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# Denmark's External Debt 1960-99

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## INTRODUCTION

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Denmark's external debt<sup>1</sup> – the debt less external claims – has accumulated since 1960 as a combination of deficits on the current account of the balance of payments and value changes in the existing debt. The debt reached its highest level in 1988, and has since declined. In recent years the size of the debt has fluctuated considerably as a consequence of value changes. This article describes how the external debt has been influenced historically by the balance of payments and by fluctuations in exchange rates, interest rates and share prices. Finally, two simple methods of illustrating the significance of the external debt to the Danish economy are discussed.

Value changes especially affected the scale of Denmark's external debt in the period 1976-84. In other periods value changes tended to be equalised over time. Assets and liabilities in the form of securities increased during the 1990s, and Denmark's external debt has become more sensitive than before to stock-market fluctuations. In overall terms, the current-account surplus and growth in GDP were the key factors in reducing the debt ratio (debt as a percentage of GDP) during the 1990s.

Periods with a significant current-account deficit and strongly increasing external debt can be a particular challenge to the fixed-exchange-rate policy. This will no longer apply if Denmark decides to adopt the euro. However, the external debt is still of significance to the Danish economy, since it reflects abroad's claims on a part of Denmark's economic output.

## THE IMPACT OF VALUE CHANGES ON THE EXTERNAL DEBT

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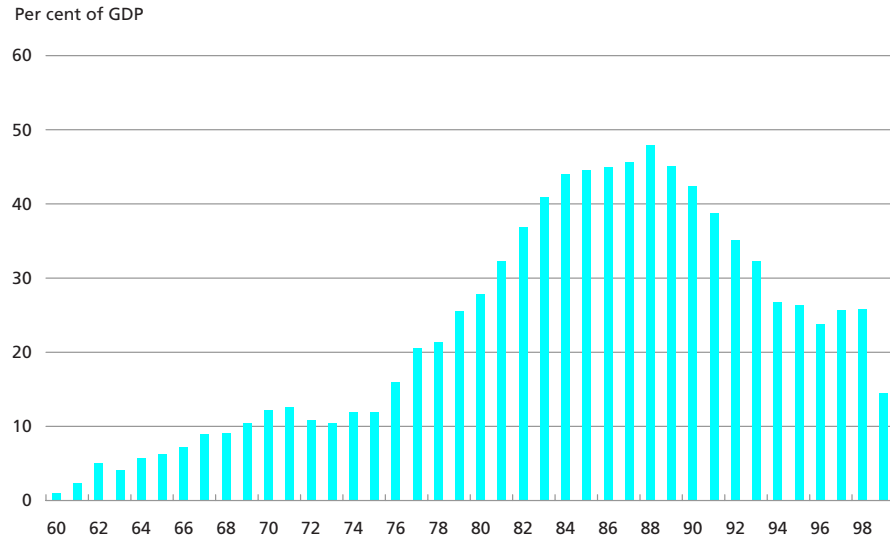
The accumulation of Denmark's external debt began in 1960, but did not start to accelerate until the mid-1970s. The strongest accumulation took place in the ten-year period from 1975 to 1984, cf. Chart 1. The debt reached its highest point in 1988.

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<sup>1</sup> External debt in this article refers to the concept of the international investment position in the IMF's Balance of Payments Manual, Fifth Edition, 1993.

DENMARK'S EXTERNAL DEBT, 1960-99

Chart 1



Sources: Official debt compilations from Statistics Denmark (1960-75) and Danmarks Nationalbank (1991-99). Data for 1976-90 are own calculations, cf. the Appendix.

The increase in indebtedness can be attributed to current-account deficits and to value changes in the existing debt. By definition these are the only factors affecting the external debt. The contribution of value changes to the debt accumulation since 1960 can be illustrated by subtracting the accumulated current-account balance from the published debt statistics, cf. Chart 2<sup>1</sup> and Box 1.

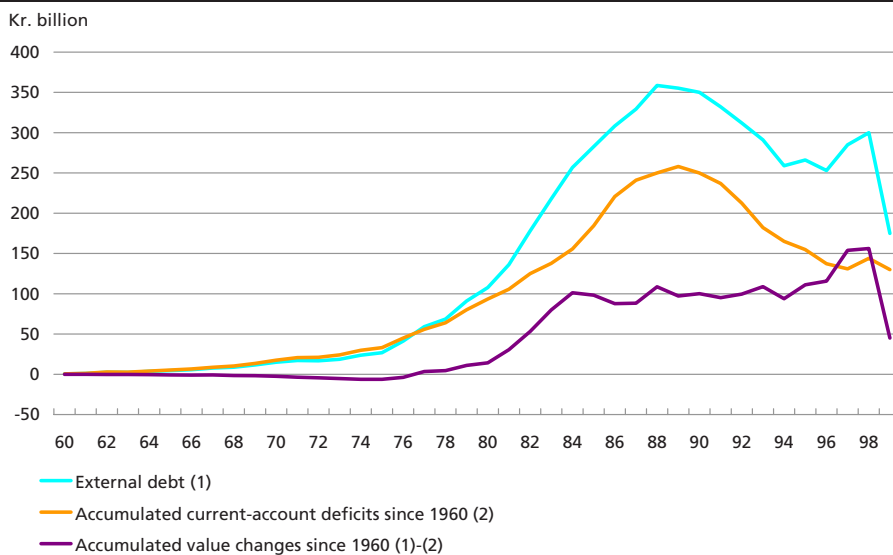
During the period 1960-75 value changes in krone terms were moderate and generally offset each other. These fluctuations should be viewed in the light of the low level of debt. In this period the debt was almost exclusively denominated in foreign currency, and the value adjustments were attributable primarily to fluctuations in the krone rate, while stock-market fluctuations played a minor role.

In the period 1976-84 value changes led to rapidly increasing debt. One of the reasons was the many devaluations of the krone, as well as the rising dollar rate after the fixed-exchange-rate policy was introduced in 1982. The nominal effective krone rate thus fell by a total of 23 per

<sup>1</sup> The external debt is currently compiled on the basis of extensive registration of the assets and liabilities of the general government and private sectors at year-end. The debt is calculated at market value. The calculation method is described in further detail in e.g. Danmarks Nationalbank, Statistics, Special Report No. 1R, 3 December 1999. In several periods the external debt has been calculated historically as the sum of the debt of the preceding year plus the current-account balance and estimated value adjustments. The upward adjustment of the external debt in 1991, when the present collection methodology was introduced, means that the data in Chart 2 has been recalculated on the basis of new estimated value adjustments. The calculations are described in further detail in the Appendix and are made solely for analytical purposes.

## VALUE CHANGES IN DENMARK'S EXTERNAL DEBT, 1960-99

Chart 2



Note: Based on calculated debt figures for the period 1976-90, as well as published debt figures from Statistics Denmark (1960-75) and Danmarks Nationalbank (1991-99).

cent from 1976 to 1984. In historical terms this was a very substantial decline in the effective krone rate.

The write-down of the krone in the period 1976-82 represented a structural shift. Although interest rates fell strongly at the end of the period, leading to capital gains on non-residents' holdings of krone-denominated debt securities, these holdings at that time were so insig-

## UNCERTAINTY OF DEBT AND BALANCE-OF-PAYMENTS COMPILATIONS

Box 1

The observations of the proportion of the accumulated debt that can be attributed to value changes, and the proportion attributable to the current account of the balance of payments, must be viewed in the light of the uncertainty concerning the compilations of the external debt in the 1980s, cf. the Appendix, as well as the general uncertainty of the compilation of the current account of the balance of payments.

The uncertainty of the compilation of the current account can be illustrated by "Errors and omissions" in the balance of payments. This item is calculated as the sum of unexplained flows related to financial transactions *and* the current account, and in the 1970s and the 1980s totalled kr. -25 billion. Assuming hypothetically, and somewhat unrealistically, that this amount can be fully attributed to the current account, the current deficit in this period taken as one should be kr. 25 billion greater, and the aforementioned value changes equivalently lower. However, normally "Errors and omissions" is attributed primarily to lack of registration of financial transactions such as direct investments, portfolio investments, or loans and deposits.

nificant that their impact on the external debt was negligible. In this period non-residents' holdings of Danish equity securities were of no particular significance to value changes in the external debt either.

After 1984 value changes have tended to offset each other, usually as a consequence of interest-rate fluctuations. At the same time the volatility of the value changes has increased in recent years, cf. the period 1997-99. This is not an isolated Danish phenomenon, but has also prevailed internationally. For example, in Finland the price of Nokia stocks rose strongly in 1999, and since these stocks were owned by non-residents Finland's external debt was written up by a substantial amount.

### **CHANGES IN THE STRUCTURE OF THE EXTERNAL DEBT IN THE 1990s**

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The greater volatility of the value changes relating to the external debt towards the end of the 1990s is attributable to changes in the structure of the debt, as well as a strong increase in both assets and liabilities, cf. Chart 3. This development must be viewed against the currency liberalisation in the 1980s, as well as the internationalisation of the capital markets.

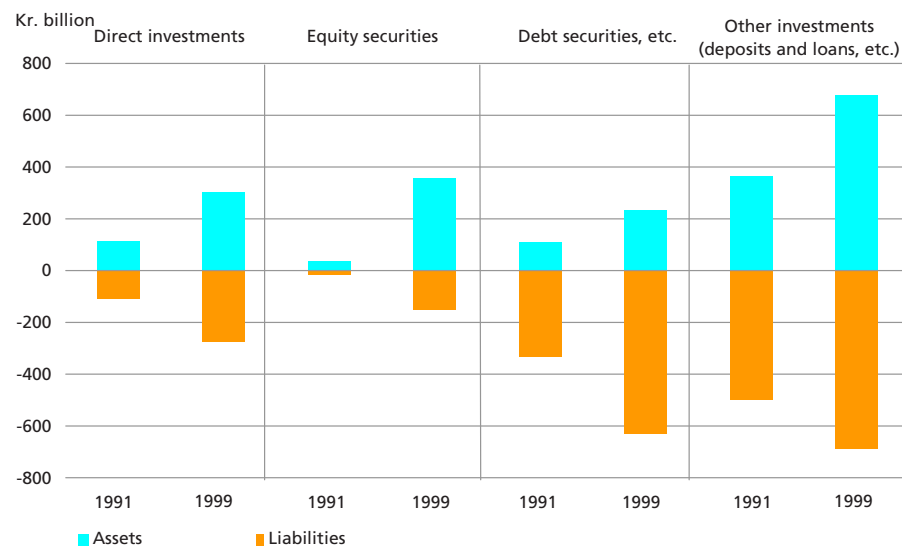
The external debt can roughly be broken down into four components, and for each component Denmark has both external assets and liabilities: direct investments, equity securities, debt securities and other securities (including money-market paper), and other investments, typically bank loans and deposits.

At the beginning of the 1990s the "debt securities" component showed a net debt. This was still the case in 1999, and liabilities in the form of debt securities have furthermore increased by more than the equivalent assets. This increases the sensitivity to interest-rate fluctuations. A significant proportion of the debt securities which are liabilities are krone-denominated debt securities, and thereby krone positions, while the debt securities which are assets are typically denominated in foreign exchange, implying a foreign-exchange position. In so far as non-residents hedge the exchange-rate risk on purchasing krone-denominated debt securities via krone-denominated loans, non-residents' purchases of krone-denominated debt securities will lead to increased borrowing by non-residents from Danish banks, thereby affecting "Other investments".

With regard to equity securities the structure has changed in favour of considerably higher Danish net assets, which increases the sensitivity to stock-market fluctuations. Furthermore, the equity securities which are assets now considerably exceed the debt securities which are assets. This

EXTERNAL ASSETS AND LIABILITIES, 1991 AND 1999

Chart 3



trend is probably related to the relatively small Danish stock market in international terms and the limited liquidity for large investment amounts. The equity securities which are assets are denominated in foreign exchange, and therefore in isolated terms constitute a position in foreign exchange which typically is not hedged.

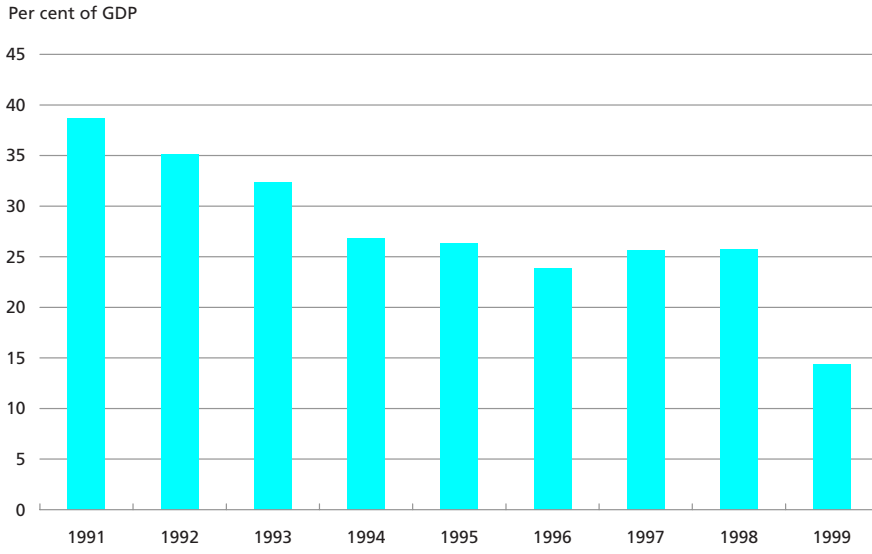
The balances of direct investments and other investments increased during the 1990s. The ratio between assets and liabilities has not changed significantly, however, since assets still generally correspond to liabilities. Most of the direct investments are not listed on a stock exchange, and they are valued at intrinsic value. This reduces the annual fluctuations attributable to value changes. The value changes are normally also moderate for "Other investments" comprising loans, deposits, trade credits, etc., and usually solely consist of exchange-rate adjustments.

The structure of Denmark's external debt is of great significance to the impact of value changes on the external debt. This is best illustrated by the extraordinarily large value changes in the preliminary compilation of the debt<sup>1</sup> for 1999. With equity securities as net external assets the external debt tends to fall when stock prices – in Denmark and abroad – rise, or when bond prices are falling, since Denmark holds debt securities as net liabilities. Both courses of development were seen in 1999, and furthermore, foreign equity securities rose by far more than Danish equity securities.

<sup>1</sup> Danmarks Nationalbank, Statistics, Nyt No. 33, 31 March 2000.

DEBT RATIO, 1991-99

Chart 4



An important element of the change in the structure of the external debt during the 1990s is the shift from net *debt* denominated in foreign exchange to net *assets* denominated in foreign exchange. The immediate effect of a decrease in the effective krone rate (as in 1999) is therefore to reduce the external debt, since the value in kroner of the net assets denominated in foreign exchange increases.

#### THE DEBT RATIO FROM 1991 TO 1999

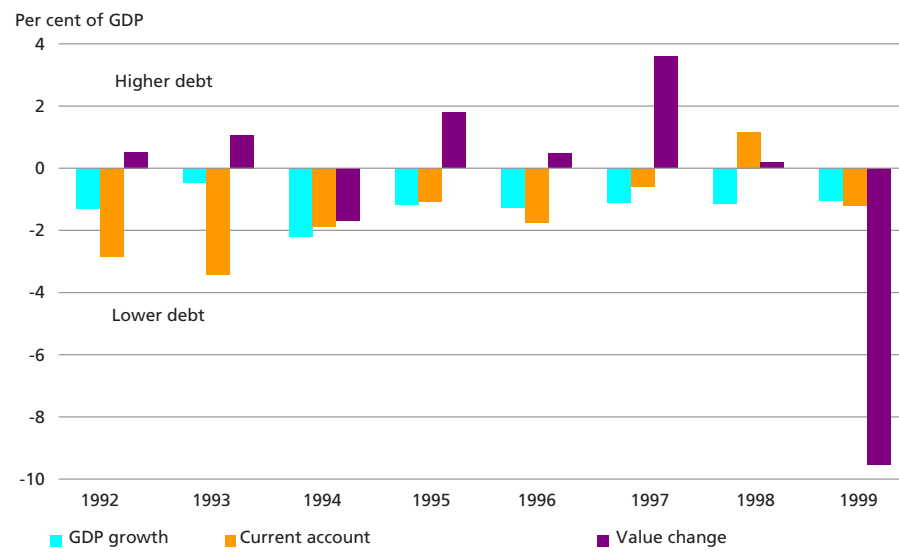
An analysis of the significance of the debt to the Danish economy must consider the debt as a ratio of the value of total economic output (nominal GDP). The debt ratio can be defined as the external debt as a percentage of GDP. Chart 4 shows the development in the debt ratio, while Chart 5 presents the changes broken down as contributions from an increase in GDP, the current account of the balance of payments and value changes.

Since 1991<sup>1</sup> the debt ratio has been reduced from almost 39 per cent to just over 14 per cent of GDP, or by a total of 24 percentage points. In isolated terms the increase in GDP contributed 9 percentage points to the reduction of the debt ratio, while the current-account surpluses contributed a total of 12 percentage points, and value changes reduced the debt

<sup>1</sup> As from 1991 the factors affecting the debt accumulation can be compiled in more detail, since from that time the compilation is made on a comparable basis.

FACTORS UNDERLYING CHANGES IN THE DEBT RATIO, 1991-99

Chart 5



ratio by only just below 3 per cent. The general growth in output and the development in the current account of the balance of payments were thus the fundamental factors in terms of reducing the debt ratio over a relatively long period. However, in individual years value changes accounted for the strongest fluctuations, cf. Chart 5.

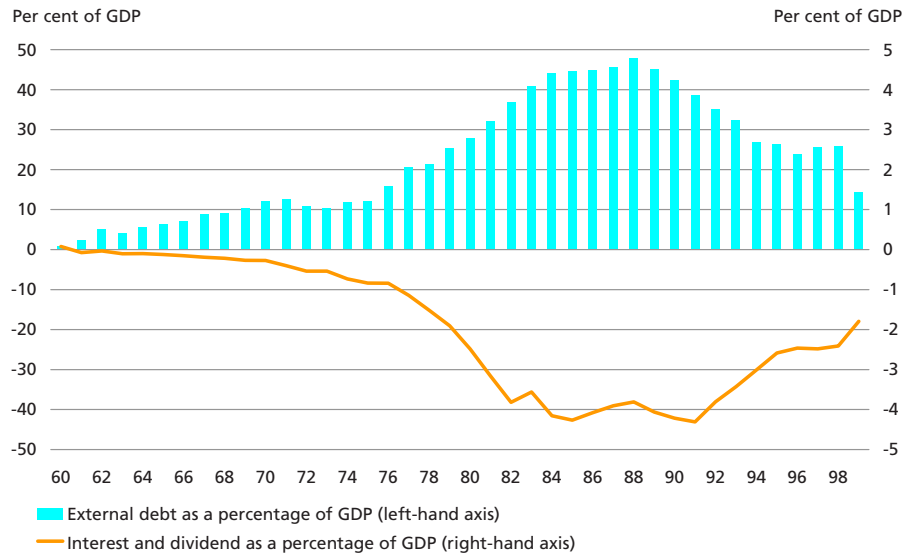
To gain a better picture of the significance of the debt to the Danish economy in periods of strong market volatility it is also necessary to consider the development in current annual expenditure to service the debt, i.e. interest and dividend, cf. below.

## INTEREST AND DIVIDEND TO ABROAD

Chart 6 shows interest and dividend to abroad (as a percentage of GDP) in the period 1960-99. Expenditure peaked in the 1980s at an amount equivalent to more than 4 per cent of Denmark's output. The expenditure is affected by such factors as differences between interest on debt and on external claims. This implies that the external debt accrues interest at a higher rate than external claims<sup>1</sup>. Interest and dividend can thus fluctuate, even though the debt remains unchanged. Measured as a percentage of GDP interest and dividend fluctuate less from year to year than the debt ratio, but are still not a perfect measure of the costs imposed on the Danish economy by the external debt, cf. Box 2.

<sup>1</sup> Cf. Frank Øland Hansen and Lill Thanning Hansen, Interest and Dividend on Denmark's External Debt, Danmarks Nationalbank, *Monetary Review*, 1st quarter 2000.

MEASURE OF THE BURDEN OF EXTERNAL DEBT ON THE DANISH ECONOMY Chart 6



On comparison of interest and dividend as a percentage of GDP with the debt ratio for the period 1960-1999, cf. Chart 6, the picture these measures taken as one present does not vary to any great extent. A difference is seen in 1999, however, when the debt ratio was reduced by half, while interest and dividend decreased by a good third. Currently the expenditure on interest and dividend as a consequence of the external debt is around 2 per cent of total Danish output.

MEASUREMENT PROBLEMS ON THE COMPILATION OF SHARE RETURNS

Box 2

The registration of share returns poses a practical problem. Dividends are registered in the payments statistics when they are transferred to/from Denmark, while the registration system fails to capture the share of the remuneration which is retained in the business enterprises as non-distributed profits. When investments are made directly in a business enterprise – here defined as more than 10 per cent of the equity capital – the retained profits are registered on the basis of an annual questionnaire survey to all large and medium-sized enterprises with direct investments. Since at the end of 1999 residents' holdings of foreign equity securities exceeded non-residents' holdings of Danish equity securities by approximately kr. 200 billion, net income of several billion kroner as retained profits from investment in equity securities which do not constitute direct investments fails to be registered.

In the compilation of the external debt value adjustment of equity securities is at market prices. All other things being equal, the price of equity securities with retained profits tends to increase, which reduces Denmark's external debt. This asymmetry between a decrease in the external debt and insufficient registration to the balance of payments should be kept in mind when the figures are assessed.



## DENMARK'S EXTERNAL DEBT IN THE PERIODS 1890-1913 AND 1960-88

Box 3

In 1890 Denmark's external debt was around zero (as in 1960), so that claims on abroad were on a par with abroad's claims on Denmark. However, Denmark experienced strong economic growth in the ensuing period, driven particularly by extensive business investments and railway and housing construction (migration from country to town). There was agreement by the general public and among politicians that this expansion should be financed by external borrowing, and the general government and private sector alike embarked on wide-scale borrowing. Certain major business enterprises issued shares abroad, particularly on the Paris Stock Exchange.

No financing problems were experienced until 1908, even though at that time the external debt had reached one third of the output value (GDP). However, it turned out that the substantial debt put the country in an exposed position. For example, the Paris Stock Exchange threatened to suspend trading in Danish securities after the government had submitted a bill to raise Danish customs tariffs on wine. Later that year the financial crisis in New York affected Denmark, and several creditor countries terminated their short-term credits to Denmark. It was necessary to tighten economic policy, and a central issue in the public debate was concern about the high indebtedness and the rising burden of interest and instalments. However, the debt continued to accumulate until 1913 when it peaked at kr. 1 billion, or approximately 41 per cent of GDP at that time<sup>1</sup>.

Rising prices, particularly for agricultural produce, during the first world war made it possible to reduce the debt burden. However, the period up to the mid-1920s again saw a deficit on the balance of payments. This was reversed to a surplus for the next two decades, but this was particularly attributable to the poor functioning of the international foreign-exchange and capital markets, which made it very difficult to raise loans. One of the consequences was foreign-exchange control and import regulations as from the beginning of the 1930s.

In 1960 the external debt had been almost eliminated (less than 1 per cent of GDP), but in the following period it rose to 48 per cent of GDP in 1988. The debt accumulation was not a major cause of concern until the late 1970s, when Denmark's creditworthiness for the first time became a central issue of the debate. In Danish Monetary History this period is summarised as follows<sup>2</sup>: "The 1960s ended in disappointment that the expectations of a coordination policy were not fulfilled, since price increases and the current-account deficit were above an acceptable level, but the 1970s were far worse .... . As soon as the employment level rose, inflation began to increase, the external debt was expanded and the high level of interest rates was detrimental to the economy. ... It is understandable that this led to irresolution and discouragement, but it is positive that it triggered a shift in attitudes among the general public, creating the basis for the stable development in the 1980s."

The most striking difference between the two periods of debt accumulation is that inflation was below 1 per cent p.a. on average in the period 1890-13, against 7 per cent p.a. in the period 1960-88, cf. the Table. The higher inflation rate in 1960-88 contributed to a higher interest-rate level, implying augmented interest expenditure, a greater current-account deficit and a higher debt ratio as a self-reinforcing process.

Year	Inflation <sup>1</sup>	Bond yield	External debt <sup>2</sup>
1890 .....	2	4	0
1913 .....	3	4	41
1960 .....	2	6	1
1982 .....	12	19	37
1988 .....	3	10	48

<sup>1</sup> GNP deflator.

<sup>2</sup> Per cent of GDP.

<sup>1</sup> Svend Aage Hansen and Knud Erik Svendsen, *Danish Monetary History, vol. 1*, (in Danish) Danmarks Nationalbank, Copenhagen, 1968.

<sup>2</sup> Erik Hoffmeyer, *Danish Monetary History, vol. 5*, (in Danish) Danmarks Nationalbank, Copenhagen, 1993.

## CONCLUSION

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The external debt reflects that a proportion of Denmark's economic output is owed to abroad. The burden this debt imposes on the Danish economy is best measured by considering the debt – and interest and dividend thereon – in relation to total output. In recent years there have been strong fluctuations in the size of the debt as a consequence of value changes, of which the most recent example is the strong decrease in the debt in 1999. Despite these major short-term fluctuations the experience from the 1990s shows that the current-account balance and the increase in GDP are the fundamental factors with the greatest impact on the debt ratio. Value changes have tended to be equalised over time.

The historical perspective shows that periods of accelerating indebtedness create problems for the Danish economy (cf. Box 3 in which debt accumulation in 1960-88 is compared with debt accumulation in 1890-1913). One problem is that Denmark's creditworthiness is brought into question. The focus on the balance of payments in periods with large current-account deficits is related to the fixed-exchange-rate policy, since a rapidly increasing debt increases the risk of pressure on the krone. This consideration will no longer apply if Denmark decides to adopt the euro. However, a current-account deficit may still reflect problems with competitiveness or overheating of the Danish economy, and the debt will still reflect that a share of Denmark's output is owed to abroad. The current ratio is 14 per cent, measured as the debt in relation to one year's output. This means that each year Denmark has to relinquish 2 per cent of its output to abroad.

## APPENDIX

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### Construction of a continuous series for the external debt in the period 1960-99

During the period 1960-91 Statistics Denmark published data on Denmark's external debt. As from 1991 the Nationalbank took over this statistical responsibility and amended the method applied: the compilation of the debt was based on an extensive questionnaire survey of the assets and liabilities of the private sector, and was also based on more precise statistics for non-residents' holdings of Danish equity securities and krone-denominated debt securities. Including subsequent corrections, the external debt was thus written up by a total of kr. 68 billion in 1991. In order to evaluate the development in value changes in the period prior to 1991 this upward revision must be distributed on the preceding years. For analytical purposes this can be achieved by constructing a continuous series for the external debt on the basis of a best estimate of the number of years on which the upward revision of the debt in 1991 is to be distributed. The upward revision in 1991 was attributable primarily to the private sector's external borrowing, as well as the upward revision of the value of non-residents' holdings of Danish equity securities and krone-denominated debt securities<sup>1</sup>.

Business enterprises' borrowing abroad is found to have increased primarily after 1978 when borrowing via Cayman Island branches, etc. accelerated. In the period before 1991 the details in the banking statistics of guarantees for Danish borrowers vis-à-vis foreign banks were used to calculate small- and medium-sized business enterprises' borrowing abroad. The use of guarantees declined gradually in step with the establishment of more and more branches of Danish banks abroad. Borrowing by private individuals thus gradually became underestimated. The establishment of subsidiary banks and staffed branches abroad commenced in 1976<sup>2</sup>.

On the basis of the private sector's borrowing abroad it is considered relevant to begin the upward revision of the external debt as from 1976, with a gradual increase in effect. The gradually accelerating impact of the factors is obtained by gradually reducing the percentage of upward adjustment of the debt. For 1991 the amount of kr. 68 billion corresponds to an upward revision of 25.8 per cent, and for each of the 16 years back to 1976 the upward revision is reduced by 25.8/16 per cent. The calculated series is shown in Chart A. As stated, this series is solely for analytical purposes.

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<sup>1</sup> See Denmark's Nationalbank, *Monetary Review*, May 1994, pp. 11-19.

<sup>2</sup> See Denmark's Nationalbank, *Monetary Review*, August 1987, p. 7.

CONTINUOUS SERIES FOR THE EXTERNAL DEBT 1960-99

Chart A

