage, then, at least at the aggregate level, Sweden did experience wage moderation between 1950 and 1970. The aggregate numbers, however, are deceptive because they hide significant sectoral differences in real wage growth and thus in the degree of wage moderation, exactly what we would expect in a Rehn-Meidner world. Before we consider the data, we need to address the following question. What would we expect to happen if some firms in the low-wage sectors respond to the increase in wages by investing in new equipment and pushing up labour productivity? The answer, of course, depends on the level of aggregation of our data. Since we are compelled, for the most part, to work with data based on two-digit industries, the drop in the number of firms and in employment in the low wage sectors is likely to be muted. On the other hand, we would still expect to see a contraction in intra and inter-industry wage differentials.

Rehn and Meidner argued that wage increases should be moderate for high-wage, high-productivity firms and "immoderate" (that is, wage increases in excess of increases in productivity) for those at the opposite end of the wage-productivity spectrum. We would, therefore, expect to find an inverse relationship between wage increases from 1956 (the start of centralized wage bargaining) to 1967 (the end, more or less, of phase one of the wage compression process) and the wage-productivity ranking of sectors in say 1953.[27] In Figure 3, we illustrate the relationship between blue-collar workers' real wages and value added per employee for two-digit sectors in 1953 and for Volvo. Although they do not line up perfectly along both wage and productivity measures, they do seem to indicate that mining, chemicals, metalworking and engineering were, on the whole, high-wage, high productivity sectors while textiles, wood and cork, and leather were at the low end in both categories.[28] Two features about Volvo, our representative export-oriented firm, stand out. First, it was definitely a high-wage, high-productivity enterprise and, second, output per worker and real wages at Volvo exceeded those of other firms in metalworking and engineering.

The next question: do sectoral wage increases between 1956 and 1967 appear consistent with the Rehn-Meidner plan? The answer is, on the whole, yes. Real wages among textile workers rose 82 per cent over the period or, on an annual basis, 5.1 per cent. On the other hand, wages

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[27] See also Edin & Topel (1997) and Hibbs & Locking (2000).

[28] The correlation between the industries' value added per employee and blue-collar wages in 1953 is roughly 0.8. Moreover, our breakdown resembles that of Edin & Topel (1997) who rely on census data.

Figure 3. Real blue-collar hourly wages and real value added per employee by industry in 1953
Real value added per employee in thousands of 1947 Kr
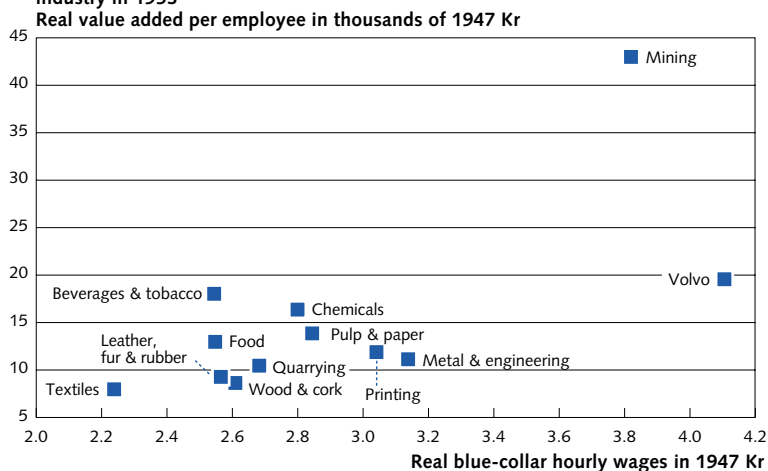
Source: Alexopoulos & Cohen (2003).

of workers in metal and engineering increased 66 per cent or roughly 4 per cent per year. Wage increases at Volvo were even more modest – 36 per cent overall or 2.2 per cent annually. As the numbers in Table 3 illustrate, there was clear wage compression from below between 1956 and 1970. The results recorded in Figure 4 make the same point even more emphatically. Wages of Volvo workers dropped sharply relative to those

On the whole, the sectoral wage increases between 1956 and 1967 appear consistent with the Rehn-Meidner plan.

TABLE 3. HOURLY WAGES ACROSS SECTORS RELATIVE TO WAGES IN METAL MANUFACTURING, 1953 AND 1970

Industry	1953	1970
Mining	1.19	1.12
Metal manufacturing	1.00	1.00
Quarrying and nonmetallic manufacturing	0.86	0.96
Manufacture of wood and cork	0.82	0.91
Pulp and paper industry	0.90	0.99
Printing	1.02	1.18
Food manufacturing	0.86	0.95
Beverage and tobacco industry	0.85	0.94
Manufacture of textiles, wearing apparel	0.81	0.86
Manufacture of leather, furs and rubber products	0.89	0.93
Manufacture of chemicals and chemical products	0.93	0.95
Total manufacturing	0.94	0.98
Public works	1.00	1.05
Building and construction*	1.25	1.13
Farm wages*	0.63	0.72

* Building and construction relative wages are reported for 1953 and 1967, relative farm wages for 1953 and 1966.
** The wage series used are based on male blue-collar workers and are measured in 1947 Kr.
Source: Alexopoulos & Cohen (2003).

Figure 4. Volvo blue-collar wage relative to metal manufacturing wage
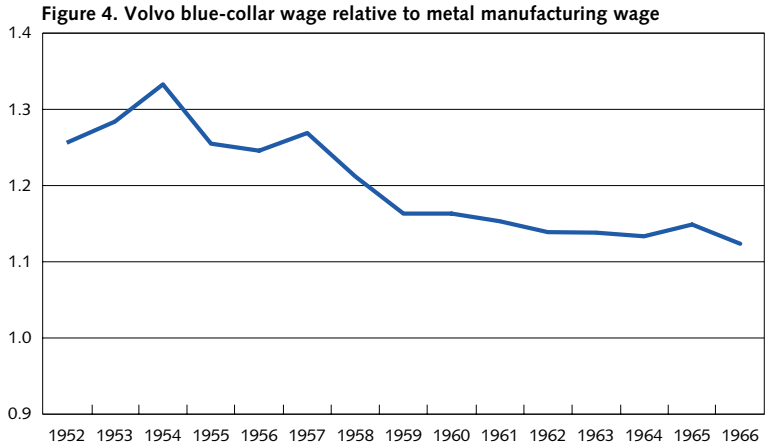
The relative wage is based on the average hourly wages for both men and women in metal manufacturing and in Volvo.

Source: Alexopoulos & Cohen (2003).

of all metal workers, whose wages, in turn, fell relative to those of textile and other low-wage employees.[29]

Wage compression for Rehn and Meidner was not an end in itself but a means to foster labour release.

Wage compression for Rehn and Meidner was not an end in itself but a means to foster labour release. For this to occur, wage increases among the low-wage, low-productivity firms had to be "immoderate" (wage increases in excess of the rise in value added per worker) and moderate for high-wage firms. The data presented in Figures 5 and 6 confirm that this pattern of wage changes did occur. As can be seen in Figure 5, the ratio of the real wage to value added per worker for textiles and leather did go up, while it remained constant for metal and engineering and declined for chemicals and Volvo.[30] Moreover, as revealed in the scatter plot in Figure 6, the growth rates of real hourly wages between 1953 and 1968 varied inversely with the rank ordering of industries' value added per worker in 1953, a result consistent with wage compression from below.

It is worth noting that neither the implicit contract nor the internalization explanations of wage moderation is compatible with wage compression from below.

It is worth noting that neither the implicit contract nor the internalization explanations of wage moderation is compatible with wage compression from below. Low-wage, low-productivity firms were unlikely to enter into an implicit agreement that threatened their survival. Moreover, high-wage firms would have had a strong incentive to break ranks on wages if nothing were done to ease the labour supply constraints they

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[29] These results, on the whole, are consistent with the findings of Hibbs & Locking (2000) and Edin & Topel (1997).

[30] It is worth noting that these numbers likely underestimate wage immoderation in the low-wage sectors because of attrition in the number of low-productivity firms within the sectors.

High-wage sectors and Volvo

| Metal and engineering | Printing | ---- Chemicals | Volvo |

Low-wage manufacturing sectors

| Food | Beverages and tobacco | ---- Textiles | Leather (and rubber) |

Source: Alexopoulos & Cohen (2003).
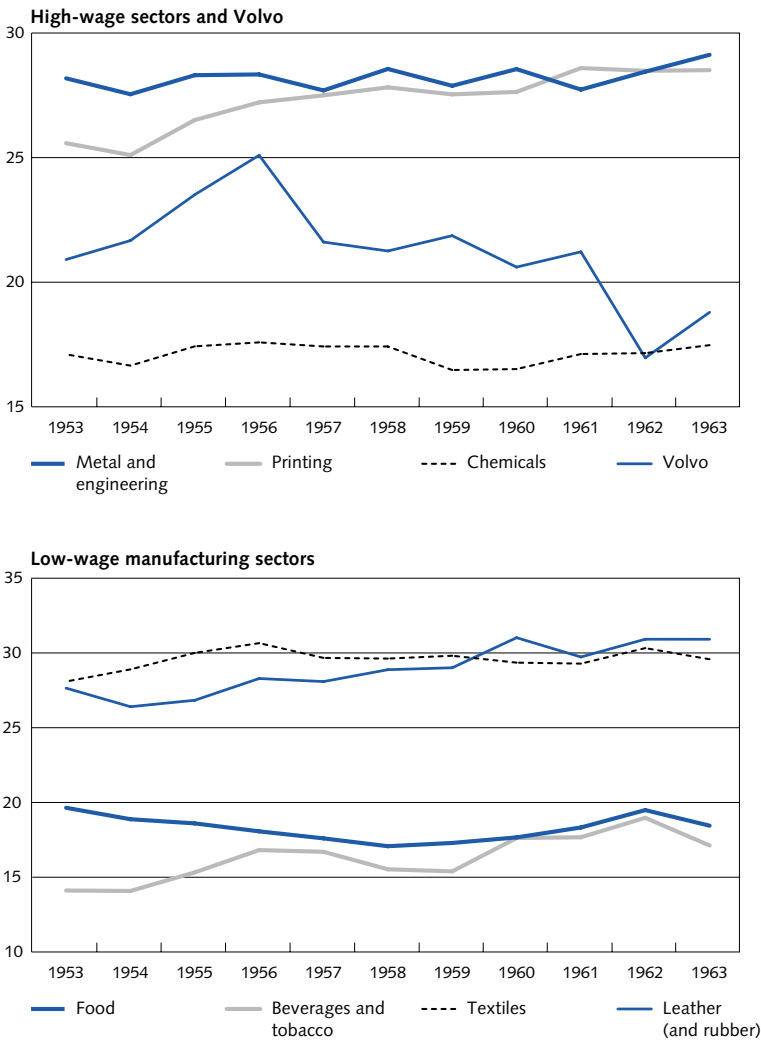
faced.[31] The internalization argument is based on the notion that labour tailors its wage demands to achieve full employment. And yet wage compression from below as conceived by Rehn and Meidner and as implemented in Sweden was designed to promote labour release by the low-wage, low-productivity sectors. The two would seem to be mutually exclusive.

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[31] As Eichengreen (1996) and Eichengreen & Iversen (1999) point out, the government allowed firms to place retained earnings in non-taxed accounts on the understanding that the funds could be withdrawn only with government approval and used only to fund new capital projects. There was, however, nothing to prevent firms from increasing wages to attract new labour.

Figure 6. Growth rate of real hourly wages from 1953 to 1968 and real output per worker in 1953

Growth in real hourly wages from 1953 to 1968; per cent

1953 real output per worker; thousands of 1947 Kr
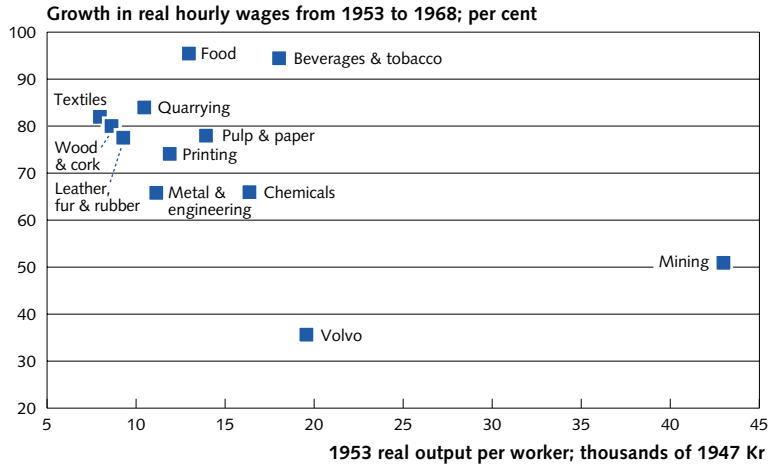
Source: Alexopoulos & Cohen (2003).

LABOUR RELEASE

Rehn and Meidner argued that the workers released by the low-end firms would find employment in the fast-growing, high-end sectors.

Rehn and Meidner argued that the workers released by the low-end firms would, with the help of a very active labour market policy on the part of the government, find employment in the fast-growing, high-end sectors. The data from the Swedish Statistical Yearbooks indicate that government spending on employment exchanges, vocational guidance and retraining programs jumped by a factor of ten between 1956 and 1968, from 20 million 1947 kronor to 207 million kronor. It is worth noting that by the latter date, 73 per cent of these funds, as opposed to less than 2 per cent in 1956, went to retraining displaced workers. Moreover, spending on these programs continued to rise, peaking in 1970 at 706 million in 1947 kronor.[32]

The key question is whether wage compression led to a contraction in the number of workers and firms in low-wage industries and an increase among high-wage ones.

The government clearly played its assigned role. The key question is whether, as Rehn and Meidner intended, wage compression led to a contraction in the number of workers and firms in low-wage industries and an increase among high-wage ones. Consider first the low-wage sectors. Wage compression from below in the Rehn-Meidner plan should have caused the number of establishments and workers in these sectors to decline. If we were to assume, as seems reasonable, that in each of these sectors there existed an array of more and less productive firms, wage compression would have caused the least productive to disappear. If we were to assume further (again reasonable) that the least productive were

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[32] Although Edin & Topel (1997) raise serious questions about the efficacy of these expenditures, it is clear that the government was committed to maintaining low levels of unemployment and easing the transition between sectors for workers.

also the smallest, it follows that in these sectors we would expect to find a drop in the number of workers, an increase in average firm size, and a rise in productivity per establishment. The impact on the number of establishments is less clear-cut. Numbers may have fallen but if productivity, competitiveness, and output all increased, they may have remained unchanged. At the high end, although we would expect to witness an increase in employment, there was no obvious link between wage compression and the number, size, and productivity of establishments. These would, instead, depend on the degree of scale economies, the nature of technical innovations, and other features of the growth process.[33]

The statistics reported in Figures 7A and 7B on establishments, employment, and firm size support our argument. As shown in the first two panels of Figure 7B, low-wage, low-productivity industries – textiles, wood and cork, and leather, fur, and rubber – lost workers and establishments while average output per worker and per establishment increased. On the other hand, the third panel reveals that investment per establishment among these firms increased sharply, suggesting that at least some chose to combat the wage pressure with new capital outlays and a consequent increase in productivity. These investment expenditures moderated but did not fully counter the forces of contraction.[34]

As indicated in Figure 7A, firms in metalworking and engineering, printing, and paper increased employment and grew in size while the number of establishments remained, more or less, the same. In chemicals, employment, establishments, and size all rose. Volvo experienced a jump in employment and productivity as measured by value added per worker.[35] Moreover, as we showed earlier, wage increases at the high end were modest, especially when compared with the growth in productivity. We would conclude from this analysis that wage compression from below led to labour release by low-wage firms and labour absorption by high-wage ones, exactly as Rehn and Meidner intended.[36]

> **Low-wage, low-productivity industries lost workers and establishments while average output per worker and per establishment increased.**

> **Wage compression from below led to labour release by low-wage firms and labour absorption by high-wage ones.**

Wage relativities and the end of centralized wage bargaining

As we posited in the introduction, any explanation for the rise of centralized wage determination must also be able to explain its demise. We

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[33] Henrekson, Jonung, & Stymne (1996) note that the Rehn-Meidner scheme favoured existing over new firms which, if correct, would have promoted growth in size of establishments at the expense of new ones.

[34] It is interesting to note that increases in employment in these sectors correspond to increases in the amount of investment per establishment.

[35] In Volvo's 1966 annual report, management reported that "the Swedish labour market was normalized and the supply of manpower improved, one of the factors contributing to this being the progressive structural rationalization resulting in a manpower surplus within several branches of Swedish industry".

[36] Our results are consistent with those reported by Edin & Topel (1997).

Figure 7A. Employment, establishments, firm size and real investment. High-wage industries

Number of total employees and workers, thousands (left scale); establishments (right scale); 1954-64

Printing industry

Total employees	Workers	Establishments

Metal and engineering

Total employees	Workers	Establishments

Chemical manufacturing

Total employees	Workers	Establishments
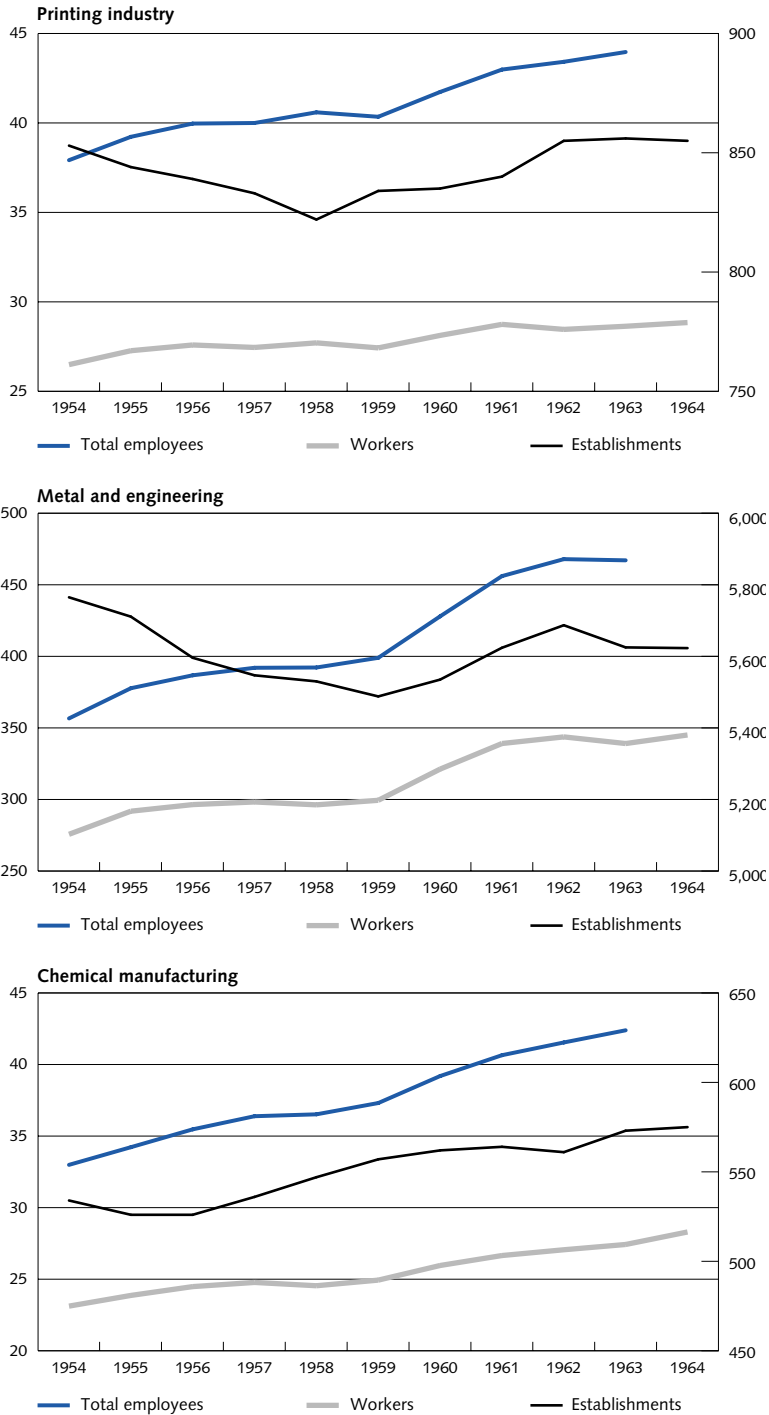
Number of workers per establishment; 1954-64

Printing industry
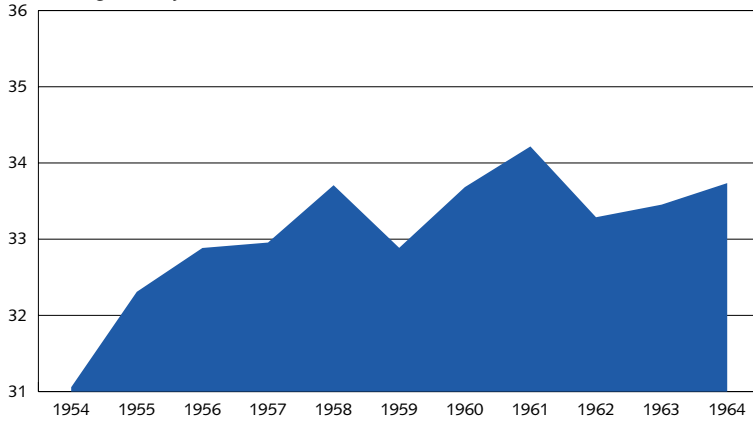
Metal and engineering
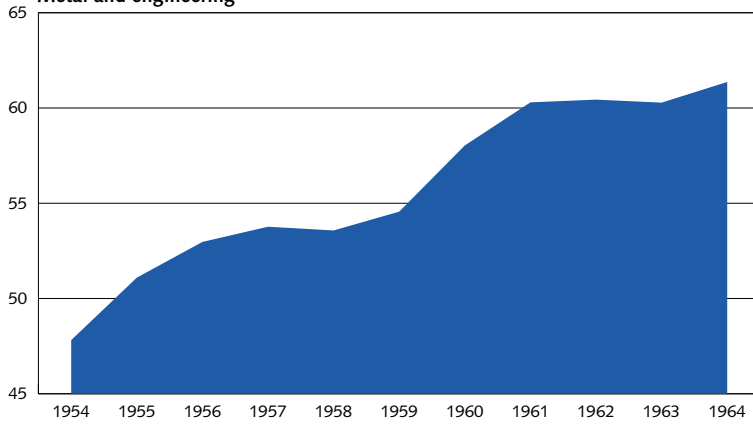
Chemical manufacturing
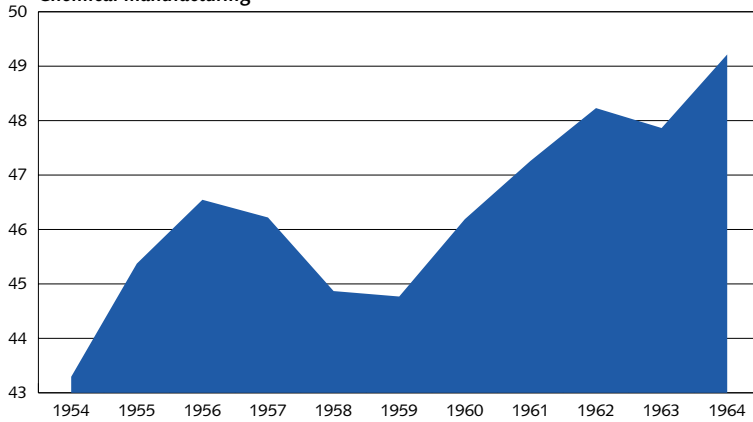
Real investment per establishment; 1955-64
Millions of 1947 Kr

Pulp and paper, including printing
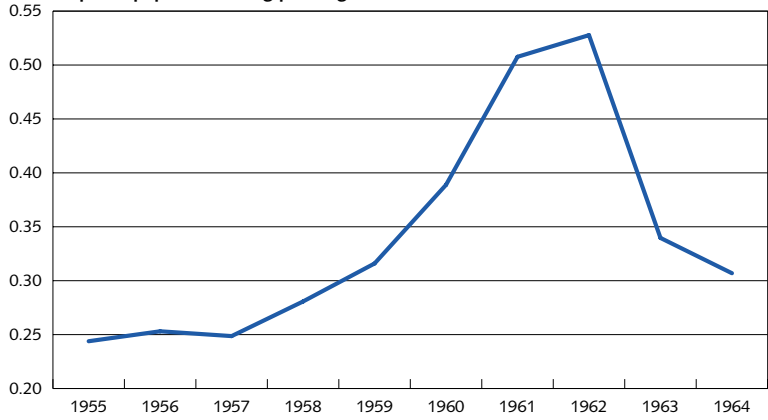
Metal and engineering
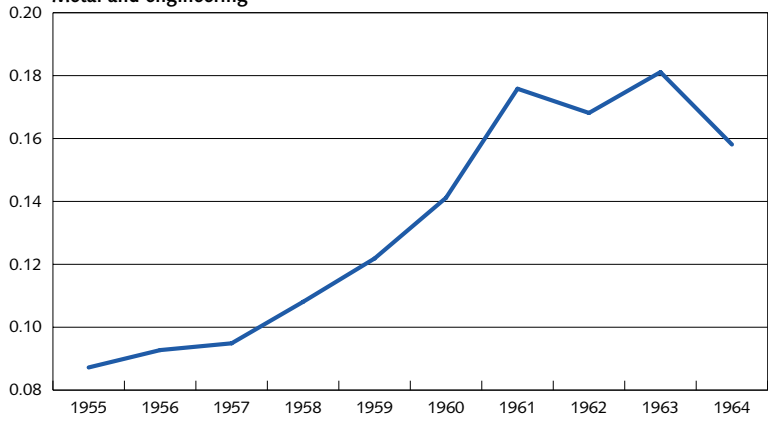
Chemical manufacturing
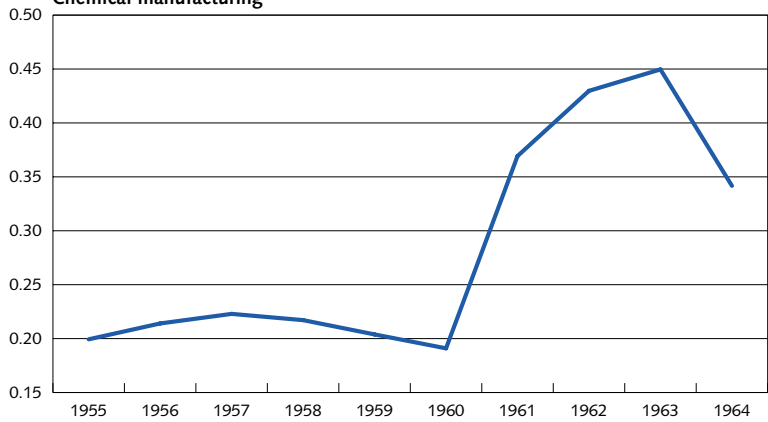
**Figure 7B. Employment, establishments, firm size and real investment.
Low-wage industries**

**Number of total employees and workers, thousands (left scale);
establishments (right scale); 1954-64**

Leather, fur and rubber

—— Total employees	—— Workers	—— Establishments

Wood and cork

—— Total employees	—— Workers	—— Establishments

Textiles

—— Total employees	—— Workers	—— Establishments
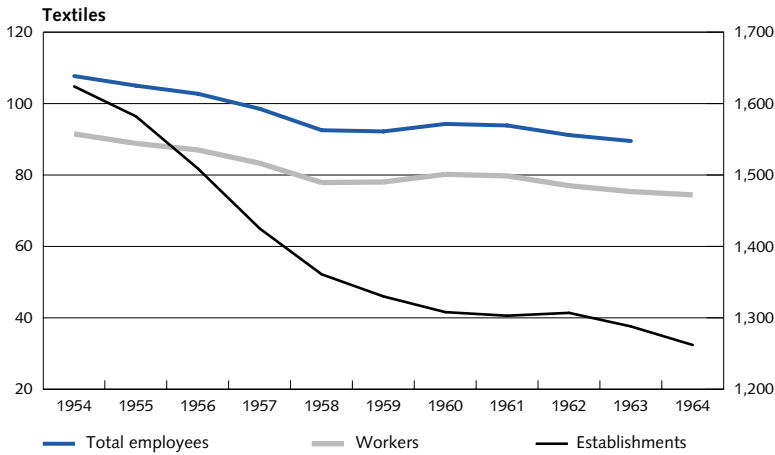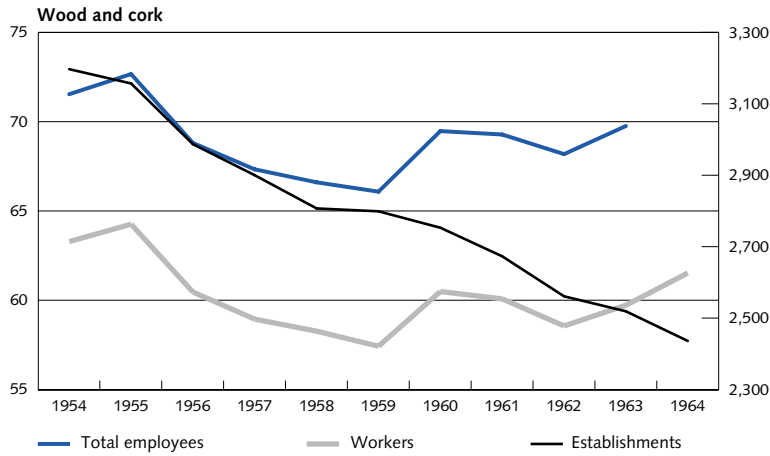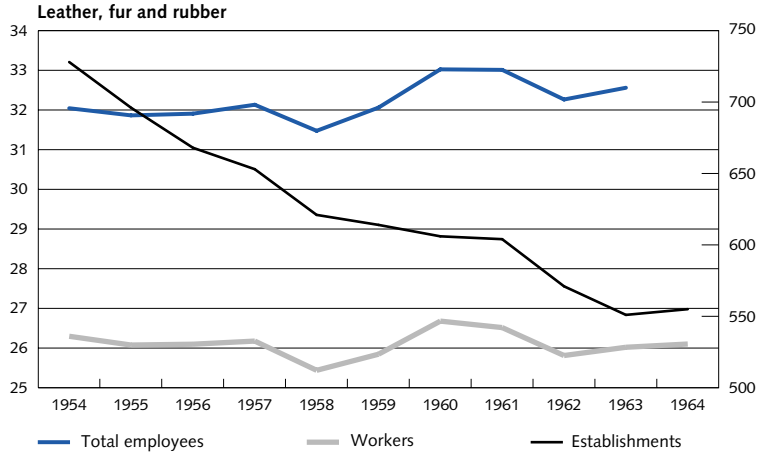
Number of workers per establishment; 1954-64

Leather, fur and rubber
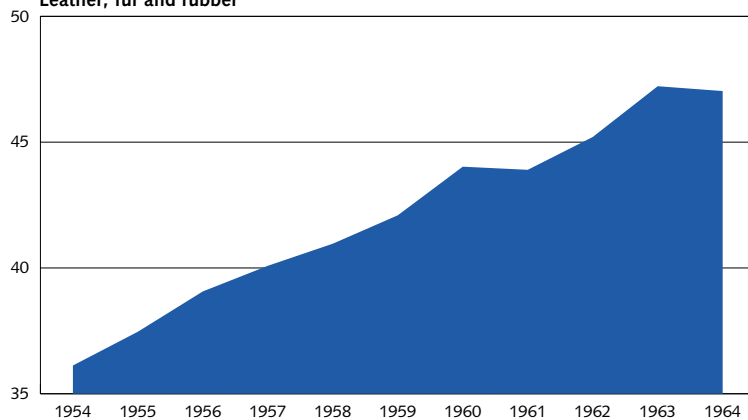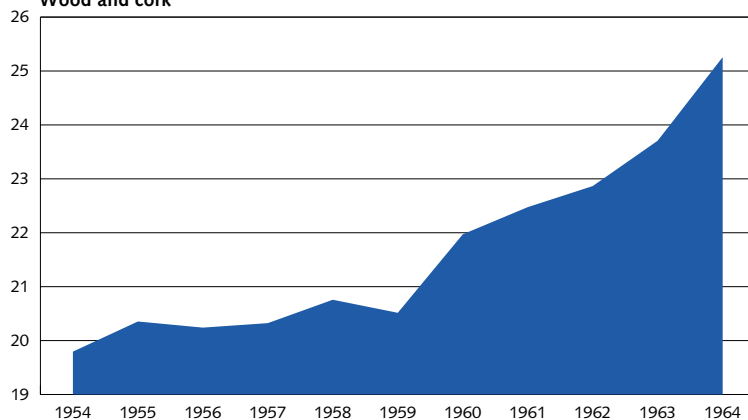
Wood and cork
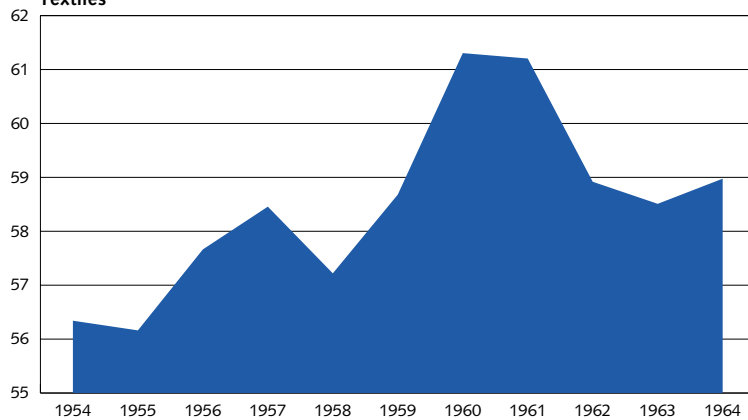
Textiles

Real investment per establishment; 1955-64
Millions of 1947 Kr

Leather, fur and rubber
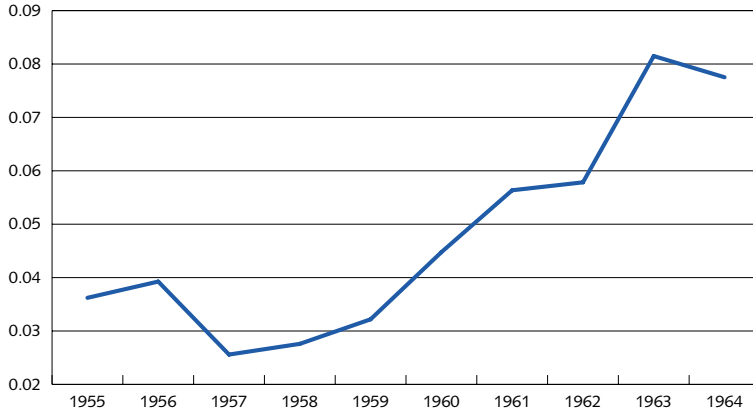
Wood and cork
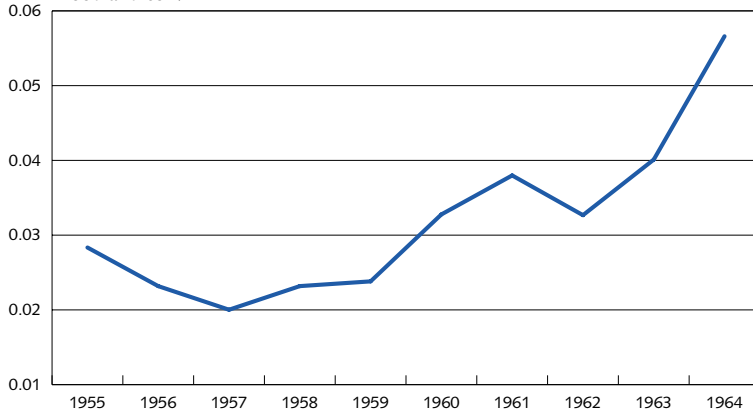
Textiles
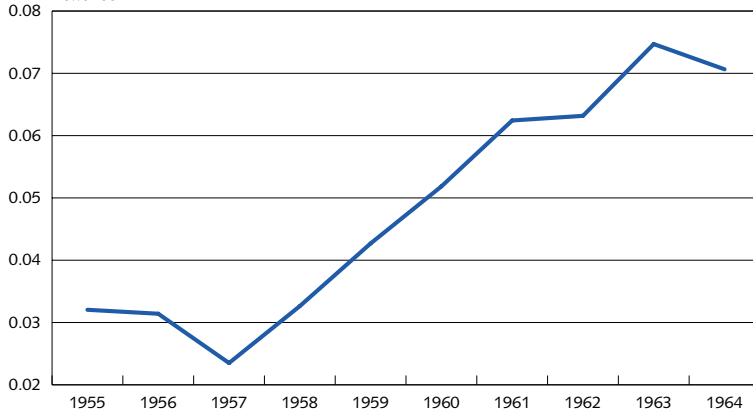
Source: Alexopoulos & Cohen (2003).

argue that Sweden's economic troubles in the 1970s were closely linked to the negative impact that intensified wage compression had on worker morale and effort and, consequently, on productivity and profits. We base this contention on our modified version of Akerlof & Yellen's (1990) fair wage hypothesis in which we argue that workers care not only about their absolute pay but also about their compensation relative to that of others, both above and below them on the pay scale.[37] In this environment, changes in wage relativities, if perceived to be unfair (for example, excessive compression), will cause workers to reduce effort.

There are indications that Swedish workers, especially highly paid ones, cared about their compensation relative to others.

Is there, in fact, evidence to suggest that Swedish workers, especially highly paid ones, cared about their compensation relative to others? The answer is yes. When centralized wage bargaining in the context of the Rehn-Meidner plan was first proposed, highly paid blue-collar unions (Metall, building trades) made no secret of their lack of enthusiasm for it. The reason was simple. They feared that wage differentials between them and those lower down the pay scale would be reduced.[38] A similar sentiment was expressed by TCO. As Olsson & Burns (1987, p. 189) observe,

> The central white-collar union, TCO, was initially included in the attempts to organize central negotiations. This cooperation fell through because of the LO's adherence to a principle of combined absolute/percentage increases in contract formation, whereas white-collar unions would only accept percentage forms (since the latter maintain wage and income relativities, an important goal for the white-collar unions in regard to white-collar/blue-collar income relations).

During the first phase of centralized bargaining, up to the late 1960s, wage drift served as an escape valve for those at the higher end of the pay scale.

During the first phase of centralized bargaining, up to the late 1960s, wage drift served as an escape valve for those at the higher end of the pay scale. We turn, once again, to Olsson and Burns (1987, p. 189) for confirmation:

> Unauthorized wage increases (wage drift) were a persistent problem during the entire period 1956–66 … Branch unions negotiated unauthorized increases, in part due to pressure from their members to maintain traditional relativities, not taken into account in the central agreements … Employers often went along with these demands, either to avoid trouble with their

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[37] See Alexopoulos & Cohen (2004).
[38] Despite their best efforts to maintain traditional differentials, centralized wage bargaining reduced them, especially after 1969. This is clearly demonstrated by Hibbs & Locking (2000) and Davis & Henrekson (2001).

union locals or to express genuine support for a more differenti-
ated or what was felt to be, locally, a more suitable wage struc-
ture.

By the late 1960s, however, as Hibbs and Locking note, the solidaristic
objectives of the majority of LO members shifted from equal pay for
equal work to equal pay period. The escape valve was closed with the
introduction of wage-drift guarantees for all workers, while low-wage
pots were created to enhance the pay of low-wage workers.[39] Wage
compression intensified, intra-industry and intra-firm pay differentials
contracted, and skilled workers, with no way to maintain traditional rela-
tivities, began to shirk. Although, as Pontusson and Swenson (1996,
p. 232–33) note in the following quote, engineering firms were hardest
hit by the collapse of wage differentials, evidence suggests that most
high-wage employers suffered.

> Through the 1960s, LO-SAF agreements did little to disturb
> wage distributional patterns within the private-sector firms and
> sectors. … From 1969 onward, however, peak-level bargaining
> became increasingly invasive in intrasectoral and intrafirm pay
> setting. … The new invasiveness of peak-level bargaining im-
> posed two major nuisances, according to engineering employ-
> ers: interoccupational leveling and wage drift compensation
> clauses. … Provisions for interoccupational leveling first intro-
> duced in 1969 in fact hit the engineering employers hardest.

Hibbs and Locking (2000) use data on reduced wage differentials during
this period to test a version of the Akerlof & Yellen (1988) fair wage
hypothesis in which increased wage compression within firms is likely to
boost morale, effort, and productivity. Hibbs and Locking find that while
equal pay for equal work may have enhanced labour productivity, more
egalitarian pay schemes did not. Although they reject the Akerlof-Yellen
hypothesis, they do not provide an alternative explanation for the behav-
iour of Swedish workers. We argue that the missing link is supplied by a
revised version of the fair wage hypothesis, one in which a worker's utility
is affected by his absolute wage and his wage relative to those both
above and below him on the pay scale.

We demonstrate in a forthcoming article (Alexopoulos & Cohen
(2004)) that an excessive narrowing of wage differentials is likely to cause

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[39] Pontusson & Swenson (1996).

the representative skilled worker to cut back on his effort and may have a negative impact on his measured productivity and on his employer's profits. With wage compression from below, high-wage firms, if there is no wage cap on the compensation they can offer their workers, will choose to raise wages to restore traditional differentials. We show that this is optimal on the part of these firms, in spite of the increased cost, because restoration of the differentials induces workers to maintain their precompression level of effort. Moreover, if labour productivity is rising, labour demand by these firms is unlikely to decrease. As it happens, this environment (wage compression along with increases in labour productivity) approximates Sweden's experience during the first phase of centralized wage bargaining, from roughly 1956 to 1968. Wage compression from below, central to the Rehn-Meidner plan, was side-stepped by Volvo and the other export-oriented firms through wage drift at the plant level. Although, as Volvo notes in its annual reports for the late 1960s, wage drift did pressure profits, for the most part, employment, output, productivity, and profits at these firms remained robust. As pointed out above, enterprises lower down on the productivity and wage scale did lose workers, either because they were forced to cut their work force in response to wage increases or because they went bankrupt.

Problems began to arise once wage-drift guarantees were introduced for low-wage workers and the wage cap for well-paid employees was enforced.[40] Consequently, wage differentials then became even more compressed. As we indicate in our model, if firms are unable to maintain traditional wage differentials, the representative worker will decrease his effort (or, the equivalent, increase his rate of absenteeism). As a result, profits, productivity and output per worker will decline. Once again, this corresponds with Swedish experience, this time with the intensification of compression in the 1970s and early 1980s.[41] With the loss of wage flexibility at the upper end, wage differentials shrank, and effort levels and productivity collapsed.[42] Absenteeism soared. Volvo, for example, reported absenteeism rates in excess of 20 per cent, the highest in its history,

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[40] Firms that violated the upper bound set by the frame agreement were subject to fines. For example Davis & Henrekson (2001) report that Volvo was fined in the 1970s because its wages exceeded the cap.

[41] Two factors, in addition to wage drift guarantees and low wage pots, contributed to the collapse of wage differentials and interoccupational wage leveling: (i) increases in the minimum contractual wage, and (ii) heavier penalties on firms that violated the upper bound on wages in the frame agreement. The concurrent changes in marginal tax rates also tended to narrow the differences in take-home pay between high paid and low paid workers. These changes would simply accentuate the problems caused by the compression.

[42] While business cycles caused some variation in the productivity numbers, the overall trend during the 1970s and early 1980s was clearly negative.

Figure 8. Real pre-tax profits in large industrial establishments
Thousands of 1947 Kr (left scale); Volvo profits in millions of 1947 Kr (right scale)
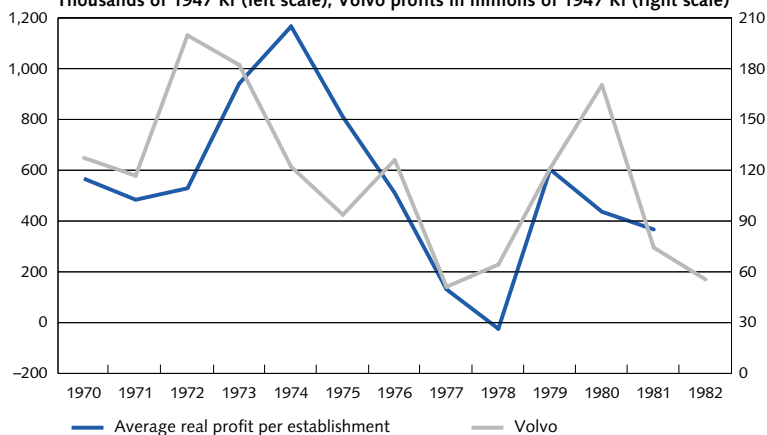
Source: Alexopoulos & Cohen (2003).

and noted that morale touched an all-time low.[43] At the same time, as is clearly illustrated by the graph in Figure 8, profits plummeted.

Volvo and others did make various attempts (worker friendly plants, cooperative work arrangements) to rebuild morale and reduce absenteeism but failed on the whole. The only solution was the elimination of centralized wage bargaining and the decompression of the pay scale. This, we argue, is exactly what occurred in 1983 when Volvo and Metall agreed to bargain outside the frame agreement and, in effect, brought centralized bargaining to an end.

The only solution was the elimination of centralized wage bargaining and the decompression of the pay scale.

It should not come as a surprise that Swedish workers still care about their relative wages. This is clearly illustrated by evidence in Agell & Lundborg (1995) and by the results of the recent survey carried out by Statistics Sweden on behalf of LO. The lesson from the past is straightforward. While some wage compression, if deemed to be fair, may boost worker morale and effort, an excessive narrowing of the differentials may have exactly the opposite effect. It is, therefore, extremely important that both labour and management seek to ensure that inter-occupational wage differentials pass the fairness test for the affected workers.[44]

It is extremely important that both labour and management seek to ensure that inter-occupational wage differentials pass the fairness test for the affected workers.

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[43] The Wall Street Journal (1979) reported that from 1960–78 male absenteeism rates in Swedish manufacturing industries increased over 63 per cent. The increase continued into the early 1980s; according to a subsequent article in the Journal (1980), by this time absenteeism rates for Swedish workers had become the highest among the major industrialized countries. Volvo's (1980) annual report echoes this finding by reporting that their absenteeism rate hit 22 per cent for their Swedish companies.

[44] Although ascertaining what workers feel are fair wage differentials can be difficult, some guidance may be provided by the recent survey evidence in the January 2003 LO report, Röster om facket och jobbet (Voices on the union and the job).

Conclusion

We argue in this paper that SAF embraced the Rehn-Meidner plan with enthusiasm because it promised to help relieve the severe labour supply shortages that large, export-oriented firms faced in the early post-war years. Skilled workers, on the other hand, were cool to the scheme, largely because they feared, with reason, its negative impact on wage differentials.

As we explain, the purpose of the plan was to promote economic expansion with full employment and low inflation and to ensure that labour received its fair share of the growth dividend. The plan was simple and ingenious. Wage increases for low-paid workers would exceed increases for those higher up the pay scale. As a result, low-wage firms would be forced to shut down (or, less likely, raise productivity) and would thus release workers for employment in the high-wage, high-growth sectors. The government would facilitate the redeployment of labour through an active labour market policy, that is, through assistance in retraining, relocation, and job search. Centralized wage bargaining, although a key feature of the plan, was seen strictly as a means to an end – it made possible wage compression from below and fostered labour release. In short, then, it is neither internalization of externalities nor implicit contracts that explains wage moderation but, instead, an increase in the supply of labour to the most dynamic firms in the economy.

The plan appeared to work as intended until the late 1960s but then began to falter. We maintain that intensified wage compression – the result, largely, of labour's quest for equal pay for all work – eroded pay differentials, damaged the morale of workers at the top of the pay scale, and led to a sharp drop in their effort. We discuss how a modified version of the Akerlof-Yellen fair wage hypothesis can help explain the negative impact that excessive compression had on the effort of the highly paid and the consequent drop in the demand for labour and in profits. As expected, absenteeism rates in Sweden soared in the 1970s, investment in human capital tumbled, and labour productivity fell. Export-oriented firms, because they relied on a skilled workforce, were hit particularly hard. It was in this context that Volvo and Metall, in an attempt to free themselves of the constraints imposed by centralized wage bargaining, chose to negotiate outside the frame agreement.

If our analysis of Sweden's experience with centralized wage determination and wage compression is correct, the effort on the part of LO and its labour union partners to reduce wage differentials may, if pushed too far, provoke very undesirable economic outcomes. Sweden today does not face a labour shortage – quite the contrary, rates of unemploy-

ment are high – which means that if labour release were to occur as a result of wage compression, rates of unemployment would almost certainly go up. Moreover, with no cap on wages at the upper end of the pay scale, wage drift is likely to flow from excessive wage compression as high-wage workers struggle to maintain what they consider appropriate relativities. This could easily have negative effects on the demand for labour, output, and profits. And, of course, to the extent that wage drift is contained, productivity and investment in human capital will suffer. Some reduction in inter-occupational wage dispersion may resonate well with Swedish workers but, as our history lesson makes abundantly clear, too much of a good thing may turn out to be very bad for everyone.

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Changes in the Riksbank's companies – letter of intent with Securitas, sale of Tumba Bruk

On 19 December 2003, the Riksbank signed a letter of intent with Securitas regarding a transfer of the majority of the commercial arm of the Riksbank's cash management operations, Pengar i Sverige AB, to Securitas Värde AB. The Riksbank has also finalised the sale of Tumba Bruk to Crane & Co Inc.

Cash management The aim is for Securitas Värde AB to take over the main part of the activities in Pengar i Sverige AB, including client undertakings. The deal is subject to the approval of the Swedish Competition Authority.

The Riksbank's company Svensk Kontantförsörjning AB, whose responsibilities include the Riksbank's cash stocks, is not affected by the transaction. The Riksbank has begun an investigation, which will propose measures to further improve efficiency in cash management.

Tumba Bruk Crane & Co Inc took over management responsibility for Tumba Bruk on 1 January 2002, whereupon its name was changed to Crane AB. According to this agreement, the Riksbank remained owner of the company until the end of 2003.

The Riksbank has transferred the parts of the area designated as cultural heritage buildings to the National Property Board. The Riksbank has also decided to fund a paper mill museum, where Tumba Bruk's 250-year history will be on display to the general public. The museum will be run by the Royal Coin Cabinet and will open in 2005.

The Riksbank's costs Up to and including the first half of 2003, the Riksbank's capital injections to Pengar i Sverige AB and Svensk Kontantförsörjning AB have totalled SEK 770 million. Approximately half of these relate to operating losses and half to restructuring costs. These costs should be seen in the light of the annual cost of SEK 60-70 million when the operations were been conducted at the Riksbank. The Executive Board has decided to provide an additional capital injection of SEK 125 million in order to cover the close-down costs during 2004.

Audit report on the Riksbank's internal control

The General Council's Audit Unit has presented a report on the Riksbank's internal control, as part of its routine examinations. The report was presented to the General Council and the Executive Board on 22 October

2003 and is a public document. The report is available on Sveriges Riksbank's website.

Exchange of EU payment

Sweden's EU membership entails monthly contributions to the EU's budget. Around the end of the year, the amounts tend to be unusually large, at the same time as market turnover often is low. Therefore, for market reasons, the Riksbank has previously exchanged the EU flow around the end of the year. The EU contribution made at the end of 2003/beginning of 2004 amounted to SEK 6.5 billion. The Riksbank exchanged the krona amount for euro. The transaction had no monetary policy significance.

Value of direct investment assets

The Riksbank's annual survey of direct investment assets indicates that the total value of Swedish-owned direct investment assets abroad declined by SEK 38 billion in 2002, amounting to a total of SEK 1,242 billion. The drop in value can partly be attributed to changes in exchange rates, where a stronger krona reduced the value of foreign assets. Income on Swedish-owned assets abroad in 2002 totalled SEK 97 billion, which was essentially unchanged compared with the previous year.

Foreign direct investment in Sweden amounted to SEK 1,040 billion, which is an increase of SEK 58 billion on the previous year. The increase is mainly due to large-scale global corporate restructuring and a number of major acquisitions. Income on foreign-owned assets in Sweden totalled SEK 39 billion in 2002, which was SEK 6 billion less than the previous year.

Income on direct investment is included as an item in Sweden's current account. The result of the 2002 survey is a positive net contribution to the current account of SEK 58 billion.

A complete report is available on the Riksbank's website.

Jörgen Eklund new Chief Press Officer

At its meeting on 5 February 2004, the Executive Board of the Riksbank appointed Jörgen Eklund chief press officer. This is a new post and entails an extension of the Communications Department's press service. The reason for the new post is that the Riksbank's external communications have gradually increased in scope.

Mr Eklund has worked as advisor to the governors of the Riksbank since 2000. Prior to that, he worked as a journalist at Finanstidningen newspaper and on the Ekot radio programme. Mr Eklund will take up his new post on 1 April 2004. The press service will then consist of a chief press officer and a press officer.

Changes in Swedish banknote and coin series 2005

In order to reduce the risk of counterfeiting and to facilitate the recognition of genuine banknotes, the Riksbank has decided to increase the security details in 50-kronor and 1,000-kronor banknotes.

The new banknotes will be introduced in autumn 2005. The current 50-kronor and 1,000-kronor banknotes will remain legal tender even after 2005.

The Riksbank has also decided to issue a 20-kronor banknote on more durable paper. This should be regarded as part of the work on resolving the problem of relatively poor quality in the circulating 20-kronor notes.

To reduce the number of different versions of valid banknotes and coins in circulation at the same time, the Riksbank proposes than non-upgraded 100-kronor and 500-kronor banknotes, the older, larger version of the 20-kronor note and the older, silver-coloured 50-öre coin should be declared invalid. This proposal must be approved by the Riksdag (the Swedish parliament). According to the proposal, the banknotes and coins in question would become invalid at the end of 2005.

The Riksbank will also investigate the possibility of marking the 250th anniversary of Tumba Bruk with a commemorative banknote.

The Riksbank will provide information to professional cash managers and the general public well in advance of the changes.

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

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

04-03 The *reference* (official discount) *rate* is confirmed by the Riksbank at 2.5 per cent as of 4 April 2000.

12-07 The *repo rate* is increased by the Riksbank from 3.75 per cent to 4.0 per cent as of 13 December 2000. The Riksbank also increases its *deposit* and *lending rates* in each case by 0,5 percentage points. The deposit rate is set at 3.25 per cent and the lending rate at 4.75 per cent. The decision takes effect on 13 December 2000.

2001-07-05 The *repo rate* is increased by the Riksbank from 4.0 per cent to 4.25 per cent as of 11 July 2001. The Riksbank also increases its *deposit* and *lending rates* in each case by 0.25 percentage points. The deposit rate is set at 3.5 per cent and the lending rate at 5.0 per cent. The decision takes effect on 11 July 2001.

09-17 The *repo rate* is lowered by the Riksbank from 4.25 per cent to 3.75 per cent as of 19 September 2001. The Riksbank also lowers its *deposit* and *lending rates* in each case by 0.50 percentage points. The deposit rate is set at 3.0 per cent and the lending rate at 4.5 per cent. The decision takes effect on 19 September 2001.

2002-03-18 The *repo rate* is increased by the Riksbank from 3.75 per cent to 4.0 per cent as of 20 March 2002. The *deposit rate* is accordingly adjusted to 3.25 per cent and the *lending rate* to 4.75 per cent.

04-25 The *repo rate* is increased by the Riksbank from 4.0 per cent to 4.25 per cent as of 2 May 2002. The *deposit rate* is accordingly adjusted to 3.5 per cent and the *lending rate* to 5.0 per cent.

06-28 The *reference rate* is confirmed by the Riksbank at 4,5 per cent for the period 1 July 2002 to 31 December 2002.

11-15 The *repo rate* is lowered by the Riksbank from 4.25 per cent to 4.0 per cent as of 20 November 2002. The *deposit*

rate is accordingly set at 3.25 per cent and the *lending rate* to 4.75 per cent.

12-05   The *repo rate* is lowered by the Riksbank from 4.0 per cent to 3.75 per cent as of 11 December 2002. The *deposit rate* is accordingly set at 3.0 per cent and the *lending rate* to 4.5 per cent.

2003-01-01   The *reference rate* is confirmed by the Riksbank at 4.0 per cent for the period 1 January 2003 to 30 June 2003.

03-17   The Riksbank decides to lower the *repo rate* from 3.75 per cent to 3.50 per cent, to apply from 19 March 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.75 per cent and 4.25 per cent respectively.

06-05   The Riksbank decides to lower the *repo rate* from 3.50 per cent to 3.00 per cent, to apply from 11 June 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.25 per cent and 3.75 per cent respectively.

07-04   The Riksbank decides to lower the *repo rate* from 3.0 per cent to 2.75 per cent, to apply from 9 July 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.00 per cent and 3.50 per cent respectively.

2004-01-01   The *reference rate* is confirmed by the Riksbank at 3.0 per cent for the period 1 January 2004 to 30 June 2004.

02-06   The Riksbank decides to lower the *repo rate* from 2.75 per cent to 2.50 per cent, to apply from 11 February 2004. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.75 per cent and 3.25 per cent respectively.

■ Statistical appendix

1 Riksbank's assets and liabilities

ASSETS. PERIOD-END STOCK FIGURES. SEK MILLION

		Gold	Lending to banks	Fixed assets	Other	Total
2002	July	17 436	21 631	159 602	2 381	201 050
	Aug	17 436	23 176	163 286	2 360	206 258
	Sept	17 436	22 393	157 865	2 280	199 974
	Oct	17 436	22 233	157 437	2 234	199 340
	Nov	17 436	23 582	157 993	2 369	201 380
	Dec	17 436	30 714	159 791	2 806	210 747
2003	Jan	18 210	22 849	153 407	11 021	205 488
	Feb	18 210	23 405	155 029	6 759	203 403
	March	18 210	22 619	151 184	11 678	203 691
	April	18 210	23 276	156 777	3 306	201 569
	May	18 210	15 938	157 470	7 006	198 624
	June	18 210	15 674	159 341	2 259	195 484
	July	18 210	15 601	158 042	1 723	193 576
	Aug	18 210	17 186	161 861	3 642	200 899
	Sept	18 210	15 206	161 340	2 444	197 200
	Oct	18 210	14 971	163 016	1 198	197 395
	Nov	18 210	15 669	165 571	3 901	203 351
	Dec	18 030	23 825	143 076	10 445	195 376
2004	Jan	18 029	15 901	146 891	12 110	192 931
	Feb	18 029	14 887	146 551	11 828	191 295

LIABILITIES. PERIOD-END STOCK FIGURES. SEK MILLION

		Notes and coins in circulation	Capital liabilities	Debts to monetary policy counterparties	Debts in foreign currency	Other	Total
2002	July	96 728	62 943	413	8 085	32 881	201 050
	Aug	98 367	62 943	133	10 450	34 365	206 258
	Sept	97 648	62 943	79	4 699	34 605	199 974
	Oct	97 411	62 943	117	3 675	35 194	199 340
	Nov	99 061	62 943	17	3 673	35 686	201 380
	Dec	107 439	62 943	87	3 664	36 614	210 747
2003	Jan	99 614	62 943	58	3 674	39 199	205 488
	Feb	100 475	62 943	33	3 327	36 625	203 403
	March	99 701	62 943	33	3 300	37 714	203 691
	April	100 318	62 943	98	4 135	34 075	201 569
	May	100 483	50 556	22	3 323	44 240	198 624
	June	100 142	50 556	123	4 173	40 490	195 484
	July	100 055	50 556	100	2 939	39 926	193 576
	Aug	101 644	50 556	69	7 247	41 383	200 899
	Sept	100 136	50 556	89	4 933	41 486	197 200
	Oct	99 987	50 556	58	6 483	40 311	197 395
	Nov	100 779	50 556	18	7 416	44 582	203 351
	Dec	108 940	50 556	540	3 653	31 687	195 376
2004	Jan	101 954	80 697	64	8 408	1 808	192 931
	Feb	100 615	80 697	61	7 774	2 148	191 295

2 Money supply

	SEK million			Percentage 12-month change	
	M0	M3		MO	M3
2001 Jan	84 327	960 545	Jan	2.5	1.1
Feb	84 282	947 276	Feb	4.0	−0.4
March	85 188	969 559	March	5.0	2.6
April	86 379	975 366	April	5.8	0.9
May	86 711	983 764	May	5.9	−0.1
June	87 288	1 012 094	June	7.2	6.2
July	86 705	977 812	July	6.6	3.5
Aug	87 693	985 811	Aug	6.6	3.8
Sept	87 892	1 008 439	Sept	6.0	4.3
Oct	88 809	1 022 639	Oct	7.3	5.4
Nov	89 947	1 039 646	Nov	7.1	6.6
Dec	96 743	1 038 972	Dec	8.8	6.7
2002 Jan	89 737	1 031 807	Jan	6.4	7.4
Feb	88 950	1 014 905	Feb	5.5	7.1
March	89 998	1 033 020	March	5.6	6.5
April	88 666	1 049 030	April	2.6	7.6
May	88 818	1 025 757	May	2.4	4.3
June	89 383	1 053 910	June	2.4	4.1
July	88 631	1 037 162	July	2.2	6.1
Aug	89 945	1 051 986	Aug	2.6	6.7
Sept	89 567	1 061 341	Sept	1.9	5.2
Oct	89 461	1 051 867	Oct	0.7	2.9
Nov	90 465	1 068 389	Nov	0.6	2.8
Dec	95 866	1 086 057	Dec	−0.9	4.5
2003 Jan	90 122	1 085 994	Jan	0.4	5.3
Feb	90 505	1 072 732	Feb	2.9	5.7
March	91 966	1 092 435	March	2.2	5.8
April	92 334	1 095 256	April	4.1	4.4
May	92 346	1 097 622	May	4.0	7.0
June	92 296	1 106 661	June	3.3	5.0
July	91 608	1 090 284	July	3.4	5.1
Aug	93 324	1 109 725	Aug	3.8	5.5
Sept	92 451	1 113 021	Sept	3.2	4.9
Oct	92 364	1 114 967	Oct	3.2	6.0
Nov	93 070	1 107 251	Nov	2.9	3.6
Dec	98 529	1 119 327	Dec	2.8	3.1
2004 Jan	93 134	1 109 837	Jan	3.3	2.2

3 Interest rates set by the Riksbank

PER CENT

	Date of announcement	Effective from	Repo rate	Deposit rate	Lending rate	Period	Reference rate[1]
2000	02-04	02-09	3.75			2002:2 half-year	4.50
	12-07	12-13	4.00	3.25	4.75	2003:1 half-year	4.00
2001	07-06	07-11	4.25	3.50	5.00	2003:2 half-year	3.00
	09-17	09-19	3.75	3.00	4.50	2004:1 half-year	3.00
2002	03-19	03-20	4.00	3.25	4.75		
	04-26	05-02	4.25	3.50	5.00		
	11-15	11-20	4.00	3.25	4.75		
	12-05	12-11	3.75	3.00	4.50		
2003	03-18	03-19	3.50	2.75	4.25		
	06-05	06-11	3.00	2.25	3.75		
	07-04	07-09	2.75	2.00	3.50		
2004	02-06	02-11	2.50	1.75	3.25		

[1] 1 July 2002 the official discount rate was replaced by a reference rate, which is set by the Riksbank at the end of June and the end of December.

4 Capital market interest rates

EFFECTIVE ANNUALIZED RATES FOR ASKED PRICE. MONTHLY AVERAGE. PER CENT

		Bond issued by:					
		Central Government				Housing institutions	
		3 years	5 years	7 years	9–10 years	2 years	5 years
2002	Jan	4.53	5.01	5.17	5.27	4.71	5.40
	Feb	4.76	5.18	5.28	5.36	4.94	5.57
	March	5.05	5.46	5.55	5.63	5.22	5.83
	April	5.10	5.46	5.56	5.69	5.28	5.85
	May	5.10	5.45	5.56	5.69	5.25	5.85
	June	4.94	5.27	5.39	5.52	5.09	5.65
	July	4.73	5.06	5.20	5.37	5.08	5.45
	Aug	4.52	4.83	4.96	5.13	4.86	5.21
	Sept	4.42	4.62	4.77	4.97	4.69	5.03
	Oct	4.29	4.62	4.80	5.07	4.52	5.07
	Nov	4.15	4.54	4.75	5.05	4.36	4.96
	Dec	3.99	4.39	4.59	4.89	4.16	4.79
2003	Jan	3.79	4.23	4.36	4.70	3.99	4.54
	Feb	3.56	3.97	4.11	4.47	3.77	4.27
	March	3.53	4.03	4.17	4.57	3.86	4.34
	April	3.59	4.17	4.30	4.72	3.93	4.57
	May	3.25	3.77	3.90	4.37	3.56	4.16
	June	2.97	3.53	3.79	4.20	3.11	3.80
	July	3.22	3.85	4.20	4.51	3.21	4.06
	Aug	3.58	4.18	4.45	4.70	3.55	4.42
	Sept	3.54	4.18	4.48	4.73	3.50	4.42
	Oct	3.62	4.31	4.60	4.85	3.53	4.54
	Nov	3.76	4.45	4.74	4.98	3.58	4.67
	Dec	3.55	4.30	4.60	4.86	3.38	4.51
2004	Jan	3.22	4.00	4.46	4.65	3.39	4.35
	Feb	3.04	3.86	4.42	4.55	3.19	4.19

5 Overnight and money market interest rates

MONTHLY AVERAGE. PER CENT

		Repo rate	Interbank rate	Treasury bills 3 months	6 months	12 months	Company certificates 3 months	6 months
2001	Jan	4.00	4.10	4.07	4.12		4.17	4.26
	Feb	4.00	4.10	4.01	4.07		4.14	4.23
	March	4.00	4.10	4.06	4.02	4.11	4.24	4.23
	April	4.00	4.10	3.94	3.98	4.01	4.12	4.11
	May	4.00	4.10	4.01	4.06	4.28	4.16	4.20
	June	4.00	4.10	4.17	4.27	4.48	4.39	4.46
	July	4.17	4.27	4.31	4.42		4.50	4.58
	Aug	4.25	4.35	4.28	4.31	4.37	4.45	4.48
	Sept	4.05	4.15	4.01	4.06	4.15	4.18	4.22
	Oct	3.75	3.85	3.70	3.72		3.90	3.91
	Nov	3.75	3.85	3.71	3.74	3.91	3.89	3.87
	Dec	3.75	3.85	3.71	3.76	3.97	3.96	3.96
2002	Jan	3.75	3.85	3.74	3.81		3.94	3.97
	Feb	3.75	3.85	3.87	3.99		4.01	4.14
	March	3.84	3.94	4.09	4.29	4.64	4.27	4.43
	April	4.00	4.10	4.25	4.41		4.52	4.69
	May	4.25	4.35	4.29	4.48	4.79	4.64	4.79
	June	4.25	4.35	4.28	4.42	4.71	4.88	5.00
	July	4.25	4.35	4.26	4.37		4.89	4.95
	Aug	4.25	4.35	4.19	4.29	4.43	4.83	4.87
	Sept	4.25	4.35	4.17	4.21	4.29	4.82	4.84
	Oct	4.25	4.35	4.07		4.14	4.67	4.64
	Nov	4.15	4.25	3.91	3.84	3.93	4.20	4.19
	Dec	3.85	3.95	3.66	3.68	3.77	3.97	3.95
2003	Jan	3.75	3.85	3.65			3.90	3.88
	Feb	3.75	3.85	3.61	3.40	3.55	3.85	3.79
	March	3.64	3.74	3.40	3.36	3.35	3.64	3.57
	April	3.50	3.60	3.42			3.62	3.59
	May	3.50	3.60	3.18	2.96		3.43	3.37
	June	3.16	3.26	2.81	2.71	2.61	3.03	2.94
	July	2.82	2.92	2.68			2.87	2.82
	Aug	2.75	2.85	2.71	2.81		2.88	2.90
	Sept	2.75	2.85	2.71	2.73	2.91	2.88	2.92
	Oct	2.75	2.85	2.73			2.89	2.93
	Nov	2.75	2.85	2.72	2.75		2.88	2.93
	Dec	2.75	2.85	2.69	2.70	2.83	2.86	2.87
2004	Jan	2.75	2.85	2.60			2.77	2.74
	Feb	2.59	2.69	2.46	2.38	2.47	2.59	2.59

6 Treasury bill and selected international rates

MONTHLY AVERAGE. PER CENT

		3-months deposits				6-months deposits			
		USD	EUR	GBP	SSVX[1]	USD	EUR	GBP	SSVX[1]
2001	Jan	5.62	4.71	5.69	4.07	5.47	4.62	5.59	4.12
	Feb	5.25	4.70	5.61	4.01	5.11	4.61	5.53	4.07
	March	4.87	4.64	5.41	4.06	4.72	4.51	5.31	4.02
	April	4.53	4.64	5.25	3.94	4.40	4.53	5.14	3.99
	May	3.99	4.58	5.09	4.01	3.99	4.50	5.07	4.06
	June	3.74	4.40	5.10	4.17	3.74	4.28	5.18	4.27
	July	3.66	4.41	5.11	4.31	3.69	4.33	5.18	4.41
	Aug	3.48	4.30	4.87	4.28	3.49	4.17	4.88	4.35
	Sept	2.92	3.91	4.56	4.01	2.89	3.78	4.49	4.06
	Oct	2.31	3.54	4.27	3.70	2.25	3.39	4.25	3.72
	Nov	2.01	3.32	3.88	3.71	2.02	3.20	3.86	3.74
	Dec	1.84	3.27	3.94	3.71	1.90	3.19	3.96	3.76
2002	Jan	1.74	3.28	3.94	3.74	1.85	3.28	4.04	3.81
	Feb	1.81	3.30	3.94	3.87	1.94	3.33	4.08	3.99
	March	1.91	3.34	4.03	4.09	2.15	3.45	4.23	4.29
	April	1.87	3.39	4.06	4.25	2.11	3.47	4.26	4.41
	May	1.82	3.40	4.05	4.29	2.01	3.56	4.26	4.48
	June	1.79	3.41	4.06	4.28	1.93	3.52	4.27	4.42
	July	1.76	3.34	3.94	4.26	1.82	3.40	4.07	4.37
	Aug	1.69	3.28	3.90	4.19	1.69	3.31	3.91	4.29
	Sept	1.73	3.24	3.88	4.17	1.71	3.18	3.89	4.21
	Oct	1.71	3.20	3.88	4.07	1.67	3.08	3.87	
	Nov	1.39	3.07	3.88	3.91	1.40	2.96	3.89	3.84
	Dec	1.33	2.86	3.92	3.66	1.34	2.81	3.92	3.68
2003	Jan	1.27	2.76	3.88	3.65	1.29	2.69	3.87	
	Feb	1.25	2.63	3.65	3.61	1.25	2.51	3.59	3.40
	March	1.19	2.47	3.56	3.40	1.17	2.39	3.50	3.36
	April	1.22	2.48	3.54	3.42	1.20	2.41	3.48	
	May	1.20	2.35	3.53	3.18	1.16	2.25	3.49	2.96
	June	1.03	2.09	3.55	2.81	1.00	2.02	3.48	2.71
	July	1.04	2.08	3.38	2.68	1.05	2.04	3.37	
	Aug	1.05	2.09	3.43	2.71	1.11	2.12	3.52	2.81
	Sept	1.06	2.09	3.60	2.71	1.10	2.12	3.70	2.73
	Oct	1.08	2.09	3.72	2.73	1.12	2.12	3.87	
	Nov	1.08	2.10	3.88	2.72	1.17	2.17	4.07	2.75
	Dec	1.08	2.09	3.93	2.69	1.15	2.13	4.08	2.70
2004	Jan	1.04	2.03	3.96	2.60	1.10	2.06	4.11	
	Feb	1.03	2.02	4.08	2.46	1.09	2.03	4.19	2.38

[1] Treasury bills.

7 Krona exchange rate: TCW index and selected exchange rates

		TCW index	SEK				
			EUR	GBP	USD	JPY	CHF
2001	Jan	129.6612	8.8963	14.0052	9.4669	0.0811	5.8170
	Feb	131.1553	8.9736	14.1555	9.7350	0.0838	5.8438
	March	133.4701	9.1254	14.4988	10.0316	0.0828	5.9416
	April	133.8280	9.1103	14.6320	10.1987	0.0824	5.9593
	May	133.9895	9.0536	14.7412	10.3333	0.0848	5.9019
	June	137.0501	9.2010	15.0876	10.7753	0.0882	6.0421
	July	137.4779	9.2557	15.2105	10.7666	0.0864	6.1150
	Aug	136.6723	9.3036	14.8466	10.3343	0.0851	6.1433
	Sept	142.0389	9.6670	15.5179	10.6089	0.0894	6.4799
	Oct	140.6226	9.5798	15.3446	10.5630	0.0871	6.4725
	Nov	138.9180	9.4131	15.2278	10.5965	0.0866	6.4196
	Dec	138.6116	9.4436	15.2024	10.5594	0.0832	6.4006
2002	Jan	135.7390	9.2292	14.9642	10.4398	0.0788	6.2594
	Feb	135.6543	9.1869	15.0223	10.5603	0.0791	6.2179
	March	133.8096	9.0600	14.7064	10.3396	0.0789	6.1690
	April	134.8265	9.1331	14.8742	10.3105	0.0788	6.2300
	May	135.2764	9.2236	14.6763	10.0519	0.0796	6.3300
	June	132.6093	9.1190	14.1612	9.5591	0.0774	6.1959
	July	134.3652	9.2705	14.5199	9.3400	0.0791	6.3380
	Aug	134.3777	9.2524	14.5486	9.4641	0.0795	6.3235
	Sept	133.2278	9.1735	14.5449	9.3504	0.0775	6.2617
	Oct	132.1625	9.1053	14.4489	9.2793	0.0749	6.2156
	Nov	131.3311	9.0785	14.2485	9.0655	0.0746	6.1869
	Dec	131.0292	9.0931	14.1771	8.9458	0.0732	6.1861
2003	Jan	130.9609	9.1775	13.9590	8.6386	0.0727	6.2767
	Feb	129.7272	9.1499	13.6813	8.4930	0.0711	6.2358
	March	130.3167	9.2221	13.5031	8.5298	0.0720	6.2777
	April	128.9566	9.1585	13.2756	8.4370	0.0704	6.1248
	May	127.1076	9.1541	12.8520	7.9229	0.0676	6.0426
	June	126.3154	9.1149	12.9638	7.8108	0.0660	5.9211
	July	127.6987	9.1945	13.1295	8.0807	0.0681	5.9417
	Aug	128.9600	9.2350	13.2074	8.2825	0.0697	5.9957
	Sept	126.7679	9.0693	13.0143	8.0861	0.0703	5.8616
	Oct	125.3358	9.0099	12.9077	7.6966	0.0703	5.8195
	Nov	125.2370	8.9908	12.9783	7.6831	0.0703	5.7642
	Dec	124.3958	9.0169	12.8514	7.3632	0.0682	5.8001
2004	Jan	125.3707	9.1373	13.1985	7.2493	0.0681	5.8343
	Feb	125.9654	9.1814	13.5574	7.2599	0.0682	5.8367

Note. The base for the TCW index is 18 November 1992. TCW (Total Competitiveness Weights) is a way of measuring the value of the krona against a basket of other currencies. TCW is based on average aggregate flows of processed goods for 21 countries. The weights include exports and imports as well as "third country" effects.

8 Nominal effective TCW exchange rate

INDEX: 18 NOVEMBER 1992=100
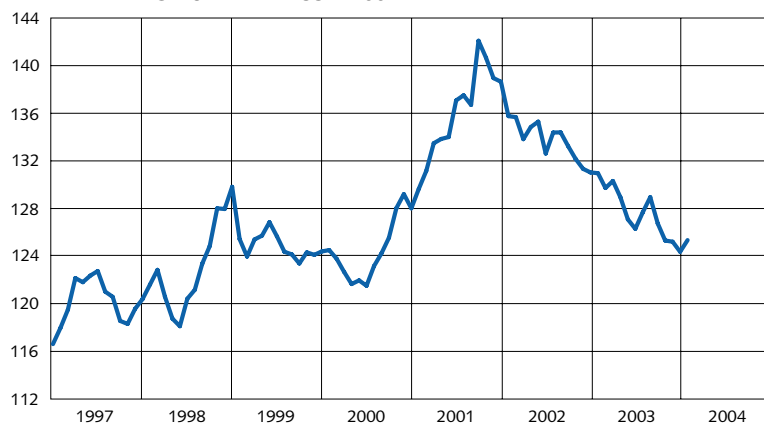
Note. TCW (Total Competitiveness Weights) is a way of measuring the value of the krona against a basket of other currencies. TCW is based on average aggregate flows of processed goods for 21 countries. The weights include exports and imports as well as "third country" effects.

9 Forward net position on the foreign-exchange market with authorized currency dealers

REPORTING PERIOD. SEK MILLION

		Non-bank public		Banks abroad	The Riksbank	Total
		Resident (1)	Non-resident (2)	Net (3)	Net (4)	(1+2+3+4)
2002	Jan	–380 368	–29 553	229 071	–5 753	–186 603
	Feb	–378 895	–20 566	197 130	–4 226	–206 557
	March	–364 779	–14 558	170 705	–3 144	–211 776
	April	–357 495	–23 805	173 232	0	–208 068
	May	–359 267	–20 295	192 173	0	–187 389
	June	–360 494	–10 409	194 312	0	–176 591
	July	–358 252	–10 076	136 339	0	–231 989
	Aug	–313 551	–13 862	153 001	–5 161	–179 573
	Sept	–360 149	– 5 411	160 670	–5 143	–210 033
	Oct	–342 143	– 5 719	216 218	–4 924	–136 568
	Nov	–348 617	–2 260	228 042	–5 089	–127 924
	Dec	–368 834	–5 810	209 273	–5 215	–170 586
2003	Jan	–325 302	2 280	221 587	–8 275	–109 710
	Feb	–321 149	6 386	231 208	–5 113	– 88 668
	March	–327 225	5 877	205 840	–5 112	–120 620
	April	–365 842	18 728	231 999	–5 113	–120 228
	May	–360 584	19 146	250 712	–5 064	– 95 790
	June	–351 974	25 664	197 708	–5 108	–133 710
	July	–341 819	17 016	205 349	–5 091	–124 545
	Aug	–359 475	11 041	156 955	–5 129	–196 608
	Sept	–324 385	17 034	228 887	–5 481	– 78 469
	Oct	–340 545	19 206	239 319	–5 463	– 82 025
	Nov	–309 229	6 781	214 104	–5 447	–88 349

Note. A positive position indicates that purchases of foreign currencies exceed sales. A negative position indicates that sales of foreign currencies exceed purchases.

■ Articles in earlier issues