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**Working Paper**

# Business cycles, monetary transmission and shocks to financial stability: empirical evidence from a new set of Danish quarterly national accounts 1948-2010

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# BUSINESS CYCLES, MONETARY TRANSMISSION AND SHOCKS TO FINANCIAL STABILITY

## EMPIRICAL EVIDENCE FROM A NEW SET OF DANISH QUARTERLY NATIONAL ACCOUNTS 1948-2010

Kim Abildgren

MACROPRUDENTIAL RESEARCH NETWORK

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This paper presents research conducted within the Macroprudential Research Network (MaRs). The network is composed of economists from the European System of Central Banks (ESCB), i.e. the 27 national central banks of the European Union (EU) and the European Central Bank. The objective of MaRs is to develop core conceptual frameworks, models and/or tools supporting macro-prudential supervision in the EU.

The research is carried out in three work streams:
1) Macro-financial models linking financial stability and the performance of the economy;
2) Early warning systems and systemic risk indicators;
3) Assessing contagion risks.

MaRs is chaired by Philipp Hartmann (ECB). Paolo Angelini (Banca d'Italia), Laurent Clerc (Banque de France), Carsten Detken (ECB), Cornelia Holthausen (ECB) and Katerina Šmídková (Czech National Bank) are workstream coordinators. Xavier Freixas (Universitat Pompeu Fabra) and Hans Degryse (Katholieke Universiteit Leuven and Tilburg University) act as external consultant. Angela Maddaloni (ECB) and Kalin Nikolov (ECB) share responsibility for the MaRs Secretariat.
The refereeing process of this paper has been coordinated by a team composed of Cornelia Holthausen, Kalin Nikolov and Bernd Schwaab (all ECB).
The paper is released in order to make the research of MaRs generally available, in preliminary form, to encourage comments and suggestions prior to final publication. The views expressed in the paper are the ones of the author(s) and do not necessarily reflect those of the ECB or of the ESCB.

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**Abstract**

In Denmark official quarterly national accounts are only available for the period since 1977. The paper constructs a set of summary non-seasonally adjusted quarterly national accounts for Denmark for 1948-2010 in current and constant prices as well as a set of other key quarterly macroeconomic indicators covering the Danish economy since 1948. As a first exploratory analysis of these two new data sets the paper reviews some of the stylised empirical evidence on the business cycle, the monetary transmission mechanism and shocks to financial stability that can be uncovered using filtering techniques and reduced-form vector autoregressive (VAR) models. The long-span data sets make it possible to estimate VAR models of a higher dimension than is usually found in the literature due to degrees-of-freedom problems. The results from the VAR analysis indicate a significant and long-lasting negative impact on real GDP following an exogenous shock to the banking sector's write-down ratio.

*Key words*: Quarterly national accounts; Danish economic history; business cycles; monetary transmission; financial stability; band-pass filters; VAR analysis.
*JEL Classification*: C32; C82; E01; E32; E44; E52; N14.

**Resumé (Danish summary)**

I Danmark foreligger kun officielle kvartalsvise nationalregnskaber for perioden siden 1977. I papiret konstrueres et sæt summariske ikke-sæsonkorrigerede kvartalsvise nationalregnskaber for Danmark i såvel løbende som faste priser for perioden 1948-2010. Endvidere konstrueres et supplerende datasæt, som indeholder en række øvrige kvartalsvise makroøkonomiske indikatorer for den danske økonomi dækkende samme periode. Som en første eksplorativ analyse af disse to nye datasæt gennemgås de empiriske stiliserede fakta omkring konjunkturcykler, den pengepolitiske transmissionsmekanisme og finansiel stabilitet, som kan udledes på basis af filtreringsteknikker og vektorautoregressive (VAR) modeller. De nye lange tidsserier gør det muligt at estimere VAR modeller af en højere dimension, end der normalt ses i litteraturen som følge af problemer med manglende frihedsgrader. VAR analyserne indikerer, at der kan være en signifikant og langvarig negativ påvirkning af det reale bruttonationalprodukt efter et eksogent stød til bankernes nedskrivningsprocenter.

## Non-technical summary

In Denmark official time series of quarterly national accounts are only available for the period since 1977. Based on a range of quarterly business cycle indicators this paper constructs a set of summary non-seasonally adjusted quarterly national accounts for Denmark 1948-2010 in current and constant prices as well as a set of other key quarterly macroeconomic indicators covering the Danish economy since 1948. Based on these new data sets the paper reviews the empirical evidence on shocks to financial stability and the linkages between the financial sector and the real economy in the Danish post-war period that can be uncovered using structural vector autoregressive (VAR) models.

VAR models have found extensive use in relation to studies on monetary transmission and have more recently also found use in relation to studies on the robustness of the banking system to adverse macroeconomic shocks and on the feedback effects on the macroeconomy of shocks to financial stability. The new long-span data sets presented in the paper make it possible to estimate VAR models of higher dimensions than usually found in studies covering not only Denmark but also many other countries due to lack of degrees of freedom.

The standard VAR model used in the literature for analysing monetary transmission usually includes three endogenous variables: Real GDP, CPI, and the short-term interest rate. In addition to these three variables the VAR models estimated in this paper includes six more endogenous variables commonly known to be of interest in relation to financial stability. The additional six variables are the yield on long-term central-government bonds, share prices, broad money, domestic credit, house prices and the banks' write-down ratio (i.e. loan impairment charges in per cent of loans and guarantees).

In the VAR models the banks' write-down ratio is used as an indicator of the robustness of the banking sector, and widespread financial instability can be represented in the model via an exogenous shock to the banks' write-down ratio. Such a shock might be interpreted as a financial stability shock originating from within the banking sector, for instance a sudden reassessment of the credit quality of the banks' loan portfolio or a sudden extraordinarily increase in the banking sectors' risk aversion. However, the model allows for other interpretations as well. An extraordinarily large increase in the banking sector's write-down ratio could for instance reflect weakened confidence in the banking sector, which increases the saving behaviour of households and firms and generates a deep recession. The banks' write-downs express the banks' expected

future losses and historically write-downs have been booked 1-2 years before the losses are realised. The banks' write-down ratio is therefore also a useful indicator of current systemic stress or instability.

The results of the VAR analysis in the paper indicate that an exogenous increase in the banking sector's write-down ratio is related to a significant and long-lasting decline in domestic credit, house prices and real GDP. This finding is consistent with recent economic-historical research, which indicates that the economic recovery after a banking crisis tends to be slower than normal.

The VAR model estimated in the paper has found use as a tool to quantify the real effects of banking crises in Danish post-World War II economic history, cf. Abildgren, Kim, Birgitte Vølund Buchholst, Atef Qureshi and Jonas Staghøj, Real Economic Consequences of Financial Crises, *Danmarks Nationalbank Monetary Review*, Vol. 50(3:2), 2011, pp. 1-49. In this study the authors estimated the development in real GDP five years ahead, corresponding to the extraordinary increases in the Danish banking sector's write-downs in 1991-93 and 2008. The extraordinary increase in the banks' write-downs in 2008 was equivalent to real GDP in the 1st half of 2010 being around 3 per cent lower than in a baseline scenario without a financial crisis. Similarly, the extraordinary increases in the banking sector's write-downs in 1991-93 became – over a few years – equivalent to a level of real GDP that was around 3 per cent lower than in the baseline scenario.

## 1. Introduction

In the wake of the international financial crisis 2008/2009, the interactions between the banking system and the macro economy have once again been among the issues at the top of the research agenda. A deeper empirical understanding of these issues requires a careful analysis of the rich and complicated dynamic interactions between a range of macroeconomic variables and could therefore benefit from access to long-span consistent time series of national accounts and other key macroeconomic indicators at a quarterly frequency. Unfortunately, researchers often have to rely on either long annual time series or quarterly data covering only the most recent decades.

The expansion of the official statistics with quarterly national accounts occurred rather late in Denmark compared to other countries. In the USA quarterly national accounts were introduced already in the 1940s, UK and Canada followed in the 1950s and Sweden and Finland in the 1960s. Statistics Denmark – the central bureau of statistics in Denmark – only introduced quarterly national accounts for Denmark in 1988 and the first release covered just 6 quarters of data (Berner & Thage, 1989; Graversen *et al*., 2008). At a later stage Statistics Denmark released series back to 1977 (Sørensen, 1994a, 1994b, 1994c).

No official quarterly national accounts are available for Denmark prior to 1977. For selected pre-1977 periods other authors have previously published quarterly national-account data for Denmark following different compilation methods. However, the lack of a consistent set of long-span quarterly national-account aggregates prior to 1977 limits the scope for business cycle analysis and short-term dynamic modelling of the Danish economy.

The paper at hand presents and documents a set of summary non-seasonally adjusted quarterly national accounts for Denmark in current and constant prices for the period since 1948. The data set contains a breakdown of GDP into private consumption, government consumption, gross investments, exports of goods and services and imports of goods and services. In order to facilitate the analytical application of the new historical quarterly national-account data, the author has also compiled a collection of seventeen other key quarterly macroeconomic indicators for the Danish economy covering the period since 1948.

Furthermore, as a first exploratory analysis of these two new data sets the paper reviews some of the stylised empirical evidence on the business cycle, monetary transmission and financial stability that can be uncovered from the data using filtering techniques and reduced-form VAR models. The two new long-span data sets make it possible to estimate VAR models of higher dimensions than usually found in studies covering not only Denmark but also many other countries due to lack of degrees of freedom. The VAR models presented in this paper contain nine endogenous variables. They are therefore able to add new empirical evidence on the influence of macroeconomic shocks on the banking sectors' write down ratio.

Furthermore, the models can also throw some new light on the output effects of shocks to financial stability.

## 2. Previous works on pre-1977 quarterly national accounts in Denmark

Danmarks Nationalbank – the central bank of Denmark – has compiled a rather detailed set of quarterly national-account statistics for the period since 1971 in relation to the construction of a macroeconometric model for Denmark (Christensen, 1989; Christensen & Knudsen, 1992; Danmarks Nationalbank, 2003). The work on quarterly national accounts at the Nationalbank is still going on. Each quarter the Nationalbank converts a large number of short-term business cycle indicators into a set of quarterly national-account figures in order to have a comprehensive and consistent picture of the latest economic development prior to the release of the official quarterly national-account data from Statistics Denmark.

Thygesen (1971) presents estimates of quarterly GDP in current prices 1951-1968 in relation to an econometric study on monetary transmission in Denmark. These GDP estimates are based on only three business cycle indicators (retail sales, exports and constructions started in a quarter).

Hansen & Paldam (1973) document a more detailed set of quarterly national-account indicators that served as the basis for a macroeconometric model at the Danish Council of Economic Advisors. However, the longest time series in the data set covers only the period 1960-1969, and many of the time series are even shorter. Furthermore, the data set is not tabulated in Hansen & Paldam, *op.cit.*, and is not available in the archives of the Danish Council of Economic Advisors.

## 3. Summary quarterly national accounts for Denmark 1948-2010 - compilation approach

In the quarterly national accounts 1948-2010 presented in this paper GDP is broken down into the following five expenditure items:

[E.1] Private consumption
[E.2] Government consumption
[E.3] Gross investments
[E.4] Exports of goods and services
[E.5] Imports of goods and services

The data set consists of non-seasonally adjusted data in current and constant prices. The description of data sources and compilation methods applied for the construction of the data set can be divided into three parts covering respectively the periods 1948-1971, 1971-1977, and 1977-2010. The series for the three sub-periods were subsequently chained together to the overall series.

### *Compilation approach 1977-2010*

For the period 1977-2010 the data set builds directly on the non-seasonally adjusted quarterly national account data in current and constant prices published by Statistics Denmark. Adjustments have been made for breaks in the series in 1988 and 1990.

### *Compilation approach 1971-1977*

Danmarks Nationalbank has compiled seasonally adjusted data in current and constant prices covering the period 1971-1977. These series were converted into non-seasonally adjusted data using seasonal factors from 1977[2] based on the quarterly national accounts from Statistics Denmark.

### *Compilation approach 1948-1971*

The compilation approach for the pre-1971 period has to a high degree been determined by data availability. An important design criterion was to be able to base the quarterly national accounts series on a fairly consistent set of key business cycle indicators published on a quarterly basis without (or nearly without) gaps.

For the pre-1971 calculations the five expenditure items of GDP were disaggregated further into a total of twelve expenditure items, cf. Table 1.

**Table 1: Quarterly indicators used in the compilation procedure 1948-1971**

| National accounts expenditure component | | Quarterly indicator | | |
|---|---|---|---|---|
| | | [a] Current prices | [b] Constant prices | [c] Price index |
| [E.1] Private consumption | [E.1a] Retail goods | Value index for retail sales | Accounting identity (a/c) | Consumer price index |
| | [E.1b] Purchase of vehicles | Accounting identity (b*c) | Number of new registrations of personal vehicles | Consumer price index |
| | [E.1c] Other private consumption | NO INDICATOR | NO INDICATOR | NO INDICATOR |
| [E.2] Government consumption | | NO INDICATOR | NO INDICATOR | NO INDICATOR |
| [E.3] Gross investments | [E.3a] New construction of residential buildings | Accounting identity (b*c) | Number of dwellings started (lagged 1 quarter) | Index for building costs |
| | [E.3b] New construction of other buildings and civil engineering works | Accounting identity (b*c) | Gross floor space (m2) of new buildings started excluding dwellings started (lagged 1 quarter) | Index for building costs |
| | [E.3c] Other gross fixed business investments | Accounting identity (b*c) | Number of new registrations of commercial vehicles | Wholesale price index |
| | [E.3d] Changes in inventories | NO INDICATOR | NO INDICATOR | NO INDICATOR |
| [E.4] Exports of goods and services | [E.4a] Goods | Value of exports of goods | Accounting identity (a/c) | Export unit values for goods |
| | [E.4b] Services | Value of exports of services | Accounting identity (a/c) | Export unit values for goods |
| [E.5] Imports of goods and services | [E.5a] Goods | Value of imports of goods | Accounting identity (a/c) | Import unit values for goods |
| | [E.5b] Services | Value of imports of services | Accounting identity (a/c) | Import unit values for goods |

[2] The seasonal factors for 1977 and the nearest following years in the quarterly national accounts from Statistics Denmark are relatively stable.

For nine of the twelve expenditure items ([E.1a], [E.1b], [E.3a], [E.3b], [E.3c], [E.4a], [E.4b], [E.5a] and [E.5b]) the quarterly national-account data were compiled via a two-step procedure: In step 1 a quarterly indicator in both current as well as constant prices was constructed for each of the nine expenditure components, cf. Table 1. In step 2 figures for the nine expenditure components in current and constant prices from the annual national-account statistics released by Statistics Denmark for the years 1948-1971 were interpolated on quarters utilising the indicators constructed in step 1 as distributions keys.

One simple approach would have been to distribute the observations from the annual national-account statistics proportionally over the four quarters of the year using the quarterly indicator series as distribution keys. However, such a procedure would lead to discontinuities around each year turn in the quarterly national-account series (in the literature known as the "step problem"). The technique used for the interpolation in step 2 was therefore based on the so-called "Proportional Denton Least Square Method", cf. Denton (1971).[3] This method minimises the least-squares differences in the quarter-on-quarter development in the ratio between the quarterly interpolated national-account series and the quarterly indicator series subject to the constraint that the sum of the quarterly interpolated national-account series over the four quarter within a year should be equal to the annual national-account figure. Mathematically the Proportional Denton Method can be formulated as follows:

$$[1] \quad \underset{(QNA_1, \cdots, QNA_T)}{\text{minimise}} \sum_{t=2}^{T} \left( \frac{QNA_t}{I_t} - \frac{QNA_{t-1}}{I_{t-1}} \right)^2 \quad \text{subject to} \quad \sum_{t=4y-3}^{4y} QNA_t = ANA^y \;, \quad y=1, \ldots, A$$

where:

$QNA_t$ = the observation in quarter t in the interpolated quarterly national account series.
$ANA^y$ = the observation in year y in the annual national account series.
$I_t$ = the observation in quarter t in the quarterly indicator series.
T = the last quarter for which the quarterly indicator series is available and the last quarter for which the quarterly national account series is to be interpolated.
A = the last year for which the annual national account series is available.

As shown in Table 1 no indicator series were available for three of the twelve expenditure components ([E.1c], [E.2] and [E.3d]). For these components the quarterly national account series had to be based solely on the annual national account statistics in current and constant prices. The quarterly national-account data for these three items were therefore constructed

[3] The Proportional Denton Least Square Method is recommended as the preferred method to compile quarterly national-account data on the basis of annual national accounts and a quarterly indicator series in the IMF manual on quarterly national accounts, cf. chapter 6 in Bloem *et al.* (2001).

using the mechanical least-squares-based technique described in Boot *et al*. (1967).[4] This method - which ensures a smooth quarterly interpolated national-account series - minimises the squared first differences of the quarterly interpolated national-account series subject to the constraint that the sum over the four quarters within a year is equal to the correspondent annual national-account figure. The method can be formulated as follows:

$$[2] \quad \underset{(QNA_1, \cdots, QNA_T)}{\text{minimise}} \sum_{t=2}^{T} \left(QNA_t - QNA_{t-1}\right)^2 \quad \text{subject to} \quad \sum_{t=4y-3}^{4y} QNA_t = ANA^y, \quad y = 1, \ldots, A$$

where:

$QNA_t$ = the observation in quarter t in the interpolated quarterly national account series.
$ANA^y$ = the observation in year y in the annual national account series.
T = the last quarter for which the quarterly national account series is to be interpolated.
A = the last year for which the annual national account series is available.

### *A first look on the data set*

Annex A contains a more detailed documentation of the data sources used to construct the quarterly national accounts 1948-2010 whereas annex B lists the data set. This data set is also available in electronic form on request from the author.

Nominal and real year-on-year growth rates of the quarterly national-account aggregates are shown in Chart 1-7. These charts put the recent great recession in a clear historical perspective. Measured by real GDP year-on-year growth rates the recession in 2008/2009 following the international financial crisis has been the deepest downturn in the post–1948 period, cf. Chart 7. This recession in 2008/2009 was mainly characterised by significant drops in the private consumption and in the exports of goods and services, cf. Chart 1 and 5. The decline in total domestic demand in 2008/2009 was by and large at the same level as the decline experienced following the first and second oil-price shocks in the 1970s and early 1980s, cf. Chart 4.

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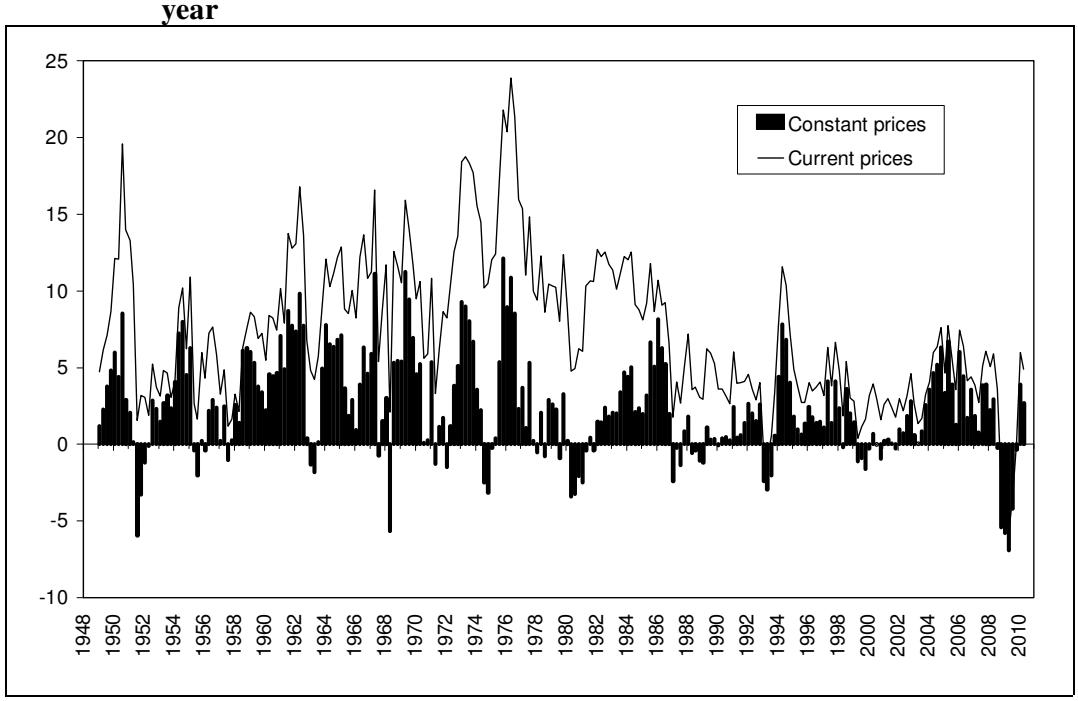
[4] The least-squares technique presented in Boot *et al*. (1967) is one of the methods recommended in the IMF manual on quarterly national accounts when one has to compile quarterly national-account data on the basis of annual national accounts and no relevant quarterly indicators are available, cf. chapter 7 in Bloem *et al.* (2001).

In case of gross investment in stock building the procedure in Boot *et al*. (1967) was only applied to the figures in current prices. Here the quarterly figures in constant prices were calculated on the basis of the figures in current prices deflated by the consumer price index.

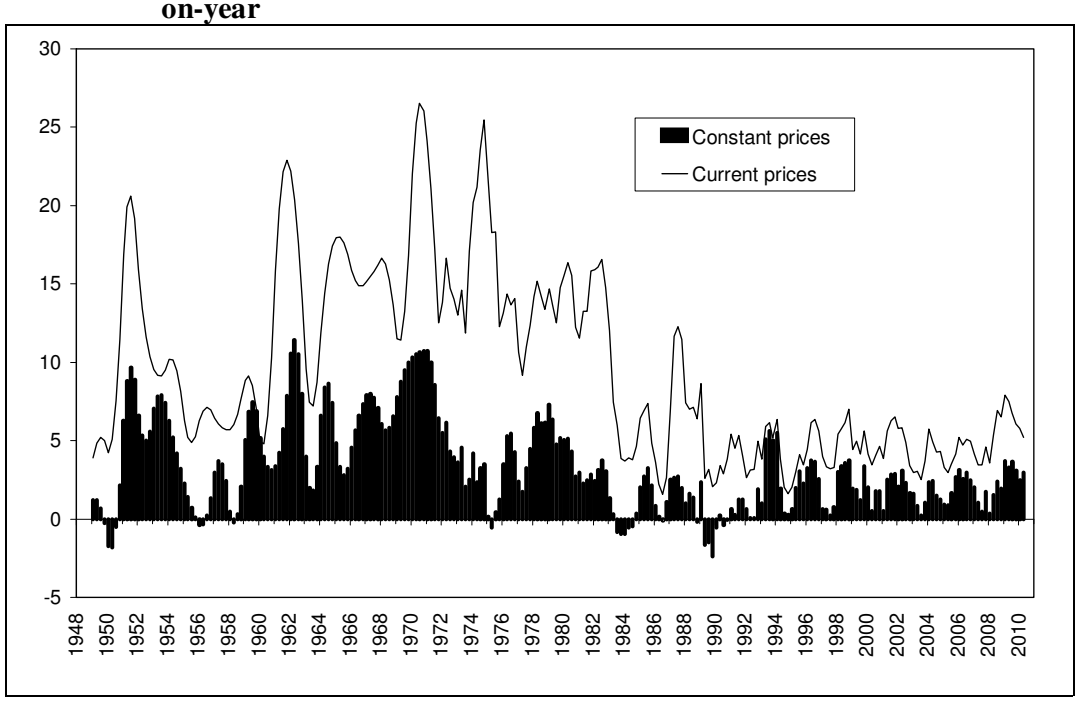
It would have been possible to incorporate seasonal variation into the quarterly interpolated national-account series for [E.1c] Other private consumption and [E.2] Government consumption based on seasonal factors from the year 1977 in Statistics Denmark's quarterly national-account statistics. However, there is almost no seasonal pattern in these two series.

**Chart 1: Growth in private consumption 1949q1-2010q2, per cent year-on-year**



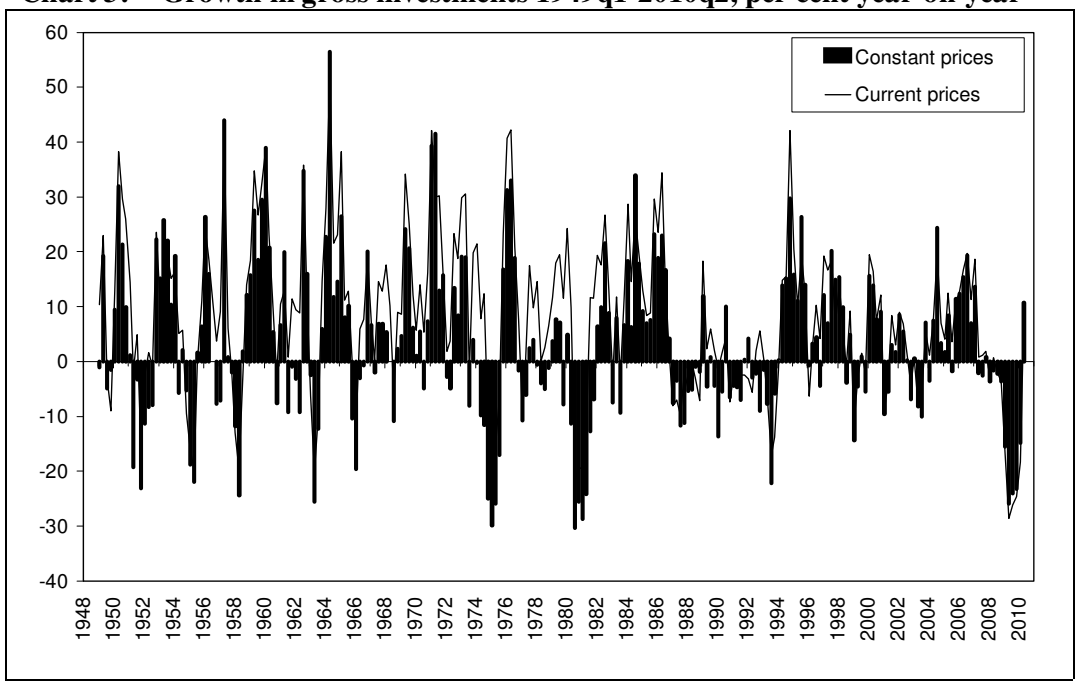

General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 2: Growth in government consumption 1949q1-2010q2, per cent year-on-year**



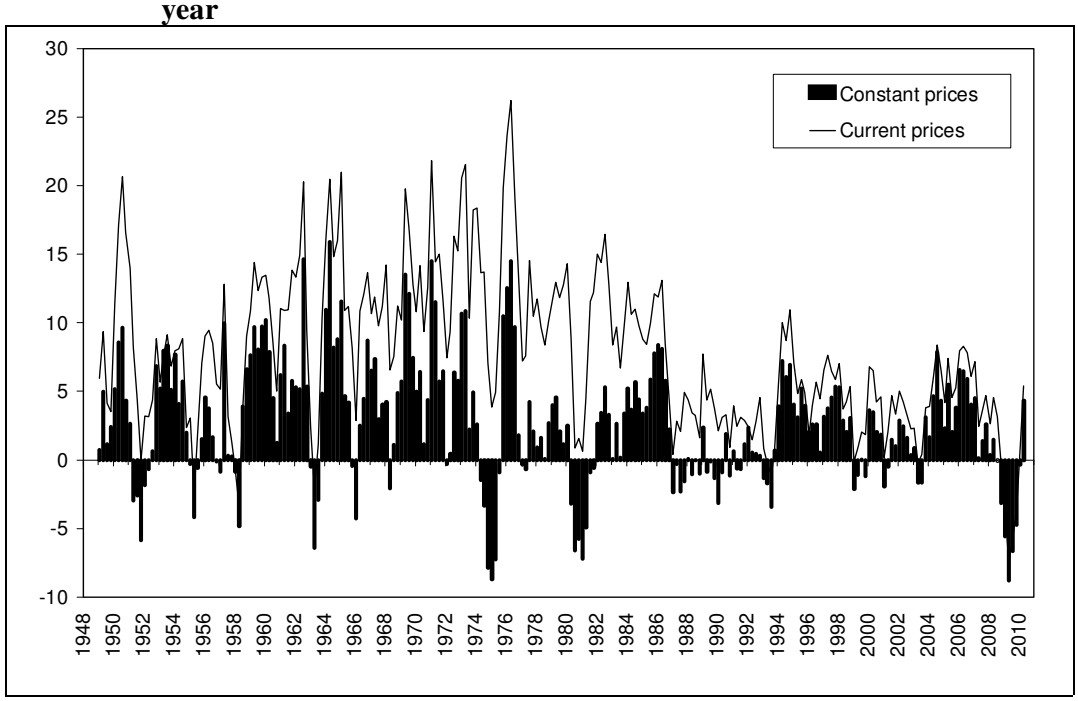

General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 3: Growth in gross investments 1949q1-2010q2, per cent year-on-year**



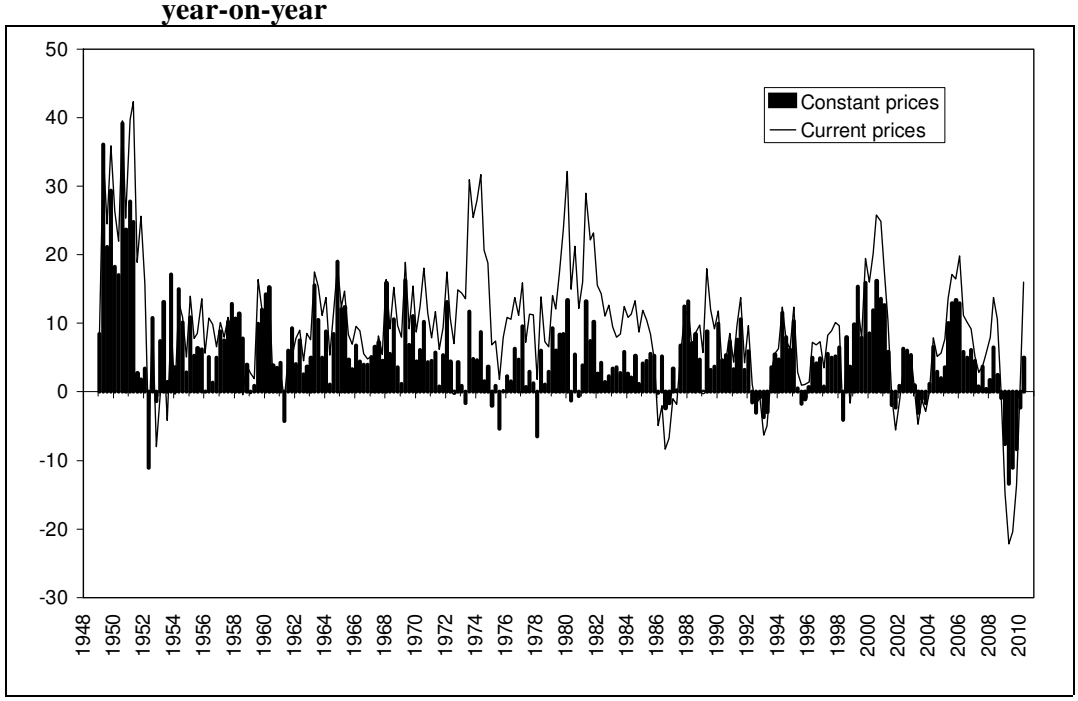

General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 4: Growth in total domestic demand 1949q1-2010q2, per cent year-on-year**



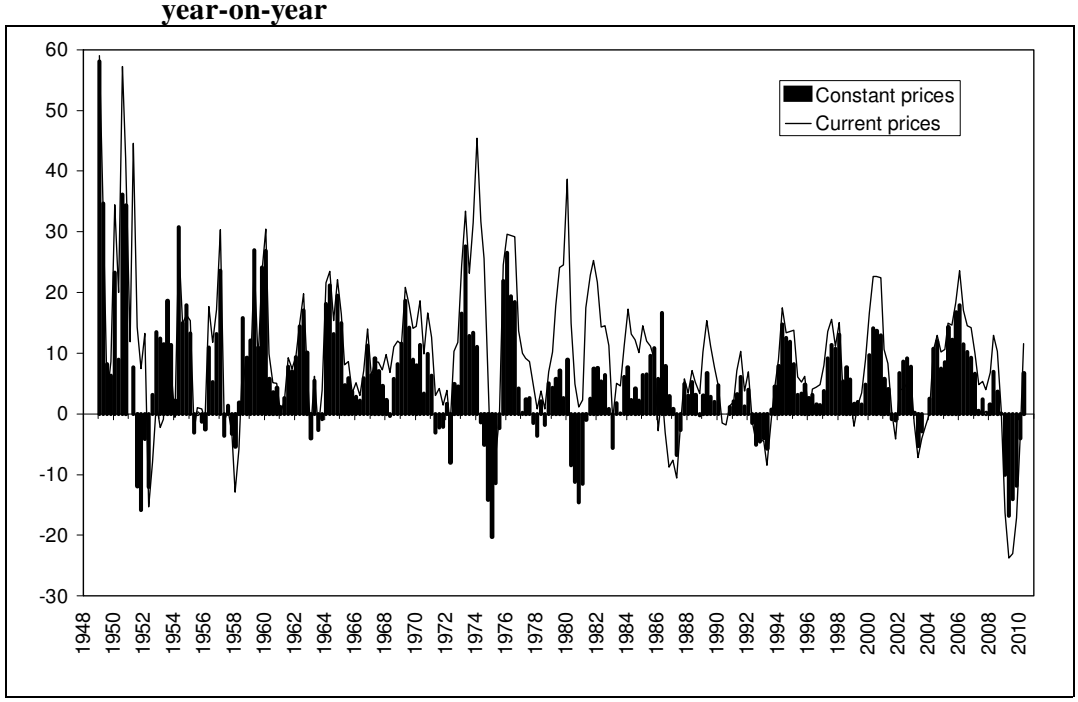

General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 5: Growth in exports of goods and services 1949q1-2010q2, per cent year-on-year**



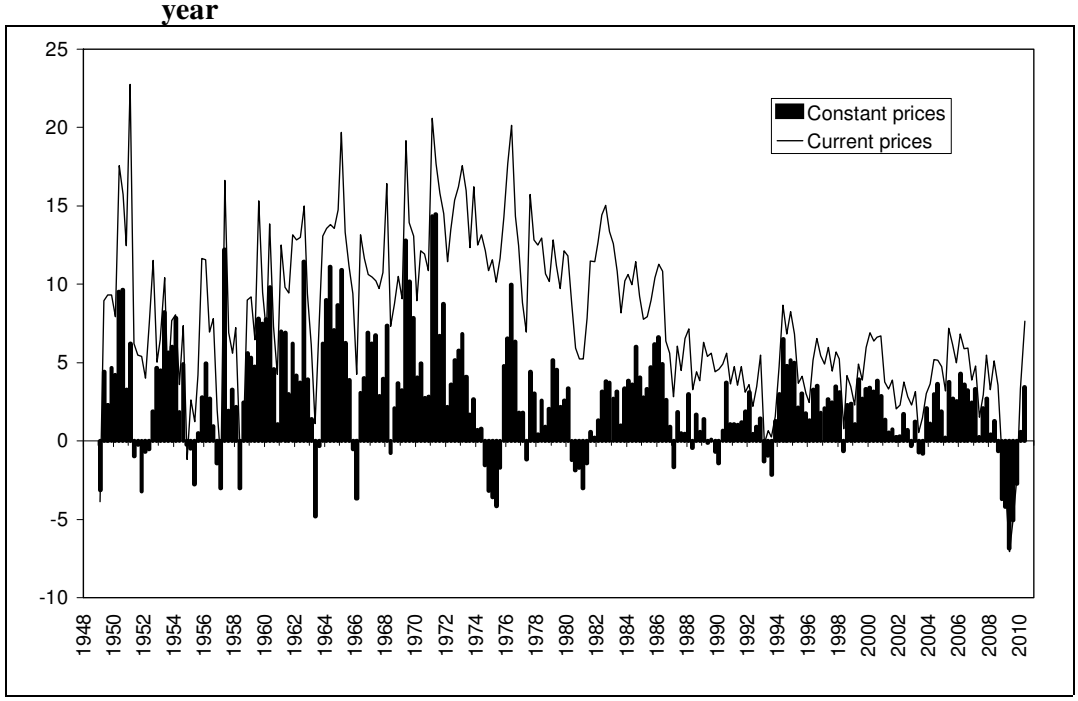

General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 6: Growth in imports of goods and services 1949q1-2010q2, per cent year-on-year**




General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

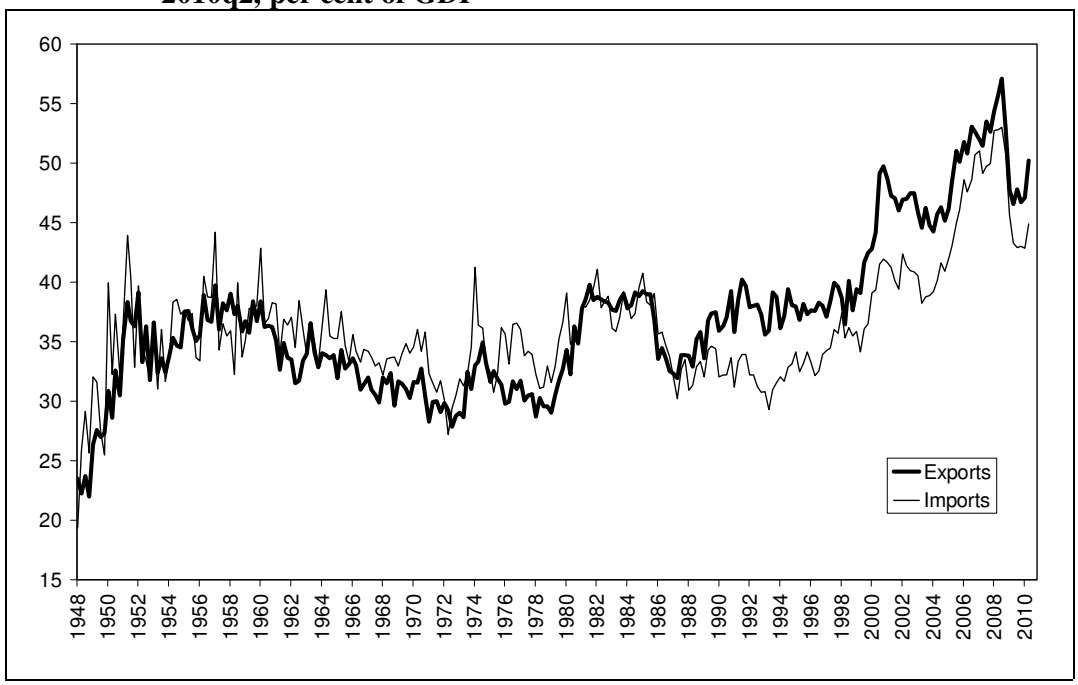
**Chart 7: Growth in gross domestic product 1949q1-2010q2, per cent year-on-year**




General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

During the 1930s and the World War II the international economy had developed into a system characterised by a complex net of bilateral clearing and payment arrangements. The very high growth rates of imports and exports during the late 1940s and early 1950s, cf. Chart 5 and 6, reflect the deregulation of quantitative trade restrictions within the framework of the Organisation for European Economic Co-operation (OEEC). The process was facilitated by the Marshall Aid 1948-1953 and the establishment of the European Payment Union (EPU) in 1950 which ensured a high degree of *de facto* internal current-account convertibility among the participating European currencies – including Danish kroner – through a monthly multilateral clearing system for current payments, cf. Mikkelsen (1999). The export and import ratios for the Danish economy increased from around 20-25 per cent of GDP in 1948 to around 35-40 per cent in the early 1950s, cf. Chart 8.

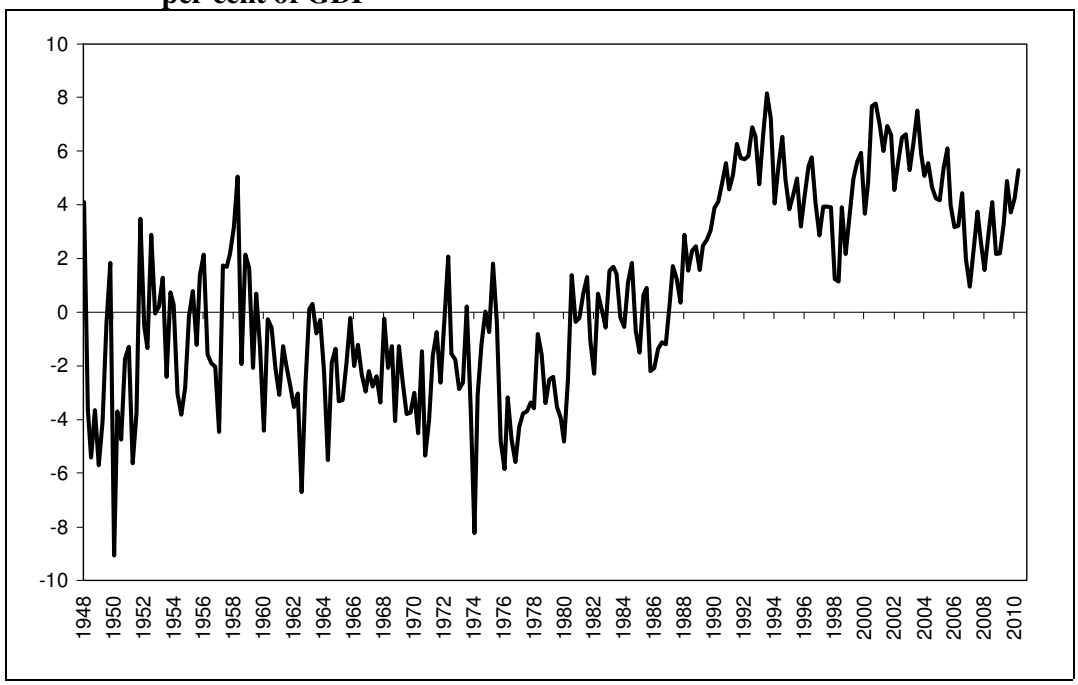
**Chart 8: Exports and imports of goods and services in current prices 1948q1-2010q2, per cent of GDP**




General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

The growth pattern of the Danish economy during the 1950s, cf. Chart 7, reflects the stop-go policy adopted during this period in order to trade-off the desire for full employment and the need to keep the balance of payments close to zero. At the end of the 1950s the scope for Danish foreign borrowing improved significantly and the 1960s and early 1970s were most of the period characterised by solid growth. The 1960s also saw the build up of a large tax-financed welfare state, which is reflected in the substantial real growth rates in government consumption, cf. Chart 2. The expansion of the domestic economy during the 1960s resulted in a significant deficit on the trade balance, cf. Chart 9. The negative growth rate in real GDP in 1963 in Chart 7 reflects a tightening of economic policies with the introduction of a general sales tax in 1962 and a number of income policy measures ("the package solution") in 1963 in order to address the weakening of the trade balance. The negative growth rate in real GDP in the first half of 1966 also reflects a tightening of economic policies (the general sales tax was increased in 1965) combined with a long winter in 1965/1966.

**Chart 9: Net exports of goods and services in current prices 1948q1-2010q2, per cent of GDP**



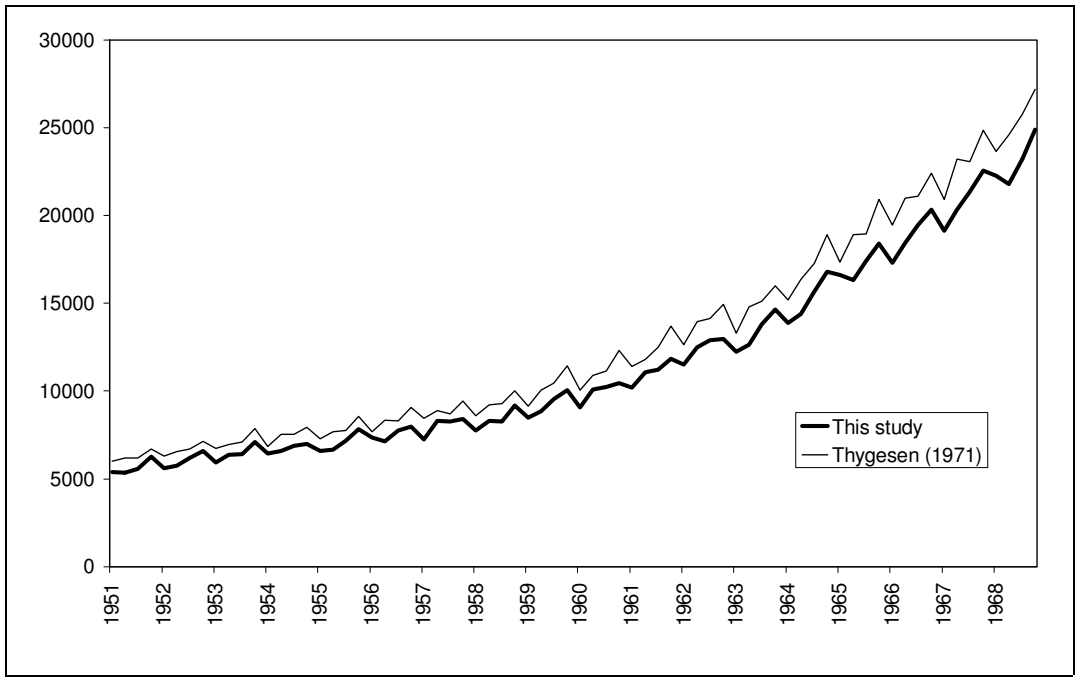

General note: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

A more detailed description of the economic development in Denmark 1948-1971 is found in Johansen (1987); Hansen *et al*. (1988); Pedersen, P. J. (1996) and Økonomiministeriet (1997). The period since 1971 is e.g. covered by Danmarks Nationalbank (2003) and Johansen & Trier (2010). Some of the stylised facts and empirical regularities of the post-1948 Danish business cycles will be further reviewed in section 5 below.

As a robustness check on the pre-1971 data construction Chart 10 and 11 compare the development in the series for the nominal gross domestic product 1951-1968 constructed in the paper at hand with the series presented in Thygesen (1971). Taking into account that the two data series are based on rather different data sources and compilation procedures the two series seem in broad terms to paint the same picture of the economic development in Denmark 1951-1968.[5]

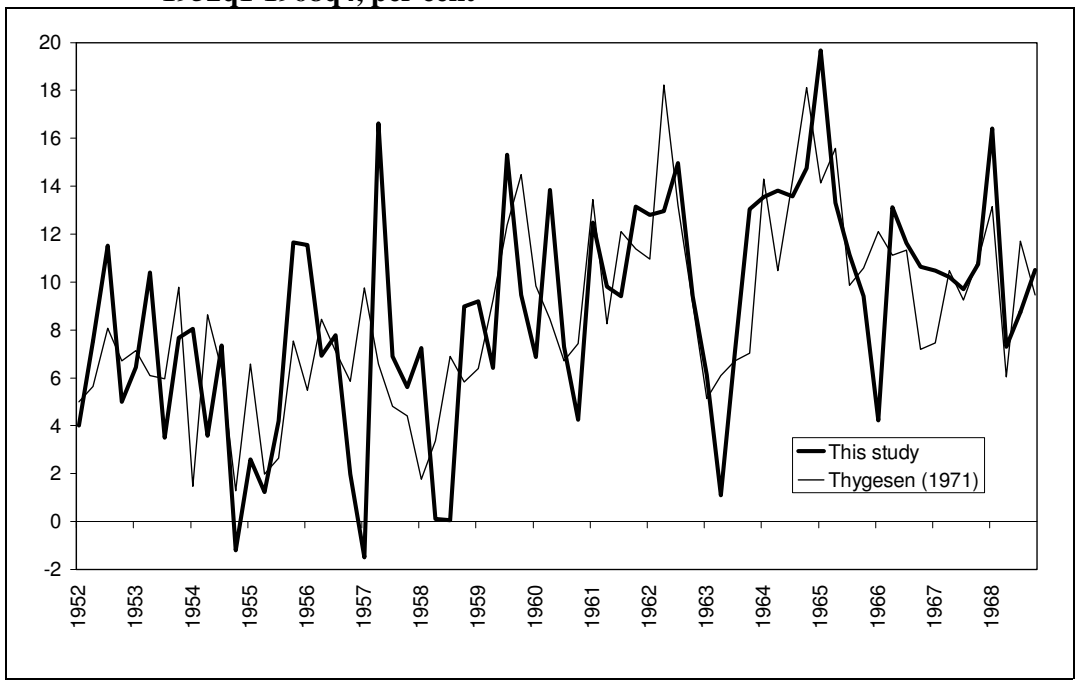
[5] The correlation coefficient between the to series in Chart 10 (11) is 1.00 (0.62).

**Chart 10: Gross domestic product, current prices 1951q1-1968q4, million kroner**




General note: Non-seasonally adjusted data.
Source: Annex B and Thygesen (1971).

**Chart 11: Year-on-year growth in gross domestic product, current prices 1952q1-1968q4, per cent**




General note: Non-seasonally adjusted data.
Source: Annex B and Thygesen (1971).

## 4. A supplementary data set on key quarterly macroeconomic indicators 1948-2010

In order to enhance the analytical application of the new historical quarterly national-account data the author also compiled a collection of seventeen other non-seasonally key quarterly economic indicators for the Danish economy covering the period 1948-2010, cf. Table 2.

**Table 2: Key quarterly macroeconomic indicators 1948-2010**

| Indicator | Notes |
|---|---|
| [I.1] Unemployment rate | Unemployed persons in per cent of the total labour force. Quarterly averages. |
| [I.2] Index of average hourly earnings in manufacturing industries | Quarterly averages. |
| [I.3] Official discount rate of Danmarks Nationalbank | Quarterly averages. |
| [I.4] Yield on long-term Danish government bonds | Quarterly averages. |
| [I.5] Private banks' average lending rate | Weighted average lending interest rate of savings banks and commercial banks. |
| [I.6] Private banks' average deposit rate | Weighted average deposit interest rate of savings banks and commercial banks. |
| [I.7] Nominal effective krone-rate index | Trade-weighted average of the development in the bilateral nominal krone-rate vis-à-vis the currencies of a range of Denmark's main trading partners. An increase in the index describes an overall nominal appreciation of the Danish krone vis-à-vis the currencies of Denmark's main trading partners. Quarterly averages. |
| [I.8] Consumer price index, Denmark | Quarterly averages. |
| [I.9] Consumer price index, abroad | Trade-weighted average of the consumer price development in Denmark's main trading partners. Quarterly averages. |
| [I.10] Real effective krone-rate index with consumer prices as deflator | Trade-weighted average of the development in the bilateral real krone-rate vis-à-vis the currencies of a range of Denmark's main trading partners. CPIs are used as deflators. An increase in the index describes an overall real appreciation of the Danish krone vis-à-vis the currencies of Denmark's main trading partners. Quarterly averages. |
| [I.11] Price index for sale of one-family houses | Quarterly averages. |
| [I.12] Share price index | End of quarter. |
| [I.13] Broad money stock (M2) | End of quarter. |
| [I.14] Credit to the domestic non-bank sector extended by resident commercial banks and savings banks | End of quarter. |
| [I.15] Credit to the domestic non-bank sector extended by resident mortgage banks | End of quarter. |
| [I.16] Credit to the domestic non-bank sector extended by all resident banks | [I.16] = [I.14] + [I.15]. End of quarter. |
| [I.17] Bank's write-downs ratio | Quarterly write-downs on loans and guaranties in per cent of end-quarter outstanding loans and guaranties. The write-down ratio is not annualised and covers write-downs in commercial banks and savings banks only. |

A number of adjustments have been made in order to transform the background data into a set of reasonable consistent set of economic indicators. Furthermore, it should be mentioned that most of the quarterly data on bank's write-down ratio have been interpolated from semi-annual or annual data. It should also be noted, that for long periods the discount rate has not been directly related to any of Danmark Nationalbank's monetary-policy instruments. However, for most of the post-1948 period the discount rate has served as a signal rate indicating the general level of monetary-policy interest rates in Denmark.

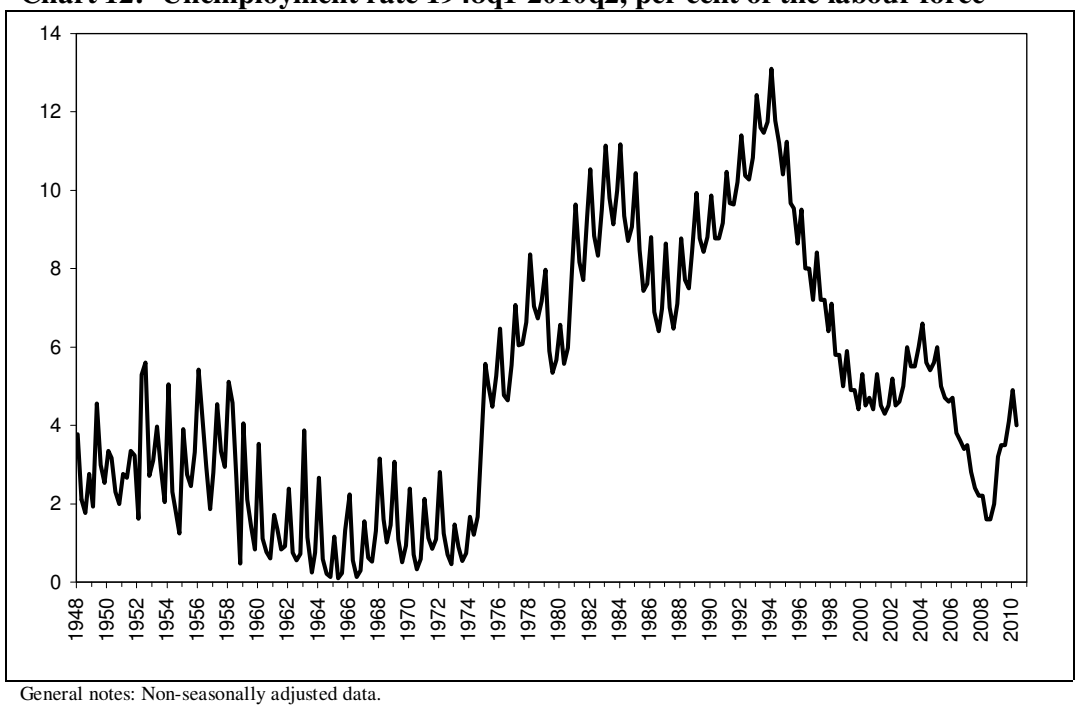
The supplementary data set on key quarterly macroeconomic indicators 1948-2010 is shown in Chart 12-19. During the solid growth in the Danish economy in the 1960s and early 1970s the unemployment rate was at a very low level, cf. Chart 12. The seasonal volatility in the

unemployment figures seems to be relatively high in the period until the early 1970s compared to the post-1970 period. This might be related to data issues but could also reflect improved utilisation of the work force over the seasons during the last four decades, i.e. within the building sector (pre-cast building).

The macroeconomic performance of the Danish economy deteriorated significantly during the 1970s, particularly in the second half of the decade. The oil price shocks of the 1970s and the devaluations of the krone caused a continuous upward pressure on price and wage inflation and on nominal interest rates, cf. Chart 13 and 15. Furthermore, unemployment increased rapidly. Due to worse inflationary performance than its main trading partners Denmark experienced a marked appreciation of the real effective exchange rate from the late 1940s to the late 1970s, cf. Chart 14.

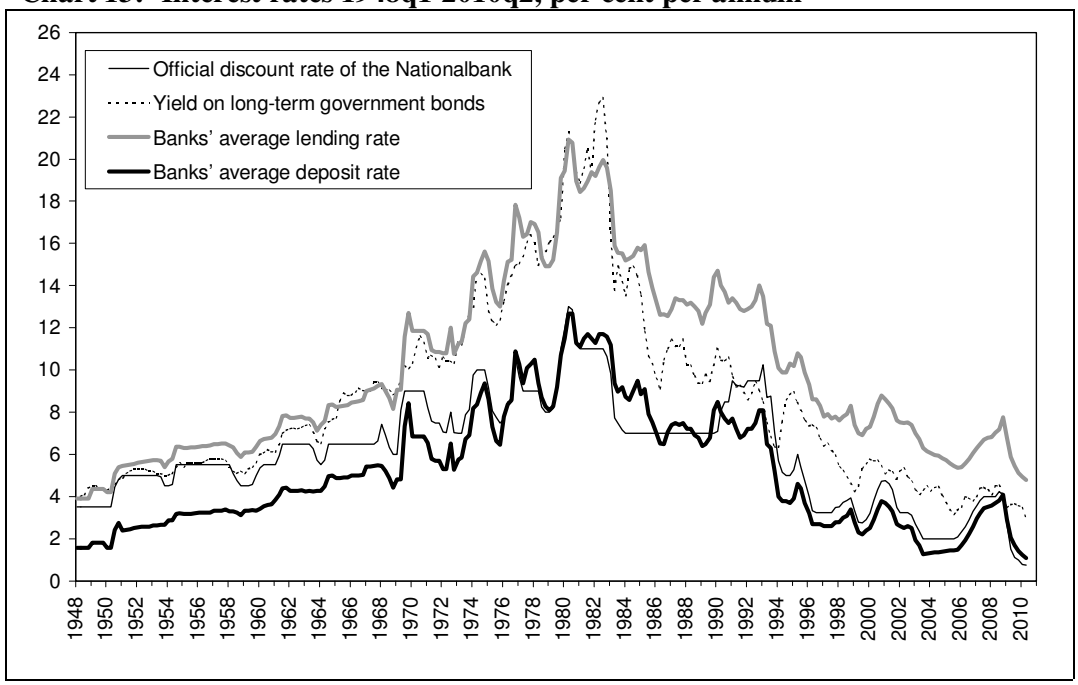
The post-1980 period witnessed significant improvements in the macroeconomic performance of the Danish economy. Consumer price inflation declined from two digit-figures in the early 1980s to a level around 2 per cent in the early 1990s. The unemployment rate stayed at a high level until the middle of the 1990s but has since declined significantly.

**Chart 12: Unemployment rate 1948q1-2010q2, per cent of the labour force**



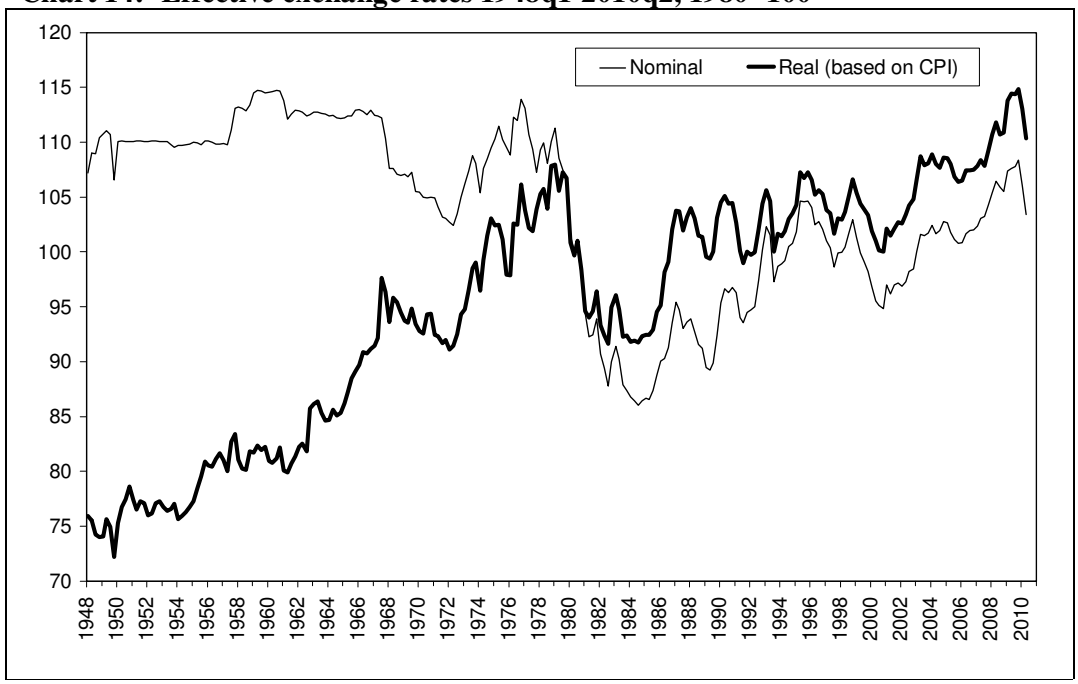

General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 13: Interest rates 1948q1-2010q2, per cent per annum**



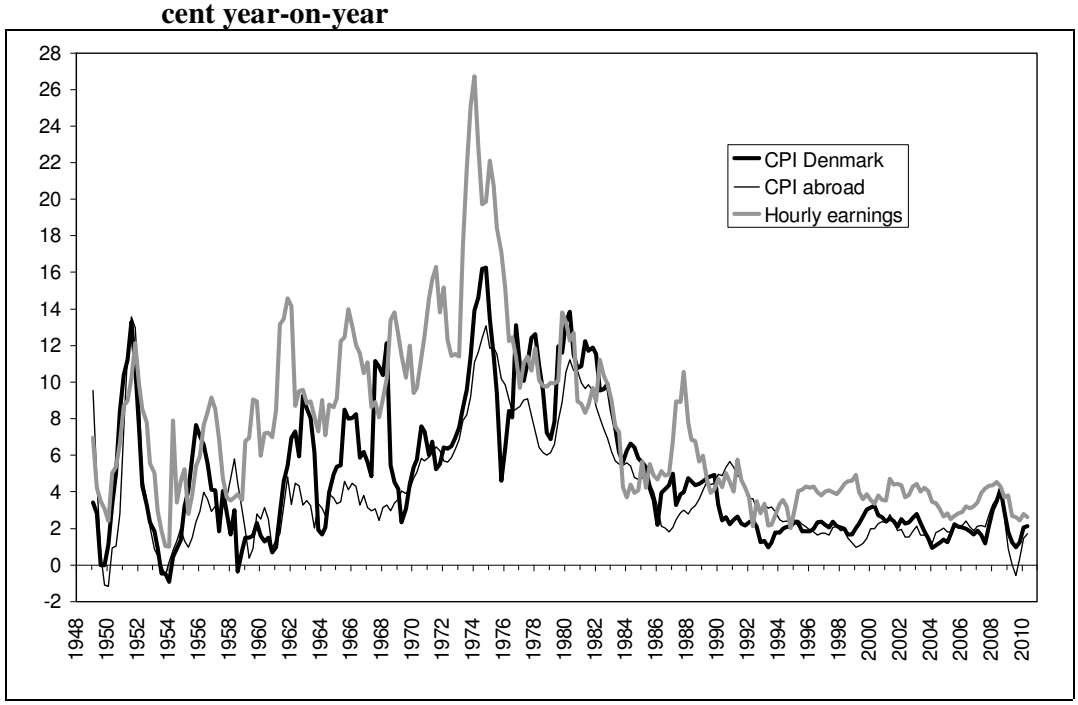

General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 14: Effective exchange rates 1948q1-2010q2, 1980=100**



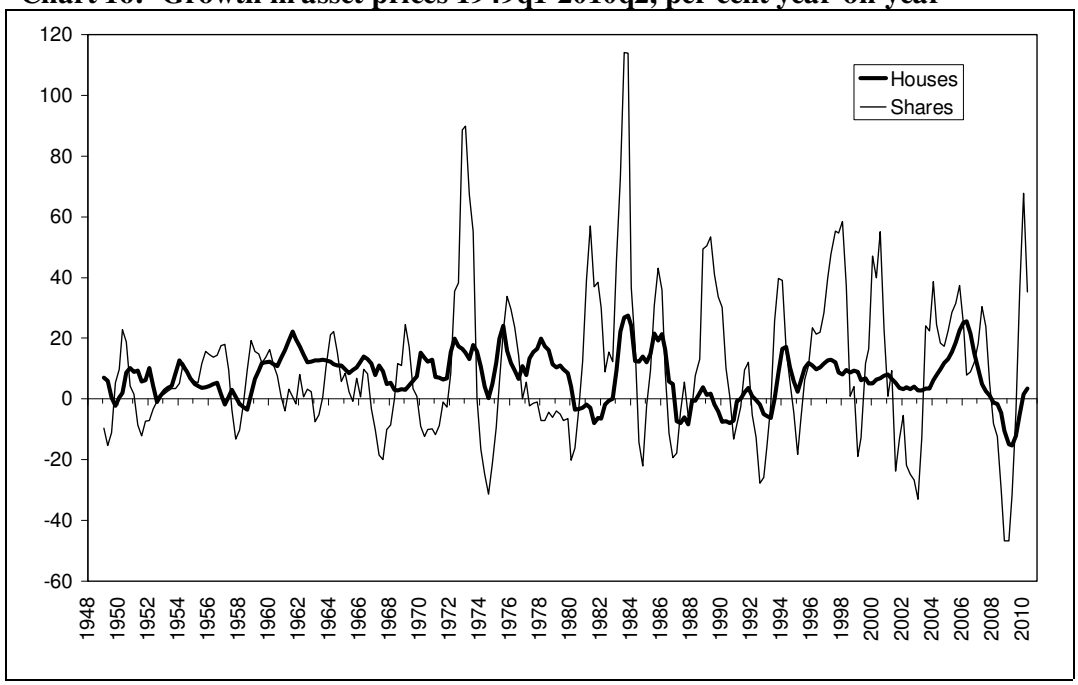

General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 15: Growth in consumer prices and hourly earnings 1949q1-2010q2, per cent year-on-year**



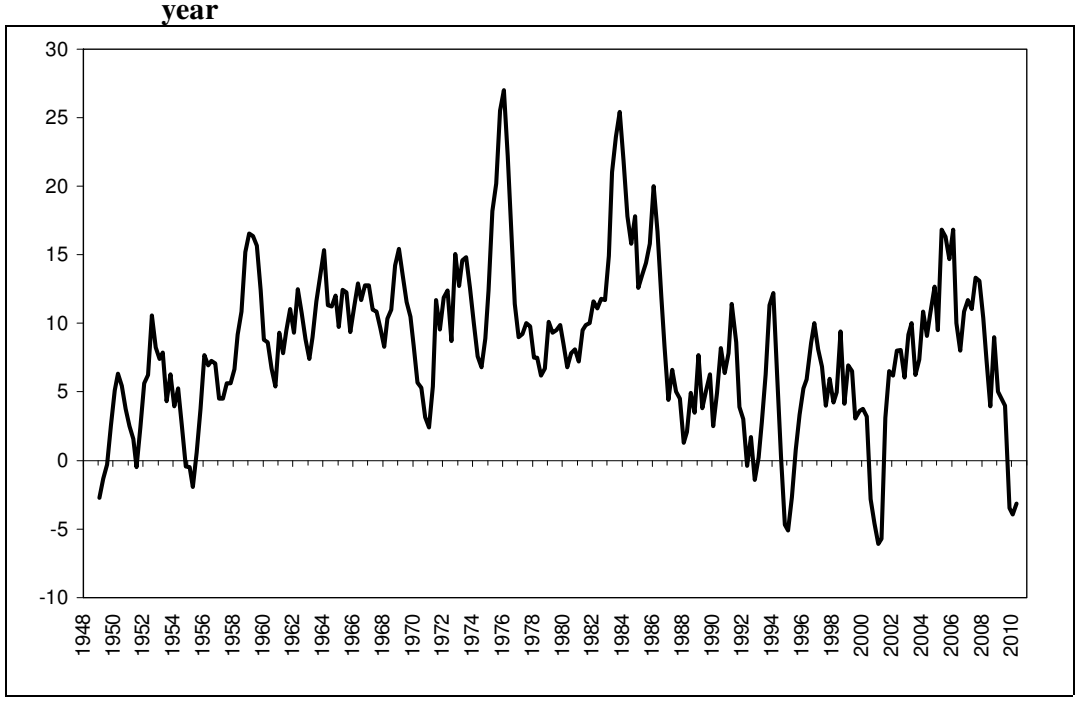

General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 16: Growth in asset prices 1949q1-2010q2, per cent year-on-year**



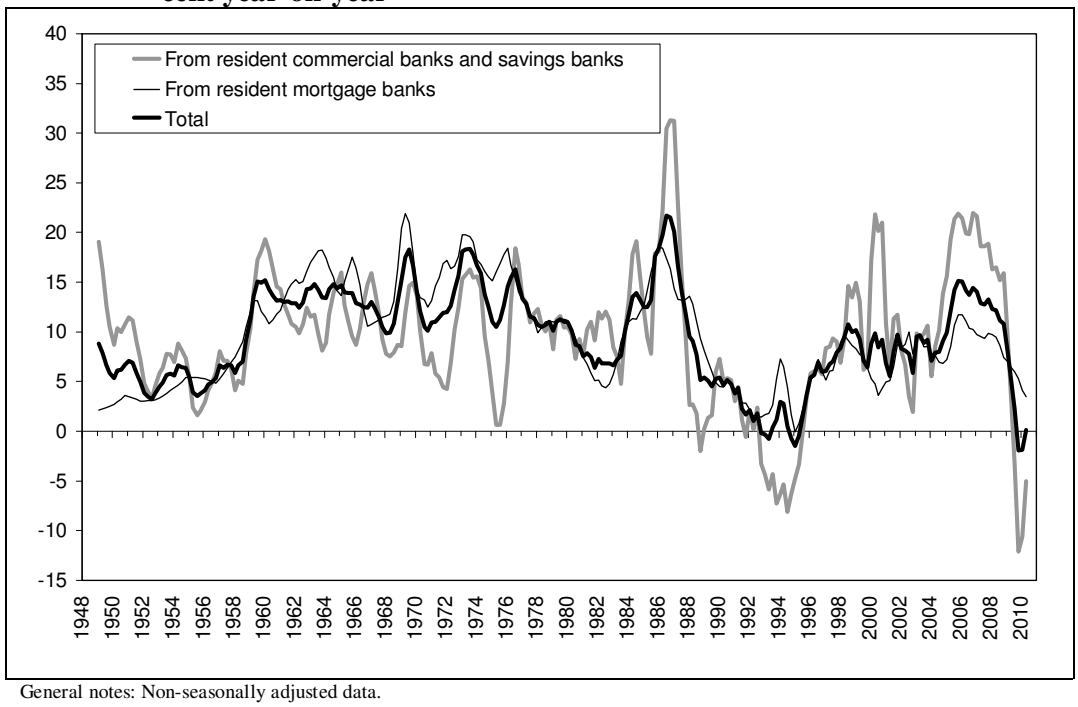

General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 17: Growth in broad money stock (M2) 1949q1-2010q2, per cent year-on-year**



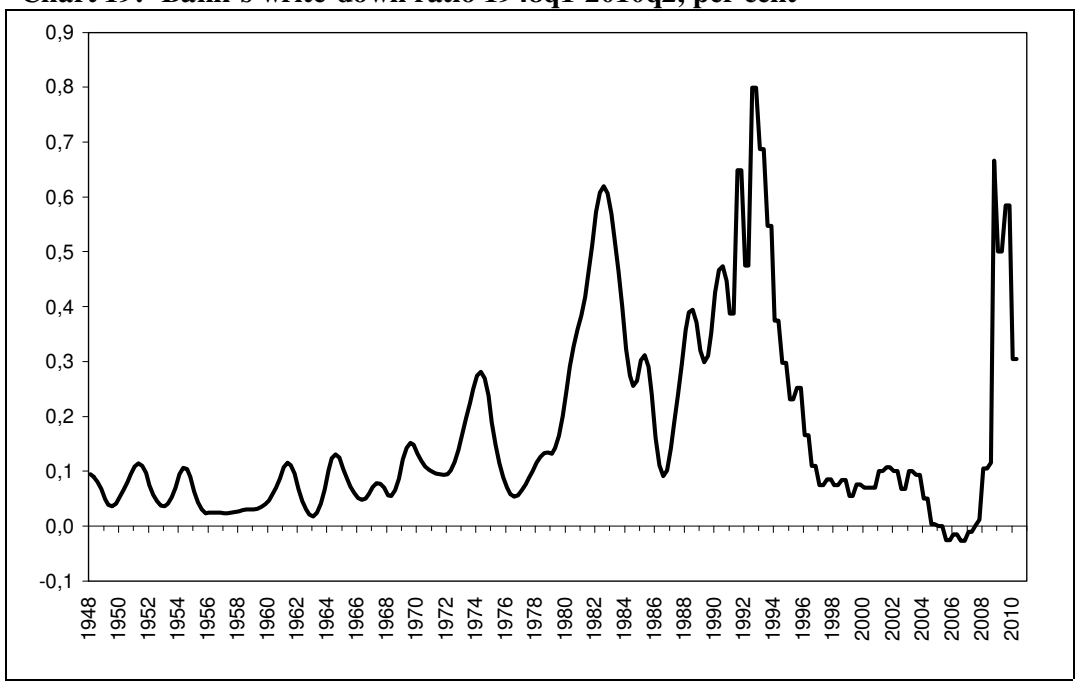

General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 18: Growth in credit to the domestic non-bank sector 1949q1-2010q2, per cent year-on-year**




General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

**Chart 19: Bank's write-down ratio 1948q1-2010q2, per cent**




General notes: Non-seasonally adjusted data.
Source: Author's calculations, cf. the main text and annex A.

In the decades from the end of the Second World War and until the early 1980s, credit rationing and exchange controls served as important economic-policy instruments. The post-1980 period saw an increased influence from market forces due to financial liberalisation and internationalisation. In post-1980 period the swings in real credit growth have been substantial relative to the economic growth compared to the pre-1980 period, cf. Chart 18 and Abildgren (2009). Furthermore, the post-1980 period has seen more substantial swings in the growth rate of asset prices compared to the pre-1980 period, cf. Chart 16.

During the early 1980s, the beginning of the 1990s and again in the late 2000s a number of banks came into financial distress and those periods were been characterised by significant increased in the write-down ratio of the banking sector, cf. Chart 19.

Annex A contains a more detailed documentation of the data sources and methods used to construct the indicators in Chart 12-19 whereas annex C lists the data set. This data set is also available in electronic form on request from the author.

## 5. Some stylised facts on the Danish business cycle from band-pass filters

During the last couple of decades filtering methods have become the standard tools used in the literature for uncovering the more or less "pure" stylised facts and empirical regularities in the cyclical movement and comovement of macroeconomic time series, cf. e.g. Stock & Watson (1999) and Agresti & Mojon (2003). Filters repack economic time series so a clearer view of their periodic oscillations is obtained.

This section briefly reviews the post-1948 short-term cyclical cross-correlation pattern of the new historical time series presented in section 3 and 4 using filtering methods. The analysis complements the studies by Hansen & Knudsen (2004) and Hansen (2005) that cover the business cycles in Denmark 1974-2000.

The business cycle component of the time series will be isolated using the Baxter & King (1999) approximate band-pass filter. A band-pass filter eliminates the very high and very low frequencies from the time series in order to isolate the frequencies in the middle range that can be interpreted as the business cycle fluctuations. The Baxter-King filter converts an input series $y_t$ into another (filtered) output series $y_t^F$ via a finite centred linear moving average of the following form:

$$[3]\ y_t^F = \sum_{i=-K}^{K} w_i \cdot y_{t+i}$$

The filter is based on results from the spectral analysis where a time series is regarded as the composed of a number of components with different frequencies. If one wishes to extract the cyclical component with a duration from a to b quarters, the filter coefficients ($w_i$) used in the Baxter-King filter are found as:

$$[4]\ w_i = w_i^* - (2 \cdot K + 1)^{-1} \cdot \sum_{j=-K}^{K} w_j^*$$

where:

$$[5]\ w_i^* = \begin{cases} \pi^{-1} \cdot \left[ \dfrac{2 \cdot \pi}{a} - \dfrac{2 \cdot \pi}{b} \right] & \text{for } i = 0 \\ (i \cdot \pi)^{-1} \cdot \left[ \sin\left( \dfrac{2 \cdot \pi}{a} \cdot i \right) - \sin\left( \dfrac{2 \cdot \pi}{b} \cdot i \right) \right] & \text{for } i = \pm 1, \pm 2, \ldots, \pm K \end{cases}$$

The Baxter-King filter ensures that the filtered time series becomes de-trended and stationary in order to avoid spurious cycles.[6] Furthermore, since the filter coefficients are symmetric the filtered series have no phase shifts compared to the input series.

The number of filter coefficients (determined by the cut-off parameter K) influences the degree to which the filter approximates an ideal band-pass filter. The higher K the better approximation, but a high K also means loss of observations.

Following Baxter & King (1999) the business cycles frequencies in the paper at hand are delimited to 6-32 quarters. Naturally, such a limitation is more or less arbitrary, but the chosen definition has become more or less standard in the literature. The reason for 6 quarters

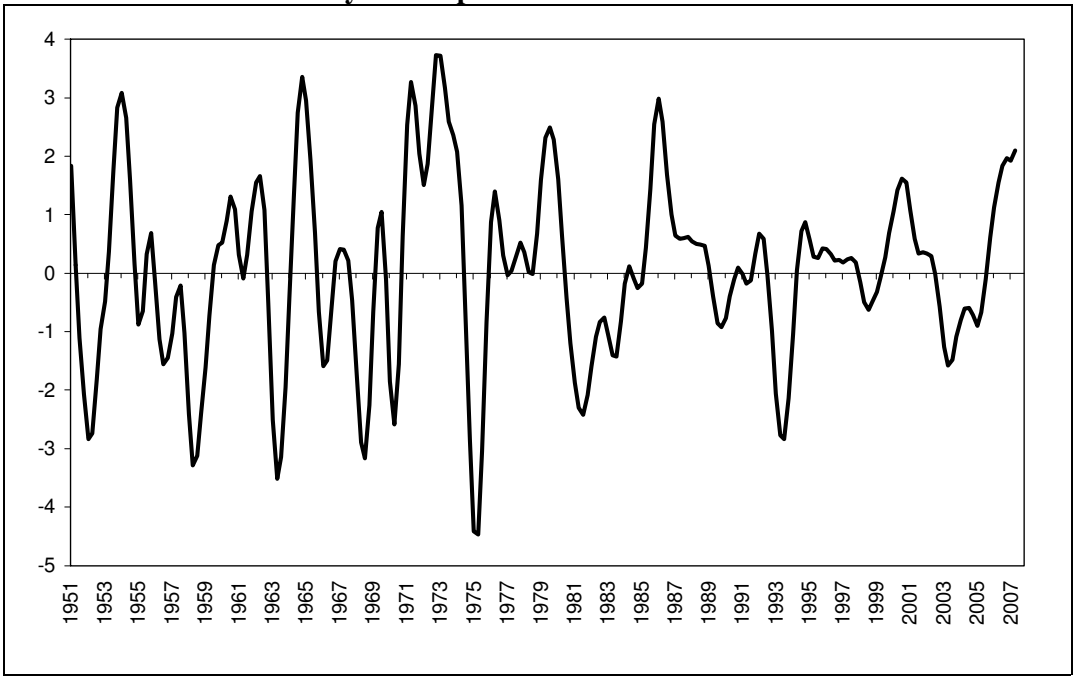
[6] The Baxter-King filter has been designed so that it will make the filtered time series stationary if the input series is integrated of order one or two, cf. Baxter & King (1999).

as the lower limit (and not zero) is the wish to exclude seasonality and very short-term random fluctuations from the business cycle component. The filter will be based on a symmetric moving average with 12 observations on each side, i.e. K=12.

By transforming a trended input series by natural logarithms before filtering, the cyclical component extracted from the data can[7] be interpreted as the deviation from the trend measured in per cent. This facilitates the economic interpretation of the filtered time series data. In this section all the time series - except interest rates, the unemployment rate, price- and wage-inflation rates and the bank's write-down ratio - have been transformed by natural logarithms before filtering.

Like most – if not all filters – the Baxter & King filter has its strengths and weaknesses, and different filters with different choices of parameters can produce different results.[8] However, the Baxter & King filter still belongs to the group of popular filtering methods in applied economics.

**Chart 20: The business cycle component of real GDP in Denmark**




General notes: Derivation from trend measured in per cent. Based on quarterly data 1948q1-2010q2.
Source: Author's calculations, cf. the main text.

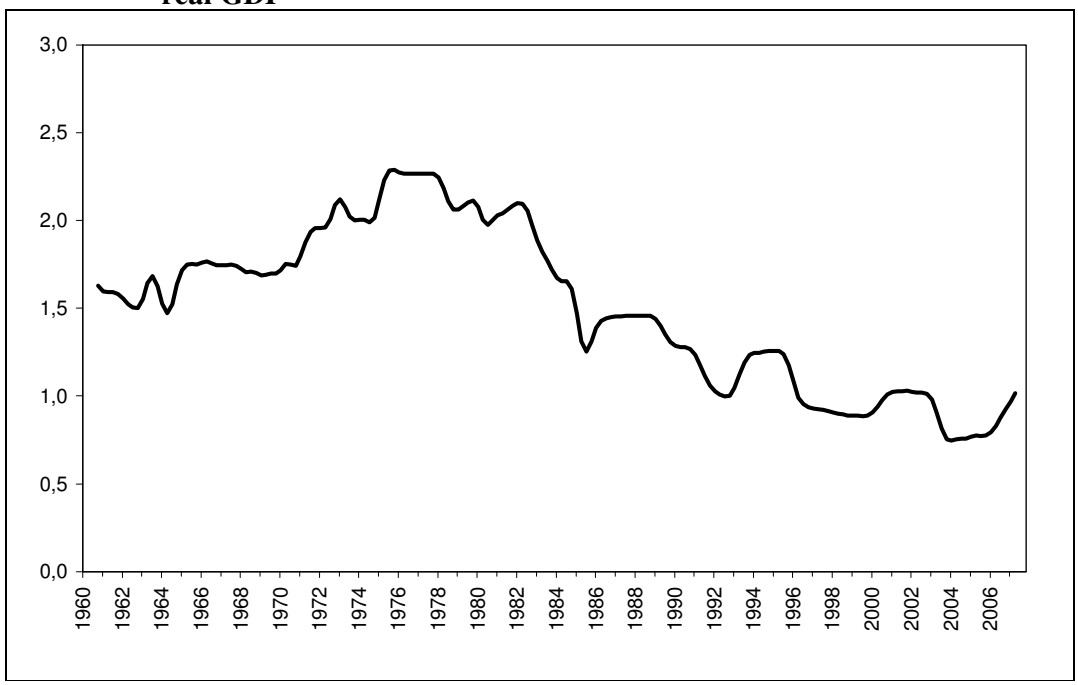
The cyclical component of real GDP is shown in Chart 20. Measured by the percentage derivation from the trend the deepest recession occurred in 1975 following the first oil-price shock. However, it should be noted that due to the compilation method of the cyclical

[7] When multiplied by 100.
[8] Cf. e.g. Gencay, Selcuk & Whitcher (2002) and Mills (2003) for an overview of a broad range of filtering methods applied in economics and finance.

component there is a loss of 12 observations at the beginning and at the end of the time series. The recession in 2008/2009 is therefore not visible in Chart 20.

Apparently the business cycle component became substantial less volatile in the decades from the mid-1970s to the mid-2000s prior to the outbreak of the recent financial crisis, cf. Chart 21 which shows the 10-year rolling standard deviations of the business cycle component of real GDP. Similar findings have been found for other countries and the reduction in volatility has been termed "the Great Moderation", cf. Blanchard & Simon (2001) and Stock & Watson (2003). The proposed explanations range from good practices (better inventory management, improved possibilities for consumption and investment smoothing due to new information technology combined with broader and deeper financial markets, more flexible labour markets) over good policy (more skilful macroeconomic stabilisation policy) to good luck (a reduction in the frequency and severity of exogenous economic shocks). Furthermore, the structural transformation of the economy towards increased production of services might also have contributed to the decline in volatility. However, the reasons are still debated in the literature, cf. Ćorić (2010).

**Chart 21: 10-year rolling standard deviations of the business cycle component of real GDP**




General notes: Based on quarterly data 1948q1-2010q2.
Source: Author's calculations, cf. the main text.

Table 3 shows the dynamic cross-correlations between the cyclical components of real GDP and the cyclical components of a range of other macroeconomic variables. While such cross-correlation coefficients are purely descriptive statistics - and do not indicate the direction of

causality of the underlying economic relationships - they offer an alternative way to look at the time series and may serve as a useful starting point to gain a deeper insight into the business cycle.

**Table 3: Dynamic cross-correlations between the cyclical component of real GDP and the cyclical components of other macroeconomic variables**

| | Cross-correlation between X(t+j) and Y(t), where Y is the business cycle component of real GDP and X is the business cycle component of the variable in the first column | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X | j=-8 | j=-4 | j=-3 | j=-2 | j=-1 | j=0 | j=1 | j=2 | j=3 | j=4 | j=8 |
| Real GDP | -0.122 | 0.023 | 0.275 | 0.600 | 0.885 | **1.000** | 0.885 | 0.600 | 0.275 | 0.023 | -0.122 |
| | (0.071) | (0.730) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.730) | (0.071) |
| Real privat consumption | -0.022 | -0.029 | 0.167 | 0.377 | 0.528 | **0.563** | 0.460 | 0.279 | 0.093 | -0.040 | -0.079 |
| | (0.741) | (0.666) | (0.013) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.164) | (0.553) | (0.243) |
| Real gross investments | -0.126 | 0.030 | 0.262 | 0.553 | 0.801 | **0.895** | 0.784 | 0.524 | 0.224 | -0.012 | -0.155 |
| | 0.063 | 0.654 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.854 | 0.022 |
| Unemployment rate | 0.279 | 0.129 | -0.061 | -0.267 | -0.445 | -0.564 | **-0.606** | -0.584 | -0.515 | -0.419 | -0.033 |
| | (0.000) | (0.055) | (0.363) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.625) |
| CPI (level) | 0.211 | -0.276 | -0.462 | -0.597 | **-0.647** | -0.598 | -0.483 | -0.346 | -0.219 | -0.111 | 0.188 |
| | (0.002) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.098) | (0.005) |
| CPI (growth y-o-y) | -0.038 | -0.402 | -0.518 | **-0.552** | -0.467 | -0.273 | -0.009 | 0.228 | 0.379 | 0.431 | 0.241 |
| | (0.585) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.889) | (0.001) | (0.000) | (0.000) | (0.000) |
| Hourly earnings (level) | 0.052 | -0.298 | -0.347 | -0.389 | **-0.417** | -0.415 | -0.369 | -0.288 | -0.187 | -0.079 | 0.325 |
| | (0.444) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.005) | (0.241) | (0.000) |
| Hourly earnings (growth y-o-y) | -0.187 | -0.325 | -0.253 | -0.193 | -0.147 | -0.095 | -0.005 | 0.107 | 0.219 | 0.307 | **0.356** |
| | (0.006) | (0.000) | (0.000) | (0.004) | (0.029) | (0.160) | (0.943) | (0.114) | (0.001) | (0.000) | (0.000) |
| Official discount rate | -0.021 | -0.403 | **-0.468** | -0.443 | -0.317 | -0.121 | 0.073 | 0.219 | 0.278 | 0.247 | 0.001 |
| | (0.762) | (0.000) | (0.000) | (0.000) | (0.000) | (0.069) | (0.274) | (0.001) | (0.000) | (0.000) | (0.993) |
| Yield on long-term government bonds | -0.038 | -0.360 | **-0.386** | -0.337 | -0.227 | -0.092 | 0.022 | 0.088 | 0.100 | 0.077 | 0.054 |
| | (0.577) | (0.000) | (0.000) | (0.000) | (0.001) | (0.170) | (0.744) | (0.191) | (0.135) | (0.256) | (0.429) |
| Private banks' average lending rate | 0.056 | -0.342 | -0.434 | **-0.438** | -0.338 | -0.163 | 0.016 | 0.140 | 0.175 | 0.128 | -0.054 |
| | (0.413) | (0.000) | (0.000) | (0.000) | (0.000) | (0.014) | (0.816) | (0.036) | (0.009) | (0.058) | (0.425) |
| Private banks' average deposit rate | 0.069 | -0.325 | -0.433 | **-0.446** | -0.345 | -0.161 | 0.025 | 0.158 | 0.200 | 0.157 | -0.067 |
| | (0.311) | (0.000) | (0.000) | (0.000) | (0.000) | (0.015) | (0.710) | (0.018) | (0.003) | (0.020) | (0.325) |
| Spread between private bank's average lending and deposit rate | -0.011 | **-0.205** | -0.204 | -0.178 | -0.132 | -0.076 | -0.019 | 0.014 | 0.010 | -0.024 | 0.011 |
| | (0.867) | (0.002) | (0.002) | (0.008) | (0.047) | (0.256) | (0.780) | (0.840) | (0.878) | (0.722) | (0.869) |
| Real effective krone-rate based on CPI | -0.046 | -0.172 | -0.250 | **-0.295** | -0.279 | -0.198 | -0.090 | 0.016 | 0.089 | 0.122 | 0.198 |
| | (0.498) | (0.010) | (0.000) | (0.000) | (0.000) | (0.003) | (0.180) | (0.816) | (0.187) | (0.069) | (0.003) |
| Share prices | -0.130 | 0.103 | 0.221 | **0.287** | 0.278 | 0.206 | 0.097 | 0.006 | -0.042 | -0.048 | -0.105 |
| | (0.056) | (0.125) | (0.001) | (0.000) | (0.000) | (0.002) | (0.147) | (0.934) | (0.529) | (0.479) | (0.122) |
| House prices | -0.221 | 0.146 | 0.275 | 0.367 | 0.416 | **0.429** | 0.416 | 0.397 | 0.372 | 0.338 | 0.065 |
| | (0.001) | (0.030) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.343) |
| Broad money stock | 0.103 | 0.318 | 0.376 | **0.388** | 0.338 | 0.226 | 0.072 | -0.083 | -0.205 | -0.269 | -0.173 |
| | (0.128) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.280) | (0.216) | (0.002) | (0.000) | (0.010) |
| Credit to domestic non-bank sector extended by resident banks | -0.173 | -0.144 | -0.067 | 0.043 | 0.164 | 0.271 | 0.329 | **0.345** | 0.333 | 0.311 | 0.251 |
| | (0.011) | (0.031) | (0.318) | (0.525) | (0.014) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Bank's write-down ratio | -0.083 | -0.354 | **-0.359** | -0.335 | -0.292 | -0.235 | -0.172 | -0.112 | -0.059 | -0.014 | 0.130 |
| | (0.222) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.010) | (0.094) | (0.381) | (0.840) | (0.055) |

Notes: The significance probability (stated in brackets) relates to the slope parameter in an OLS-regression between the cyclical components of real GDP and the other macroeconmic variable. A constant is included. The null hypothesis is zero correlation. Bold numbers indicates peak cross-correlations in the table. All the time series - except interest rates, the unemployment rate, price and wage inflation rates and the bank's write-down ratio - have been transformed by natural logarithms before filtering. Sample: Quarterly data 1948q1-2010q2.

Source: Author's calculations, cf. the main text.

A positive contemporaneous correlation coefficient indicates that a variable is pro-cyclical while a negative contemporaneous correlation coefficient suggests that the variable is counter-cyclical. Measured by the peak correlation coefficients real private consumption and gross investments are highly pro-cyclical. This reflects the simultaneous nature of output, consumption and investments. However, the size of the cross-correlation coefficients of the lagged values of consumption (investment) and GDP are slightly higher than the cross-correlation coefficients of the leaded values of consumption (investments) and GDP. This might indicate that output tends to be driven by demand rather than vice versa, cf. also the discussion in Hansen & Knudsen (2004).

The unemployment rate is counter-cyclical and tends to lag output with one quarter measured by the peak correlation coefficient. This might reflect traditional labour hoarding effects.

CPI inflation seems to be counter-cyclical and lead output by two quarters. Following the lines of Real Business Cycle theories the negative contemporaneous correlation between inflation and output could indicate that business cycle fluctuations are dominated by supply shocks, cf. Kydland & Prescott (1990). However, the cross-correlation coefficient between inflation and real GDP becomes positive when a two-quarter lag or more of output is considered. The pattern of cross-correlations for CPI inflation could therefore also be interpreted as an indication of price stickiness as suggested by New Keynesian models, cf. King & Watson (1996).

The signs of the correlation coefficients for wage inflation correspond at all leads and lags with the signs of the cross-correlation coefficients for CPI inflation but the absolute size of the coefficients for wage inflation tend to be smaller. This could indicate that the rigidity for wages is higher than for prices.

All the four nominal interest rates tend to be counter-cyclical and seem to lead output. It is interesting to note that the official discount rate lead output by three quarters measured by the peak correlation whereas the lead time for private banks' lending and deposit rates is only two quarters. This is consistent with the findings in Carlsen & Fæste (2007) which shows that the Danish banks normally change their interest rates with a time-lag following an adjustment of the Nationalbank's discount rate.

The spread between the private bank's average lending and deposit rate seems to be counter-cyclical and leads the cycle with one year measured by the peak correlation. This reflect that interest-rate margins tend to widen in recessions where the risk of default among firms and households increases.

Share prices tend to be pro-cyclical and lead the cycle with two quarters. This is consistent with the forward-looking nature of this variable. House prices are also pro-cyclical but seem to be more closely aligned with the cycle.

Broad money seems also to be pro-cyclical and tends to lead real GDP by two quarters measured by the peak correlation. Furthermore, it seems that credit to the domestic non-financial sector is pro-cyclical and tends to lag output with two quarters. Unfortunately does the quarterly data set described in section 4 not offers a breakdown of credit by sectors. However, the lagged nature of credit might reflect that Danish firms tend to finance parts of their fixed investments in the initial stages of an upturn with own funds from retained earnings rather than loans from banks, cf. Abildgren (2009).

Finally, the bank's write-down ratio tends to be counter-cyclical and thus fall in periods with good macroeconomic performance and increase in periods with slowdown in the economy. It furthermore appears that the write-down ratio leads the cycle with three quarters. However, one must have in mind that most of the quarterly series on bank's write-down ratio is interpolated on the basis of semi-annual or annual data, cf. section 4.

## 6. VAR evidence on monetary transmission and shocks to financial stability

Vector autoregression (VAR) models can be used to gain further insight into business cycle dynamics, the monetary transmission mechanism and the interactions between the financial system and the real economy.

The VAR approach to the study of the monetary transmission mechanism was introduced by Sims (1972, 1980a, 1980b). Christiano *et al.* (1999) review and discuss the evidence from VAR analysis on the monetary transmission mechanism with focus on the USA whereas Peersman & Smets (2003) cover the euro area. Stock & Watson (2001) and Walsh (2010) offer non-technical summaries of the literature. The number of endogenous variables in the VAR studies on monetary transmission has usually been around 3-4.

More recently the VAR approach has also found use in relation to macroeconomic stress testing of the banking system and other studies of the robustness of the banking system to adverse macroeconomic shocks, cf. Hoggarth *et al.* (2005) and Dovern *et. al.* (2010).

VAR models might also be used to study the feedback effect on the macro economy of shocks to the robustness of the banking system, cf. Anari *et al*. (2005), Kupiec & Ramirez (2008), Marcucci & Quagliariello (2008), Österholm (2010), Monnin & Jokipii (2010), Berrospide & Edge (2010) and Puddu (2010). The stock of deposits or liabilities in failed banks, a financial condition index, the bank borrowers' default rates, the share of non-performing loans in bank's loan portfolio, the bank's write-down ratio, the bank's solvency (capital-to-assets) ratio, the return on equity in banks and the banking sector's probability of default have been used as indicators of the robustness of the banking sector. Since the dynamic interactions between the financial sector and the real economy are rich and complicated a reduced-form VAR approach seems particularly useful for studies of banking system instability due to the few *a priori* restrictions imposed on such models. The number of endogenous variables in the VAR studies mentioned above on the interactions between the macro economy and banking sector have typically been around 4-6.

This section reviews the evidence on the monetary transmission mechanism and shocks to financial stability that can be gained via orthogonalised impulse-response functions from a range of reduced form VAR models with nine endogenous variables estimated on the basis of the new historical quarterly data sets presented in section 3 and 4. The long-span data sets make it possible to estimate VAR models of a higher dimension than is usually found in the

literature due to degrees-of-freedom problems. The analysis complements a number of earlier studies on the monetary transmission mechanism in Denmark, in particular the study by Sløk (1997) using reduced form stationary VAR analysis based on quarterly data 1972-1994. Beier & Storgaard (2006) contains a more recent and detailed study on the monetary transmission mechanism in Denmark following a structural stationary VAR approach based on monthly data 1983-2005. However, none of these Danish studies have included asset prices, credit, money and the bank's write down ratio among the endogenous variables.

### *Model specification issues*

An unrestricted reduced form VAR model can in general terms be written as:

$$[6]\ Y_t = A_1 Y_{t-1} + ... + A_p Y_{t-p} + E_t$$

where $Y_t$ is a Kx1vector of endogenous variables, $A_i$ (i=1,...,p) are KxK coefficient matrices and $E_t$ is a Kx1 vector of serially uncorrelated error terms with zero means and a time-independent variance-covariance matrix V. Exogenous variables and deterministic terms such as constant terms, linear time trends and seasonal dummy variables can be included on the right-hand side of equation [6] but has been left out in order to simplify the exposition.

Since the right hand side of [6] only contains predetermined variables, simultaneity is not an issue. Furthermore, since all the equations have the same explanatory variables, the coefficients can be estimated efficiently by use of OLS directly to each equation in the VAR. The variance-covariance matrix V of the reduced form error terms can then be estimated from the residuals.

Once the $A_i$ coefficients are estimated the marginal effect on the system at time t, t+1, t+2, ... of a shock to one of the endogenous variables at time t can be traced out from [6]. Such effects are usually termed "impulse responses" since they measure the marginal response of $Y_t$ at time t, t+1, t+2, ... to a unit change at time t in one of the reduced form error terms in $E_t$.

However, if the variance-covariance matrix V is not diagonal a unit change at time t in only one of the reduced form error terms in $E_t$ is implausible. The reduced form error terms can be seen as linear combinations of "structural" shocks, i.e. shocks that occur to each endogenous variable in isolation. A common way to identify such "structural" (or "orthogonal") shocks is based on a Cholesky decomposition of V. Since V is assumed to be symmetric and positive definite it can be uniquely decomposed as $V = LL^T$, where $^T$ denotes transponation and L is a KxK lower triangular matrix with zeros above the diagonal. The reduced form error terms in $E_t$ can then be written as $E_t = LU_t$, where $U_t$ is a Kx1 vector of structural shocks which are contemporaneously uncorrelated and have a unit variance, i.e. the variance-covariance matrix of $U_t$ is an identity matrix. If $U^j$ denotes a Kx1 vector with one in row j and zeros elsewhere,

the impulse-responses to a one standard error structural shock to the endogenous variable no. j can then be traced out from $LU^j$ and the estimated $A_i$ coefficients in [6]. These impulse responses are typically denoted "orthogonalised impulse responses".

Since L is lower triangular a structural shock to the first endogenous variable at time t will also have an instantaneous effect on all the other endogenous variables in the system. A structural shock to the second endogenous variable at time t will not have any effect at time t on the first endogenous variable but only on the other endogenous variable, *etc*. The effect of a structural shock to one of the endogenous variables in the system thus depends on ordering of the endogenous variables in $Y_t$. This complicates the economic interpretation of the orthogonalised impulse-responses based on a Cholesky decomposition of V. However, a reasonable ordering might be based on economic arguments. Furthermore, the robustness of the ordering can be assessed by estimating models with different ordering of the endogenous variables.[9]

A final issue to consider is whether all the variables in the VAR need to be (trend) stationary or whether non-stationary variables can be included. Sims *et al*. (1990), Hamilton (1994: 651-652) and Enders (2004:270) notes that the parameters describing the systems dynamics and hence impulse responses are still estimated consistently in a VAR in levels even in the case when some or all of the variables are non-stationarity. Furthermore, many test statistics still have the same asymptotic distribution as in the stationary case. A VAR in levels allows for implicit cointegration among the variables and it might be argued that trending variables or deterministic trends could approximate unit roots with drift. A VAR in differences could be an alternative option to a VAR in levels. However, differencing throws away information and a VAR in differences is misspecified if some of the variables in levels in fact are stationary or cointegrated. A robustness check of the order of integration of the variables in the VAR can be performed by estimating the system in levels as well as in first differences.

In the paper at hand a range of reduced-form VAR models are estimated using quarterly data for the period 1948q1-2010q2.[10] All the models contain the same nine endogenous variables (real GDP, CPI, discount rate, yield on long-term central-government bonds, share prices, broad money, domestic credit, house prices and the bank's write-down ratio), and the estimated impulse-responses are orthogonalised based on a Cholesky decompositions.

Table 4 shows the result of a range of Augmented Dickey Fuller (ADF) unit-root tests for the nine variables in levels and first differences. All tests include a constant, and for variables in levels a trend is included as well. Seasonal dummies are included for non-seasonally

[9] The econometrics of VAR models and impulse-response analysis is e.g. covered by Hamilton (1994), Krätzig & Lütkepohl (eds.) (2004) and DeJong & Dave (2007).

adjusted series with a seasonal pattern.[11] ADF tests are known to be sensible to the choice of lag length for differences included in the test. The lag length in the tests has been chosen with the aim of ensuring no significant signs of autocorrelation in the residuals at a 5 per cent significance level.

At a 5 per cent significance level the ADF-tests in Table 4 suggest that all variables in levels are generated from non-stationary processes whereas all variables in differences are stationary. ADF test usually serves as the starting point or "benchmark" in unit-root testing. However, it should be noted that the power of ADF tests against the null hypothesis of a unit root is not very strong. A null hypothesis is always accepted unless there is strong evidence against it. One the other hand, if the null hypothesis of non-stationarity in an ADF test is rejected, there is a strong case for stationarity. Alternative tests with stationarity as the null hypothesis have been developed. However, in light of the test results in Table 4 it seems suitable - as a robustness test - to estimate the VAR models both in levels and in first differences.

**Table 4 Univariate unit-root tests**

| | Augmented Dickey Fuller tests | | | | |
|---|---|---|---|---|---|
| | Null hypothesis: The presence of a unit root | | | | |
| | Constant? | Trend? | Seasonal dummies ? | Number of lags for differences | Test statistics |
| *Levels*: | | | | | |
| Real GDP (log-level, NSA) | yes | yes | yes | 4 | -0.63 |
| CPI (log-level, NSA) | yes | yes | yes | 4 | -0.47 |
| Discount rate (level, NSA) | yes | yes | no | 4 | -1.73 |
| Yield on long-term central-government bonds (level, NSA) | yes | yes | no | 4 | -1.09 |
| Share prices (log-level, NSA) | yes | yes | no | 1 | -3.16 |
| Broad money (log-level, NSA) | yes | yes | yes | 5 | -0.76 |
| Domestic credit (log-level, NSA) | yes | yes | yes | 5 | -1.20 |
| House prices (log-level, NSA) | yes | yes | no | 5 | -1.63 |
| Bank's write-down ratio (level, NSA) | yes | yes | no | 5 | -3.19 |
| *Differences*: | | | | | |
| Real GDP (dlog_1, SA) | yes | no | no | 0 | -19.03** |
| CPI (dlog_1, SA) | yes | no | no | 5 | -3.44* |
| Discount rate (d_1, NSA) | yes | no | no | 3 | -8.60** |
| Yield on long-term central-government bonds (d_1, NSA) | yes | no | no | 3 | -8.85** |
| Share prices (dlog_1, NSA) | yes | no | no | 0 | -11.62** |
| Broad money (dlog_1, SA) | yes | no | no | 2 | -5.56** |
| Domestic credit (dlog_1, SA) | yes | no | no | 1 | -3.85* |
| House prices (dlog_1, NSA) | yes | no | no | 4 | -5.19** |
| Bank's write-down ratio (d_1, NSA) | yes | no | no | 4 | -6.67** |

General notes: Sample: Quarterly data 1948q1-2010q2.
NSA denotes no seasonally adjustment whereas SA denotes seasonally adjustment.
d_1 denotes first differences whereas dlog_1 denotes first logarithmic differences.
* (**) denotes rejection of the null hypothesis at a 5-per-cent (1-per-cent) significance level.

In the following three different reduced-form VAR models are therefore estimated, cf. Table 5. In model L and model LA all time series are non-seasonally adjusted and are in log-levels except interest rates and bank's write-down ratio, which are in levels. Furthermore,

[10] All econometric results presented in this section have been obtained via the use of PCGive and JMulTi.

constant terms, linear time trends and seasonal dummy variables are included in these two models.

In model L, the financial and monetary variables as well as the bank's write-down ratio are ordered at the end, which implies that these variables are assumed to respond immediately to shocks to the real economy and to monetary policy. Output and consumer prices are placed at the beginning, which implies a lagged reaction of these variables to monetary and financial shocks. The ordering in model L implies e.g. that a shock to the discount rate has no contemporaneous effect on output and prices but might effect the yield on long-term bonds and house prices immediately.

**Table 5: Specifications of three VAR models. Estimated on the basis of quarterly data 1948q1-2010q2**

| Model | L (Levels) | LA (Levels, Alternative ordering) | D (Differences) |
|---|---|---|---|
| Endogenous variables listed in order | 1. Real GDP (log-level, NSA)<br>2. CPI (log-level, NSA)<br>3. Discount rate (level, NSA)<br>4. Yield on long-term central-government bonds (level, NSA)<br>5. Share prices (log-level, NSA)<br>6. Broad money (log-level, NSA)<br>7. Domestic credit (log-level, NSA)<br>8. House prices (log-level, NSA)<br>9. Bank's write-down ratio (level, NSA) | 1. Discount rate (level, NSA)<br>2. Yield on long-term central-government bonds (level, NSA)<br>3. Share prices (log-level, NSA)<br>4. Broad money (log-level, NSA)<br>5. Domestic credit (log-level, NSA)<br>6. House prices (log-level, NSA)<br>7. Bank's write-down ratio (level, NSA)<br>8. Real GDP (log-level, NSA)<br>9. CPI (log-level, NSA) | 1. Real GDP (dlog_1, SA)<br>2. CPI (dlog_1, SA)<br>3. Discount rate (d_1, NSA)<br>4. Yield on long-term central-government bonds (d_1, NSA)<br>5. Share prices (dlog_1, NSA)<br>6. Broad money (dlog_1, SA)<br>7. Domestic credit (dlog_1, SA)<br>8. House prices (dlog_1, NSA)<br>9. Bank's write-down ratio (d_1, NSA) |
| Deterministic terms | Constant terms<br>Linear time trends<br>Seasonal dummies | Constant terms<br>Linear time trends<br>Seasonal dummies | Constant terms |
| Optimal endogenous lags from AIC (a) | 5 | 5 | 4 |
| Chosen number of endogenous lags | 5 | 5 | 6 |
| Vector F-tests for auto-correlation (p-value) (b) | 0.2553 | 0.2580 | 0.2602 |

General notes: NSA denotes no seasonally adjustment whereas SA denotes seasonally adjustment. d_1 denotes first differences whereas dlog_1 denotes first logarithmic differences.

(a) Among models with a maximum of 10 endogenous lags.

(b) Up to the chosen number of lags in the models. Null hypothesis is no autocorrelation.

Model LA is almost identical to model L but contains an alternative ordering of the variables. In model LA output and prices are placed at the end whereas the ordering of the other variables follows the ordering from model L. Model LA serves as a robustness test of the orthogonalisation in model L.

In model D all time series are seasonally adjusted except interest rates, asset prices and bank's write-down ratio, which are non-seasonally adjusted. Furthermore, all time series in

[11] No seasonal patterns were found for interest rates, share prices, house prices and the bank's write-down ratio. The seasonal assessment was carried out with X-12-ARIMA, cf. U.S. Census Bureau (2009).

this model are in first logarithmic differences except interest rates and bank's write-down ratio, which are in first differences and not transformed by the natural logarithm function. Constant terms are included in model D and the ordering of the variables in model D correspond to that in model L. Model D serves as a robustness check on the order of integration of the variables in model L. The estimated impulse-responses in model D are accumulated in order to facilitate comparisons of the results with those from the corresponding model in levels (i.e. model L).

The number of lags in all the three VAR-models has been guided by the Akaike Information Criterion (AIC) compiled for models with a maximum of 10 endogenous lags. However, the actual lag length has been chosen based on vector diagnostics for autocorrelation in order to ensure no signs of autocorrelation in the residuals at a five per cent significance level.

### *Responses to a monetary-policy shock*

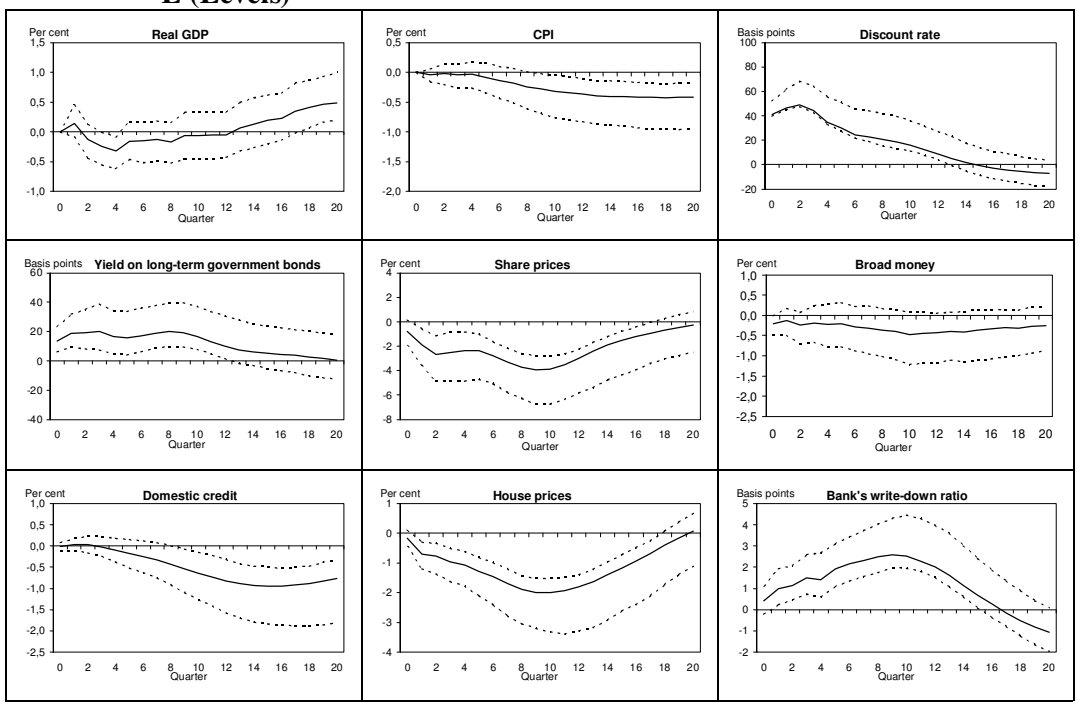
The thick lines in Chart 22 shows the estimated responses to an unexpected (exogenous) shock to the nominal discount rate derived from model L. The shape and direction of the impulse-response functions seems in general to be in line with what one could expect from mainstream macroeconomic theory.

After the shock the discount rate gradually converge back to the baseline level. The yield on long-term central-government bonds rises significantly following the shock but less than the increase in the discount rate. The pattern of the long-term interest rate is consistent with the expectation theory of the term structure, according to which the long-term interest rate is an average of the expected future short-term interest rates (plus a risk premuim).

Asset prices drop significantly during the first couple of years after the interest-rate shock before they begin a sluggish reversion towards the baseline levels. This is in line with a discounted dividend model for share prices and a model for house prices based on discounted future imputed rents.

Real GDP falls after the shock to the discount rate and reaches a minimum after one year before reverting back towards the baseline level. The initial drop in output may e.g. reflect intertemporal substitution in consumption and lower investment due to the fall in asset prices (cf. Tobins Q).

**Chart 22: Responses to a one standard error shock to the discount rate - Model L (Levels)**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Quarterly data 1948q1-2010q2.

The CPI decline significantly after a couple of years following the shock to the discount rate. The effect on the price level seems to be very persistent which might indicate price stickiness. It might also be noted that the so-called "price puzzle" known from the VAR literature - cf. e.g. Christiano *et al.* (1999) - where an increase in the short-term interest rate followed initially by an increase in the price level, seems not to be an issue in Chart 22.

After a couple of years there seems to be a significant and persistent decline in credit following the shock to the discount rate. This could reflect the persistent reductions in house prices. Falling house prices are usually followed by a reduction in the demand for loans when existing houses are traded at new and lower price levels. Furthermore, a decline in house prices may reduce the borrowing for other purposes than house acquisition by lowering the equity that potentially can be posed as collateral.

There seems not to be any significant reaction of broad money to shock to the discount rate. This might reflect a combination of several factors. The higher short-term interest rate makes money more attractive, but the increase in the long-term interest rate as well as a lower transaction level indicated by the decline in real GDP reduce the demand for money.

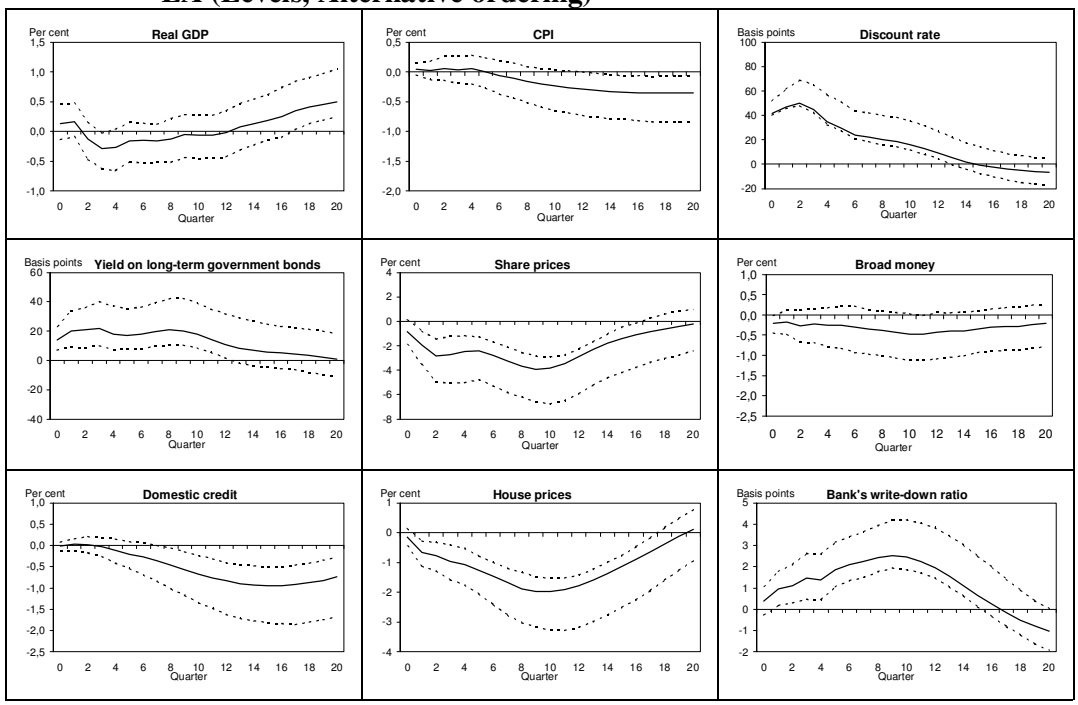
Finally it seems that a shock to the short-term interest rate tend to be followed by a significant increase in the bank's write-down ratio up to three years after the shock. This

might reflect that the decline in real GDP and asset prices and the increase in the interest rate level deteriorate the credit quality of the bank's customers.

### *Robustness checks*

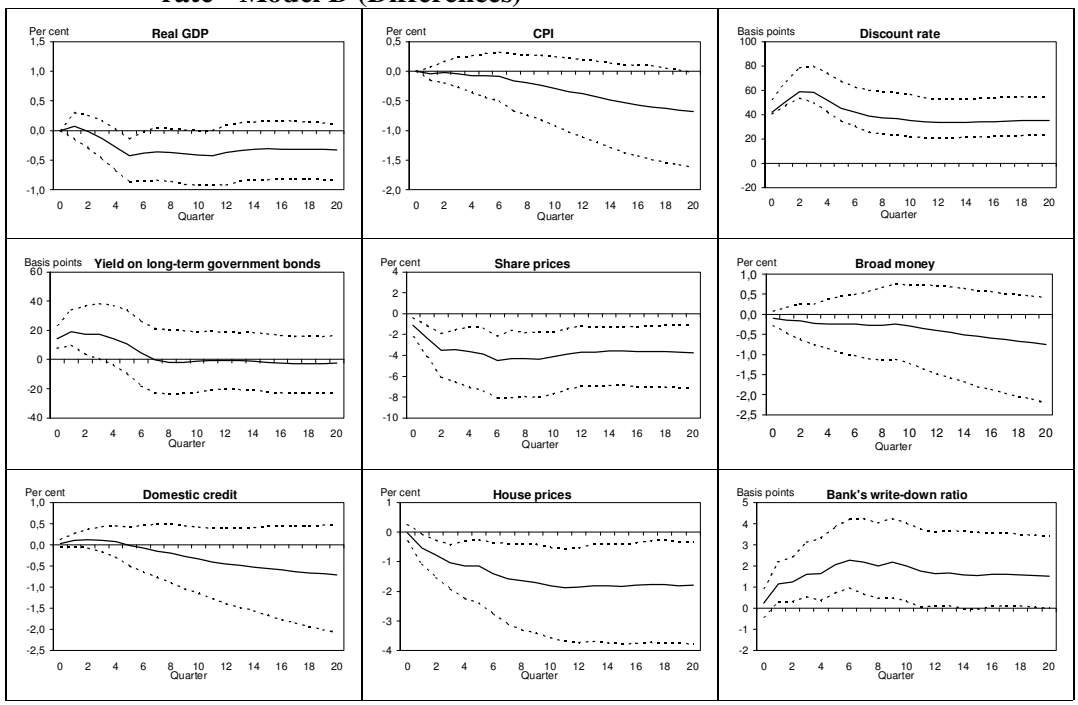
As a robustness test of the ordering and stationarity of the variables in model L, Chart 23-24 reports the estimated responses to a shock to the discount rate derived from model LA and model D. In broad terms, the responses in the three models are similar in direction, shape and magnitude.

**Chart 23: Responses to a one standard error shock to the discount rate - Model LA (Levels, Alternative ordering)**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Quarterly data 1948q1-2010q2.

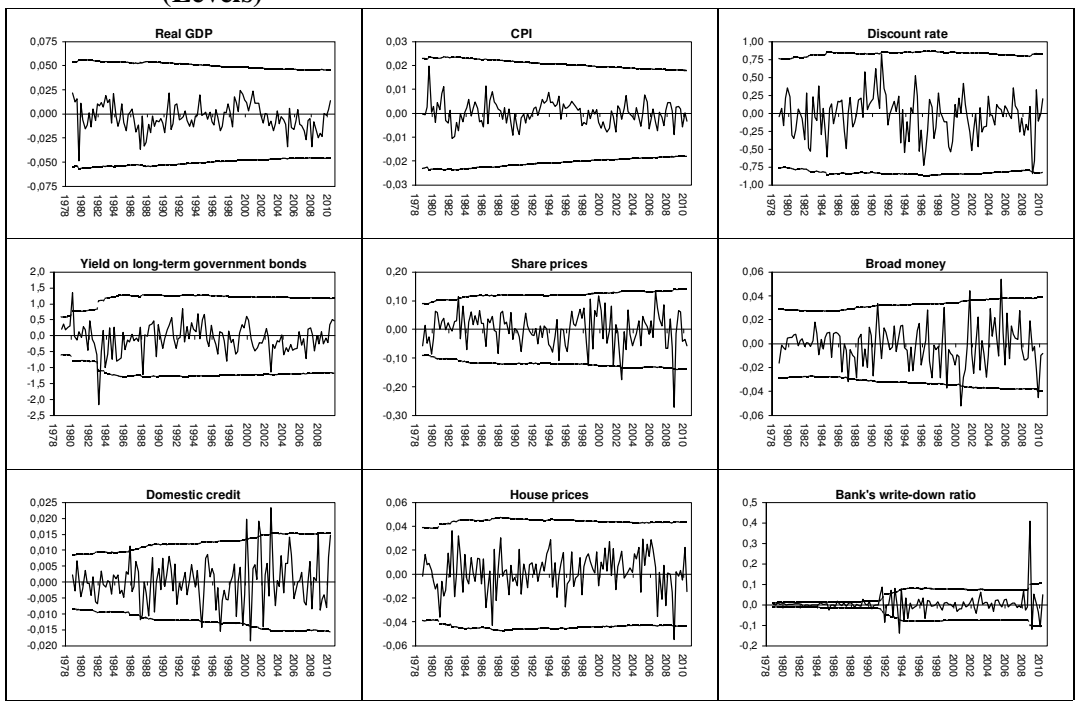
**Chart 24: Accumulated responses to a one standard error shock to the discount rate - Model D (Differences)**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The accumulated orthogonalised impulse-response functions show accumulated deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show accumulated derivations from the baseline in basis points. Sample: Quarterly data 1948q1-2010q2.

Chart 25 shows one-step-ahead prediction errors (also known as "one-step recursive residuals") for the nine equations in model L. The figure shows how the one-quarter-ahead forecast error in each equation changes when new observations are added recursively to the estimation sample. Residuals outside the standard error bands can be taken as an indicator of outliers or parameter instability. For all the equations most of the prediction errors stay inside the 95 per cent confidence bounds. Overall the prediction errors do not indicate signs of structural change or parameter instability although a few outliers seem to be present.

**Chart 25: One-step-ahead prediction errors for the equations in model L (Levels)**



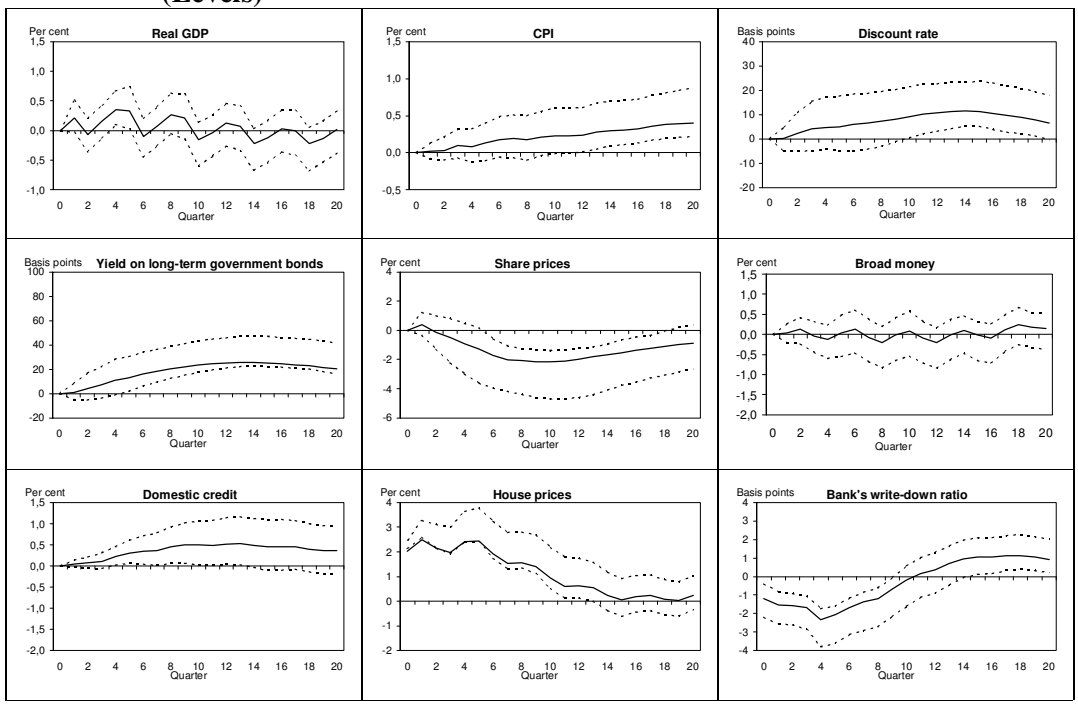

General notes: Dashed lines are 95 per cent confidence intervals. Sample: Quarterly data 1948q1-2010q2. 118 observations have been used for initialisation.

As mentioned in section 3 the pre-1971 quarterly national-account data were constructed using least-squares interpolation algorithms and an information set consisting of a range of quarterly indicator series and annual national account data. Furthermore, as mentioned in section 4 most of the quarterly data on bank's write-down ratio have been interpolated from semi-annual or annual data. As a further robustness test the three models in Table 5 have therefore also been estimated on annual data 1948-2009, cf. annex D. Overall, the response of the annual systems to a one-standard-error structural shock to the discount rate are similar in direction, shape and magnitude to the findings based on the quarterly models described above.

### *Responses to shocks to house prices and the long-term interest rate*

Chart 26 explores the dynamics following a shock to nominal house prises. An increase in house prices is followed by a significant and rather persistent decline in the banking sector's write-down ratio. The jagged response of e.g. real GDP and broad money reflects that the model is based on non-seasonally adjusted data, cf. Table 5.

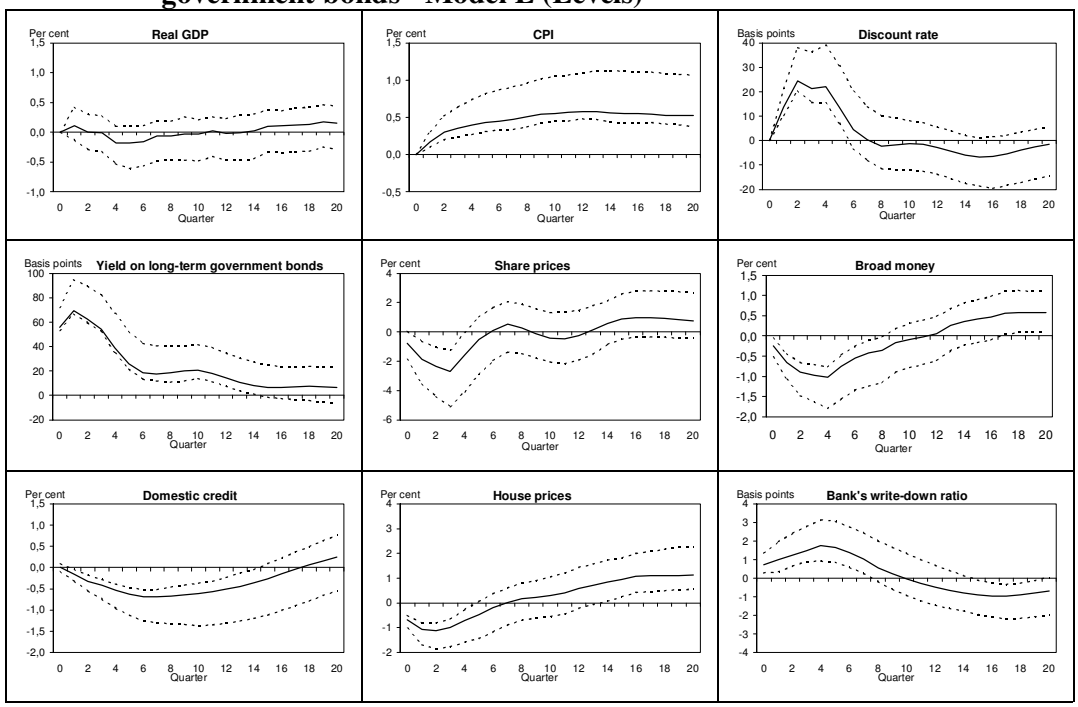
**Chart 26: Responses to a one standard error shock to house prices - Model L (Levels)**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Quarterly data 1948q1-2010q2.

The responses to a shock to the nominal long-term interest rate are shown in Chart 27. An increase in the long-term interest rate is followed by a significant increase in the banking sector's write-down ratio. The responses of output and prices - no significant effect on real GDP and a gradual and significant increase in the price level - might at first seem surprising. The most obvious explanation is that the shock to the nominal long-term interest rate should be interpreted as a shock to the expected inflation rate or the inflation risk-premium rather than a shock to the expected real interest rate, cf. also the historical development of inflation and the nominal long-term interest rate in Denmark in section 4.

**Chart 27: Responses to a one standard error shock to the yield on long-term government bonds - Model L (Levels)**

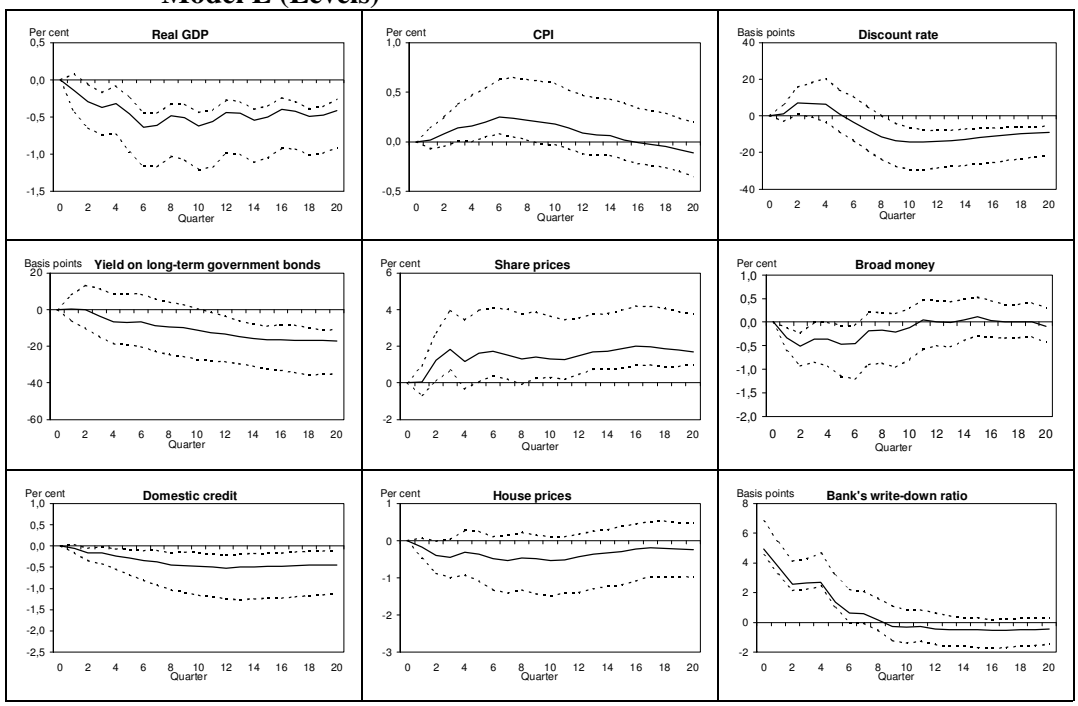



General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Quarterly data 1948q1-2010q2.

### *Responses to a shock to the bank's write-down ratio*

Finally, Chart 28 suggests that there are feedback effects from shocks to the banking sector to the real economy. A shock to the bank's write-down ratio - which might be interpreted as a sudden reassessment of the credit quality of the bank's loan portfolio or an increase in the banking sectors' risk aversion - has a significant and long-lasting negative effect on domestic credit and real GDP. There thus seems to be a link between financial stability and macroeconomic performance. The link might indicate the existence of a bank-lending channel. According to such a line of thinking a shock to the bank's capital is followed by a period of reduced loan supply in order to maintain or re-establish a sufficient capital ratio, and the reduced credit supply affects the other parts of the macroeconomic system. The negative and persistent impact on real GDP after a shock to the banking sector's write-down ratio is consistent with the findings in the literature that economic recoveries after banking and financial crises are slower than normal, cf. e.g. Bordo *et al.* (2001) and Reinhart & Reinhart (2010).

**Chart 28: Responses to a one standard error shock to bank's write-down ratio - Model L (Levels)**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Quarterly data 1948q1-2010q2.

## 7. Final remarks and scope for further research

Official quarterly national accounts for Denmark are only available for the period since 1977. This paper has presented a first attempt to overcome this data shortage by constructing a set of summary quarterly national-account data for Denmark covering the period since 1948. The long-span data sets has made it possible to estimate VAR models of a higher dimension than is usually found in the literature due to degrees-of-freedom problems. The estimated responses to the shocks presented in the paper seem plausible and most of the responses are clearly significant at 5 per cent levels. This illustrates the usefulness of long-span data sets when the rich and complicated dynamic interactions between the financial sector and the real economy are subject to study.

However, the quarterly national-account data presented in this paper should only be considered as a first attempt to close some of the gaps in the existing stock of historical statistics in Denmark. It could be useful if the data set on quarterly national accounts could be disaggregated somewhat further, for instance with a breakdown of private consumption into durables and non-durables and a drill-down of gross investment into sub-categories. Furthermore, in general it would be preferable if the quarterly data could be based on a larger

set of indicators than the figures presented in section 3. Until now projects on historical national accounts in Denmark have only focused on annual data.[12] It would be interesting if future projects on historical-national accounts statistics in Denmark would make an attempt to cover quarterly data as well.

Also the supplementary quarterly data set in section 4 could benefit from further work. It would be useful with quarterly data on employment and time series for public finances, at least for the central government. It would also be interesting with a drill down of domestic credit into commercial credit and credit to private individuals. Furthermore, as mentioned in section 3 most of the quarterly data on the bank's write-down ratio have been interpolated from semi-annual or annual data. Even though the bank's write-down ratio is rather persistent in nature it could improve the quality of this data series if more quarterly information could be uncovered.

The analysis of the stylised empirical evidence on the business cycle, the monetary transmission mechanism and shocks to financial stability presented in this paper have only been of an explorative nature. The data sets in section 3 and 4 could be subject to further and more comprehensive studies. In Denmark there is no recognised business cycle dating committee. The stylised facts on the business cycle in section 5 could therefore be elaborated by an attempt to identify peaks and troughs in the Danish business cycle since 1948. Another natural next step could be exploration of the robustness of the findings in section 6 within the framework of cointegrated or structural VAR models.

## 8. References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[12] For an overview of the available historical national-accounts figures in Denmark, cf. pp. 164-179 in Mogensen (1987), Hyldtoft (1993, 1994), Christensen *et al.* (1995) and Nilsson (1991, 2004).

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## Annex A: Data sources

***National accounts statistics, annual data 1948-1971***
Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*; and Statistics Denmark, *Statistical ten-year review*. Other sources: Statistics Denmark (1966).

Comments:

(1) Figures in constant prices are based on 1955-prices.

***National accounts statistics (non-seasonally adjusted), quarterly data 1971q1-1977q4***
Sources:

The MONA database (cf. Danmarks Nationalbank, 2003) and Statistics Denmark, *StatBank Denmark*.

(1) The non-seasonally adjusted data been compiled on the basis of seasonally adjusted data and seasonal factors from 1977. (2) Figures in constant prices are based on 2000-prices (chain figures).

***National accounts statistics (non-seasonally adjusted), quarterly data 1977q1-2010q2***
Sources:

Statistics Denmark, *StatBank Denmark*.

Comments:

(1) Adjusted for break in series in 1988 and 1990. (2) Figures in constant prices are based on 1995-prices (1988-1990) and 2000-prices (1991-2010).

***Value index for retail sales, quarterly data 1948q1-1971q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook*.

Comments:

(1) Adjusted for break in series in 1955, 1961 and 1968.

***Consumer price index, Denmark, quarterly data 1948q1-2010q2***
Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*; and Statistics Denmark, *Statistical Yearbook*.

Comments:

(1) Adjusted for break in series in 1956, 1965, 1976, 1981 and 2000.

***Number of new registrations of passenger cars etc., quarterly data 1948q1-1971q4***
Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*; and Statistics Denmark, *Konjunkturoversigt*;

Comments:

(1) Adjusted for break in series in 1949 and 1955.

***Number of dwellings started, quarterly data 1948q1-1971q4***
Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*; and Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) 1969-1971: Quarterly data for the number of dwellings started in all of Denmark. (2) For the period 1949-1968 are the quarterly data estimated on the basis of semiannual data for the number of dwellings started in all of Denmark and quarterly data for the number of dwellings started in towns *etc.* with more than 1000 inhabitants. During the period 1949-1968 the number of dwellings started in towns *etc.* with more than 1000 inhabitants covered 75-87 per cent of the number of dwellings started in all of Denmark. (3) For 1948 are the quarterly data estimated on the basis of the development in quarterly data for the number of dwellings started in town *etc.* with more than 1000 inhabitants. (4) Adjusted for break in series 1949 and 1969.

***Index of building costs, quarterly data 1948q1-1971q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) 1968-1971: Index of building costs for a single-family house. 1949-1967: Index of building costs for a residential building. 1948: index of building costs of a 3-storeyed building.

(2) Adjusted for break in series in 1949, 1955 and 1968.

***Gross floor space (m2) of new buildings started excluding dwellings started, quarterly data 1948q1-1971q4***

Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*; and Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Quarterly figures for gross floor space of new dwellings started is calculated on the basis of gross floor space of new dwellings started in 1948 and the development in the number of dwellings started on a quarterly basis in the period 1948-1971. (2) Adjusted for break in series in 1949, 1963 and 1968.

***Number of new registrations of commercial vehicles, quarterly data 1948q1-1971q4***

Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*; Statistics Denmark, *Konjunkturoversigt*; and Statistics Denmark, *Statistical Yearbook*.

***Wholesale price index, quarterly data 1948q1-1971q4***

Sources:

Various issues of Statistics Denmark, *Statistical Yearbook*; and IMF, *International Financial Statistics*.

Comments:

(1) Adjusted for break in series in 1955, 1956 and 1968.

***Value of exports and imports of goods, quarterly data 1948q1-1971q4***

Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) 1948-1956: Special trade. 1957-1971: General trade. (2) Adjusted for break in series in 1957.

***Index of unit values in exports and imports of goods, quarterly data 1948q1-1971q4***

Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Excluding ships and aeroplanes. (2) Adjusted for break in series in 1949, 1956, 1966 and 1971.

***Value of exports and imports of services, quarterly data 1948q1-1971q4***
Sources:

Various issues of Danmarks Nationalbank, *Annual Report and Accounts*; and Statistics Denmark, *Statistical Yearbook*. Other sources: Thygesen (1971).

Comments:

(1) Quarterly data for the value of exports and imports of services are only available from 1960. Prior to 1960 the figures are interpolated based on the development in the value of exports and imports of goods.

***Unemployment rate, quarterly data 1948q1-2010q2***
Sources:

Various issues of: Statistics Denmark, *Statistical ten-year review*. Other sources: Statistics Denmark (1996); and Statistics Denmark, *StatBank Denmark*.

Comments:

(1) Unemployed persons in per cent of the total labour force. (2) For the period 1966-1972 calculated on the basis of annual data for unemployed persons in per cent of the total labour force and quarterly data for unemployed persons in per cent of wage earners in the labour force (3) For the period 1948-1965 calculated on the basis of annual data for unemployed persons in per cent of the total labour force 1949-1965 and quarterly data for unemployed members of unemployment insurance funds in per cent of the total number of members of unemployment insurance funds 1948-1965. (4) Adjusted for break in series in 1949, 1957, 1966, 1973, 1980 and 2000.

***Index of average hourly earnings in manufacturing industries, quarterly data 1948q1-2010q2***
Sources:

Various issues of: Statistics Denmark, *Statistical Yearbook*. Other sources: Statistics Denmark, *StatBank Denmark*.

Comments:

(1) Adjusted for break in series in 1970, 1973, 1996 and 2007.

***Official discount rate of Danmarks Nationalbank, quarterly data 1948q1-2010q2***
Sources:

Various issues of: Danmarks Nationalbank, *Report and Accounts*. Other sources: Mordhorst (1968); and Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) Quarterly averages of daily observations.

***Yield on long-term Danish government bonds, quarterly data 1948q1-2010q2***

Sources:

Various issues of: Danmarks Nationalbank, *Monetary Review*; and Danmarks Nationalbank, *Report and Accounts*. Other sources: Danmarks Nationalbank's website (www.nationalbanken.dk); Statistics Denmark (1969) and internal material from Danmarks Nationalbank.

Comments:

(1) 1983q3-2010q2: Yield to maturity on 10-year central government bonds. 1948q1-1983q2: Yield to maturity on long central government bonds. (2) 1960-2010: Quarterly averages of daily observations. 1948-1959: The quarterly figures refer to 15 March, 15 June, 15 September and 15 December.

***Private banks' average lending rate, quarterly data 1948q1-2010q2***

Sources:

Various issues of: Danmarks Nationalbank, *Report and Accounts*; and Statistics Denmark, *Statistical Yearbook*. Other sources: Carlsen & Fæste (2007); Mikkelsen (1993); Pedersen (1989); Thygesen (1971); and Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) Quarterly data for the weighted average lending interest rates of savings banks and commercial banks are only available for the period 1973-2010. For the period 1969-1972 the quarterly data are based on annual data on the weighted average lending interest rates of savings banks and commercial banks and quarterly data for the average lending rate charged by the main commercial banks. For the period 1951-1968 are the quarterly data based on annual data on the weighted average lending interest rates of savings banks and commercial banks and quarterly data for the rate charged by commercial banks on cash credits. For the period 1948-1950 the quarterly data are based on annual data on the weighted average lending interest rates of savings banks and commercial banks and quarterly data for the average lending rate charged by the main commercial banks. (2) Adjusted for break in series in 1948, 1951, 1969, 1973, 1976 and 1983.

***Private banks' average deposit rate, quarterly data 1948q1-2010q2***

Sources:

Various issues of: Danmarks Nationalbank, *Report and Accounts*; and Statistics Denmark, *Statistical Yearbook*. Other sources: Carlsen & Fæste (2007); Mikkelsen (1993); Pedersen (1989); Thygesen (1971); and Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) Quarterly data for the weighted average deposit interest rates of savings banks and commercial banks are only available for the period 1973-2010. For the period 1969-1972 the quarterly data are based on annual data on the marginal between the weighted average lending and deposits rates of savings banks and commercial banks and quarterly data for the private banks' average lending rate. For the period 1951-1968 based on quarterly data on the marginal between the weighted average lending and deposits rates of commercial banks and quarterly data for the private banks' average lending rate. For the period 1948-1950 the quarterly data are based on annual data on the weighted average deposit interest rates of savings banks and commercial banks (2) Adjusted for break in series in 1951, 1969, 1976 and 1983.

***Nominal effective krone-rate index, quarterly data 1948q1-2010q2***

Sources:

Various issues of: Danmarks Nationalbank, *Report and Accounts*; and Danmarks Nationalbank, *Monetary Review*. Other sources: Danmarks Nationalbank's website (www.nationalbanken.dk), Pedersen, E. H. (1996), Statistics Denmark (1995) and Ølgaard (1992).

Comments:

(1) Trade-weighted average of the development in the bilateral nominal krone-rate vis-à-vis the currencies of a range of Denmark's main trading partners. An increase in the index describes an overall nominal appreciation of the Danish krone vis-à-vis the currencies of Denmark's main trading partners. (2) Quarterly averages. (3) 1970-2010: Based on the official nominal effective krone-rate index published by the Nationalbank. The index has been compiled by weighting (geometrically) the development in indices for the bilateral value of one krone vis-à-vis the currency range of different countries. The weights used in the index are based on so-called double-weighted export weights and bilateral import weights. For the period from 8 April 2010 to June 2010 the official nominal effective krone-rate index is based on weights calculated from 2009 trade statistics (covering trade with 27 countries). For the period from 1 October 2004 to 7 April 2010 the official nominal effective krone-rate index is based on weights calculated from 2002 trade statistics (covering trade with 27 countries). The

weights from the period 30 May 1997 to 30 September 2004 are based on 1995 trade statistics (25 countries). For the period from 1 January 1992 to 29 May 1997 the weights are based on 1989 trade statistics (21 countries). For 1970-1991 the weights are based on 1983 trade statistics (17 countries). (4) No official quarterly nominal effective krone-rate index has been published by the Nationalbank for the period prior to 1970. For the period 1948-1969 the index has been compiled by weighting (geometrically) the development in indices for the bilateral value of one krone vis-à-vis the currencies of 9 different countries (Germany, U.K., Sweden, Norway, U.S.A., France, The Netherlands, Finland and Switzerland) using the 1983-weights mentioned above. (5) Adjusted for break in series in 1970.

***Consumer price index, abroad, quarterly data 1948q1-2010q2***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook*. Other sources: Danmarks Nationalbank's website (www.nationalbanken.dk), Pedersen, E. H. (1996) and Ølgaard (1992).

Comments:

(1) Trade-weighted average of the consumer price development in Denmark's main trading partners. The weights and weighting methodology are identical to those used for the calculation of the nominal effective krone-rate index, cf. the description above. (2) Quarterly averages. (3) Adjusted for break in series in 1970.

***Consumer price index, West Germany, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1951, 1952, 1954, 1961, 1962, 1965 and 1968.

***Consumer price index, U.K., quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1962, 1965 and 1968.

***Consumer price index, Sweden, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1962, 1965 and 1968.

***Consumer price index, Norway, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1962, 1965 and 1968.

***Consumer price index, U.S.A., quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1962, 1965 and 1968.

***Consumer price index, France, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1957, 1960, 1962, 1964, 1965 and 1968.

***Consumer price index, The Netherlands, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1951, 1953, 1954, 1961, 1962, 1965 and 1968.

***Consumer price index, Finland, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1962, 1965 and 1968.

***Consumer price index, Switzerland, quarterly data 1948q1-1970q4***
Sources:

Various issues of Statistics Denmark, *Statistical Yearbook.*

Comments:

(1) Adjusted for break in series in 1950, 1955, 1962, 1965 and 1968.

***Real effective krone-rate index with consumer prices as deflator 1948q1-2010q2***
Comments:

(1) The weights and weighting methodology are identical to those used for the calculation of the nominal effective krone-rate index, cf. the description above.

***Price index for sale of one-family houses, quarterly data 1948q1-2010q2***
Sources:

Various issues of Statistics Denmark, *Statistiske Efterretninger*. Other sources: Thygesen (1971); and Statistics Denmark, *StatBank Denmark*.

Comments:

(1) 1948-1950: Covers the price development on sales of smallholdings. 1951-1967: Covers the price development for sale of one-family houses in provincial towns. 1968-2010: Covers the cash-price development for one-family houses in ordinary free trade in all of Denmark. (2) Adjusted for break in series 1950 and 1968.

***Share price index, quarterly data 1948q1-2010q2***
Sources:

Various issues of: Statistics Denmark, *Statistics Månedsoversigt* and Statistics Denmark, *Statistical Yearbook*. Other sources: Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) End of quarter. (2) 1948-1993: Covers all shares at the Copenhagen Stock Exchange. 1994-2010: OMXC20 (KFX). (3) Adjusted for break in series in 1957, 1959, 1964, 1972, 1982 and 1994.

***Broad money stock (M2), quarterly data 1948q1-2010q2***
Various issues of: Danmarks Nationalbank, *Report and Accounts*. Other sources: Thygesen (1971); and Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) End of quarter. (2) For the period prior to 1993 calculated on the basis of year-to-year growth rates where adjustments have been made for break in series.

***Credit to the domestic non-bank sector extended by resident commercial banks and savings banks, quarterly data 1948q1-2010q2***

Various issues of: Danmarks Nationalbank, *Report and Accounts*. Other sources: Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) End of quarter. (2) Covers commercial banks and savings banks. (3) For the period prior to 1981 calculated on the basis of year-to-year growth rates where adjustments have been made for break in series.

***Credit to the domestic non-bank sector extended by resident mortgage banks, quarterly data 1948q1-2010q2***

Various issues of: Danmarks Nationalbank, *Report and Accounts*. Other sources: Danmarks Nationalbank's website (www.nationalbanken.dk).

Comments:

(1) End of quarter. (2) For the period 1961-1981 calculated on the basis of accumulated flow-of-funds figures regarding the net supply of Danish mortgage-credit bonds at market values (1964-1981) or nominal values (1961-1963). (3) For the period 1948-1956 are the quarterly figures interpolated from annual data. (4) Adjusted for break in series in 1957, 1961 and 1981.

***Bank's write-downs ratio, quarterly data 1948q1-2010q2***

Sources:

Various issues of: Danmarks Nationalbank, Financial Stability; Finanstilsynet, Markedsudviklingen for pengeinstitutter; Finanstilsynet, Pengeinstitutternes regnskaber, 1. halvår; and Statistics Denmark, *Statistical Yearbook*. Other sources: Busk-Nielsen *et al*. (1996); Finanstilsynet (2008) and Økonomiministeriet (1994).

Comments:

(1) Quarterly write-downs on loans and guaranties in per cent of end-quarter outstanding loans and guaranties. The write-down ratios are not annualised and are compiled net of receipts on relinquished debts. (2) Covers write-downs in commercial banks and savings banks. (3) For the period 1991-2010 based on quarterly or semi-annual data. For the period 1948-1990 are the quarterly data interpolated from annual data using the least-squares-based method described in Boot *et al*. (1967).

# Annex B: Summary quarterly national accounts for Denmark 1948-2010

Table B.1: Quarterly national accounts data, current prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million kroner | | | | | |
| 1948q1 | 2591 | 500 | 959 | 992 | 819 | 4223 |
| 1948q2 | 2765 | 500 | 816 | 877 | 1021 | 3937 |
| 1948q3 | 2703 | 515 | 1181 | 990 | 1216 | 4173 |
| 1948q4 | 3121 | 543 | 1350 | 1064 | 1241 | 4839 |
| 1949q1 | 2713 | 520 | 1059 | 1071 | 1302 | 4060 |
| 1949q2 | 2935 | 524 | 1002 | 1182 | 1355 | 4288 |
| 1949q3 | 2896 | 542 | 1143 | 1232 | 1252 | 4560 |
| 1949q4 | 3392 | 570 | 1229 | 1446 | 1348 | 5289 |
| 1950q1 | 3042 | 542 | 1195 | 1353 | 1750 | 4381 |
| 1950q2 | 3289 | 550 | 1386 | 1441 | 1627 | 5040 |
| 1950q3 | 3463 | 582 | 1481 | 1719 | 1969 | 5276 |
| 1950q4 | 3867 | 636 | 1548 | 1812 | 1916 | 5948 |
| 1951q1 | 3447 | 633 | 1367 | 1891 | 1959 | 5378 |
| 1951q2 | 3632 | 660 | 1362 | 2051 | 2352 | 5352 |
| 1951q3 | 3517 | 702 | 1554 | 2043 | 2251 | 5565 |
| 1951q4 | 3991 | 758 | 1302 | 2276 | 2059 | 6269 |
| 1952q1 | 3552 | 734 | 1336 | 2190 | 2219 | 5593 |
| 1952q2 | 3701 | 748 | 1383 | 1915 | 1992 | 5755 |
| 1952q3 | 3701 | 784 | 1542 | 2252 | 2074 | 6205 |
| 1952q4 | 4140 | 836 | 1610 | 2094 | 2096 | 6583 |
| 1953q1 | 3664 | 804 | 1475 | 2180 | 2168 | 5954 |
| 1953q2 | 3879 | 817 | 1576 | 2056 | 1974 | 6354 |
| 1953q3 | 3874 | 855 | 1848 | 2158 | 2313 | 6423 |
| 1953q4 | 4267 | 915 | 1853 | 2299 | 2246 | 7087 |
| 1954q1 | 3813 | 885 | 1716 | 2174 | 2155 | 6433 |
| 1954q2 | 4224 | 900 | 1658 | 2325 | 2524 | 6582 |
| 1954q3 | 4270 | 936 | 1953 | 2393 | 2657 | 6895 |
| 1954q4 | 4533 | 990 | 1677 | 2416 | 2614 | 7002 |
| 1955q1 | 4230 | 941 | 1440 | 2477 | 2486 | 6601 |
| 1955q2 | 4335 | 947 | 1331 | 2505 | 2453 | 6664 |
| 1955q3 | 4340 | 982 | 1949 | 2598 | 2684 | 7184 |
| 1955q4 | 4803 | 1042 | 1864 | 2743 | 2634 | 7818 |
| 1956q1 | 4412 | 1000 | 1794 | 2616 | 2459 | 7363 |
| 1956q2 | 4649 | 1012 | 1578 | 2774 | 2887 | 7126 |
| 1956q3 | 4672 | 1052 | 2166 | 2854 | 3001 | 7742 |
| 1956q4 | 5086 | 1114 | 1934 | 2924 | 3086 | 7972 |
| 1957q1 | 4556 | 1064 | 1958 | 2882 | 3206 | 7253 |
| 1957q2 | 4875 | 1073 | 2218 | 2996 | 2850 | 8311 |
| 1957q3 | 4727 | 1113 | 2296 | 3164 | 3024 | 8276 |
| 1957q4 | 5169 | 1177 | 1890 | 3169 | 2987 | 8419 |
| 1958q1 | 4705 | 1125 | 1704 | 3039 | 2794 | 7778 |
| 1958q2 | 4979 | 1138 | 1782 | 3107 | 2686 | 8319 |
| 1958q3 | 5026 | 1187 | 2227 | 3149 | 3309 | 8281 |
| 1958q4 | 5556 | 1267 | 2155 | 3293 | 3096 | 9175 |
| 1959q1 | 5110 | 1224 | 2019 | 3121 | 2981 | 8493 |
| 1959q2 | 5393 | 1242 | 2402 | 3165 | 3348 | 8854 |
| 1959q3 | 5374 | 1288 | 2821 | 3664 | 3599 | 9548 |
| 1959q4 | 5959 | 1357 | 2860 | 3688 | 3821 | 10043 |
| 1960q1 | 5389 | 1284 | 2804 | 3488 | 3888 | 9077 |
| 1960q2 | 5848 | 1301 | 2958 | 3652 | 3679 | 10080 |
| 1960q3 | 5818 | 1373 | 3115 | 3726 | 3785 | 10246 |
| 1960q4 | 6402 | 1496 | 2789 | 3794 | 4011 | 10470 |
| 1961q1 | 5937 | 1487 | 3099 | 3584 | 3898 | 10209 |
| 1961q2 | 6309 | 1559 | 3342 | 3614 | 3755 | 11068 |
| 1961q3 | 6617 | 1677 | 3140 | 3912 | 4135 | 11210 |
| 1961q4 | 7221 | 1838 | 3108 | 3990 | 4311 | 11846 |
| 1962q1 | 6713 | 1817 | 3393 | 3861 | 4267 | 11517 |
| 1962q2 | 7369 | 1876 | 3638 | 3938 | 4318 | 12504 |
| 1962q3 | 7518 | 1971 | 4264 | 4089 | 4954 | 12889 |
| 1962q4 | 7711 | 2094 | 3501 | 4329 | 4676 | 12959 |
| 1963q1 | 7036 | 1992 | 3180 | 4155 | 4140 | 12223 |
| 1963q2 | 7680 | 2016 | 2907 | 4625 | 4587 | 12640 |
| 1963q3 | 7950 | 2113 | 3848 | 4715 | 4825 | 13801 |
| 1963q4 | 8403 | 2277 | 4013 | 4813 | 4856 | 14650 |
| 1964q1 | 7887 | 2228 | 4071 | 4728 | 5035 | 13879 |
| 1964q2 | 8469 | 2306 | 4404 | 4873 | 5666 | 14386 |
| 1964q3 | 8835 | 2456 | 4679 | 5269 | 5566 | 15674 |
| 1964q4 | 9427 | 2673 | 4941 | 5698 | 5928 | 16812 |
| 1965q1 | 8902 | 2628 | 5631 | 5311 | 5862 | 16609 |
| 1965q2 | 9216 | 2721 | 4895 | 5589 | 6121 | 16300 |

Table B.1 (continued): Quarterly national accounts data, current prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million kroner | | | | | |
| 1965q3 | 9587 | 2889 | 5281 | 5711 | 6045 | 17423 |
| 1965q4 | 10372 | 3125 | 4935 | 6094 | 6133 | 18393 |
| 1966q1 | 9636 | 3044 | 4976 | 5820 | 6164 | 17311 |
| 1966q2 | 10340 | 3134 | 5187 | 6088 | 6310 | 18439 |
| 1966q3 | 10898 | 3319 | 5686 | 6027 | 6480 | 19450 |
| 1966q4 | 11495 | 3589 | 5865 | 6388 | 6989 | 20349 |
| 1967q1 | 10718 | 3505 | 5319 | 6119 | 6538 | 19123 |
| 1967q2 | 12057 | 3618 | 5207 | 6290 | 6852 | 20320 |
| 1967q3 | 11489 | 3843 | 6514 | 6520 | 7030 | 21336 |
| 1967q4 | 12501 | 4170 | 6618 | 6736 | 7493 | 22533 |
| 1968q1 | 11972 | 4088 | 6258 | 7120 | 7175 | 22263 |
| 1968q2 | 12312 | 4207 | 5735 | 6868 | 7320 | 21802 |
| 1968q3 | 12932 | 4430 | 6130 | 7516 | 7809 | 23199 |
| 1968q4 | 13956 | 4739 | 7211 | 7385 | 8393 | 24898 |
| 1969q1 | 13233 | 4557 | 6799 | 7689 | 7998 | 24280 |
| 1969q2 | 14273 | 4688 | 7697 | 8167 | 8849 | 25975 |
| 1969q3 | 14743 | 5016 | 7667 | 8204 | 9205 | 26425 |
| 1969q4 | 15586 | 5535 | 8086 | 8527 | 9580 | 28155 |
| 1970q1 | 14490 | 5560 | 7191 | 8361 | 9153 | 26450 |
| 1970q2 | 15789 | 5870 | 8774 | 9186 | 10496 | 29123 |
| 1970q3 | 15572 | 6346 | 8080 | 9683 | 10111 | 29570 |
| 1970q4 | 16506 | 6976 | 9395 | 9509 | 11173 | 31213 |
| 1971q1 | 16062 | 6901 | 10222 | 9021 | 10312 | 31894 |
| 1971q2 | 16312 | 7109 | 11402 | 10264 | 10810 | 34277 |
| 1971q3 | 16540 | 7436 | 10518 | 10282 | 10534 | 34242 |
| 1971q4 | 17934 | 7848 | 10892 | 10396 | 11337 | 35733 |
| 1972q1 | 17383 | 7852 | 10412 | 10604 | 10712 | 35540 |
| 1972q2 | 17975 | 8291 | 11822 | 11382 | 10579 | 38891 |
| 1972q3 | 18612 | 8532 | 12971 | 11001 | 11616 | 39500 |
| 1972q4 | 20368 | 8950 | 12940 | 11942 | 12672 | 41528 |
| 1973q1 | 20587 | 8874 | 13516 | 12138 | 13330 | 41784 |
| 1973q2 | 21345 | 9501 | 15440 | 12924 | 14113 | 45097 |
| 1973q3 | 22023 | 9544 | 12700 | 14408 | 14310 | 44365 |
| 1973q4 | 23974 | 10479 | 15500 | 14972 | 16668 | 48257 |
| 1974q1 | 23791 | 10665 | 16420 | 15525 | 19388 | 47013 |
| 1974q2 | 24440 | 11510 | 16644 | 17020 | 18593 | 51022 |
| 1974q3 | 24275 | 11788 | 14268 | 17385 | 17975 | 49741 |
| 1974q4 | 26490 | 13149 | 13844 | 17785 | 17767 | 53501 |
| 1975q1 | 26660 | 12996 | 13175 | 16590 | 16973 | 52448 |
| 1975q2 | 27476 | 13611 | 14093 | 18285 | 17272 | 56192 |
| 1975q3 | 28474 | 13947 | 13316 | 17702 | 17914 | 55525 |
| 1975q4 | 32262 | 14761 | 17069 | 19196 | 22134 | 61154 |
| 1976q1 | 32093 | 14698 | 18541 | 18388 | 21996 | 61726 |
| 1976q2 | 34037 | 15562 | 20046 | 20218 | 22359 | 67504 |
| 1976q3 | 34547 | 15850 | 16101 | 20130 | 23143 | 63485 |
| 1976q4 | 37408 | 16840 | 18353 | 21337 | 25168 | 68771 |
| 1977q1 | 37032 | 16264 | 16746 | 21318 | 24193 | 67167 |
| 1977q2 | 37794 | 16989 | 20137 | 21685 | 24413 | 72192 |
| 1977q3 | 39677 | 17585 | 18920 | 22413 | 25136 | 73459 |
| 1977q4 | 41139 | 18918 | 20145 | 23731 | 26345 | 77588 |
| 1978q1 | 40508 | 18573 | 19182 | 21704 | 24403 | 75564 |
| 1978q2 | 42448 | 19567 | 20170 | 24680 | 25337 | 81527 |
| 1978q3 | 43094 | 20067 | 19409 | 24055 | 25338 | 81288 |
| 1978q4 | 45439 | 21451 | 21467 | 25295 | 28185 | 85467 |
| 1979q1 | 44685 | 21295 | 21411 | 24748 | 26889 | 85250 |
| 1979q2 | 46802 | 22234 | 23791 | 27656 | 29850 | 90632 |
| 1979q3 | 46558 | 22574 | 23196 | 28292 | 31440 | 89181 |
| 1979q4 | 51056 | 24619 | 23954 | 31319 | 35110 | 95838 |
| 1980q1 | 48686 | 24604 | 26604 | 32696 | 37288 | 95302 |
| 1980q2 | 49046 | 25870 | 26125 | 31799 | 34305 | 98535 |
| 1980q3 | 48857 | 26082 | 18209 | 34299 | 32994 | 94453 |
| 1980q4 | 54245 | 27632 | 19320 | 35137 | 35491 | 100843 |
| 1981q1 | 51633 | 27447 | 21422 | 37923 | 38144 | 100281 |
| 1981q2 | 54117 | 29296 | 22111 | 41014 | 40284 | 106253 |
| 1981q3 | 54058 | 29534 | 20336 | 41912 | 40531 | 105309 |
| 1981q4 | 60007 | 32006 | 21549 | 43271 | 44455 | 112378 |
| 1982q1 | 58189 | 31812 | 25580 | 43819 | 46407 | 112992 |
| 1982q2 | 60733 | 33996 | 25989 | 46888 | 46050 | 121556 |
| 1982q3 | 60845 | 34423 | 25771 | 46542 | 46429 | 121153 |
| 1982q4 | 67053 | 36730 | 24340 | 48735 | 49478 | 127380 |

Table B.1 (continued): Quarterly national accounts data, current prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million kroner | | | | | |
| 1983q1 | 64794 | 35640 | 24806 | 47971 | 45994 | 127216 |
| 1983q2 | 66867 | 36534 | 29035 | 50639 | 48353 | 134722 |
| 1983q3 | 67633 | 36480 | 25030 | 50454 | 48572 | 131025 |
| 1983q4 | 75269 | 38154 | 27244 | 54786 | 55057 | 140396 |
| 1984q1 | 72586 | 36959 | 31933 | 53185 | 53951 | 140711 |
| 1984q2 | 75252 | 37960 | 33267 | 56394 | 54735 | 148138 |
| 1984q3 | 73793 | 37854 | 31671 | 57176 | 54518 | 145976 |
| 1984q4 | 81892 | 39921 | 32573 | 59562 | 60624 | 153324 |
| 1985q1 | 78485 | 39334 | 36076 | 59501 | 61791 | 151605 |
| 1985q2 | 82179 | 40580 | 36072 | 62341 | 61307 | 159865 |
| 1985q3 | 82493 | 40646 | 34474 | 62019 | 60582 | 159051 |
| 1985q4 | 88983 | 41845 | 42218 | 62395 | 66126 | 169314 |
| 1986q1 | 86878 | 40749 | 44576 | 56581 | 60100 | 168684 |
| 1986q2 | 89639 | 41477 | 48486 | 61077 | 63497 | 177182 |
| 1986q3 | 90115 | 41279 | 39683 | 56829 | 58715 | 169190 |
| 1986q4 | 94869 | 42950 | 43083 | 58178 | 60307 | 178773 |
| 1987q1 | 88399 | 43545 | 40959 | 56043 | 55500 | 173446 |
| 1987q2 | 93271 | 46314 | 45079 | 59978 | 56761 | 187881 |
| 1987q3 | 92516 | 46347 | 35790 | 59895 | 57728 | 176821 |
| 1987q4 | 99671 | 47866 | 42253 | 64503 | 63829 | 190463 |
| 1988q1 | 94772 | 46762 | 38906 | 62821 | 57437 | 185825 |
| 1988q2 | 96603 | 49552 | 44866 | 63796 | 60813 | 194003 |
| 1988q3 | 95960 | 49642 | 34739 | 64997 | 60762 | 184576 |
| 1988q4 | 102717 | 50928 | 39244 | 70809 | 65951 | 197747 |
| 1989q1 | 97566 | 50790 | 46023 | 66406 | 63302 | 197483 |
| 1989q2 | 102610 | 50839 | 45928 | 75242 | 70171 | 204447 |
| 1989q3 | 101639 | 51216 | 36784 | 72784 | 67549 | 194873 |
| 1989q4 | 108118 | 51981 | 40037 | 77343 | 71043 | 206437 |
| 1990q1 | 101083 | 51967 | 45455 | 74226 | 66189 | 206542 |
| 1990q2 | 106307 | 52573 | 46690 | 77956 | 69118 | 214408 |
| 1990q3 | 104838 | 52686 | 38381 | 76205 | 66312 | 205798 |
| 1990q4 | 110952 | 53973 | 37074 | 83944 | 72043 | 213900 |
| 1991q1 | 107177 | 54770 | 44408 | 77434 | 67511 | 216278 |
| 1991q2 | 110522 | 54945 | 45192 | 85439 | 74040 | 222058 |
| 1991q3 | 109061 | 55499 | 37453 | 86675 | 73151 | 215537 |
| 1991q4 | 115491 | 56151 | 36171 | 87469 | 74791 | 220491 |
| 1992q1 | 112068 | 56206 | 43003 | 84928 | 72162 | 224043 |
| 1992q2 | 114502 | 56658 | 42633 | 86335 | 73147 | 226981 |
| 1992q3 | 112239 | 57247 | 38207 | 85111 | 69741 | 223063 |
| 1992q4 | 120135 | 58937 | 38188 | 86777 | 71529 | 232508 |
| 1993q1 | 111401 | 58354 | 43233 | 79605 | 68932 | 223661 |
| 1993q2 | 113213 | 59994 | 40237 | 82029 | 66989 | 228484 |
| 1993q3 | 112858 | 60771 | 31706 | 87499 | 69247 | 223587 |
| 1993q4 | 124108 | 61980 | 32929 | 91570 | 74509 | 236078 |
| 1994q1 | 120095 | 62057 | 42586 | 84628 | 75103 | 234263 |
| 1994q2 | 126332 | 62292 | 46172 | 92186 | 78705 | 248277 |
| 1994q3 | 124559 | 62006 | 36626 | 94129 | 78499 | 238821 |
| 1994q4 | 133159 | 62984 | 46813 | 97286 | 84659 | 255583 |
| 1995q1 | 125955 | 63322 | 51321 | 95066 | 85448 | 250216 |
| 1995q2 | 131081 | 64156 | 50861 | 94808 | 83548 | 257358 |
| 1995q3 | 127979 | 64551 | 43729 | 94996 | 82583 | 248672 |
| 1995q4 | 136778 | 65157 | 52971 | 98299 | 89906 | 263299 |
| 1996q1 | 131002 | 66117 | 48068 | 96450 | 85250 | 256387 |
| 1996q2 | 135641 | 68102 | 52131 | 101670 | 86974 | 270570 |
| 1996q3 | 132738 | 68659 | 48233 | 101501 | 86184 | 264947 |
| 1996q4 | 142340 | 68802 | 55163 | 105522 | 94242 | 277585 |
| 1997q1 | 135192 | 68742 | 57315 | 99790 | 92069 | 268970 |
| 1997q2 | 144236 | 70361 | 60790 | 110037 | 98760 | 286664 |
| 1997q3 | 137813 | 70859 | 57142 | 110528 | 99643 | 276699 |
| 1997q4 | 151786 | 71067 | 59003 | 116217 | 104764 | 293309 |
| 1998q1 | 141724 | 72457 | 65370 | 109439 | 105957 | 283033 |
| 1998q2 | 146906 | 74399 | 64273 | 105354 | 102032 | 288900 |
| 1998q3 | 145259 | 75211 | 56520 | 115612 | 104355 | 288247 |
| 1998q4 | 156400 | 76044 | 64446 | 114305 | 107759 | 303436 |
| 1999q1 | 145704 | 75655 | 57803 | 114183 | 103797 | 289548 |
| 1999q2 | 147496 | 78084 | 62464 | 118507 | 103495 | 303056 |
| 1999q3 | 146929 | 78319 | 57377 | 124737 | 107990 | 299372 |
| 1999q4 | 159003 | 80312 | 63060 | 136537 | 117416 | 321496 |
| 2000q1 | 150334 | 78786 | 69038 | 132445 | 121075 | 309528 |
| 2000q2 | 153338 | 80779 | 72716 | 142475 | 126958 | 322350 |

Table B.1 (continued): Quarterly national accounts data, current prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million kroner | | | | | |
| 2000q3 | 151460 | 81505 | 61638 | 156934 | 132407 | 319130 |
| 2000q4 | 161550 | 84029 | 70692 | 170498 | 143813 | 342956 |
| 2001q1 | 154266 | 81838 | 62566 | 156461 | 133926 | 321205 |
| 2001q2 | 157922 | 85322 | 69786 | 157499 | 137455 | 333074 |
| 2001q3 | 155069 | 86600 | 66784 | 155949 | 132951 | 331451 |
| 2001q4 | 164430 | 89504 | 72843 | 160976 | 137873 | 349880 |
| 2002q1 | 158846 | 86571 | 68217 | 154176 | 139251 | 328559 |
| 2002q2 | 161401 | 90280 | 74583 | 162437 | 143129 | 345572 |
| 2002q3 | 160037 | 90816 | 67669 | 161800 | 139595 | 340727 |
| 2002q4 | 171972 | 92545 | 69674 | 169903 | 146215 | 357879 |
| 2003q1 | 163052 | 89145 | 68692 | 155344 | 137393 | 338840 |
| 2003q2 | 163566 | 93009 | 68941 | 154794 | 132870 | 347440 |
| 2003q3 | 162756 | 93103 | 63892 | 159908 | 133956 | 345703 |
| 2003q4 | 177568 | 95979 | 73439 | 165068 | 143347 | 368707 |
| 2004q1 | 169662 | 94272 | 69464 | 155406 | 137600 | 351204 |
| 2004q2 | 173329 | 97602 | 74170 | 166962 | 146644 | 365419 |
| 2004q3 | 173137 | 97058 | 76318 | 168217 | 151313 | 363417 |
| 2004q4 | 191086 | 100097 | 78553 | 174419 | 158014 | 386141 |
| 2005q1 | 177569 | 97379 | 72325 | 167351 | 152265 | 362359 |
| 2005q2 | 186752 | 100467 | 83449 | 189616 | 168583 | 391701 |
| 2005q3 | 182884 | 100432 | 79039 | 197004 | 173474 | 385885 |
| 2005q4 | 197934 | 104230 | 86994 | 203034 | 186880 | 405312 |
| 2006q1 | 190787 | 102448 | 81639 | 200479 | 188238 | 387115 |
| 2006q2 | 198715 | 105224 | 97478 | 210660 | 197323 | 414754 |
| 2006q3 | 190486 | 105542 | 94662 | 216857 | 198764 | 408783 |
| 2006q4 | 206594 | 109390 | 96836 | 221606 | 213420 | 421006 |
| 2007q1 | 198159 | 106703 | 96871 | 210880 | 206996 | 405617 |
| 2007q2 | 204183 | 108854 | 98217 | 216662 | 206872 | 421044 |
| 2007q3 | 200195 | 109157 | 95723 | 225113 | 209391 | 420797 |
| 2007q4 | 219128 | 114416 | 98609 | 233727 | 221866 | 444014 |
| 2008q1 | 208171 | 110535 | 93608 | 227651 | 221028 | 418937 |
| 2008q2 | 216255 | 114684 | 98933 | 246369 | 233641 | 442600 |
| 2008q3 | 207412 | 116711 | 93774 | 248874 | 231023 | 435748 |
| 2008q4 | 213673 | 121882 | 95088 | 233017 | 223497 | 440163 |
| 2009q1 | 199433 | 119270 | 78141 | 194073 | 185215 | 405702 |
| 2009q2 | 203853 | 123269 | 70651 | 191633 | 178098 | 411308 |
| 2009q3 | 200411 | 124583 | 69265 | 198159 | 177912 | 414506 |
| 2009q4 | 213885 | 129260 | 71644 | 201357 | 185293 | 430853 |
| 2010q1 | 211354 | 126187 | 63838 | 197361 | 179579 | 419161 |
| 2010q2 | 213817 | 129691 | 75635 | 222240 | 198772 | 442611 |

Table B.2: Quarterly national accounts data, constant prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million 2000-kroner | | | | | |
| 1948q1 | 39307 | 12935 | 13565 | 6624 | 5413 | 67018 |
| 1948q2 | 40954 | 13028 | 11179 | 5836 | 7269 | 63727 |
| 1948q3 | 40395 | 13417 | 16580 | 6941 | 8653 | 68680 |
| 1948q4 | 44239 | 13770 | 17694 | 7492 | 8455 | 74741 |
| 1949q1 | 39773 | 13090 | 13415 | 7184 | 8557 | 64906 |
| 1949q2 | 41884 | 13183 | 13329 | 7939 | 9790 | 66546 |
| 1949q3 | 41917 | 13510 | 15758 | 8410 | 9360 | 70236 |
| 1949q4 | 46365 | 13731 | 17417 | 9689 | 8992 | 78210 |
| 1950q1 | 42157 | 12863 | 14684 | 8492 | 10552 | 67645 |
| 1950q2 | 43727 | 12944 | 17589 | 9291 | 10670 | 72882 |
| 1950q3 | 45490 | 13439 | 19120 | 11705 | 12743 | 77011 |
| 1950q4 | 47699 | 14026 | 19143 | 11981 | 12076 | 80773 |
| 1951q1 | 43025 | 13670 | 14855 | 10852 | 10551 | 71852 |
| 1951q2 | 43795 | 14084 | 14194 | 11591 | 11491 | 72172 |
| 1951q3 | 42783 | 14738 | 18497 | 12023 | 11226 | 76815 |
| 1951q4 | 46141 | 15273 | 14730 | 12198 | 10159 | 78182 |
| 1952q1 | 42513 | 14570 | 13167 | 11223 | 10112 | 71360 |
| 1952q2 | 43749 | 14832 | 13018 | 10303 | 10111 | 71792 |
| 1952q3 | 44004 | 15475 | 17033 | 13318 | 11582 | 78248 |
| 1952q4 | 47206 | 16124 | 18012 | 12028 | 11533 | 81837 |
| 1953q1 | 43135 | 15593 | 15166 | 12050 | 11366 | 74578 |
| 1953q2 | 44931 | 15989 | 16374 | 11657 | 11275 | 77676 |
| 1953q3 | 45401 | 16699 | 20787 | 13504 | 13735 | 82656 |
| 1953q4 | 48327 | 17317 | 19869 | 14089 | 12843 | 86758 |
| 1954q1 | 44886 | 16573 | 18092 | 12481 | 11615 | 80418 |
| 1954q2 | 48189 | 16823 | 15442 | 13400 | 14749 | 79106 |
| 1954q3 | 49025 | 17401 | 21220 | 14865 | 15794 | 86717 |
| 1954q4 | 50506 | 17873 | 18832 | 14489 | 15139 | 86561 |
| 1955q1 | 47701 | 16946 | 14682 | 13840 | 13158 | 80011 |
| 1955q2 | 48001 | 17062 | 12051 | 14103 | 14297 | 76920 |
| 1955q3 | 48025 | 17523 | 21573 | 15818 | 15809 | 87130 |
| 1955q4 | 50616 | 17891 | 20035 | 15389 | 14952 | 88978 |
| 1956q1 | 47517 | 16879 | 18555 | 13846 | 12831 | 83965 |
| 1956q2 | 49046 | 17000 | 13974 | 14822 | 15858 | 78983 |
| 1956q3 | 49422 | 17559 | 21583 | 16030 | 16631 | 87962 |
| 1956q4 | 51830 | 18124 | 18493 | 16162 | 16913 | 87696 |
| 1957q1 | 47620 | 17376 | 17225 | 15061 | 15859 | 81423 |
| 1957q2 | 50259 | 17625 | 20114 | 15930 | 15293 | 88636 |
| 1957q3 | 48920 | 18172 | 21762 | 17665 | 16861 | 89659 |
| 1957q4 | 51964 | 18561 | 18134 | 18240 | 16349 | 90551 |
| 1958q1 | 48848 | 17456 | 15201 | 16663 | 14994 | 83173 |
| 1958q2 | 50965 | 17586 | 15218 | 17749 | 15577 | 85941 |
| 1958q3 | 51918 | 18228 | 22182 | 19038 | 19523 | 91842 |
| 1958q4 | 55216 | 18941 | 20345 | 18959 | 17862 | 95599 |
| 1959q1 | 51803 | 18334 | 17586 | 16660 | 16810 | 87573 |
| 1959q2 | 53681 | 18788 | 19401 | 17908 | 19776 | 90002 |
| 1959q3 | 53872 | 19584 | 26291 | 20924 | 21654 | 99017 |
| 1959q4 | 57103 | 20239 | 26355 | 21226 | 22167 | 102757 |
| 1960q1 | 52958 | 19278 | 24427 | 19027 | 21328 | 94361 |
| 1960q2 | 56135 | 19535 | 23422 | 20643 | 20913 | 98824 |
| 1960q3 | 56276 | 20231 | 27711 | 21733 | 22420 | 103531 |
| 1960q4 | 59751 | 20867 | 24351 | 21974 | 23114 | 103828 |
| 1961q1 | 56695 | 19923 | 26051 | 19826 | 21566 | 100929 |
| 1961q2 | 58883 | 20362 | 28088 | 19767 | 21465 | 105635 |
| 1961q3 | 61177 | 21392 | 25167 | 23036 | 24154 | 106618 |
| 1961q4 | 64380 | 22505 | 24128 | 24007 | 24732 | 110288 |
| 1962q1 | 60857 | 22024 | 25222 | 20633 | 23589 | 105147 |
| 1962q2 | 64680 | 22686 | 25487 | 21257 | 24559 | 109551 |
| 1962q3 | 65902 | 23640 | 33929 | 23629 | 28283 | 118818 |
| 1962q4 | 64638 | 24299 | 27990 | 24887 | 27229 | 114585 |
| 1963q1 | 60060 | 22902 | 24619 | 21670 | 22650 | 106600 |
| 1963q2 | 63509 | 23138 | 18968 | 24556 | 25887 | 104283 |
| 1963q3 | 65995 | 24066 | 29792 | 26106 | 27534 | 118426 |
| 1963q4 | 67821 | 25110 | 29650 | 26134 | 27000 | 121715 |
| 1964q1 | 64730 | 24415 | 30215 | 23575 | 26749 | 116185 |
| 1964q2 | 67664 | 25076 | 29673 | 24828 | 31369 | 115872 |
| 1964q3 | 70199 | 26144 | 33297 | 28318 | 31164 | 126794 |
| 1964q4 | 72451 | 26971 | 33964 | 31093 | 32255 | 132225 |
| 1965q1 | 69329 | 25596 | 38221 | 26435 | 30738 | 128842 |
| 1965q2 | 70128 | 25912 | 32060 | 27892 | 32866 | 123125 |

Table B.2 (continued): Quarterly national accounts data, constant prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million 2000-kroner | | | | | |
| 1965q3 | 71500 | 26878 | 36664 | 29649 | 32987 | 131704 |
| 1965q4 | 74543 | 27838 | 30429 | 32117 | 33431 | 131495 |
| 1966q1 | 69977 | 26755 | 30747 | 28231 | 31601 | 124109 |
| 1966q2 | 72871 | 27379 | 31077 | 29132 | 33572 | 126887 |
| 1966q3 | 76004 | 28652 | 36418 | 30828 | 34937 | 136964 |
| 1966q4 | 77961 | 29881 | 36525 | 33396 | 37180 | 140582 |
| 1967q1 | 74105 | 28864 | 32803 | 29670 | 33623 | 131818 |
| 1967q2 | 80965 | 29570 | 30466 | 31054 | 36630 | 135424 |
| 1967q3 | 75448 | 30865 | 38918 | 33049 | 37419 | 140861 |
| 1967q4 | 79137 | 31995 | 39044 | 34888 | 38908 | 146156 |
| 1968q1 | 76331 | 30616 | 34558 | 34393 | 34384 | 141514 |
| 1968q2 | 76383 | 31246 | 30470 | 32777 | 36506 | 134371 |
| 1968q3 | 79458 | 32665 | 34707 | 36559 | 39601 | 143789 |
| 1968q4 | 83453 | 34085 | 39971 | 36138 | 42107 | 151540 |
| 1969q1 | 80464 | 32992 | 36166 | 34784 | 38359 | 146047 |
| 1969q2 | 84959 | 33978 | 37844 | 38101 | 43317 | 151565 |
| 1969q3 | 86976 | 35765 | 41856 | 39062 | 45236 | 158423 |
| 1969q4 | 89246 | 37494 | 42454 | 40119 | 45882 | 163433 |
| 1970q1 | 84152 | 36386 | 36528 | 36330 | 41432 | 151963 |
| 1970q2 | 89385 | 37546 | 39933 | 40437 | 48252 | 159049 |
| 1970q3 | 87055 | 39570 | 39832 | 43040 | 46772 | 162726 |
| 1970q4 | 89502 | 41510 | 45571 | 41870 | 50407 | 168046 |
| 1971q1 | 88651 | 40287 | 50895 | 37966 | 44048 | 173751 |
| 1971q2 | 88231 | 41291 | 56518 | 42765 | 46792 | 182013 |
| 1971q3 | 88051 | 42947 | 44965 | 43392 | 45746 | 173609 |
| 1971q4 | 91034 | 44187 | 52738 | 44112 | 49348 | 182723 |
| 1972q1 | 87347 | 42503 | 49484 | 42954 | 44759 | 177530 |
| 1972q2 | 89270 | 43832 | 53764 | 44663 | 43014 | 188515 |
| 1972q3 | 91412 | 44794 | 51010 | 43337 | 47990 | 182563 |
| 1972q4 | 95690 | 45927 | 57159 | 46015 | 51563 | 193227 |
| 1973q1 | 95469 | 44041 | 58920 | 43323 | 52147 | 189607 |
| 1973q2 | 97307 | 45827 | 63989 | 43937 | 54864 | 196197 |
| 1973q3 | 98769 | 45721 | 46893 | 48418 | 54172 | 185630 |
| 1973q4 | 102091 | 47079 | 59415 | 48215 | 58451 | 198349 |
| 1974q1 | 98858 | 45874 | 58805 | 45303 | 57887 | 190953 |
| 1974q2 | 99491 | 46896 | 57722 | 47757 | 54111 | 197755 |
| 1974q3 | 96326 | 47206 | 41485 | 49183 | 51444 | 182755 |
| 1974q4 | 98885 | 48730 | 44571 | 50006 | 50169 | 192022 |
| 1975q1 | 98643 | 45940 | 41269 | 44402 | 46180 | 184074 |
| 1975q2 | 99889 | 46643 | 42771 | 48171 | 47969 | 189504 |
| 1975q3 | 101490 | 47400 | 34423 | 46540 | 50251 | 179602 |
| 1975q4 | 110891 | 49337 | 52077 | 50059 | 61167 | 201197 |
| 1976q1 | 107470 | 47533 | 54158 | 45412 | 58459 | 196115 |
| 1976q2 | 110744 | 49105 | 56899 | 48910 | 57256 | 208402 |
| 1976q3 | 110144 | 49980 | 40914 | 49463 | 59512 | 190989 |
| 1976q4 | 113458 | 51446 | 51199 | 52418 | 63748 | 204772 |
| 1977q1 | 111429 | 48667 | 48329 | 49772 | 58576 | 199621 |
| 1977q2 | 111912 | 49960 | 53437 | 49233 | 58628 | 205914 |
| 1977q3 | 116020 | 51606 | 41922 | 50911 | 61091 | 199369 |
| 1977q4 | 113687 | 53738 | 53230 | 53079 | 62790 | 210945 |
| 1978q1 | 110843 | 51493 | 48042 | 46541 | 56463 | 200456 |
| 1978q2 | 114202 | 53326 | 51287 | 52194 | 59846 | 211163 |
| 1978q3 | 115139 | 54760 | 39798 | 51429 | 59996 | 201129 |
| 1978q4 | 116986 | 57032 | 52611 | 54614 | 65968 | 215276 |
| 1979q1 | 113717 | 55242 | 49829 | 50876 | 58869 | 210796 |
| 1979q2 | 116799 | 56714 | 55220 | 55320 | 63298 | 220755 |
| 1979q3 | 114104 | 57355 | 42642 | 55692 | 64303 | 205490 |
| 1979q4 | 120795 | 59982 | 48511 | 59223 | 67725 | 220786 |
| 1980q1 | 113978 | 58031 | 52261 | 57686 | 64115 | 217840 |
| 1980q2 | 112827 | 59620 | 48966 | 54598 | 57954 | 218058 |
| 1980q3 | 110413 | 59813 | 29723 | 58710 | 57067 | 201591 |
| 1980q4 | 118296 | 61602 | 36126 | 58861 | 57869 | 217016 |
| 1981q1 | 111140 | 59751 | 37237 | 59932 | 56770 | 211289 |
| 1981q2 | 112398 | 60966 | 37158 | 61813 | 57418 | 214916 |
| 1981q3 | 110901 | 61298 | 25950 | 63054 | 58482 | 202721 |
| 1981q4 | 117827 | 63342 | 33627 | 64874 | 62168 | 217502 |
| 1982q1 | 112780 | 61196 | 39625 | 61544 | 61071 | 214075 |
| 1982q2 | 114030 | 62857 | 40846 | 64404 | 60470 | 221667 |
| 1982q3 | 113559 | 63582 | 31544 | 63971 | 62236 | 210420 |
| 1982q4 | 119972 | 65280 | 36624 | 66354 | 62655 | 225574 |

Table B.2 (continued): Quarterly national accounts data, constant prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million 2000-kroner | | | | | |
| 1983q1 | 115102 | 62017 | 36681 | 63635 | 57639 | 219795 |
| 1983q2 | 116344 | 63056 | 44077 | 66707 | 61554 | 228630 |
| 1983q3 | 117410 | 63050 | 28582 | 65728 | 62264 | 212506 |
| 1983q4 | 125616 | 64662 | 39056 | 70252 | 66449 | 233137 |
| 1984q1 | 120153 | 61422 | 43382 | 65327 | 62091 | 228192 |
| 1984q2 | 122181 | 62694 | 46849 | 68110 | 62979 | 236854 |
| 1984q3 | 119885 | 62753 | 38274 | 69203 | 64882 | 225233 |
| 1984q4 | 128553 | 64889 | 46040 | 71048 | 67938 | 242591 |
| 1985q1 | 122527 | 62662 | 47359 | 68043 | 66040 | 234551 |
| 1985q2 | 126051 | 64396 | 50122 | 71169 | 67061 | 244677 |
| 1985q3 | 127881 | 64778 | 41188 | 73037 | 71081 | 235803 |
| 1985q4 | 135071 | 66274 | 56753 | 74774 | 75297 | 257575 |
| 1986q1 | 132509 | 63182 | 56323 | 67907 | 69861 | 250061 |
| 1986q2 | 133933 | 64495 | 61619 | 74848 | 78196 | 256698 |
| 1986q3 | 134546 | 64715 | 48038 | 71316 | 76675 | 241941 |
| 1986q4 | 137730 | 66981 | 59121 | 73554 | 77481 | 259904 |
| 1987q1 | 129295 | 64780 | 52051 | 70197 | 70409 | 245913 |
| 1987q2 | 133593 | 66190 | 59479 | 75048 | 72884 | 261425 |
| 1987q3 | 132692 | 66486 | 42417 | 76150 | 74658 | 243087 |
| 1987q4 | 138907 | 68303 | 52521 | 82695 | 81332 | 261094 |
| 1988q1 | 131650 | 65434 | 49244 | 79470 | 72566 | 253233 |
| 1988q2 | 132838 | 67250 | 56432 | 80409 | 76712 | 260217 |
| 1988q3 | 132144 | 67389 | 42035 | 82570 | 77036 | 247103 |
| 1988q4 | 137401 | 68178 | 51557 | 86614 | 81139 | 262610 |
| 1989q1 | 130069 | 66970 | 55094 | 79410 | 74813 | 256730 |
| 1989q2 | 134297 | 66137 | 53861 | 87525 | 81891 | 259930 |
| 1989q3 | 132535 | 66382 | 42368 | 85217 | 79194 | 247308 |
| 1989q4 | 137886 | 66540 | 49255 | 89790 | 82750 | 260721 |
| 1990q1 | 130010 | 66591 | 47546 | 87294 | 78354 | 253087 |
| 1990q2 | 134801 | 66292 | 50886 | 91589 | 81918 | 261650 |
| 1990q3 | 133145 | 66111 | 46643 | 89750 | 79215 | 256434 |
| 1990q4 | 138247 | 66499 | 46043 | 96385 | 83727 | 263447 |
| 1991q1 | 133186 | 67020 | 45430 | 90173 | 79996 | 255813 |
| 1991q2 | 135402 | 66468 | 48480 | 98515 | 84607 | 264258 |
| 1991q3 | 133915 | 66940 | 43370 | 99252 | 84012 | 259465 |
| 1991q4 | 140173 | 67335 | 46193 | 99470 | 84738 | 268433 |
| 1992q1 | 136679 | 67442 | 47326 | 95508 | 83194 | 263761 |
| 1992q2 | 138126 | 66514 | 47063 | 97018 | 83307 | 265414 |
| 1992q3 | 135958 | 66987 | 42386 | 96210 | 79757 | 261784 |
| 1992q4 | 143835 | 68603 | 42056 | 98664 | 80868 | 272290 |
| 1993q1 | 133367 | 68104 | 46604 | 92011 | 79810 | 260276 |
| 1993q2 | 134030 | 69904 | 43435 | 94172 | 78592 | 262949 |
| 1993q3 | 133171 | 70743 | 32966 | 99623 | 80346 | 256157 |
| 1993q4 | 144605 | 72033 | 39581 | 104056 | 84514 | 275761 |
| 1994q1 | 139245 | 71836 | 46690 | 96347 | 86130 | 267988 |
| 1994q2 | 144506 | 71263 | 49455 | 104998 | 90169 | 280053 |
| 1994q3 | 142257 | 70978 | 37954 | 107574 | 90384 | 268379 |
| 1994q4 | 150416 | 72221 | 51360 | 110472 | 94540 | 289929 |
| 1995q1 | 141795 | 72288 | 54112 | 106296 | 93189 | 281302 |
| 1995q2 | 145892 | 72669 | 54928 | 105536 | 93012 | 286013 |
| 1995q3 | 143144 | 73149 | 47959 | 105694 | 93454 | 276492 |
| 1995q4 | 152431 | 73864 | 58559 | 109283 | 99127 | 295010 |
| 1996q1 | 145229 | 74632 | 53736 | 106997 | 95641 | 284953 |
| 1996q2 | 148447 | 75389 | 56729 | 110768 | 95940 | 295393 |
| 1996q3 | 145143 | 75834 | 50087 | 110082 | 94915 | 286231 |
| 1996q4 | 154687 | 75734 | 55971 | 114593 | 100605 | 300380 |
| 1997q1 | 146832 | 75108 | 60264 | 107883 | 99196 | 290891 |
| 1997q2 | 154530 | 75844 | 60666 | 116898 | 104733 | 303205 |
| 1997q3 | 147144 | 76008 | 60195 | 115520 | 105679 | 293188 |
| 1997q4 | 161019 | 76316 | 64353 | 120533 | 111412 | 310809 |
| 1998q1 | 150260 | 77351 | 69555 | 114908 | 112141 | 299933 |
| 1998q2 | 154243 | 78409 | 66694 | 112142 | 110306 | 301182 |
| 1998q3 | 152437 | 78721 | 57890 | 124676 | 113829 | 299895 |
| 1998q4 | 164285 | 79177 | 67521 | 124911 | 117697 | 318197 |
| 1999q1 | 152423 | 78862 | 59598 | 126238 | 113996 | 303125 |
| 1999q2 | 152559 | 79858 | 63685 | 129327 | 112481 | 312948 |
| 1999q3 | 151053 | 79663 | 58450 | 134483 | 115626 | 308023 |
| 1999q4 | 161633 | 81838 | 63809 | 144821 | 123387 | 328714 |
| 2000q1 | 151988 | 80465 | 68900 | 136974 | 125009 | 313318 |
| 2000q2 | 153602 | 80275 | 72555 | 144687 | 128350 | 322769 |

Table B.2 (continued): Quarterly national accounts data, constant prices, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Private consumption | Government consumption | Gross investments | Exports of goods and services | Imports of goods and services | Gross Domestic Product |
|---|---|---|---|---|---|---|
| | million 2000-kroner | | | | | |
| 2000q3 | 151013 | 81086 | 62978 | 156204 | 131490 | 319791 |
| 2000q4 | 160079 | 83273 | 69651 | 164486 | 139404 | 338085 |
| 2001q1 | 152339 | 80885 | 62293 | 154249 | 132250 | 317516 |
| 2001q2 | 154080 | 82300 | 68570 | 153119 | 133555 | 324514 |
| 2001q3 | 151104 | 83386 | 64870 | 153192 | 130425 | 322127 |
| 2001q4 | 159662 | 85662 | 70862 | 160680 | 137938 | 338928 |
| 2002q1 | 153806 | 82555 | 67625 | 155577 | 141109 | 318454 |
| 2002q2 | 155199 | 84840 | 72336 | 162740 | 145047 | 330068 |
| 2002q3 | 153928 | 85292 | 64998 | 162399 | 142292 | 324325 |
| 2002q4 | 164169 | 87067 | 66006 | 169219 | 148602 | 337859 |
| 2003q1 | 154713 | 83875 | 68007 | 157155 | 141426 | 322324 |
| 2003q2 | 155286 | 85563 | 66431 | 157779 | 137434 | 327625 |
| 2003q3 | 155217 | 85461 | 58464 | 160764 | 138239 | 321667 |
| 2003q4 | 168351 | 87980 | 70733 | 166402 | 148591 | 344875 |
| 2004q1 | 160219 | 85856 | 65651 | 159028 | 144929 | 325825 |
| 2004q2 | 162510 | 87618 | 71396 | 168182 | 152245 | 337461 |
| 2004q3 | 163254 | 86715 | 72724 | 165426 | 154822 | 333297 |
| 2004q4 | 178966 | 89078 | 73142 | 169740 | 159657 | 351269 |
| 2005q1 | 165590 | 86651 | 66770 | 164689 | 157260 | 326440 |
| 2005q2 | 173374 | 88391 | 77415 | 184974 | 174041 | 350113 |
| 2005q3 | 169632 | 88132 | 71475 | 186820 | 173810 | 342249 |
| 2005q4 | 181199 | 91470 | 81539 | 192399 | 186415 | 360192 |
| 2006q1 | 175562 | 89338 | 75049 | 185929 | 185496 | 340382 |
| 2006q2 | 181061 | 90663 | 89319 | 195795 | 194101 | 362737 |
| 2006q3 | 172581 | 90751 | 85336 | 196133 | 191494 | 353307 |
| 2006q4 | 187690 | 93707 | 87216 | 204148 | 203769 | 368992 |
| 2007q1 | 178815 | 91124 | 85292 | 194295 | 197845 | 351681 |
| 2007q2 | 182474 | 91609 | 87440 | 197308 | 195155 | 363676 |
| 2007q3 | 179192 | 91186 | 83135 | 203237 | 196070 | 360680 |
| 2007q4 | 194964 | 95326 | 87909 | 204919 | 204164 | 378954 |
| 2008q1 | 182815 | 91430 | 82250 | 197552 | 200869 | 353178 |
| 2008q2 | 187859 | 93002 | 85988 | 210071 | 208661 | 368259 |
| 2008q3 | 178754 | 93357 | 81254 | 208273 | 203278 | 358360 |
| 2008q4 | 184420 | 97171 | 84688 | 203044 | 204445 | 364878 |
| 2009q1 | 172274 | 94808 | 69460 | 182460 | 180684 | 338318 |
| 2009q2 | 174892 | 96047 | 63740 | 181900 | 173585 | 342994 |
| 2009q3 | 171288 | 96784 | 61735 | 185174 | 174834 | 340147 |
| 2009q4 | 183732 | 100165 | 65051 | 186145 | 180249 | 354844 |
| 2010q1 | 178987 | 97143 | 59199 | 178319 | 173343 | 340305 |
| 2010q2 | 179612 | 98891 | 70557 | 191001 | 185337 | 354724 |

# Annex C: Other key quarterly macroeconomic indicators for Denmark 1948-2010

Table C.1: Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Unemployment rate | Index of average hourly earnings in manufacturing | Official discount rate of Danmarks Nationalbank | Yield on long-term Danish government bonds | Private banks' average lending rate | Private banks' average deposit rate |
|---|---|---|---|---|---|---|
| | Per cent of the labour force | 2005q1=100 | Per cent per annum | Per cent per annum | Per cent per annum | Per cent per annum |
| 1948q1 | 3.8 | 1.42 | 3.50 | 3.90 | 3.89 | 1.59 |
| 1948q2 | 2.1 | 1.53 | 3.50 | 4.00 | 3.89 | 1.59 |
| 1948q3 | 1.8 | 1.51 | 3.50 | 4.10 | 3.89 | 1.59 |
| 1948q4 | 2.8 | 1.56 | 3.50 | 4.40 | 3.89 | 1.59 |
| 1949q1 | 1.9 | 1.52 | 3.50 | 4.50 | 4.37 | 1.80 |
| 1949q2 | 4.6 | 1.60 | 3.50 | 4.50 | 4.37 | 1.80 |
| 1949q3 | 3.0 | 1.57 | 3.50 | 4.30 | 4.37 | 1.80 |
| 1949q4 | 2.5 | 1.61 | 3.50 | 4.40 | 4.37 | 1.80 |
| 1950q1 | 3.3 | 1.55 | 3.50 | 4.30 | 4.22 | 1.56 |
| 1950q2 | 3.2 | 1.68 | 3.50 | 4.40 | 4.22 | 1.56 |
| 1950q3 | 2.3 | 1.65 | 4.47 | 4.60 | 5.08 | 2.43 |
| 1950q4 | 2.0 | 1.71 | 4.83 | 4.80 | 5.41 | 2.75 |
| 1951q1 | 2.8 | 1.69 | 5.00 | 4.90 | 5.46 | 2.40 |
| 1951q2 | 2.7 | 1.83 | 5.00 | 5.10 | 5.48 | 2.43 |
| 1951q3 | 3.3 | 1.82 | 5.00 | 5.20 | 5.51 | 2.47 |
| 1951q4 | 3.2 | 1.92 | 5.00 | 5.30 | 5.54 | 2.50 |
| 1952q1 | 1.6 | 1.85 | 5.00 | 5.30 | 5.60 | 2.55 |
| 1952q2 | 5.3 | 1.98 | 5.00 | 5.30 | 5.63 | 2.57 |
| 1952q3 | 5.6 | 1.96 | 5.00 | 5.30 | 5.66 | 2.58 |
| 1952q4 | 2.7 | 2.03 | 5.00 | 5.20 | 5.68 | 2.59 |
| 1953q1 | 3.1 | 1.95 | 5.00 | 5.20 | 5.74 | 2.63 |
| 1953q2 | 4.0 | 2.04 | 5.00 | 5.10 | 5.75 | 2.64 |
| 1953q3 | 2.9 | 2.00 | 4.96 | 5.10 | 5.71 | 2.66 |
| 1953q4 | 2.0 | 2.05 | 4.50 | 5.00 | 5.38 | 2.66 |
| 1954q1 | 5.0 | 1.97 | 4.50 | 5.00 | 5.67 | 2.89 |
| 1954q2 | 2.3 | 2.20 | 4.59 | 5.10 | 5.78 | 2.88 |
| 1954q3 | 1.8 | 2.07 | 5.50 | 5.40 | 6.37 | 3.20 |
| 1954q4 | 1.2 | 2.14 | 5.50 | 5.60 | 6.37 | 3.22 |
| 1955q1 | 3.9 | 2.07 | 5.50 | 5.40 | 6.31 | 3.17 |
| 1955q2 | 2.7 | 2.26 | 5.50 | 5.60 | 6.32 | 3.18 |
| 1955q3 | 2.4 | 2.15 | 5.50 | 5.60 | 6.33 | 3.19 |
| 1955q4 | 3.3 | 2.26 | 5.50 | 5.60 | 6.33 | 3.20 |
| 1956q1 | 5.4 | 2.19 | 5.50 | 5.60 | 6.37 | 3.23 |
| 1956q2 | 4.2 | 2.44 | 5.50 | 5.60 | 6.39 | 3.24 |
| 1956q3 | 2.9 | 2.32 | 5.50 | 5.70 | 6.40 | 3.25 |
| 1956q4 | 1.9 | 2.47 | 5.50 | 5.80 | 6.42 | 3.25 |
| 1957q1 | 2.8 | 2.38 | 5.50 | 5.80 | 6.49 | 3.33 |
| 1957q2 | 4.5 | 2.60 | 5.50 | 5.80 | 6.50 | 3.34 |
| 1957q3 | 3.3 | 2.43 | 5.50 | 5.80 | 6.51 | 3.35 |
| 1957q4 | 2.9 | 2.56 | 5.50 | 5.70 | 6.51 | 3.38 |
| 1958q1 | 5.1 | 2.46 | 5.50 | 5.40 | 6.44 | 3.31 |
| 1958q2 | 4.6 | 2.70 | 5.10 | 5.20 | 6.35 | 3.30 |
| 1958q3 | 2.6 | 2.53 | 4.74 | 5.10 | 6.08 | 3.25 |
| 1958q4 | 0.5 | 2.65 | 4.50 | 5.20 | 5.87 | 3.11 |
| 1959q1 | 4.0 | 2.63 | 4.50 | 5.10 | 6.09 | 3.33 |
| 1959q2 | 2.1 | 2.89 | 4.50 | 5.30 | 6.10 | 3.34 |
| 1959q3 | 1.4 | 2.76 | 4.57 | 5.40 | 6.12 | 3.36 |
| 1959q4 | 0.8 | 2.89 | 5.00 | 5.60 | 6.35 | 3.35 |
| 1960q1 | 3.5 | 2.79 | 5.36 | 5.99 | 6.63 | 3.43 |
| 1960q2 | 1.1 | 3.10 | 5.50 | 6.06 | 6.75 | 3.56 |
| 1960q3 | 0.8 | 2.96 | 5.50 | 6.23 | 6.76 | 3.60 |
| 1960q4 | 0.6 | 3.09 | 5.50 | 6.13 | 6.78 | 3.64 |
| 1961q1 | 1.7 | 3.02 | 5.50 | 6.11 | 6.98 | 3.85 |
| 1961q2 | 1.4 | 3.50 | 5.93 | 6.46 | 7.34 | 4.09 |
| 1961q3 | 0.8 | 3.35 | 6.50 | 7.00 | 7.83 | 4.38 |
| 1961q4 | 0.9 | 3.54 | 6.50 | 7.14 | 7.85 | 4.41 |
| 1962q1 | 2.4 | 3.45 | 6.50 | 7.23 | 7.73 | 4.27 |
| 1962q2 | 0.8 | 3.81 | 6.50 | 7.25 | 7.74 | 4.28 |
| 1962q3 | 0.5 | 3.67 | 6.50 | 7.21 | 7.76 | 4.28 |
| 1962q4 | 0.7 | 3.88 | 6.50 | 7.29 | 7.78 | 4.30 |
| 1963q1 | 3.9 | 3.76 | 6.50 | 7.38 | 7.71 | 4.24 |
| 1963q2 | 1.1 | 4.15 | 6.50 | 7.40 | 7.71 | 4.26 |
| 1963q3 | 0.2 | 3.97 | 6.27 | 7.06 | 7.51 | 4.25 |
| 1963q4 | 0.8 | 4.16 | 5.73 | 6.62 | 7.12 | 4.27 |
| 1964q1 | 2.7 | 4.10 | 5.50 | 6.51 | 7.39 | 4.27 |
| 1964q2 | 0.6 | 4.45 | 5.72 | 7.22 | 7.58 | 4.49 |
| 1964q3 | 0.2 | 4.32 | 6.50 | 7.52 | 8.34 | 4.98 |
| 1964q4 | 0.1 | 4.52 | 6.50 | 7.65 | 8.37 | 5.01 |
| 1965q1 | 1.2 | 4.47 | 6.50 | 7.72 | 8.26 | 4.88 |
| 1965q2 | 0.1 | 4.99 | 6.50 | 8.55 | 8.29 | 4.89 |

Table C.1 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Unemployment rate | Index of average hourly earnings in manufacturing | Official discount rate of Danmarks Nationalbank | Yield on long-term Danish government bonds | Private banks' average lending rate | Private banks' average deposit rate |
|---|---|---|---|---|---|---|
| | Per cent of the labour force | 2005q1=100 | Per cent per annum | Per cent per annum | Per cent per annum | Per cent per annum |
| 1965q3 | 0.2 | 4.86 | 6.50 | 8.91 | 8.31 | 4.90 |
| 1965q4 | 1.3 | 5.15 | 6.50 | 8.78 | 8.34 | 4.91 |
| 1966q1 | 2.2 | 5.06 | 6.50 | 8.80 | 8.45 | 5.00 |
| 1966q2 | 0.6 | 5.59 | 6.50 | 8.96 | 8.49 | 5.01 |
| 1966q3 | 0.1 | 5.42 | 6.50 | 9.14 | 8.53 | 5.01 |
| 1966q4 | 0.3 | 5.69 | 6.50 | 9.04 | 8.57 | 5.03 |
| 1967q1 | 1.6 | 5.62 | 6.50 | 8.99 | 9.01 | 5.42 |
| 1967q2 | 0.6 | 6.07 | 6.50 | 9.01 | 9.06 | 5.43 |
| 1967q3 | 0.5 | 5.90 | 6.50 | 9.43 | 9.12 | 5.46 |
| 1967q4 | 1.3 | 6.15 | 6.64 | 9.43 | 9.26 | 5.50 |
| 1968q1 | 3.1 | 6.13 | 7.43 | 9.14 | 9.35 | 5.46 |
| 1968q2 | 1.6 | 6.69 | 6.90 | 9.11 | 9.01 | 5.22 |
| 1968q3 | 1.0 | 6.69 | 6.32 | 9.04 | 8.66 | 4.88 |
| 1968q4 | 1.5 | 7.00 | 6.00 | 8.83 | 8.15 | 4.41 |
| 1969q1 | 3.1 | 6.90 | 6.01 | 8.92 | 9.07 | 4.80 |
| 1969q2 | 1.1 | 7.46 | 8.10 | 9.55 | 9.07 | 4.80 |
| 1969q3 | 0.5 | 7.38 | 9.00 | 10.21 | 11.59 | 7.32 |
| 1969q4 | 0.9 | 7.84 | 9.00 | 10.07 | 12.69 | 8.42 |
| 1970q1 | 2.4 | 7.55 | 9.00 | 10.32 | 11.85 | 6.86 |
| 1970q2 | 0.7 | 8.19 | 9.00 | 11.06 | 11.85 | 6.86 |
| 1970q3 | 0.3 | 8.22 | 9.00 | 11.59 | 11.85 | 6.86 |
| 1970q4 | 0.6 | 8.83 | 9.00 | 11.30 | 11.85 | 6.86 |
| 1971q1 | 2.1 | 8.65 | 8.21 | 10.59 | 11.72 | 6.56 |
| 1971q2 | 1.1 | 9.46 | 7.58 | 10.72 | 10.95 | 5.79 |
| 1971q3 | 0.9 | 9.56 | 7.50 | 10.54 | 10.86 | 5.70 |
| 1971q4 | 1.1 | 10.04 | 7.50 | 10.13 | 10.86 | 5.70 |
| 1972q1 | 2.8 | 9.96 | 7.05 | 10.61 | 10.80 | 5.31 |
| 1972q2 | 1.2 | 10.63 | 7.03 | 10.42 | 10.78 | 5.29 |
| 1972q3 | 0.7 | 10.65 | 8.00 | 10.42 | 12.00 | 6.51 |
| 1972q4 | 0.5 | 11.20 | 7.02 | 10.32 | 10.77 | 5.28 |
| 1973q1 | 1.5 | 11.10 | 7.00 | 11.33 | 11.24 | 5.76 |
| 1973q2 | 0.9 | 12.48 | 7.00 | 11.18 | 11.33 | 5.85 |
| 1973q3 | 0.5 | 12.96 | 7.89 | 12.15 | 12.21 | 6.73 |
| 1973q4 | 0.7 | 14.01 | 8.12 | 12.67 | 12.39 | 6.91 |
| 1974q1 | 1.7 | 14.06 | 9.76 | 12.97 | 14.43 | 8.19 |
| 1974q2 | 1.2 | 15.34 | 10.00 | 14.66 | 14.61 | 8.37 |
| 1974q3 | 1.7 | 15.52 | 10.00 | 14.55 | 15.16 | 8.92 |
| 1974q4 | 3.6 | 16.80 | 10.00 | 14.34 | 15.61 | 9.37 |
| 1975q1 | 5.6 | 17.17 | 9.14 | 12.77 | 15.17 | 8.60 |
| 1975q2 | 5.0 | 18.52 | 8.07 | 12.30 | 13.86 | 7.29 |
| 1975q3 | 4.5 | 18.38 | 7.76 | 12.13 | 13.20 | 6.63 |
| 1975q4 | 5.3 | 19.67 | 7.50 | 12.37 | 13.02 | 6.45 |
| 1976q1 | 6.5 | 19.78 | 7.65 | 13.27 | 14.22 | 7.79 |
| 1976q2 | 4.8 | 20.79 | 8.50 | 14.05 | 15.12 | 8.39 |
| 1976q3 | 4.6 | 20.67 | 8.50 | 14.47 | 15.22 | 8.59 |
| 1976q4 | 5.5 | 21.90 | 10.62 | 14.95 | 17.82 | 10.89 |
| 1977q1 | 7.1 | 21.69 | 9.68 | 15.04 | 17.22 | 10.29 |
| 1977q2 | 6.0 | 23.09 | 9.00 | 15.37 | 16.32 | 9.39 |
| 1977q3 | 6.1 | 23.02 | 9.00 | 16.04 | 16.42 | 10.09 |
| 1977q4 | 6.6 | 24.24 | 9.00 | 16.40 | 17.02 | 10.29 |
| 1978q1 | 8.4 | 24.27 | 9.00 | 16.04 | 16.92 | 10.49 |
| 1978q2 | 7.0 | 25.42 | 9.00 | 14.97 | 16.52 | 9.39 |
| 1978q3 | 6.7 | 25.28 | 8.26 | 15.29 | 15.32 | 8.69 |
| 1978q4 | 7.2 | 26.60 | 8.00 | 15.62 | 14.92 | 8.29 |
| 1979q1 | 8.0 | 26.68 | 8.00 | 16.09 | 14.92 | 8.09 |
| 1979q2 | 5.9 | 27.94 | 8.18 | 16.30 | 15.22 | 8.29 |
| 1979q3 | 5.3 | 27.82 | 9.30 | 16.65 | 16.52 | 9.19 |
| 1979q4 | 5.7 | 30.27 | 11.00 | 17.23 | 19.12 | 10.69 |
| 1980q1 | 6.6 | 30.23 | 11.95 | 20.50 | 19.42 | 11.49 |
| 1980q2 | 5.6 | 31.37 | 13.00 | 21.28 | 20.92 | 12.69 |
| 1980q3 | 6.0 | 31.35 | 12.87 | 20.32 | 20.76 | 12.69 |
| 1980q4 | 7.8 | 32.98 | 11.28 | 19.42 | 18.96 | 11.29 |
| 1981q1 | 9.6 | 32.90 | 11.00 | 18.86 | 18.42 | 11.09 |
| 1981q2 | 8.2 | 33.99 | 11.00 | 19.56 | 18.62 | 11.49 |
| 1981q3 | 7.7 | 34.08 | 11.00 | 20.47 | 18.95 | 11.69 |
| 1981q4 | 9.3 | 36.18 | 11.00 | 19.32 | 19.38 | 11.49 |
| 1982q1 | 10.5 | 35.85 | 11.00 | 21.86 | 19.18 | 11.29 |
| 1982q2 | 8.8 | 37.80 | 11.00 | 22.69 | 19.63 | 11.69 |
| 1982q3 | 8.3 | 37.61 | 11.00 | 22.90 | 19.94 | 11.69 |
| 1982q4 | 9.5 | 39.75 | 10.65 | 20.99 | 19.60 | 11.59 |

Table C.1 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Unemployment rate | Index of average hourly earnings in manufacturing | Official discount rate of Danmarks Nationalbank | Yield on long-term Danish government bonds | Private banks' average lending rate | Private banks' average deposit rate |
|---|---|---|---|---|---|---|
| | Per cent of the labour force | 2005q1=100 | Per cent per annum | Per cent per annum | Per cent per annum | Per cent per annum |
| 1983q1 | 11.1 | 39.08 | 9.83 | 16.54 | 18.50 | 11.19 |
| 1983q2 | 9.8 | 40.67 | 7.73 | 13.78 | 15.89 | 9.36 |
| 1983q3 | 9.1 | 40.35 | 7.50 | 14.90 | 15.56 | 8.99 |
| 1983q4 | 10.0 | 41.45 | 7.14 | 14.18 | 15.52 | 9.19 |
| 1984q1 | 11.2 | 40.53 | 7.00 | 13.52 | 15.20 | 8.72 |
| 1984q2 | 9.3 | 42.46 | 7.00 | 14.81 | 15.30 | 8.58 |
| 1984q3 | 8.7 | 41.94 | 7.00 | 14.92 | 15.39 | 9.00 |
| 1984q4 | 9.1 | 43.14 | 7.00 | 14.46 | 15.79 | 9.50 |
| 1985q1 | 10.4 | 42.82 | 7.00 | 13.55 | 15.67 | 8.86 |
| 1985q2 | 8.5 | 44.26 | 7.00 | 11.83 | 15.92 | 9.08 |
| 1985q3 | 7.4 | 44.26 | 7.00 | 10.63 | 14.65 | 7.91 |
| 1985q4 | 7.6 | 45.25 | 7.00 | 10.30 | 13.89 | 7.51 |
| 1986q1 | 8.8 | 44.83 | 7.00 | 9.61 | 13.26 | 7.03 |
| 1986q2 | 6.9 | 46.52 | 7.00 | 9.11 | 12.62 | 6.53 |
| 1986q3 | 6.4 | 46.42 | 7.00 | 10.48 | 12.65 | 6.50 |
| 1986q4 | 7.0 | 47.48 | 7.00 | 11.00 | 12.56 | 7.06 |
| 1987q1 | 8.6 | 47.87 | 7.00 | 11.44 | 12.90 | 7.40 |
| 1987q2 | 7.0 | 50.68 | 7.00 | 11.11 | 13.40 | 7.50 |
| 1987q3 | 6.5 | 50.55 | 7.00 | 11.14 | 13.30 | 7.40 |
| 1987q4 | 7.1 | 52.49 | 7.00 | 11.45 | 13.30 | 7.50 |
| 1988q1 | 8.8 | 51.61 | 7.00 | 10.20 | 13.10 | 7.20 |
| 1988q2 | 7.7 | 54.15 | 7.00 | 10.23 | 13.20 | 7.20 |
| 1988q3 | 7.5 | 53.99 | 7.00 | 9.72 | 13.00 | 6.90 |
| 1988q4 | 8.4 | 55.46 | 7.00 | 9.38 | 12.80 | 6.80 |
| 1989q1 | 9.9 | 54.69 | 7.00 | 9.37 | 12.20 | 6.40 |
| 1989q2 | 8.8 | 56.70 | 7.00 | 9.79 | 12.70 | 6.50 |
| 1989q3 | 8.4 | 56.12 | 7.00 | 9.46 | 13.10 | 6.80 |
| 1989q4 | 8.8 | 57.76 | 7.00 | 10.21 | 14.40 | 8.10 |
| 1990q1 | 9.9 | 57.26 | 7.10 | 11.02 | 14.70 | 8.50 |
| 1990q2 | 8.8 | 59.12 | 8.05 | 10.46 | 14.00 | 8.00 |
| 1990q3 | 8.8 | 58.95 | 8.50 | 10.44 | 13.70 | 7.70 |
| 1990q4 | 9.2 | 60.38 | 8.50 | 10.60 | 13.20 | 7.50 |
| 1991q1 | 10.5 | 59.55 | 9.49 | 9.67 | 13.40 | 7.70 |
| 1991q2 | 9.7 | 62.53 | 9.28 | 9.18 | 13.20 | 7.20 |
| 1991q3 | 9.6 | 61.68 | 9.25 | 9.27 | 12.90 | 6.80 |
| 1991q4 | 10.2 | 62.94 | 9.17 | 8.93 | 12.80 | 6.90 |
| 1992q1 | 11.4 | 61.75 | 9.50 | 8.60 | 12.90 | 7.20 |
| 1992q2 | 10.4 | 63.85 | 9.50 | 8.87 | 13.00 | 7.20 |
| 1992q3 | 10.3 | 63.84 | 9.50 | 9.45 | 13.30 | 7.50 |
| 1992q4 | 10.8 | 64.72 | 9.50 | 9.03 | 14.00 | 8.10 |
| 1993q1 | 12.4 | 63.82 | 10.23 | 8.49 | 13.50 | 8.10 |
| 1993q2 | 11.6 | 65.23 | 8.71 | 7.51 | 12.20 | 6.50 |
| 1993q3 | 11.5 | 65.24 | 8.76 | 6.85 | 12.10 | 6.30 |
| 1993q4 | 11.7 | 66.48 | 7.02 | 6.37 | 10.90 | 5.20 |
| 1994q1 | 13.1 | 65.96 | 5.70 | 6.33 | 10.10 | 4.00 |
| 1994q2 | 11.8 | 67.57 | 5.15 | 7.54 | 9.90 | 3.80 |
| 1994q3 | 11.2 | 67.31 | 5.00 | 8.60 | 9.90 | 3.80 |
| 1994q4 | 10.4 | 67.82 | 5.00 | 8.84 | 10.30 | 3.70 |
| 1995q1 | 11.2 | 67.93 | 5.27 | 8.96 | 10.20 | 3.90 |
| 1995q2 | 9.7 | 70.31 | 6.00 | 8.44 | 10.80 | 4.60 |
| 1995q3 | 9.5 | 70.07 | 5.40 | 8.09 | 10.60 | 4.40 |
| 1995q4 | 8.6 | 70.73 | 4.76 | 7.59 | 9.90 | 3.70 |
| 1996q1 | 9.5 | 70.79 | 4.00 | 7.35 | 9.30 | 3.20 |
| 1996q2 | 8.0 | 73.33 | 3.35 | 7.41 | 8.60 | 2.70 |
| 1996q3 | 8.0 | 72.87 | 3.25 | 7.26 | 8.60 | 2.70 |
| 1996q4 | 7.2 | 73.41 | 3.25 | 6.75 | 8.30 | 2.70 |
| 1997q1 | 8.4 | 73.65 | 3.25 | 6.40 | 7.80 | 2.60 |
| 1997q2 | 7.2 | 76.32 | 3.25 | 6.52 | 7.90 | 2.60 |
| 1997q3 | 7.2 | 75.77 | 3.25 | 6.17 | 7.70 | 2.60 |
| 1997q4 | 6.4 | 76.25 | 3.48 | 5.96 | 7.80 | 2.80 |
| 1998q1 | 7.1 | 76.68 | 3.50 | 5.40 | 7.60 | 2.80 |
| 1998q2 | 5.8 | 79.72 | 3.72 | 5.22 | 7.80 | 3.00 |
| 1998q3 | 5.8 | 79.23 | 3.80 | 4.93 | 7.90 | 3.10 |
| 1998q4 | 5.0 | 79.77 | 3.94 | 4.62 | 8.30 | 3.40 |
| 1999q1 | 5.9 | 80.46 | 3.34 | 4.25 | 7.40 | 2.80 |
| 1999q2 | 4.9 | 82.88 | 2.79 | 4.50 | 7.00 | 2.30 |
| 1999q3 | 4.9 | 82.10 | 2.75 | 5.35 | 6.90 | 2.20 |
| 1999q4 | 4.4 | 82.85 | 2.90 | 5.57 | 7.20 | 2.40 |
| 2000q1 | 5.3 | 83.33 | 3.20 | 5.79 | 7.30 | 2.50 |
| 2000q2 | 4.5 | 85.67 | 3.81 | 5.69 | 7.80 | 2.90 |

Table C.1 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Unemployment rate | Index of average hourly earnings in manufacturing | Official discount rate of Danmarks Nationalbank | Yield on long-term Danish government bonds | Private banks' average lending rate | Private banks' average deposit rate |
|---|---|---|---|---|---|---|
| | Per cent of the labour force | 2005q1=100 | Per cent per annum | Per cent per annum | Per cent per annum | Per cent per annum |
| 2000q3 | 4.7 | 85.21 | 4.33 | 5.71 | 8.40 | 3.40 |
| 2000q4 | 4.4 | 85.81 | 4.73 | 5.45 | 8.80 | 3.80 |
| 2001q1 | 5.3 | 86.27 | 4.75 | 5.09 | 8.60 | 3.70 |
| 2001q2 | 4.5 | 89.70 | 4.61 | 5.27 | 8.40 | 3.50 |
| 2001q3 | 4.3 | 88.96 | 4.35 | 5.18 | 8.20 | 3.30 |
| 2001q4 | 4.5 | 89.61 | 3.48 | 4.83 | 7.60 | 2.70 |
| 2002q1 | 5.2 | 90.02 | 3.25 | 5.21 | 7.53 | 2.60 |
| 2002q2 | 4.5 | 93.03 | 3.25 | 5.36 | 7.48 | 2.50 |
| 2002q3 | 4.6 | 92.39 | 3.25 | 4.92 | 7.53 | 2.60 |
| 2002q4 | 5.0 | 93.44 | 3.13 | 4.74 | 7.41 | 2.50 |
| 2003q1 | 6.0 | 94.02 | 2.68 | 4.30 | 7.00 | 1.93 |
| 2003q2 | 5.5 | 96.78 | 2.36 | 4.12 | 6.73 | 1.71 |
| 2003q3 | 5.5 | 96.30 | 2.00 | 4.31 | 6.30 | 1.28 |
| 2003q4 | 6.0 | 97.22 | 2.00 | 4.51 | 6.15 | 1.30 |
| 2004q1 | 6.6 | 97.27 | 2.00 | 4.25 | 6.08 | 1.33 |
| 2004q2 | 5.6 | 100.04 | 2.00 | 4.43 | 5.96 | 1.35 |
| 2004q3 | 5.4 | 99.26 | 2.00 | 4.48 | 5.94 | 1.36 |
| 2004q4 | 5.6 | 99.79 | 2.00 | 4.06 | 5.81 | 1.40 |
| 2005q1 | 6.0 | 100.02 | 2.00 | 3.73 | 5.74 | 1.43 |
| 2005q2 | 5.0 | 102.54 | 2.00 | 3.38 | 5.59 | 1.44 |
| 2005q3 | 4.7 | 101.93 | 2.00 | 3.17 | 5.46 | 1.46 |
| 2005q4 | 4.6 | 102.62 | 2.08 | 3.34 | 5.35 | 1.49 |
| 2006q1 | 4.7 | 102.92 | 2.33 | 3.50 | 5.39 | 1.69 |
| 2006q2 | 3.8 | 105.84 | 2.57 | 4.01 | 5.58 | 1.95 |
| 2006q3 | 3.6 | 105.08 | 2.91 | 3.93 | 5.80 | 2.23 |
| 2006q4 | 3.4 | 105.92 | 3.29 | 3.81 | 6.05 | 2.57 |
| 2007q1 | 3.5 | 106.45 | 3.56 | 4.00 | 6.31 | 2.96 |
| 2007q2 | 2.8 | 110.00 | 3.82 | 4.39 | 6.48 | 3.21 |
| 2007q3 | 2.4 | 109.49 | 4.00 | 4.44 | 6.71 | 3.45 |
| 2007q4 | 2.2 | 110.51 | 4.00 | 4.31 | 6.78 | 3.50 |
| 2008q1 | 2.2 | 111.08 | 4.00 | 4.09 | 6.81 | 3.58 |
| 2008q2 | 1.6 | 115.00 | 4.00 | 4.51 | 7.02 | 3.69 |
| 2008q3 | 1.6 | 114.20 | 4.24 | 4.55 | 7.18 | 3.81 |
| 2008q4 | 2.0 | 114.60 | 4.08 | 3.98 | 7.75 | 4.09 |
| 2009q1 | 3.2 | 115.30 | 2.65 | 3.48 | 6.78 | 2.92 |
| 2009q2 | 3.5 | 118.10 | 1.50 | 3.62 | 5.87 | 2.05 |
| 2009q3 | 3.5 | 117.20 | 1.11 | 3.66 | 5.47 | 1.69 |
| 2009q4 | 4.1 | 117.40 | 1.00 | 3.58 | 5.13 | 1.41 |
| 2010q1 | 4.9 | 118.50 | 0.79 | 3.49 | 4.95 | 1.22 |
| 2010q2 | 4.0 | 121.20 | 0.75 | 2.99 | 4.78 | 1.08 |

Table C.2: Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Nominal effective krone-rate index | Consumer price index, Denmark | Consumer price index, abroad | Real effective krone-rate index | Price index for sale of one-family houses, | Share price index |
|---|---|---|---|---|---|---|
| | 1980=100 | 1980=100 | 1980=100 | 1980=100 | 2006=100 | End of quarter, 3rd July 1989 = 100 |
| 1948q1 | 107.2 | 14.51 | 20.49 | 75.9 | 1.353 | 5.21 |
| 1948q2 | 109.0 | 14.60 | 21.07 | 75.5 | 1.400 | 5.05 |
| 1948q3 | 109.0 | 14.72 | 21.61 | 74.2 | 1.548 | 5.09 |
| 1948q4 | 110.4 | 14.79 | 22.07 | 74.0 | 1.615 | 4.61 |
| 1949q1 | 110.8 | 15.01 | 22.44 | 74.1 | 1.449 | 4.70 |
| 1949q2 | 111.1 | 15.01 | 22.04 | 75.6 | 1.484 | 4.28 |
| 1949q3 | 110.7 | 14.72 | 21.75 | 75.0 | 1.555 | 4.52 |
| 1949q4 | 106.5 | 14.79 | 21.83 | 72.2 | 1.577 | 4.86 |
| 1950q1 | 110.1 | 15.17 | 22.18 | 75.3 | 1.456 | 5.16 |
| 1950q2 | 110.1 | 15.51 | 22.25 | 76.8 | 1.512 | 5.26 |
| 1950q3 | 110.1 | 15.46 | 21.97 | 77.5 | 1.691 | 5.37 |
| 1950q4 | 110.0 | 16.03 | 22.44 | 78.6 | 1.737 | 5.06 |
| 1951q1 | 110.1 | 16.75 | 23.82 | 77.4 | 1.587 | 5.25 |
| 1951q2 | 110.1 | 17.25 | 24.83 | 76.5 | 1.652 | 4.81 |
| 1951q3 | 110.1 | 17.52 | 24.95 | 77.3 | 1.788 | 4.72 |
| 1951q4 | 110.0 | 17.76 | 25.35 | 77.1 | 1.844 | 4.69 |
| 1952q1 | 110.1 | 17.99 | 26.05 | 76.0 | 1.749 | 4.87 |
| 1952q2 | 110.1 | 18.00 | 26.02 | 76.2 | 1.722 | 4.65 |
| 1952q3 | 110.1 | 18.10 | 25.83 | 77.1 | 1.771 | 4.68 |
| 1952q4 | 110.1 | 18.18 | 25.89 | 77.3 | 1.860 | 4.73 |
| 1953q1 | 110.1 | 18.32 | 26.28 | 76.7 | 1.797 | 4.95 |
| 1953q2 | 110.1 | 18.16 | 26.16 | 76.4 | 1.783 | 4.77 |
| 1953q3 | 109.8 | 18.01 | 25.82 | 76.6 | 1.847 | 4.85 |
| 1953q4 | 109.6 | 18.10 | 25.73 | 77.0 | 2.018 | 4.90 |
| 1954q1 | 109.7 | 18.16 | 26.32 | 75.7 | 2.028 | 5.21 |
| 1954q2 | 109.7 | 18.25 | 26.36 | 75.9 | 1.976 | 5.34 |
| 1954q3 | 109.7 | 18.18 | 26.16 | 76.3 | 2.011 | 5.29 |
| 1954q4 | 109.8 | 18.34 | 26.24 | 76.8 | 2.158 | 5.23 |
| 1955q1 | 110.0 | 18.74 | 26.66 | 77.3 | 2.129 | 5.50 |
| 1955q2 | 109.9 | 18.99 | 26.62 | 78.4 | 2.061 | 5.62 |
| 1955q3 | 109.8 | 19.25 | 26.56 | 79.6 | 2.083 | 5.90 |
| 1955q4 | 110.1 | 19.75 | 26.87 | 80.9 | 2.242 | 6.05 |
| 1956q1 | 110.1 | 20.07 | 27.44 | 80.5 | 2.218 | 6.30 |
| 1956q2 | 110.0 | 20.24 | 27.68 | 80.4 | 2.160 | 6.40 |
| 1956q3 | 109.8 | 20.32 | 27.51 | 81.1 | 2.194 | 6.76 |
| 1956q4 | 109.9 | 20.56 | 27.66 | 81.7 | 2.278 | 7.12 |
| 1957q1 | 109.9 | 20.88 | 28.32 | 81.0 | 2.176 | 7.43 |
| 1957q2 | 109.7 | 20.61 | 28.26 | 80.0 | 2.173 | 7.01 |
| 1957q3 | 111.1 | 21.14 | 28.40 | 82.7 | 2.262 | 6.51 |
| 1957q4 | 113.1 | 21.15 | 28.68 | 83.4 | 2.296 | 6.19 |
| 1958q1 | 113.2 | 21.23 | 29.65 | 81.1 | 2.141 | 6.66 |
| 1958q2 | 113.1 | 21.23 | 29.90 | 80.3 | 2.116 | 6.90 |
| 1958q3 | 112.9 | 21.07 | 29.68 | 80.1 | 2.183 | 7.13 |
| 1958q4 | 113.4 | 21.32 | 29.54 | 81.8 | 2.330 | 7.38 |
| 1959q1 | 114.5 | 21.55 | 30.21 | 81.7 | 2.285 | 7.70 |
| 1959q2 | 114.7 | 21.55 | 30.02 | 82.4 | 2.313 | 7.92 |
| 1959q3 | 114.7 | 21.41 | 29.94 | 82.0 | 2.440 | 7.97 |
| 1959q4 | 114.5 | 21.81 | 30.36 | 82.2 | 2.610 | 8.40 |
| 1960q1 | 114.6 | 21.89 | 30.97 | 81.0 | 2.564 | 8.96 |
| 1960q2 | 114.6 | 21.83 | 30.96 | 80.8 | 2.577 | 8.81 |
| 1960q3 | 114.7 | 21.72 | 30.69 | 81.2 | 2.701 | 8.58 |
| 1960q4 | 114.7 | 21.95 | 30.64 | 82.2 | 2.962 | 8.47 |
| 1961q1 | 113.8 | 22.11 | 31.41 | 80.1 | 2.976 | 8.61 |
| 1961q2 | 112.1 | 22.44 | 31.49 | 79.9 | 3.074 | 9.09 |
| 1961q3 | 112.6 | 22.72 | 31.68 | 80.7 | 3.301 | 8.65 |
| 1961q4 | 112.9 | 23.14 | 32.12 | 81.4 | 3.543 | 8.33 |
| 1962q1 | 112.9 | 23.64 | 32.45 | 82.2 | 3.491 | 9.31 |
| 1962q2 | 112.7 | 24.08 | 32.89 | 82.5 | 3.520 | 9.15 |
| 1962q3 | 112.4 | 24.07 | 33.05 | 81.8 | 3.697 | 8.92 |
| 1962q4 | 112.5 | 25.29 | 33.18 | 85.8 | 3.982 | 8.54 |
| 1963q1 | 112.8 | 25.67 | 33.59 | 86.2 | 3.935 | 8.61 |
| 1963q2 | 112.7 | 26.02 | 33.96 | 86.4 | 3.971 | 8.67 |
| 1963q3 | 112.6 | 25.55 | 33.72 | 85.3 | 4.174 | 8.99 |
| 1963q4 | 112.6 | 25.78 | 34.29 | 84.6 | 4.484 | 9.42 |
| 1964q1 | 112.4 | 26.09 | 34.64 | 84.7 | 4.419 | 10.43 |
| 1964q2 | 112.5 | 26.55 | 34.88 | 85.6 | 4.423 | 10.60 |
| 1964q3 | 112.2 | 26.56 | 35.03 | 85.1 | 4.633 | 10.34 |
| 1964q4 | 112.2 | 27.05 | 35.55 | 85.3 | 4.977 | 9.96 |
| 1965q1 | 112.2 | 27.50 | 35.80 | 86.2 | 4.852 | 11.32 |
| 1965q2 | 112.4 | 28.00 | 36.09 | 87.2 | 4.804 | 10.86 |

Table C.2 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Nominal effective krone-rate index | Consumer price index, Denmark | Consumer price index, abroad | Real effective krone-rate index | Price index for sale of one-family houses, | Share price index |
|---|---|---|---|---|---|---|
| | 1980=100 | 1980=100 | 1980=100 | 1980=100 | 2006=100 | End of quarter, 3rd July 1989 = 100 |
| 1965q3 | 112.4 | 28.82 | 36.63 | 88.5 | 5.078 | 10.25 |
| 1965q4 | 112.9 | 29.22 | 37.02 | 89.1 | 5.495 | 10.65 |
| 1966q1 | 113.0 | 29.71 | 37.41 | 89.7 | 5.448 | 11.40 |
| 1966q2 | 112.8 | 30.32 | 37.64 | 90.9 | 5.481 | 11.91 |
| 1966q3 | 112.5 | 30.52 | 37.83 | 90.7 | 5.748 | 11.11 |
| 1966q4 | 112.9 | 31.02 | 38.43 | 91.2 | 6.138 | 10.30 |
| 1967q1 | 112.4 | 31.38 | 38.59 | 91.4 | 5.879 | 10.26 |
| 1967q2 | 112.4 | 31.79 | 38.75 | 92.2 | 6.084 | 9.72 |
| 1967q3 | 112.2 | 33.93 | 38.99 | 97.6 | 6.277 | 8.89 |
| 1967q4 | 110.4 | 34.38 | 39.37 | 96.4 | 6.438 | 9.27 |
| 1968q1 | 107.6 | 34.64 | 39.80 | 93.6 | 6.191 | 9.37 |
| 1968q2 | 107.6 | 35.64 | 40.02 | 95.8 | 6.261 | 9.72 |
| 1968q3 | 107.1 | 35.78 | 40.14 | 95.4 | 6.453 | 9.91 |
| 1968q4 | 107.0 | 35.95 | 40.70 | 94.5 | 6.643 | 10.30 |
| 1969q1 | 107.1 | 36.07 | 41.23 | 93.7 | 6.378 | 11.67 |
| 1969q2 | 106.9 | 36.47 | 41.65 | 93.6 | 6.541 | 11.39 |
| 1969q3 | 107.3 | 36.88 | 41.71 | 94.8 | 6.840 | 10.25 |
| 1969q4 | 105.5 | 37.54 | 42.38 | 93.4 | 7.141 | 10.39 |
| 1970q1 | 105.4 | 38.00 | 43.19 | 92.8 | 7.350 | 10.61 |
| 1970q2 | 105.0 | 38.57 | 43.75 | 92.6 | 7.430 | 9.99 |
| 1970q3 | 105.0 | 39.68 | 44.14 | 94.3 | 7.684 | 9.23 |
| 1970q4 | 105.0 | 40.28 | 44.80 | 94.4 | 8.062 | 9.36 |
| 1971q1 | 105.0 | 40.29 | 45.75 | 92.4 | 7.880 | 9.37 |
| 1971q2 | 104.1 | 41.17 | 46.43 | 92.3 | 7.946 | 9.11 |
| 1971q3 | 103.2 | 41.76 | 46.99 | 91.7 | 8.175 | 9.14 |
| 1971q4 | 103.0 | 42.49 | 47.60 | 92.0 | 8.602 | 9.10 |
| 1972q1 | 102.7 | 42.87 | 48.34 | 91.1 | 9.095 | 10.17 |
| 1972q2 | 102.4 | 43.80 | 49.04 | 91.5 | 9.522 | 12.35 |
| 1972q3 | 103.5 | 44.47 | 49.75 | 92.5 | 9.587 | 12.65 |
| 1972q4 | 105.0 | 45.45 | 50.61 | 94.3 | 10.014 | 17.17 |
| 1973q1 | 106.2 | 46.10 | 51.65 | 94.8 | 10.474 | 19.30 |
| 1973q2 | 107.4 | 47.57 | 52.92 | 96.5 | 10.769 | 20.68 |
| 1973q3 | 108.8 | 48.73 | 53.83 | 98.5 | 11.295 | 19.60 |
| 1973q4 | 108.1 | 50.63 | 55.26 | 99.0 | 11.590 | 17.17 |
| 1974q1 | 105.4 | 52.52 | 57.37 | 96.5 | 11.590 | 16.10 |
| 1974q2 | 107.6 | 54.52 | 59.08 | 99.3 | 11.196 | 15.53 |
| 1974q3 | 108.5 | 56.61 | 60.51 | 101.5 | 11.327 | 13.46 |
| 1974q4 | 109.5 | 58.85 | 62.49 | 103.1 | 12.148 | 13.52 |
| 1975q1 | 110.3 | 59.59 | 64.17 | 102.4 | 12.969 | 14.59 |
| 1975q2 | 111.5 | 60.77 | 66.11 | 102.5 | 13.429 | 16.37 |
| 1975q3 | 110.2 | 61.94 | 67.49 | 101.2 | 14.053 | 16.44 |
| 1975q4 | 109.5 | 61.57 | 68.86 | 97.9 | 14.085 | 18.09 |
| 1976q1 | 108.8 | 63.38 | 70.50 | 97.9 | 14.512 | 18.92 |
| 1976q2 | 112.3 | 65.89 | 72.10 | 102.6 | 14.676 | 20.21 |
| 1976q3 | 112.0 | 66.95 | 73.15 | 102.5 | 14.972 | 18.79 |
| 1976q4 | 113.9 | 69.64 | 74.72 | 106.2 | 15.596 | 18.09 |
| 1977q1 | 113.1 | 70.31 | 76.60 | 103.8 | 15.661 | 19.96 |
| 1977q2 | 110.7 | 72.54 | 78.60 | 102.2 | 16.646 | 19.74 |
| 1977q3 | 109.4 | 74.34 | 79.79 | 101.9 | 17.270 | 18.52 |
| 1977q4 | 107.3 | 78.28 | 80.84 | 103.9 | 18.157 | 17.90 |
| 1978q1 | 109.3 | 79.19 | 82.20 | 105.3 | 18.781 | 18.55 |
| 1978q2 | 110.0 | 80.46 | 83.66 | 105.8 | 19.536 | 18.34 |
| 1978q3 | 108.1 | 81.44 | 84.69 | 103.9 | 20.028 | 17.71 |
| 1978q4 | 110.1 | 83.96 | 85.69 | 107.8 | 20.225 | 16.81 |
| 1979q1 | 111.3 | 84.63 | 87.27 | 108.0 | 20.718 | 17.79 |
| 1979q2 | 108.6 | 86.76 | 89.20 | 105.6 | 21.670 | 17.40 |
| 1979q3 | 107.5 | 91.19 | 91.38 | 107.3 | 21.998 | 16.44 |
| 1979q4 | 106.3 | 93.71 | 93.32 | 106.8 | 21.965 | 15.71 |
| 1980q1 | 101.5 | 95.89 | 96.48 | 100.8 | 21.571 | 14.22 |
| 1980q2 | 100.1 | 98.78 | 99.20 | 99.7 | 20.915 | 14.60 |
| 1980q3 | 100.4 | 101.67 | 101.07 | 101.0 | 21.276 | 15.90 |
| 1980q4 | 97.9 | 103.78 | 103.24 | 98.4 | 21.309 | 17.63 |
| 1981q1 | 94.4 | 106.33 | 106.11 | 94.6 | 21.177 | 19.77 |
| 1981q2 | 92.3 | 110.87 | 108.79 | 94.0 | 20.324 | 22.92 |
| 1981q3 | 92.5 | 113.60 | 111.03 | 94.6 | 19.601 | 21.77 |
| 1981q4 | 93.9 | 116.13 | 113.07 | 96.4 | 19.963 | 24.39 |
| 1982q1 | 90.7 | 118.60 | 115.29 | 93.3 | 19.798 | 25.70 |
| 1982q2 | 89.4 | 121.43 | 117.55 | 92.4 | 19.963 | 24.98 |
| 1982q3 | 87.8 | 124.50 | 119.29 | 91.6 | 19.503 | 25.11 |
| 1982q4 | 90.0 | 127.63 | 120.91 | 95.0 | 19.963 | 27.40 |

Table C.2 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Nominal effective krone-rate index | Consumer price index, Denmark | Consumer price index, abroad | Real effective krone-rate index | Price index for sale of one-family houses, | Share price index |
|---|---|---|---|---|---|---|
| | 1980=100 | 1980=100 | 1980=100 | 1980=100 | 2006=100 | End of quarter, 3rd July 1989 = 100 |
| 1983q1 | 91.4 | 128.70 | 122.47 | 96.1 | 21.670 | 37.56 |
| 1983q2 | 90.2 | 130.53 | 124.22 | 94.8 | 24.395 | 43.23 |
| 1983q3 | 87.9 | 132.13 | 125.87 | 92.3 | 24.723 | 53.78 |
| 1983q4 | 87.4 | 134.80 | 127.52 | 92.4 | 25.446 | 58.64 |
| 1984q1 | 86.8 | 136.77 | 129.30 | 91.8 | 26.890 | 51.40 |
| 1984q2 | 86.5 | 139.20 | 130.93 | 91.9 | 27.449 | 50.81 |
| 1984q3 | 86.1 | 140.63 | 131.90 | 91.8 | 27.744 | 46.13 |
| 1984q4 | 86.4 | 142.67 | 133.49 | 92.4 | 28.992 | 45.76 |
| 1985q1 | 86.7 | 144.47 | 135.43 | 92.4 | 30.141 | 50.27 |
| 1985q2 | 86.6 | 146.67 | 137.36 | 92.5 | 31.520 | 55.58 |
| 1985q3 | 87.4 | 146.53 | 137.79 | 92.9 | 33.753 | 60.33 |
| 1985q4 | 88.8 | 147.77 | 138.79 | 94.5 | 34.573 | 65.50 |
| 1986q1 | 90.0 | 147.63 | 139.72 | 95.1 | 36.543 | 68.35 |
| 1986q2 | 90.3 | 152.47 | 140.28 | 98.1 | 36.675 | 60.63 |
| 1986q3 | 91.3 | 152.63 | 140.58 | 99.1 | 35.723 | 53.50 |
| 1986q4 | 93.5 | 154.23 | 141.30 | 102.1 | 36.248 | 52.89 |
| 1987q1 | 95.4 | 155.00 | 142.58 | 103.7 | 33.851 | 56.20 |
| 1987q2 | 94.7 | 157.47 | 143.75 | 103.7 | 33.785 | 58.11 |
| 1987q3 | 93.0 | 158.53 | 144.60 | 102.0 | 33.556 | 56.51 |
| 1987q4 | 93.6 | 160.37 | 145.53 | 103.2 | 33.227 | 49.88 |
| 1988q1 | 93.9 | 162.37 | 146.56 | 104.0 | 33.687 | 54.79 |
| 1988q2 | 92.7 | 164.70 | 148.19 | 103.1 | 33.588 | 62.60 |
| 1988q3 | 91.6 | 165.43 | 149.31 | 101.5 | 34.212 | 63.88 |
| 1988q4 | 91.2 | 167.50 | 150.75 | 101.4 | 34.475 | 74.54 |
| 1989q1 | 89.5 | 169.77 | 152.52 | 99.6 | 34.147 | 82.47 |
| 1989q2 | 89.2 | 172.53 | 154.91 | 99.4 | 34.212 | 96.00 |
| 1989q3 | 89.9 | 173.47 | 155.86 | 100.1 | 33.556 | 90.08 |
| 1989q4 | 92.4 | 175.73 | 157.50 | 103.1 | 33.063 | 99.48 |
| 1990q1 | 95.4 | 175.37 | 160.08 | 104.5 | 31.553 | 107.32 |
| 1990q2 | 96.6 | 176.73 | 162.48 | 105.1 | 31.684 | 105.83 |
| 1990q3 | 96.3 | 178.00 | 164.20 | 104.4 | 30.896 | 90.63 |
| 1990q4 | 96.8 | 179.67 | 166.41 | 104.5 | 30.699 | 86.32 |
| 1991q1 | 96.3 | 179.73 | 168.62 | 102.7 | 31.323 | 98.28 |
| 1991q2 | 94.0 | 181.43 | 170.46 | 100.1 | 31.717 | 103.02 |
| 1991q3 | 93.5 | 182.03 | 172.03 | 99.0 | 31.586 | 99.36 |
| 1991q4 | 94.5 | 183.57 | 173.44 | 100.0 | 31.815 | 96.74 |
| 1992q1 | 94.7 | 183.93 | 174.72 | 99.7 | 31.600 | 93.20 |
| 1992q2 | 95.0 | 185.87 | 176.63 | 100.0 | 31.600 | 90.11 |
| 1992q3 | 97.4 | 185.87 | 177.35 | 102.1 | 31.000 | 71.79 |
| 1992q4 | 100.2 | 185.87 | 178.40 | 104.4 | 30.200 | 71.80 |
| 1993q1 | 102.3 | 186.37 | 180.51 | 105.6 | 29.800 | 78.80 |
| 1993q2 | 101.6 | 187.70 | 182.12 | 104.7 | 29.600 | 88.42 |
| 1993q3 | 97.3 | 188.10 | 182.97 | 100.0 | 31.000 | 90.36 |
| 1993q4 | 98.7 | 189.17 | 183.65 | 101.7 | 32.800 | 100.30 |
| 1994q1 | 98.9 | 189.67 | 184.99 | 101.4 | 34.700 | 109.58 |
| 1994q2 | 99.2 | 191.47 | 186.44 | 101.9 | 34.700 | 102.74 |
| 1994q3 | 100.5 | 192.03 | 187.37 | 103.0 | 34.200 | 95.27 |
| 1994q4 | 100.8 | 193.13 | 188.02 | 103.5 | 34.700 | 95.64 |
| 1995q1 | 101.8 | 194.13 | 189.52 | 104.3 | 35.500 | 89.51 |
| 1995q2 | 104.6 | 195.83 | 191.00 | 107.3 | 36.800 | 95.84 |
| 1995q3 | 104.6 | 195.57 | 191.56 | 106.8 | 37.700 | 101.27 |
| 1995q4 | 104.6 | 196.73 | 191.95 | 107.3 | 38.800 | 106.14 |
| 1996q1 | 104.1 | 197.70 | 193.12 | 106.5 | 39.400 | 110.56 |
| 1996q2 | 102.5 | 199.70 | 194.45 | 105.2 | 40.400 | 116.35 |
| 1996q3 | 102.8 | 200.10 | 194.70 | 105.6 | 41.600 | 123.47 |
| 1996q4 | 102.1 | 201.40 | 195.29 | 105.3 | 43.300 | 136.13 |
| 1997q1 | 101.0 | 202.00 | 196.48 | 103.8 | 44.400 | 154.58 |
| 1997q2 | 100.4 | 203.80 | 197.61 | 103.5 | 45.600 | 171.71 |
| 1997q3 | 98.6 | 204.83 | 198.69 | 101.7 | 46.600 | 191.70 |
| 1997q4 | 99.9 | 205.70 | 199.44 | 103.1 | 47.100 | 210.55 |
| 1998q1 | 100.0 | 206.13 | 200.16 | 103.0 | 48.000 | 244.86 |
| 1998q2 | 100.5 | 207.83 | 201.41 | 103.7 | 50.000 | 235.69 |
| 1998q3 | 101.7 | 208.27 | 201.63 | 105.1 | 50.700 | 193.63 |
| 1998q4 | 102.9 | 209.17 | 201.88 | 106.6 | 51.500 | 219.34 |
| 1999q1 | 101.3 | 210.30 | 202.09 | 105.4 | 52.300 | 198.56 |
| 1999q2 | 99.9 | 212.57 | 203.51 | 104.4 | 53.100 | 205.43 |
| 1999q3 | 99.1 | 213.77 | 203.98 | 103.9 | 54.100 | 216.00 |
| 1999q4 | 98.2 | 215.53 | 204.85 | 103.3 | 54.200 | 255.69 |
| 2000q1 | 96.8 | 216.88 | 206.10 | 101.9 | 55.000 | 291.95 |
| 2000q2 | 95.5 | 219.44 | 207.57 | 101.0 | 56.500 | 287.53 |

Table C.2 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Nominal effective krone-rate index | Consumer price index, Denmark | Consumer price index, abroad | Real effective krone-rate index | Price index for sale of one-family houses, | Share price index |
|---|---|---|---|---|---|---|
| | 1980=100 | 1980=100 | 1980=100 | 1980=100 | 2006=100 | End of quarter, 3rd July 1989 = 100 |
| 2000q3 | 95.2 | 219.61 | 208.62 | 100.2 | 57.800 | 334.88 |
| 2000q4 | 94.8 | 221.16 | 209.71 | 100.0 | 58.300 | 313.90 |
| 2001q1 | 97.0 | 221.99 | 210.88 | 102.1 | 59.400 | 294.47 |
| 2001q2 | 96.2 | 225.07 | 213.29 | 101.5 | 60.200 | 314.62 |
| 2001q3 | 97.0 | 224.88 | 213.62 | 102.1 | 60.900 | 255.45 |
| 2001q4 | 97.2 | 225.77 | 213.66 | 102.7 | 60.400 | 272.45 |
| 2002q1 | 96.9 | 227.54 | 214.96 | 102.6 | 61.300 | 278.64 |
| 2002q2 | 97.3 | 230.18 | 216.55 | 103.4 | 62.500 | 245.99 |
| 2002q3 | 98.2 | 230.14 | 216.91 | 104.2 | 62.900 | 192.07 |
| 2002q4 | 98.5 | 231.62 | 217.65 | 104.8 | 62.900 | 199.49 |
| 2003q1 | 100.1 | 233.90 | 219.52 | 106.6 | 63.000 | 186.65 |
| 2003q2 | 101.6 | 235.45 | 220.10 | 108.7 | 64.300 | 214.90 |
| 2003q3 | 101.5 | 234.38 | 220.45 | 107.9 | 65.100 | 238.19 |
| 2003q4 | 101.7 | 234.98 | 221.05 | 108.1 | 65.100 | 244.35 |
| 2004q1 | 102.4 | 236.09 | 222.08 | 108.9 | 66.900 | 258.75 |
| 2004q2 | 101.7 | 238.00 | 223.98 | 108.0 | 69.400 | 267.43 |
| 2004q3 | 101.9 | 237.23 | 224.57 | 107.7 | 71.400 | 281.86 |
| 2004q4 | 102.8 | 238.27 | 225.52 | 108.6 | 72.800 | 286.66 |
| 2005q1 | 102.7 | 239.02 | 226.12 | 108.5 | 75.700 | 316.66 |
| 2005q2 | 101.8 | 242.02 | 228.03 | 108.0 | 80.100 | 343.97 |
| 2005q3 | 101.1 | 242.49 | 229.53 | 106.8 | 84.700 | 370.60 |
| 2005q4 | 100.8 | 243.24 | 230.41 | 106.4 | 89.300 | 393.52 |
| 2006q1 | 100.9 | 243.91 | 230.99 | 106.5 | 94.700 | 395.12 |
| 2006q2 | 101.7 | 246.85 | 233.53 | 107.5 | 100.600 | 371.01 |
| 2006q3 | 101.9 | 246.95 | 234.32 | 107.4 | 103.000 | 403.39 |
| 2006q4 | 102.0 | 247.34 | 234.75 | 107.5 | 102.700 | 441.48 |
| 2007q1 | 102.4 | 248.52 | 235.90 | 107.9 | 104.100 | 466.59 |
| 2007q2 | 103.1 | 250.87 | 238.59 | 108.4 | 105.500 | 483.69 |
| 2007q3 | 103.3 | 249.87 | 239.26 | 107.8 | 105.800 | 499.93 |
| 2007q4 | 104.3 | 252.67 | 241.19 | 109.2 | 103.900 | 464.14 |
| 2008q1 | 105.4 | 256.04 | 243.74 | 110.7 | 102.800 | 428.10 |
| 2008q2 | 106.5 | 259.64 | 247.22 | 111.8 | 103.700 | 424.30 |
| 2008q3 | 105.9 | 260.25 | 249.02 | 110.7 | 100.900 | 351.15 |
| 2008q4 | 105.5 | 260.06 | 247.47 | 110.9 | 93.000 | 247.72 |
| 2009q1 | 107.4 | 260.72 | 245.96 | 113.8 | 87.500 | 228.36 |
| 2009q2 | 107.6 | 262.93 | 247.31 | 114.4 | 87.900 | 290.70 |
| 2009q3 | 107.8 | 262.81 | 247.61 | 114.4 | 88.600 | 335.03 |
| 2009q4 | 108.3 | 263.28 | 248.43 | 114.8 | 88.300 | 336.69 |
| 2010q2 | 106.0 | 266.05 | 249.55 | 113.0 | 88.800 | 383.04 |
| 2010q2 | 103.4 | 268.49 | 251.55 | 110.4 | 90.900 | 393.02 |

Table C.3: Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Broad money stock (M2) | Credit to the domestic non-bank sector extended by resident commercial banks and savings banks | Credit to the domestic non-bank sector extended by resident mortgage banks | Credit to the domestic non-bank sector extended by all resident banks | Bank's write-downs ratio |
|---|---|---|---|---|---|
| | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | Per cent |
| 1948q1 | 8759 | 5690 | 8676 | 14366 | 0.09 |
| 1948q2 | 8297 | 5832 | 8715 | 14546 | 0.09 |
| 1948q3 | 8135 | 6223 | 8814 | 15037 | 0.08 |
| 1948q4 | 8119 | 6440 | 8873 | 15312 | 0.07 |
| 1949q1 | 8519 | 6774 | 8862 | 15636 | 0.05 |
| 1949q2 | 8188 | 6778 | 8910 | 15687 | 0.04 |
| 1949q3 | 8112 | 7009 | 9021 | 16030 | 0.04 |
| 1949q4 | 8326 | 7115 | 9095 | 16210 | 0.04 |
| 1950q1 | 8956 | 7365 | 9101 | 16467 | 0.05 |
| 1950q2 | 8706 | 7478 | 9171 | 16649 | 0.07 |
| 1950q3 | 8553 | 7708 | 9312 | 17020 | 0.08 |
| 1950q4 | 8638 | 7879 | 9422 | 17301 | 0.09 |
| 1951q1 | 9180 | 8210 | 9419 | 17630 | 0.11 |
| 1951q2 | 8843 | 8312 | 9480 | 17792 | 0.11 |
| 1951q3 | 8510 | 8404 | 9611 | 18016 | 0.11 |
| 1951q4 | 8845 | 8450 | 9707 | 18156 | 0.10 |
| 1952q1 | 9696 | 8605 | 9706 | 18310 | 0.07 |
| 1952q2 | 9393 | 8644 | 9771 | 18415 | 0.06 |
| 1952q3 | 9411 | 8682 | 9910 | 18593 | 0.05 |
| 1952q4 | 9574 | 8831 | 10013 | 18844 | 0.04 |
| 1953q1 | 10413 | 9108 | 10029 | 19137 | 0.04 |
| 1953q2 | 10130 | 9196 | 10116 | 19312 | 0.04 |
| 1953q3 | 9817 | 9361 | 10286 | 19648 | 0.05 |
| 1953q4 | 10174 | 9512 | 10426 | 19938 | 0.07 |
| 1954q1 | 10824 | 9744 | 10466 | 20210 | 0.09 |
| 1954q2 | 10662 | 10009 | 10585 | 20594 | 0.11 |
| 1954q3 | 10056 | 10119 | 10799 | 20918 | 0.10 |
| 1954q4 | 10132 | 10214 | 10991 | 21205 | 0.09 |
| 1955q1 | 10771 | 10255 | 11032 | 21287 | 0.06 |
| 1955q2 | 10457 | 10247 | 11157 | 21404 | 0.04 |
| 1955q3 | 10114 | 10283 | 11381 | 21664 | 0.03 |
| 1955q4 | 10515 | 10428 | 11582 | 22009 | 0.02 |
| 1956q1 | 11598 | 10558 | 11615 | 22173 | 0.02 |
| 1956q2 | 11180 | 10673 | 11734 | 22407 | 0.02 |
| 1956q3 | 10847 | 10784 | 11954 | 22738 | 0.02 |
| 1956q4 | 11260 | 11048 | 12145 | 23193 | 0.02 |
| 1957q1 | 12122 | 11410 | 12230 | 23639 | 0.02 |
| 1957q2 | 11683 | 11427 | 12413 | 23840 | 0.02 |
| 1957q3 | 11457 | 11552 | 12713 | 24265 | 0.02 |
| 1957q4 | 11893 | 11741 | 12991 | 24731 | 0.03 |
| 1958q1 | 12930 | 11884 | 13142 | 25027 | 0.03 |
| 1958q2 | 12751 | 12010 | 13418 | 25429 | 0.03 |
| 1958q3 | 12703 | 12102 | 13862 | 25964 | 0.03 |
| 1958q4 | 13701 | 12645 | 14344 | 26990 | 0.03 |
| 1959q1 | 15066 | 13115 | 14725 | 27840 | 0.03 |
| 1959q2 | 14838 | 13696 | 15183 | 28879 | 0.03 |
| 1959q3 | 14690 | 14190 | 15683 | 29873 | 0.04 |
| 1959q4 | 15402 | 14941 | 16077 | 31017 | 0.04 |
| 1960q1 | 16391 | 15651 | 16425 | 32076 | 0.05 |
| 1960q2 | 16112 | 16186 | 16832 | 33018 | 0.06 |
| 1960q3 | 15677 | 16516 | 17440 | 33956 | 0.07 |
| 1960q4 | 16235 | 17117 | 17975 | 35093 | 0.09 |
| 1961q1 | 17918 | 17885 | 18425 | 36310 | 0.11 |
| 1961q2 | 17370 | 18274 | 19045 | 37320 | 0.12 |
| 1961q3 | 17158 | 18448 | 19938 | 38385 | 0.11 |
| 1961q4 | 18029 | 18973 | 20643 | 39617 | 0.10 |
| 1962q1 | 19589 | 19766 | 21234 | 41000 | 0.07 |
| 1962q2 | 19540 | 20072 | 21880 | 41952 | 0.05 |
| 1962q3 | 19002 | 20428 | 22938 | 43366 | 0.03 |
| 1962q4 | 19623 | 21330 | 23963 | 45293 | 0.02 |
| 1963q1 | 21038 | 22046 | 24844 | 46891 | 0.02 |
| 1963q2 | 21295 | 22431 | 25732 | 48163 | 0.02 |
| 1963q3 | 21210 | 22433 | 27110 | 49544 | 0.04 |
| 1963q4 | 22264 | 23063 | 28329 | 51392 | 0.07 |
| 1964q1 | 24264 | 24013 | 29176 | 53189 | 0.10 |
| 1964q2 | 23700 | 25071 | 29977 | 55048 | 0.12 |
| 1964q3 | 23590 | 25577 | 31300 | 56877 | 0.13 |
| 1964q4 | 24939 | 26445 | 32338 | 58784 | 0.12 |
| 1965q1 | 26630 | 27845 | 33163 | 61008 | 0.10 |
| 1965q2 | 26649 | 28254 | 34490 | 62745 | 0.09 |

Table C.3 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Broad money stock (M2) | Credit to the domestic non-bank sector extended by resident commercial banks and savings banks | Credit to the domestic non-bank sector extended by resident mortgage banks | Credit to the domestic non-bank sector extended by all resident banks | Bank's write-downs ratio |
|---|---|---|---|---|---|
| | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | Per cent |
| 1965q3 | 26478 | 28401 | 36391 | 64793 | 0.07 |
| 1965q4 | 27269 | 28964 | 38013 | 66978 | 0.06 |
| 1966q1 | 29602 | 30260 | 38606 | 68866 | 0.05 |
| 1966q2 | 30090 | 31166 | 39585 | 70751 | 0.05 |
| 1966q3 | 29574 | 32079 | 40825 | 72904 | 0.05 |
| 1966q4 | 30744 | 33261 | 42040 | 75300 | 0.06 |
| 1967q1 | 33378 | 35071 | 42750 | 77820 | 0.07 |
| 1967q2 | 33393 | 35634 | 43923 | 79556 | 0.08 |
| 1967q3 | 32778 | 35870 | 45407 | 81277 | 0.08 |
| 1967q4 | 33701 | 36342 | 46854 | 83196 | 0.07 |
| 1968q1 | 36138 | 37806 | 47705 | 85511 | 0.06 |
| 1968q2 | 36839 | 38310 | 49113 | 87423 | 0.05 |
| 1968q3 | 36386 | 38721 | 51348 | 90069 | 0.06 |
| 1968q4 | 38482 | 39517 | 54488 | 94005 | 0.09 |
| 1969q1 | 41714 | 41044 | 57456 | 98500 | 0.12 |
| 1969q2 | 41800 | 42873 | 59863 | 102736 | 0.14 |
| 1969q3 | 40584 | 44387 | 62149 | 106536 | 0.15 |
| 1969q4 | 42519 | 45420 | 64251 | 109671 | 0.15 |
| 1970q1 | 45205 | 46664 | 65676 | 112340 | 0.13 |
| 1970q2 | 44169 | 47238 | 67943 | 115181 | 0.12 |
| 1970q3 | 42740 | 47391 | 70344 | 117734 | 0.11 |
| 1970q4 | 43866 | 48475 | 72286 | 120761 | 0.10 |
| 1971q1 | 46300 | 50326 | 74309 | 124635 | 0.10 |
| 1971q2 | 46549 | 49971 | 77873 | 127844 | 0.10 |
| 1971q3 | 47736 | 49969 | 81222 | 131191 | 0.09 |
| 1971q4 | 48061 | 50626 | 84503 | 135129 | 0.09 |
| 1972q1 | 51805 | 52462 | 87076 | 139538 | 0.09 |
| 1972q2 | 52325 | 53409 | 90605 | 144014 | 0.10 |
| 1972q3 | 51888 | 55094 | 94737 | 149831 | 0.12 |
| 1972q4 | 55293 | 56934 | 99353 | 156287 | 0.14 |
| 1973q1 | 58385 | 60495 | 104274 | 164769 | 0.17 |
| 1973q2 | 59965 | 61809 | 108513 | 170322 | 0.20 |
| 1973q3 | 59568 | 64063 | 113284 | 177347 | 0.22 |
| 1973q4 | 62260 | 65744 | 118304 | 184048 | 0.25 |
| 1974q1 | 64223 | 69942 | 122275 | 192217 | 0.27 |
| 1974q2 | 64522 | 70737 | 126722 | 197459 | 0.28 |
| 1974q3 | 63618 | 70212 | 131543 | 201756 | 0.27 |
| 1974q4 | 67801 | 70405 | 136662 | 207067 | 0.24 |
| 1975q1 | 72187 | 72665 | 140757 | 213422 | 0.19 |
| 1975q2 | 76265 | 71192 | 147007 | 218199 | 0.15 |
| 1975q3 | 76469 | 70669 | 153764 | 224433 | 0.11 |
| 1975q4 | 85090 | 72336 | 160983 | 233319 | 0.09 |
| 1976q1 | 91677 | 77718 | 166718 | 244435 | 0.07 |
| 1976q2 | 93196 | 80379 | 171506 | 251885 | 0.06 |
| 1976q3 | 89699 | 83674 | 177359 | 261032 | 0.05 |
| 1976q4 | 94791 | 84479 | 183499 | 267978 | 0.06 |
| 1977q1 | 99928 | 88196 | 188805 | 277001 | 0.07 |
| 1977q2 | 101770 | 90792 | 193301 | 284094 | 0.08 |
| 1977q3 | 98668 | 92809 | 198269 | 291077 | 0.09 |
| 1977q4 | 104080 | 94469 | 204030 | 298499 | 0.10 |
| 1978q1 | 107423 | 99029 | 207528 | 306557 | 0.12 |
| 1978q2 | 109403 | 100529 | 213470 | 313999 | 0.13 |
| 1978q3 | 104786 | 102147 | 220112 | 322259 | 0.13 |
| 1978q4 | 111054 | 104735 | 226622 | 331357 | 0.13 |
| 1979q1 | 118273 | 107200 | 230430 | 337630 | 0.13 |
| 1979q2 | 119577 | 111802 | 236840 | 348642 | 0.14 |
| 1979q3 | 114740 | 114029 | 244628 | 358657 | 0.17 |
| 1979q4 | 122048 | 115692 | 252164 | 367857 | 0.20 |
| 1980q1 | 128326 | 118474 | 256073 | 374546 | 0.25 |
| 1980q2 | 127708 | 122672 | 261282 | 383954 | 0.29 |
| 1980q3 | 123690 | 122361 | 267515 | 389876 | 0.33 |
| 1980q4 | 131934 | 126431 | 272865 | 399296 | 0.36 |
| 1981q1 | 137565 | 127639 | 275094 | 402733 | 0.38 |
| 1981q2 | 139840 | 135257 | 278981 | 414238 | 0.42 |
| 1981q3 | 135936 | 135812 | 283258 | 419070 | 0.46 |
| 1981q4 | 145127 | 138000 | 286786 | 424786 | 0.51 |
| 1982q1 | 153523 | 142955 | 289194 | 432149 | 0.57 |
| 1982q2 | 155363 | 150615 | 291822 | 442437 | 0.61 |
| 1982q3 | 151976 | 152132 | 295608 | 447740 | 0.62 |
| 1982q4 | 162107 | 153492 | 300386 | 453878 | 0.61 |

Table C.3 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Broad money stock (M2) | Credit to the domestic non-bank sector extended by resident commercial banks and savings banks | Credit to the domestic non-bank sector extended by resident mortgage banks | Credit to the domestic non-bank sector extended by all resident banks | Bank's write-downs ratio |
|---|---|---|---|---|---|
| | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | Per cent |
| 1983q1 | 176398 | 155056 | 305778 | 460834 | 0.57 |
| 1983q2 | 187989 | 161835 | 312599 | 474434 | 0.52 |
| 1983q3 | 187842 | 159347 | 322327 | 481674 | 0.47 |
| 1983q4 | 203282 | 168671 | 330713 | 499384 | 0.40 |
| 1984q1 | 214853 | 175403 | 339465 | 514868 | 0.32 |
| 1984q2 | 221451 | 190678 | 347957 | 538635 | 0.27 |
| 1984q3 | 217521 | 189847 | 358743 | 548590 | 0.26 |
| 1984q4 | 239467 | 194775 | 370526 | 565301 | 0.26 |
| 1985q1 | 241924 | 196536 | 382631 | 579167 | 0.30 |
| 1985q2 | 251347 | 208741 | 397330 | 606071 | 0.31 |
| 1985q3 | 248844 | 204709 | 416326 | 621035 | 0.29 |
| 1985q4 | 277302 | 229665 | 435131 | 664796 | 0.24 |
| 1986q1 | 290309 | 232077 | 453723 | 685800 | 0.16 |
| 1986q2 | 293322 | 255239 | 470520 | 725759 | 0.11 |
| 1986q3 | 278457 | 267099 | 488873 | 755972 | 0.09 |
| 1986q4 | 300318 | 301636 | 506278 | 807914 | 0.10 |
| 1987q1 | 303082 | 304558 | 518942 | 823500 | 0.14 |
| 1987q2 | 312681 | 313286 | 532908 | 846194 | 0.19 |
| 1987q3 | 292380 | 308274 | 553371 | 861645 | 0.24 |
| 1987q4 | 313833 | 330451 | 573485 | 903936 | 0.30 |
| 1988q1 | 307023 | 312582 | 589533 | 902115 | 0.36 |
| 1988q2 | 319247 | 321820 | 601224 | 923044 | 0.39 |
| 1988q3 | 306706 | 313831 | 614555 | 928386 | 0.40 |
| 1988q4 | 324817 | 323941 | 626893 | 950834 | 0.37 |
| 1989q1 | 330663 | 313312 | 637359 | 950671 | 0.32 |
| 1989q2 | 331379 | 326187 | 643522 | 969709 | 0.30 |
| 1989q3 | 322348 | 318975 | 651473 | 970448 | 0.31 |
| 1989q4 | 345280 | 343322 | 657441 | 1000763 | 0.35 |
| 1990q1 | 338930 | 336028 | 666151 | 1002179 | 0.43 |
| 1990q2 | 347616 | 342557 | 672013 | 1014570 | 0.47 |
| 1990q3 | 348781 | 335959 | 684742 | 1020701 | 0.47 |
| 1990q4 | 367378 | 361040 | 687590 | 1048630 | 0.45 |
| 1991q1 | 365366 | 346201 | 694274 | 1040475 | 0.39 |
| 1991q2 | 387245 | 357781 | 701192 | 1058973 | 0.39 |
| 1991q3 | 378776 | 339982 | 703996 | 1043978 | 0.65 |
| 1991q4 | 381706 | 359010 | 707128 | 1066138 | 0.65 |
| 1992q1 | 376327 | 353583 | 709304 | 1062887 | 0.48 |
| 1992q2 | 385696 | 358383 | 711569 | 1069952 | 0.48 |
| 1992q3 | 385215 | 348078 | 714997 | 1063075 | 0.80 |
| 1992q4 | 376362 | 347157 | 717292 | 1064449 | 0.80 |
| 1993q1 | 377080 | 338163 | 721437 | 1059600 | 0.69 |
| 1993q2 | 396495 | 337405 | 724594 | 1061999 | 0.69 |
| 1993q3 | 409484 | 333017 | 734008 | 1067025 | 0.55 |
| 1993q4 | 418891 | 321958 | 755063 | 1077021 | 0.55 |
| 1994q1 | 423158 | 316770 | 773933 | 1090703 | 0.38 |
| 1994q2 | 420930 | 319374 | 772014 | 1091388 | 0.38 |
| 1994q3 | 410484 | 305944 | 766526 | 1072470 | 0.30 |
| 1994q4 | 399189 | 301740 | 767967 | 1069707 | 0.30 |
| 1995q1 | 401502 | 301664 | 773306 | 1074970 | 0.23 |
| 1995q2 | 409533 | 308613 | 777722 | 1086335 | 0.23 |
| 1995q3 | 413649 | 305638 | 783091 | 1088729 | 0.25 |
| 1995q4 | 412566 | 311876 | 796982 | 1108858 | 0.25 |
| 1996q1 | 422579 | 319120 | 813695 | 1132815 | 0.17 |
| 1996q2 | 433655 | 327268 | 820774 | 1148042 | 0.17 |
| 1996q3 | 449093 | 324900 | 839471 | 1164371 | 0.11 |
| 1996q4 | 453906 | 329699 | 845358 | 1175057 | 0.11 |
| 1997q1 | 456826 | 345771 | 855909 | 1201680 | 0.08 |
| 1997q2 | 463221 | 355023 | 870602 | 1225625 | 0.08 |
| 1997q3 | 467026 | 355139 | 890749 | 1245888 | 0.09 |
| 1997q4 | 481039 | 359380 | 908862 | 1268242 | 0.09 |
| 1998q1 | 476040 | 369665 | 932549 | 1302214 | 0.08 |
| 1998q2 | 486319 | 387977 | 954782 | 1342759 | 0.08 |
| 1998q3 | 510983 | 407105 | 972485 | 1379590 | 0.08 |
| 1998q4 | 500924 | 407808 | 987462 | 1395270 | 0.08 |
| 1999q1 | 508971 | 424833 | 1009942 | 1434775 | 0.06 |
| 1999q2 | 518021 | 438659 | 1028439 | 1467098 | 0.06 |
| 1999q3 | 526609 | 432297 | 1045634 | 1477931 | 0.08 |
| 1999q4 | 519143 | 434895 | 1050699 | 1485594 | 0.08 |
| 2000q1 | 527992 | 497973 | 1063035 | 1561008 | 0.07 |
| 2000q2 | 534628 | 534402 | 1077205 | 1611607 | 0.07 |

Table C.3 (continued): Quarterly key macroeconomic indicators, non-seasonally adjusted, 1948q1-2010q2

| Quarter | Broad money stock (M2) | Credit to the domestic non-bank sector extended by resident commercial banks and savings banks | Credit to the domestic non-bank sector extended by resident mortgage banks | Credit to the domestic non-bank sector extended by all resident banks | Bank's write-downs ratio |
|---|---|---|---|---|---|
| | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | End of quarter, million kroner | Per cent |
| 2000q3 | 511738 | 519517 | 1083102 | 1602619 | 0.07 |
| 2000q4 | 495233 | 526224 | 1095873 | 1622097 | 0.07 |
| 2001q1 | 495912 | 551958 | 1115611 | 1667569 | 0.10 |
| 2001q2 | 504216 | 568684 | 1131920 | 1700604 | 0.10 |
| 2001q3 | 527670 | 578308 | 1153289 | 1731597 | 0.11 |
| 2001q4 | 527377 | 588011 | 1191844 | 1779855 | 0.11 |
| 2002q1 | 526555 | 596647 | 1209207 | 1805854 | 0.10 |
| 2002q2 | 544456 | 606866 | 1231398 | 1838264 | 0.10 |
| 2002q3 | 570283 | 598289 | 1268632 | 1866921 | 0.07 |
| 2002q4 | 559292 | 599235 | 1285139 | 1884374 | 0.07 |
| 2003q1 | 574829 | 655399 | 1322593 | 1977992 | 0.10 |
| 2003q2 | 599042 | 663357 | 1352003 | 2015360 | 0.10 |
| 2003q3 | 605811 | 656771 | 1376082 | 2032853 | 0.09 |
| 2003q4 | 600513 | 662944 | 1394550 | 2057494 | 0.09 |
| 2004q1 | 637179 | 691738 | 1426629 | 2118367 | 0.05 |
| 2004q2 | 653465 | 720409 | 1455051 | 2175460 | 0.05 |
| 2004q3 | 670347 | 723651 | 1472136 | 2195787 | 0.00 |
| 2004q4 | 676715 | 754760 | 1489948 | 2244708 | 0.00 |
| 2005q1 | 697766 | 799371 | 1529586 | 2328957 | 0.00 |
| 2005q2 | 763535 | 859415 | 1579089 | 2438504 | 0.00 |
| 2005q3 | 779694 | 878575 | 1629910 | 2508485 | -0.02 |
| 2005q4 | 775991 | 920088 | 1664379 | 2584467 | -0.02 |
| 2006q1 | 815132 | 971040 | 1709157 | 2680197 | -0.02 |
| 2006q2 | 839990 | 1030265 | 1753725 | 2783990 | -0.02 |
| 2006q3 | 842185 | 1052858 | 1799246 | 2852104 | -0.03 |
| 2006q4 | 860166 | 1121922 | 1834777 | 2956699 | -0.03 |
| 2007q1 | 910330 | 1181458 | 1875052 | 3056510 | -0.01 |
| 2007q2 | 932610 | 1222089 | 1920876 | 3142965 | -0.01 |
| 2007q3 | 954543 | 1249075 | 1967389 | 3216464 | 0.00 |
| 2007q4 | 972764 | 1333638 | 2015527 | 3349165 | 0.01 |
| 2008q1 | 1004802 | 1374087 | 2057954 | 3432041 | 0.11 |
| 2008q2 | 1001272 | 1423491 | 2102403 | 3525894 | 0.11 |
| 2008q3 | 992341 | 1438650 | 2136823 | 3575473 | 0.12 |
| 2008q4 | 1059977 | 1546256 | 2164613 | 3710869 | 0.67 |
| 2009q1 | 1055207 | 1506972 | 2202652 | 3709624 | 0.50 |
| 2009q2 | 1045830 | 1462125 | 2236800 | 3698925 | 0.50 |
| 2009q3 | 1031798 | 1391200 | 2265600 | 3656800 | 0.59 |
| 2009q4 | 1023080 | 1359100 | 2278800 | 3637900 | 0.59 |
| 2010q1 | 1013400 | 1347200 | 2293300 | 3640500 | 0.31 |
| 2010q2 | 1013100 | 1388300 | 2315200 | 3703500 | 0.31 |

## Annex D: VAR models estimated on the basis of annual data 1948-2009

This annex illustrates the response to a one-standard-error structural shock to the discount rate obtained via an estimation of the three VAR models from section 6 on annual data 1948-2009.

The annual data has been derived from the quarterly data sets presented in section 3 and 4. The annual data for real GDP and the bank's write-down ratio refer to the sum of the quarterly data within the year. The annual data for the CPI, the discount rate, the yield on long-term central-government bonds and for house prices refer to the annual averages of the quarterly data within the year. For the rest of the variables, the annual data are equal to the observation in the fourth quarter of the year.

**Table 5.A: Specifications of three VAR models. Estimated on the basis of annual data 1948-2009**

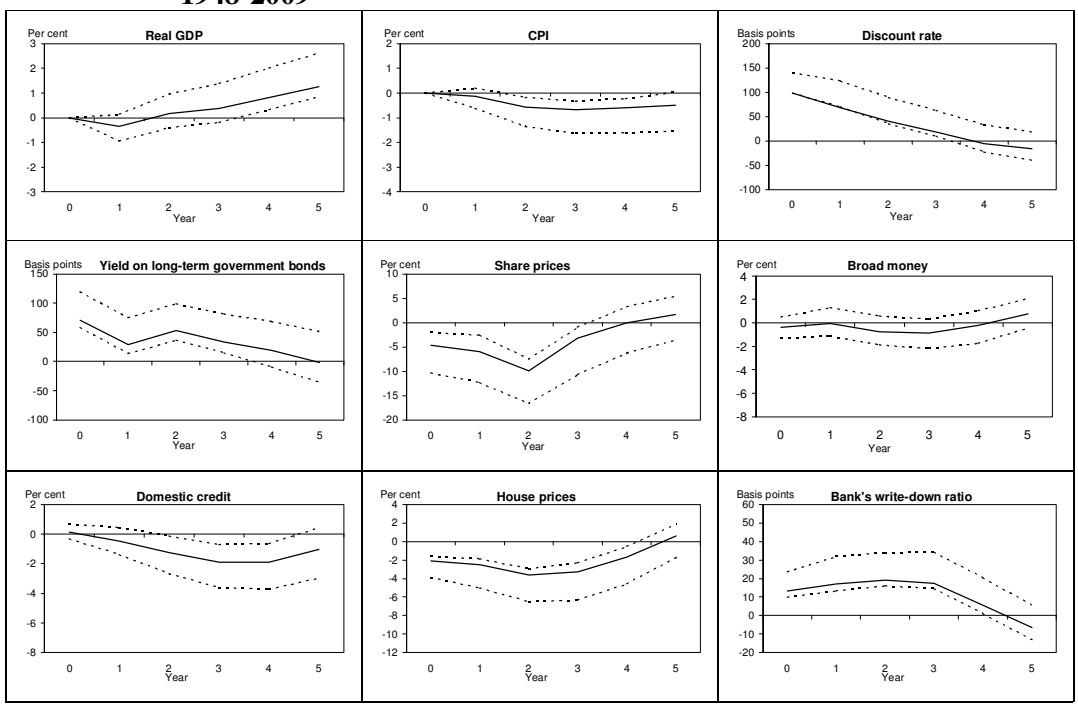
| Model | L (Levels) | LA (Levels, Alternative ordering) | D (Differences) |
|---|---|---|---|
| Endogenous variables listed in order | 1. Real GDP (log-level)<br>2. CPI (log-level)<br>3. Discount rate (level)<br>4. Yield on long-term central-government bonds (level)<br>5. Share prices (log-level)<br>6. Broad money (log-level)<br>7. Domestic credit (log-level)<br>8. House prices (log-level)<br>9. Bank's write-down ratio (level) | 1. Discount rate (level)<br>2. Yield on long-term central-government bonds (level)<br>3. Share prices (log-level)<br>4. Broad money (log-level)<br>5. Domestic credit (log-level)<br>6. House prices (log-level)<br>7. Bank's write-down ratio (level)<br>8. Real GDP (log-level)<br>9. CPI (log-level) | 1. Real GDP (dlog_1)<br>2. CPI (dlog_1)<br>3. Discount rate (d_1)<br>4. Yield on long-term central-government bonds (d_1)<br>5. Share prices (dlog_1)<br>6. Broad money (dlog_1)<br>7. Domestic credit (dlog_1)<br>8. House prices (dlog_1)<br>9. Bank's write-down ratio (d_1) |
| Deterministic terms | Constant terms<br>Linear time trends | Constant terms<br>Linear time trends | Constant terms |
| Optimal endogenous lags from AIC (a) | 5 | 5 | 5 |
| Chosen number of endogenous lags | 2 | 2 | 1 |
| Vector F-tests for auto-correlation (p-value) (b) | 0.0238 | 0.0238 | 0.2786 |

General notes: d_1 denotes first differences whereas dlog_1 denotes first logarithmic differences.
(a) Among models with a maximum of 10 endogenous lags.
(b) Up to the chosen number of lags in the models. Null hypothesis is no autocorrelation.

Due to the more limited degrees of freedom in the annual data sets, the models have been estimated with fewer lags of the endogenous variables than in the quarterly models, cf. table 5.A. However, in all the annual models there are no signs of autocorrelation in the residuals at a one per cent significance level measured by vector diagnostics for autocorrelation.

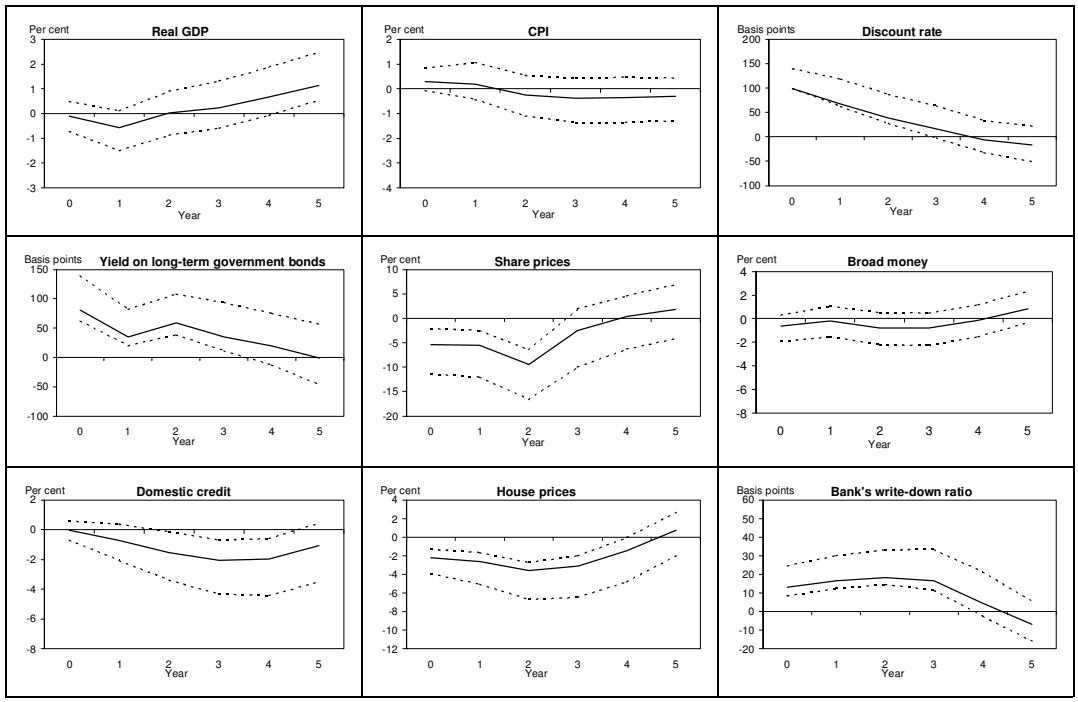
The responses to a one standard error shock to the discount rate in the three annual models are shown in the Charts below.

**Chart 22.A: Responses to a one standard error shock to the discount rate - Model L (Levels). Estimated on the basis of annual observations 1948-2009**



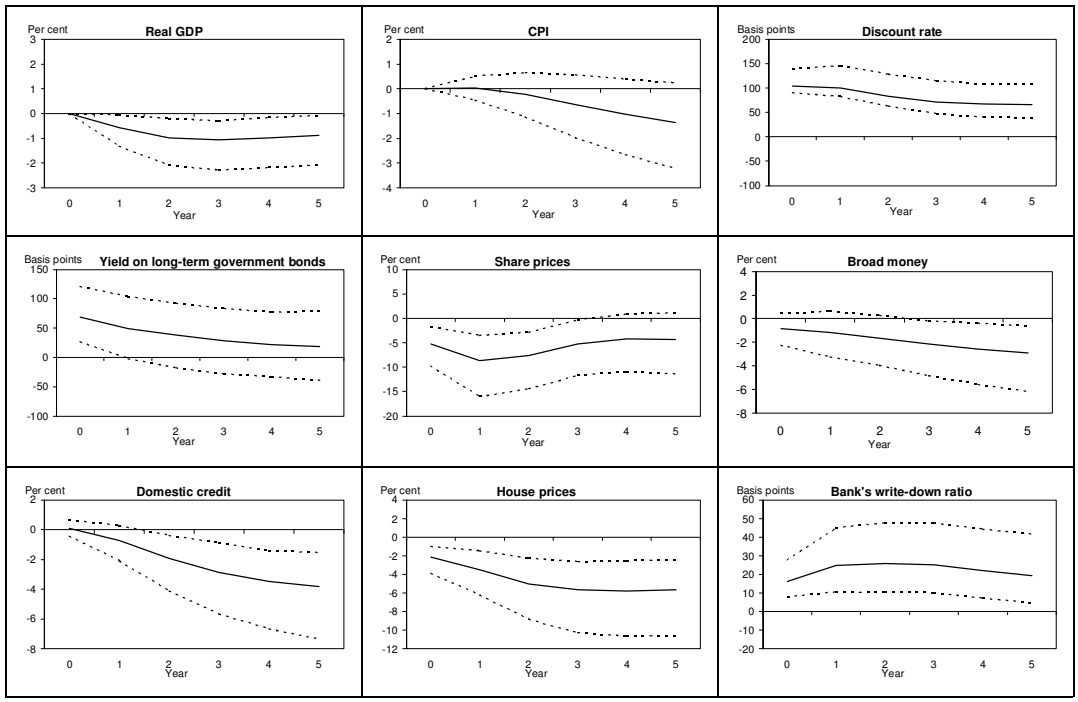

General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Annual data 1948-2009.

**Chart 23.A: Responses to a one standard error shock to the discount rate - Model LA (Levels, Alternative ordering). Estimated on the basis of annual observations 1948-2009**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The orthogonalised impulse-response functions show deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show derivations from the baseline in basis points. Sample: Annual data 1948-2009.

**Chart 24.A: Accumulated responses to a one standard error shock to the discount rate - Model D (Differences). Estimated on the basis of annual observations 1948-2009**




General notes: Dashed lines are 95 per cent bootstrapped confidence intervals calculated using 500 repetitions of Hall's percentile method. The accumulated orthogonalised impulse-response functions show accumulated deviations from the underlying baseline in per cent, except for interest rates and the bank's write-down ratio, which show accumulated derivations from the baseline in basis points. Sample: Annual data 1948-2009.