



DANMARKS NATIONALBANK WORKING PAPERS

2007 • 47

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Danmarks Nationalbank

**Financial Liberalisation and Credit
Dynamics in Denmark in the Post-
World War II Period**

October 2007

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ISSN (trykt/print) 1602-1185

ISSN (online) 1602-1193

Financial Liberalisation and Credit Dynamics in Denmark in the Post-World War II Period¹

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October 2007

¹ The author wishes to thank colleagues from Danmarks Nationalbank for useful comments on preliminary versions of this paper. The author alone is responsible for any remaining errors.

Abstract

Long-span time series on credit by institutional sectors and industries are not readily available in Denmark. The paper constructs annual time series for credit to Danish residents by sector and industry 1951-2005 and explores the trends and cycles in credit during the past five decades.

There seems to have been a structural shift in the relationship between growth in real credit and economic activity around 1980 that might be related to the development in the monetary and financial system broadly defined. In the post-1980 period characterised by increased influence from market forces due to financial liberalisation and internationalisation the swings in real credit growth have been very large relative to the economic growth compared to the pre-1980 period where credit rationing and exchange controls served as important economic-policy instruments.

The credit expansion during the last five decades has caused an upward trend in loan-to-value ratios. However, throughout the entire period the macro level of non-financial sector indebtedness relative to the stock of real assets and net financial assets has been fairly low, even after the house price decline during the late 1980s and early 1990s. The process of financial liberalisation in Denmark has therefore been relatively smooth and has not raised any concern regarding financial stability seen from a macroeconomic point of view.

There seems to have been a shift over time in the short-term cyclical behaviour of commercial credit to the various industries. Real credit to agriculture, industry and services were contemporaneous with private sector real GDP in the pre-1980 period but has lagged the business cycle with one year in the post-1980 period. This might reflect the more restricted access to credit in the pre-1980 period, which gave firms an incentive to raise loans at an early stage of the business cycle in order to be sure to have command over the funding necessary for their planned investments. Another possible explanation could be the increased significance of commercial and industrial foundations in the Danish economy. Foundations might be seen as “patient owners” without an urgent need for return on equity. In step with the increased capital accumulation in those foundations it might therefore have been possible for Danish firms to finance larger shares of their fixed investments in the initial stages of an upturn with own funds from retained earnings rather than loans from domestic and foreign credit institutes.

Key words: Bank-lending data, credit growth, financial liberalisation, financial stability, credit dynamics, business cycles, band-pass filter.

JEL Classification: C82; E51; G21; N24.

Resumé (Danish summary)

Lange tidsserier over udlån fordelt på institutionelle sektorer og brancher er ikke umiddelbart tilgængelige i Danmark. I papiret opstilles årlige tidsserier for udlån til danske residerende fordelt på sektor og branche for perioden 1951-2005. Endvidere undersøges de udviklingstendenser og konjunkturbevægelser, som har karakteriseret kreditgivningen gennem de seneste halvtreds år.

Der ser ud til at være indtruffet et strukturelt skift i forholdet mellem realvækst i udlån og økonomisk aktivitet omkring 1980, som muligvis har sammenhæng med den generelle udvikling i det monetære og finansielle system. Perioden siden 1980, der har været karakteriseret ved øget markedsorientering som følge af liberalisering og internationalisering af den finansielle sektor, har været kendetegnet ved meget store udsving i den reale udlånsvækst i forhold til den økonomiske vækst sammenlignet med perioden før 1980, hvor kreditrationering og valutakontrol var centrale instrumenter i den økonomiske politik.

Krediteksponeringen de seneste fem årtier har medført øgede belåningsgrader. Den ikke-finansielle sektors gæld har dog gennem hele perioden udgjort en forholdsvis begrænset andel af værdien af de reale aktiver og finansielle nettoaktiver, selv efter boligprisfaldet i slutningen af 1980'erne og begyndelsen af 1990'erne. Den finansielle liberalisering i Danmark er derfor forløbet relativt gnidningsfrit og har ikke givet anledning til bekymring for den finansielle stabilitet set fra et makroøkonomisk synspunkt.

Der synes at være indtruffet et skift over tid i de kortsigtede konjunkturbevægelser i udlånet til forskellige erhverv. Bevægelserne i reale udlån til landbrug, industri og tjenesteydende erhverv var sammenfaldende med bevægelsen i den reale bruttofaktorindkomst i den private sektor i perioden før 1980 men har lagget konjunkturcyklen med omkring 1 år i perioden efter 1980. Dette afspejler muligvis den mere restriktive adgang til kredit i perioden før 1980, som gav virksomhederne et incitament til at låne på et tidlig stadie i konjunkturcyklen for at være sikker på at råde over de nødvendige midler finansiering af planlagte investeringer. En anden mulig forklaring er den stigende betydning af erhvervsdrivende fonde i dansk erhvervsliv. Erhvervsdrivende fonde kan betragtes som en "tålmodig ejerkreds", der ikke har et akut behov for afkast af deres ejerandele. I takt med formuevæksten i disse fonde har det formentlig været muligt for virksomhederne at finansiere en større andel af deres faste bruttoinvesteringer i begyndelsen af et konjunkturopsving via tilbageholdt indtjening frem for lån fra kreditinstitutter i ind- og udland.

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1. Introduction

During the last decade or so, the increased focus on financial stability among central banks around the world and the transition from a centrally-planned to a market-based economy in Central and Eastern European countries have acted as catalyst for research in credit dynamics in many countries. The period has also seen a renewed research interest in long-span studies on financial liberalisation, lending booms and financial globalisation in order to gain a deeper understanding of the current economic development trends and see whether any lessons of relevance for contemporary economic policy can be learnt.

Long-span time series on credit by institutional sectors and industries are not readily available in Denmark and many other countries. Empirical studies on trends and cycles in credit growth have therefore often to rely on either very aggregated time series or more detailed data sets covering only the most recent decades. A general concern regarding the robustness of empirical results based on aggregated credit data might occur due to a possible heterogeneity in both the short-term as well as the long-term behaviour of credit to different sectors and industries. With more disaggregated data sets such heterogeneity issues can be considered. However, when only shorter time-span of data are available one will not be able to analyse the cross-sector and cross-industry dimension in credit dynamics under different monetary regimes and macroeconomic environments that might be of importance to the way monetary transmission or potential financial-system instability works.

The present paper constructs annual time series data for credit extended by domestic banks and savings banks, domestic mortgage-credit institutions and foreign banks to respectively Danish firms and private individuals in the period 1951-2005. Credit from domestic commercial banks and savings banks is furthermore broken down by main industry (agriculture, industry and services). On basis of this new data set the trends and cycles in credit by sector and industry during the past five decades are explored. It has been a period in Danish economic history characterised by a transition from a regulated financial sector to a market-based financial system with free cross-border movements of capital.

It is not the ambition of the paper to formally model the credit development but simply to uncover some stylised facts and empirical regularities that have characterised credit to Danish firms and private individuals during the past half of a century. However, some more eclectic interpretations and suggestions on the driving economic forces will be offered.

The structure of the paper is the following: Section 2 contains a brief outline of the monetary system in Denmark and the macroeconomic development since 1951. Section 3 describes the main sources and methods used for the construction of the data set on credit by sector and industry for Denmark 1951-2005. Furthermore, some of the more conceptual issues related to the data sets are elaborated. An analysis of the main trends in domestic and

foreign credit to Danish firms and private individuals is offered in section 4 and 5 followed by an analysis of the short-term cyclical correlation pattern between credit and output using band-pass filters in section 6. Finally, section 7 indicates some areas for further research. Sources and compilation methods used to construct the data sets applied in the paper is detailed in appendix A followed by a listing of all time series data in appendix B.

2. The monetary and financial system in Denmark since 1951: From credit rationing and exchange controls to liberal financial markets²

The early post-war years were still characterised by the excess liquidity of the war reflecting the German occupation forces' expenditures in Denmark during the years 1940-1945 compulsorily financed via German accounts at Danmarks Nationalbank (the central bank of Denmark). However, around 1950 the excess liquidity had been eliminated due to tight fiscal policy (including a one-off tax in 1946 on wealth accumulation during the war) and an increased transaction level. The year 1951 seems therefore a suitable starting point for a study of the post-World War II credit development in Denmark.

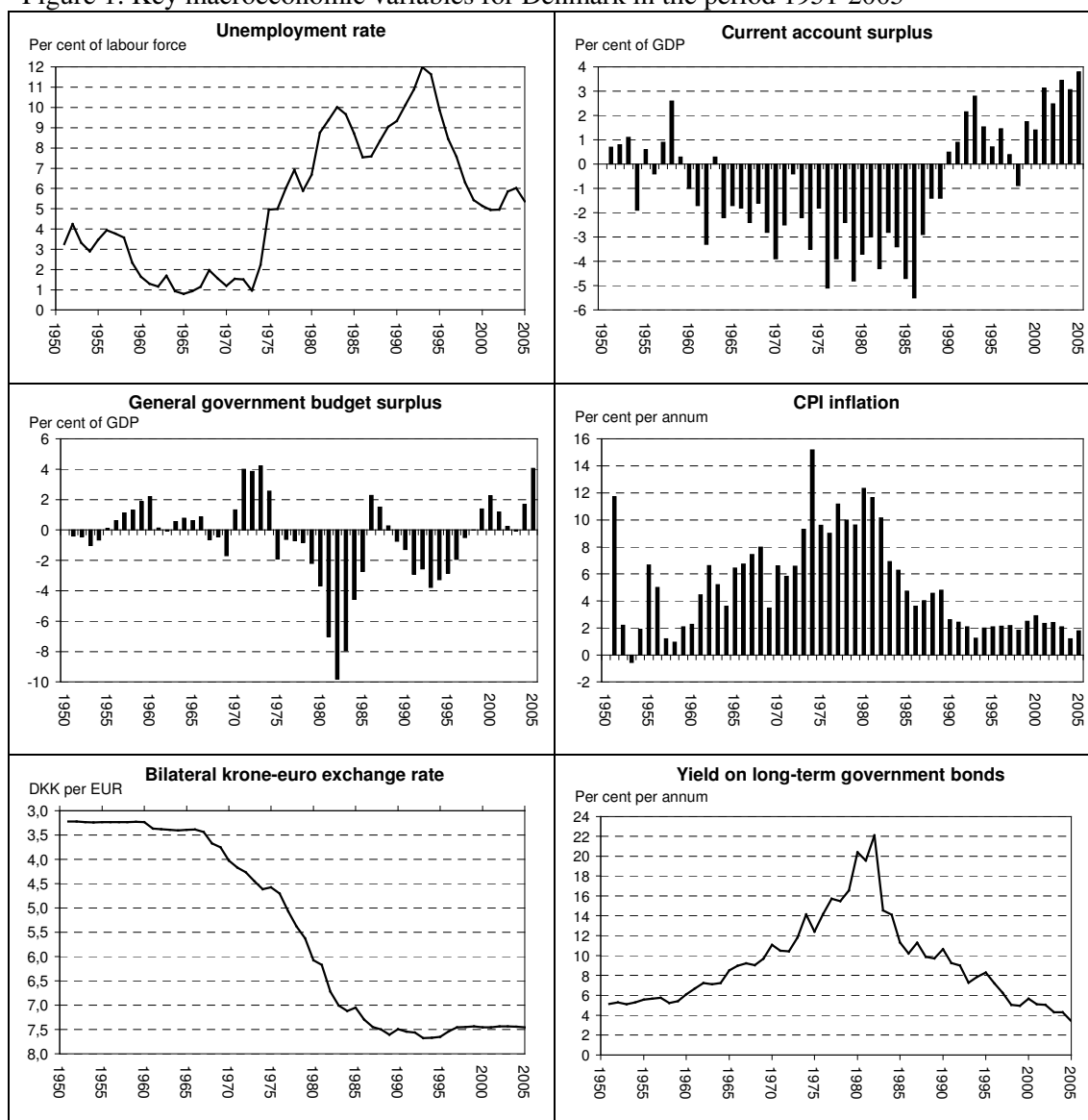
During the 1950s the Danish business sector were given access to obtain commercial credits related to imports and exports of goods and services, but prior to restoration of current-account convertibility of the Danish krone in 1958 capital-account transactions were regulated tightly. Since 1946 Denmark had participated in the Bretton Woods fixed-exchange-rate system. Despite extensive capital controls the modest amount of foreign exchange reserves coupled with a limited access to foreign borrowing resulted *de facto* in a low degree of monetary autonomy in the 1950s. The Nationalbank intended to follow a simple monetary rule – laid out in the so-called letter agreement with the central government in 1951 – stating that a reduction in the level of foreign exchange reserves should be reflected in a reduction of the monetary base. Furthermore, as a general principle the central government's long-term lending to housing purposes³ should be matched by the sale of government bonds. Until the early 1960s the Nationalbank's open market operations were therefore rather modest. From

² For a more thorough account on monetary policy in Denmark during the post-World War II period, cf. Hoffmeyer & Olsen (1968), Thygesen (1971), Blomgren-Hansen (1977), Det Økonomiske Råd. Formandskabet (1985), Hoffmeyer (1993), Mikkelsen (1993) and Danmarks Nationalbank (2003). Denmark's exchange-rate policy and the application of exchange controls is detailed in Abildgren (2004, 2005b). The development in interest-rates is covered by Abildgren (2005a), the financial sector by Abildgren (2006b) and the fiscal-policy regime by Abildgren (2006a). The general economic development in the Danish economy in the post-World War period is covered by e.g. Johansen (1987), Pedersen (1996) and Økonomiministeriet (1997).

³ An arrangement with cheap (i.e. low interest rates and small instalments) government long-term third-mortgage loans for housing purposes within a certain quota of flats had been established in 1946. The arrangement ceased in 1959 when a number of Mortgage funds – self-governing institutions that granted loans for housing purposes against third mortgage – were established.

the early 1950s and until the first half of the 1970s the Nationalbank was involved in various exports financing schemes, but they never reached any large amounts.⁴

Figure 1: Key macroeconomic variables for Denmark in the period 1951-2005



Source: See appendix A.

At the end of the 1950s the scope for Danish foreign borrowing improved significantly and the main focus point of monetary policy in the 1960s was to moderate the tendency to rising interest rates that followed from strong economic growth, a low level of unemployment and increased inflation, cf. figure 1. In 1961, short-term bank loans for the financing of imports and exports were liberalised and in 1968 non-financial Danish firms were granted permission to take out financial loans abroad within certain maturity and size limits. However, most other

⁴ The Nationalbank's role in export financing in the post World War II period is covered by Dalggaard (2000).

private capital account transactions to and from Denmark still required permission from the Nationalbank during the Bretton Woods period. The local government's access to foreign borrowing was also suspended in the years 1964-1966 and thereafter subject to limitations.

In the 1960s the Nationalbank made use of interventions in the market for mortgage-credit bonds in order to influence the long-term bond yields. Furthermore, in the years 1965-1971 loan offers from the mortgage-credit institutes were subject to a quota system imposed by the monetary authorities after negotiations with the Mortgage Credit Board.⁵ As a supplement to its discount policy and "open mouth operations" Danmarks Nationalbank in the years 1965-1971 also made use of deposits agreements⁶ with the organisations of commercial banks and savings banks as means of regulating bank lending.⁷

After a currency crisis in the first half of 1969 the level of foreign exchange reserves reached a critical minimum and the monetary policy had to become more oriented towards external objectives – maintaining the value of the krone and an adequate level of foreign exchange reserves in a situation with a permanent balance-of-payments deficit, cf. figure 1. In principle, a fixed exchange-rate policy was pursued – from 1972 within the European Exchange Rate Co-operation – but frequent devaluations of the Danish krone occurred up to the early 1980s. 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 inflation and a widening of the long-term interest spread between Denmark and its main trading partners. Furthermore, unemployment increased rapidly and a sizeable deficit of the government budget developed.

In 1969, the Nationalbank issued guidelines for the amount of lending commitments extended by the banking sector, and in 1970 a direct ceiling on lending commitments from individual commercial banks and savings banks was imposed. At the beginning the credit ceiling covered only around 20 major commercial banks (with a market share of around 85-90 per cent of the total lending by commercial banks) and 50 major savings banks (covering around 80 per cent of the total lending by savings banks). However, in 1973 the credit ceiling was extended to cover most commercial banks and savings banks. The access to so-called financial loans abroad was tightened in 1973 and at the same time initiatives were taken in

⁵ Since the Mortgage Credit Board accepted to enter into an agreement with the Nationalbank on a quota system the ongoing work on draft legislation was cancelled in mid-1965.

⁶ The agreements implied that a certain share of the growth in the bank's deposit liabilities and 100 per cent of an increase in the bank's net foreign liabilities should be placed on a special account with Danmarks Nationalbank at below market interest rates. However, the banks could also fulfil their obligations by placements abroad or in certain domestic bonds as well. For the individual banks fulfilment of the agreement was a condition for access to the Nationalbank's monetary-policy instruments.

⁷ Danmarks Nationalbank had in 1962 made an attempt to get reserve requirements included within its arsenal of monetary-policy instruments but the proposal was rejected by the government in early 1963. It was part of the deposit agreements from 1965 that the Nationalbank would not take any new initiatives to get legal basis for a reserve requirement system, cf. page 74 in Mikkelsen (1993).

order to limit the local government's foreign borrowing. In 1970 a major mortgage-credit reform had been implemented implying a reduction in the maturity of loans for owner-occupied dwellings and more restricted access to raise mortgage loans against free mortgageable value. During the 1970s the Mortgage Credit Act was amended several times where the terms of the mortgage-credit loans were tightened in an attempt to limit the lending activities of the mortgage-credit institutes. Furthermore, in 1975 Danmarks Nationalbank and the Mortgage Credit Board entered into an agreement on a ceiling of the mortgage-credit institutes total loan offers. In 1979 the lending activity of insurance companies and pension funds also became subject to regulation.

Throughout the 1960s and early 1970s the central government's budgets were generally in surplus and there were ample credit facilities available to banks at Danmarks Nationalbank. The development of significant deficits on the central government finances in the mid-1970s called for new instruments in monetary policy implementation. The former rather liberal access for banks to obtain monetary-policy loans from the Nationalbank against securities as collateral or through the rediscounting of bills of exchange was in 1975 replaced with a system of borrowing limits at ascending interest rate supplemented by interventions in the money market by the Nationalbank. In 1977 the Nationalbank also introduced a deposit system where the banks within certain limits and for short periods could place surplus liquidity in interest-bearing sight deposits. Furthermore, the Nationalbank and the central government reached an informal understanding according to which the huge liquidity effects of the central government's budget deficits should as far as possible be neutralised by open-market sales of government bonds by the Nationalbank on behalf of the Treasury in order to avoid monetary financing of the budget deficit.

During the second half of the 1970s the policy of credit rationing gradually lost its significance, partly due to a shift in credit demand towards other sources (mainly foreign financing and the "grey" market for private mortgage deeds). The post-1980 period has been characterised by increased liberalisation of international capital movements as well as deregulation and internationalisation of the domestic financial sector.

The soft peg of the Danish krone of the 1970s within the European exchange-rate co-operation was in the early 1980s replaced by a hard peg vis-à-vis the D-mark (and later the euro). The switch to a fixed exchange rate was followed by a transition to a system with free cross-border capital movements. The ceiling on financial loans was gradually increased during the 1970s and early 1980s and removed altogether in 1983. The last restrictions on capital account credit-transactions in Denmark – related to loans in kroner to residents from Danish banks' foreign units and private individuals' loans abroad – were removed in 1988.

The quantitative elements in monetary-policy implementation were also substantially reduced in the first half of the 1980s. The ceilings on domestic bank lending were dismantled in 1980 and the ceiling of the mortgage-credit institutes loan offers was gradually lifted during the late 1970s and early 1980s. Furthermore, the regulation of the lending activity of insurance companies and pension funds was abolished in 1982. In the first half of the 1980s the Nationalbank still aimed at influencing the growth in bank lending by curtailing the borrowing facilities at the Nationalbank of banks with strong lending growth. However, the private business sector increasingly resorted to borrowing abroad, and the Nationalbank did not control the banks' bond purchases. During the second half of the 1980s and early 1990s monetary policy implementation became therefore gradually more market-oriented with focus on managing the short-term interest rate via standing facilities and operations in the money market. During the 1980's the terms and conditions for mortgage-credit loans stated in the Mortgage Credit Act were still occasionally used as a tool in the macroeconomic stabilisation policy, but the last couple of decades or so has witnessed a gradual easing of the access to raise mortgage loans against free mortgageable value.

The post-1980 period has also witnessed significant improvements in the macroeconomic performance of the Danish economy, cf. figure 1. In the early 1980s fiscal policy became oriented towards consolidation and medium-term stability, and the automatic inflation indexation of wages was abolished. The increased credibility of the Danish fixed-exchange-rate policy and the international decline of inflation rates during the 1980s and the beginning of the 1990s caused a marked downward trend in both inflation and nominal interest rates in Denmark. The long-term interest spread between Denmark and Germany decreased rapidly from more than 13 per cent in 1982 to less than 1 per cent in 1991 and 0.02 per cent in 2005, and since the early 1990s the level of inflation in Denmark has roughly been equal to that of Germany and since 1999 the euro area. Furthermore, the current account of the balance of payments turned into surplus in 1990 (after more than 25 years with a deficit) and especially since the early 1990s there has been focus on the importance of flexible labour-market structures. The economic incentive structures have also been improved through several tax reforms that have lowered the marginal tax rates and in particular the maximum tax value of interest rate deductions⁸.

⁸ In 1986 the maximum tax value of interest rate deductions was up to 73 per cent which implied negative real interest rates after tax. By the so-called Tax Reform 1985, the maximum tax value of interest rate deductions was lowered to around 52 per cent after a transitional period. A further reduction was included in the Tax Reform 1993, which gradually lowered the tax value to 46 per cent in 1998. Finally, the so-called Whitsun Package of economic measures in 1998 implied a further gradual reduction to 33 per cent in 2002, cf. Gaard & Kieler (2005).

3. Credit data by sector and industry 1951-2005 – Sources and compilation methods

Statistics Denmark has published figures on the stock of domestic lending extended by resident commercial banks and savings banks covering the period since 1978. The lending figures from Statistics Denmark are broken down by sector (commercial credit and credit to private individuals) with a further drill-down of commercial lending by industry. The central bank of Denmark, Danmarks Nationalbank, published stock data on domestic lending by sector and industry in the period 1951-1977 extended by commercial banks, but no official statistics regarding domestic lending by sector and industry from savings banks is available prior to 1978. The pre-1978 data on credit by sector and industry from savings banks has therefore been estimated on the basis of loan type supplemented with information from the special surveys covering loans from savings banks by sector and industry in 1955 and 1959 found in Winding (1958) and Hoffmeyer (1960).

The Nationalbank has published stock statistics on loans extended by resident mortgage-credit institutes distributed by type of collateral for the period since 1993. The type of collateral is used as the basis for the sector classification. Prior to 1992 the stock figures presented are based on accumulated flow of funds. In the period 1972-1992 flow statistics on mortgage-credit loans by type of collateral is available from Danmarks Nationalbank. Prior to 1972, the amount of total lending from mortgage-credit institutes are based on accounting statistics, and the distribution between commercial lending and private lending are based on the development in the property values by category in the national-wealth calculations presented in various issues of *Finanstidende*, cf. the list of references.

The data on commercial lending from foreign banks are based on the statistics on Denmark's international investment position and on the financial items in the balance of payment statistics published by Statistics Denmark and Danmarks Nationalbank. For the period since 1993 stock figures are directly available. Prior to 1993 the stock figures have been compiled on an accumulated flow-of-funds basis.

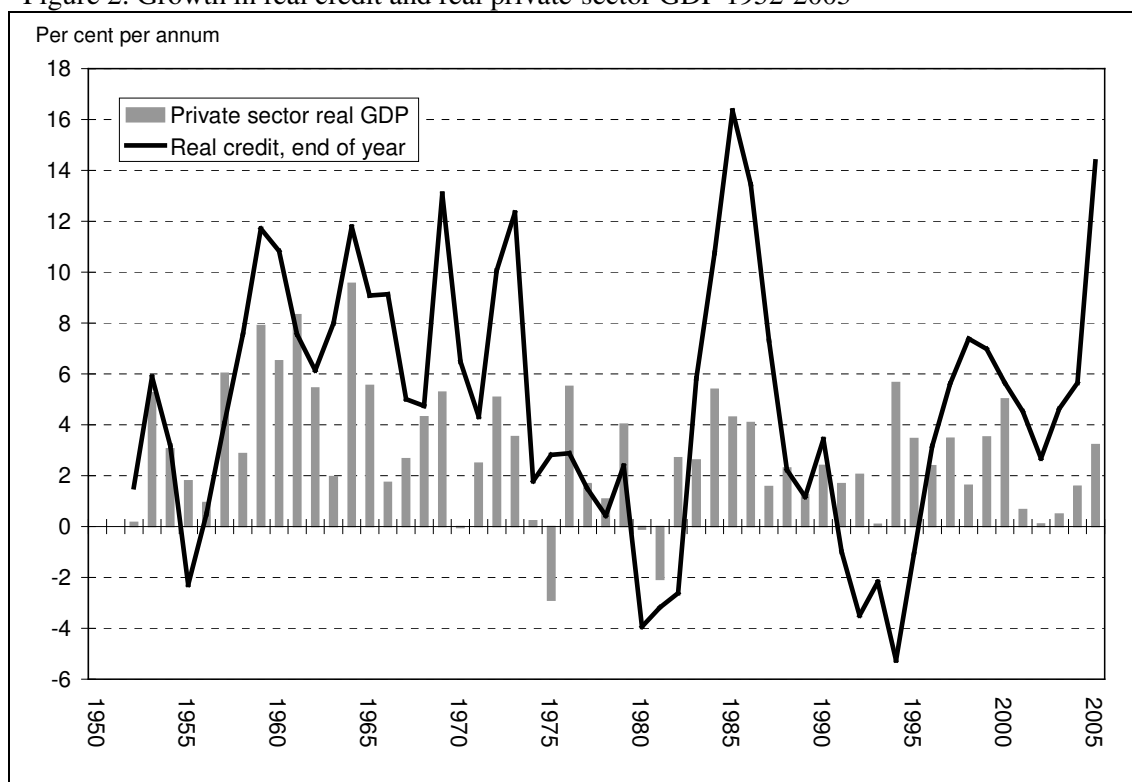
A few remarks should be given on the classification by sector and industry applied in the data set on credit presented in the present paper. The data set operates with two institutional sectors, a "commercial sector" and a "private individuals" sector. "Private individuals" covers wage earners, pensioners, etc., but not self-employed persons (even though part of a loan proceed raised by a self-employed person might go to private consumption). It differs therefore from the concept of the "household sector" applied in modern national accounts statistics following the requirements set out in United Nations' System of National Accounts (SNA), which include self-employed persons among households. The "commercial sector" does neither include MFIs or the central government, whereas local governments and self-

employed persons are included. The applied classification of main industries (agriculture, industry and services) follows in broad terms the International Standard Industrial Classification (ISIC).

Appendix A describes the sources and compilation methods used to construct the data set on credit in more details. A full listing of all time series data is found in appendix B.

Finally a word of caution is in order. Even though an attempt has been made to transform the available information on credit by sector and industry into a reasonable consistent set of time series, the quality of a data set spanning more than 50 years is to a high degree determined by data availability. It has been necessary to adjust the data set for several breaks in the primary sources, which naturally surrounds the figures with a certain amount of uncertainty.

Figure 2: Growth in real credit and real private-sector GDP 1952-2005



Source: See appendix A.

4. Trends in credit growth and loan-to-value ratios

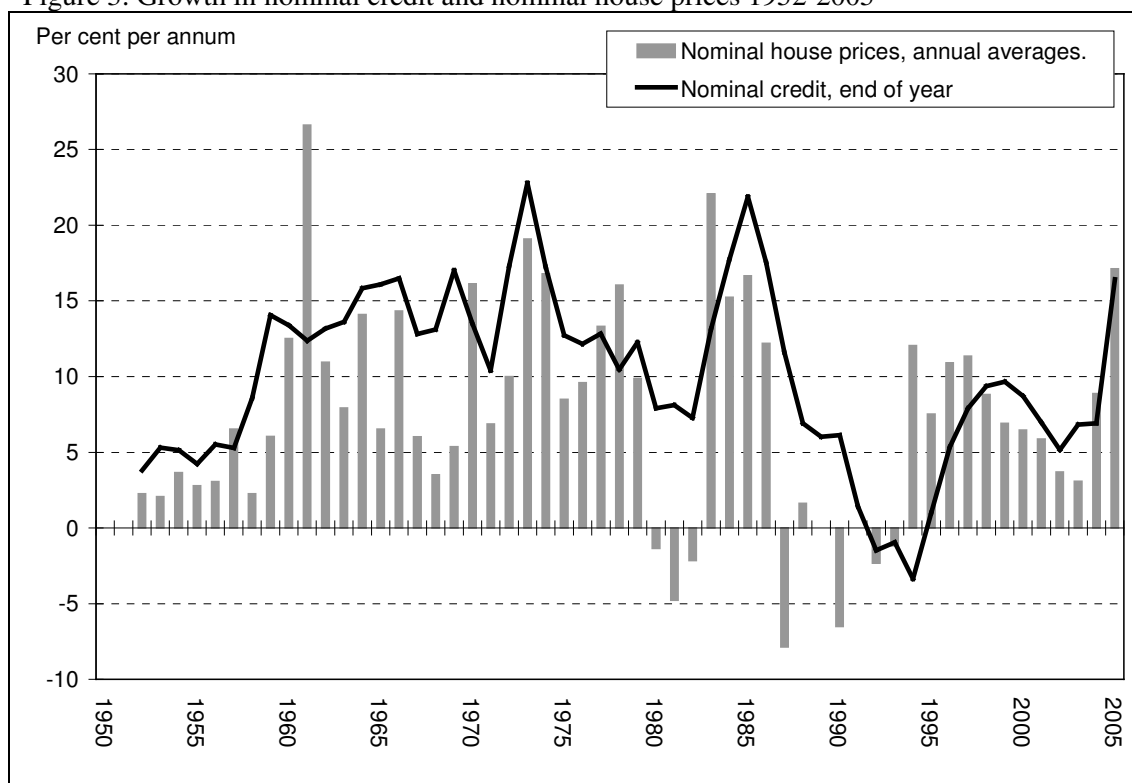
Figure 2 shows the annual growth in the private sector real GDP and in the outstanding amount of total credit to Danish firms and private individuals (deflated by CPI) extended by domestic banks, foreign banks and domestic mortgage-credit institutions. In broad terms growth in credit and real activity has followed the same course during the entire period. However, a structural shift in credit growth seems to have occurred around 1980. In the post-

1980 period the swings in the growth of credit have been very large relative to the growth in economic activity compared to the pre-1980 period.

The larger fluctuations in credit growth relative to economic growth in the post-1980 period compared to the pre-1980 period might be related to the movement from an economy with a heavily regulated financial system to a market-based system with liberal access to credit.

Furthermore, the post-1980 period has seen some substantial swings in the nominal growth rate of house prices compared to the pre-1980 period, cf. figure 3. Rising house prices are usually followed by an increased amount of lending when existing houses are traded at new and higher price levels. Rising house prices may also increase the borrowing for other purposes than house acquisition using the house as collateral (mortgage equity withdrawal). The easier access to raise loans against free mortgageable value coupled with the larger movements in the level of house price inflation might therefore also have contributed to the substantial swings in credit growth during the post-1980 period.

Figure 3: Growth in nominal credit and nominal house prices 1952-2005

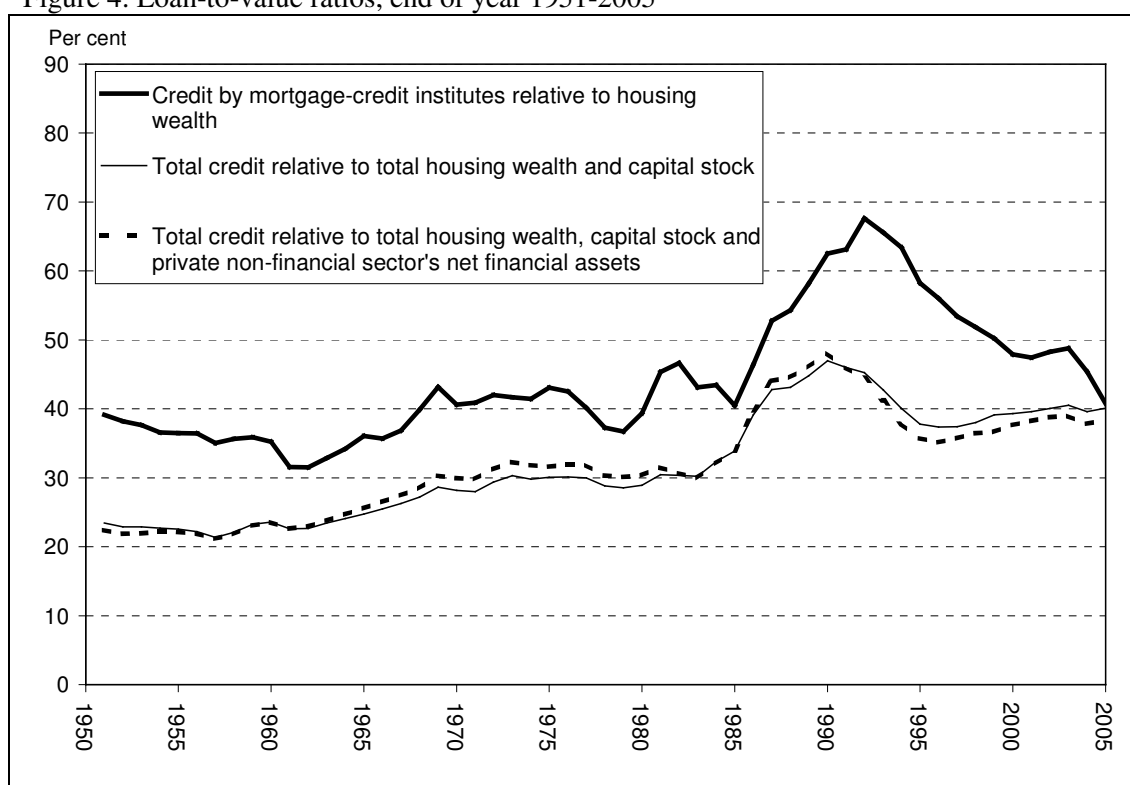


Source: See appendix A.

The credit expansion during the last five decades or so has increased the level of financial intermediation. However, the total outstanding amount of credit extended by domestic mortgage-credit institutes was still just above 40 per cent of the total housing wealth in 2005, cf. figure 4. Even after the asset price deflation during the late 1980s and early 1990s the loan-to-value ratio never exceeded 70 per cent on a macro level. The total amount of credit

from domestic and foreign credit institutions to the Danish private non-financial sector accounted also only for 40 per cent of the value of the total housing wealth and capital stock in 2005. If the non-financial private sector's net financial assets are taken into consideration, the loan-to-value ratio was just below 40 per cent in 2005. The robustness of the private non-financial sector against adverse macroeconomic shocks has therefore been good during the entire World War II period, and the increased level of indebtedness has not raised any concern regarding financial stability seen from a macroeconomic point of view.⁹ Even though a few banks came into financial distress during the 1980s and the early 1990s, Denmark has not experienced any major banking crises during the entire post-World War II period.

Figure 4: Loan-to-value ratios, end of year 1951-2005



Source: See appendix A.

In some other advanced countries (e.g. Norway and Sweden) the course towards financial liberalisation during the last quarter of the twentieth century were followed by a period of financial distress and negative impact on the government budget.¹⁰ A vast and growing literature on financial stability during the recent decade or so has also suggested that rapid growth of asset prices and credit increase the probability of banking crises and financial

⁹ Cf. also the various issues of the Financial Stability report from Danmarks Nationalbank since 2000 (in 2000 and 2001 included in the Nationalbank's Monetary Review, since then as separate publications).

¹⁰ Cf. e.g. Økonomiministeriet (1994) and Caprio *et al.* (2001)

instability.¹¹ The relatively smooth process of financial liberalisation in Denmark might have several causes:

- Financial markets' liberalisation in Denmark was a gradual process during the 1970s and 1980s, giving the banks the necessary time to adapt to a more liberal environment.¹²
- As illustrated above the level of non-financial sector indebtedness relative to various wealth measures has been fairly low during the entire post-World War II period.
- There has been a tradition for a relatively market-based financial sector without mandatory placements in government bonds or lending to selected sectors at interest rates below market levels.
- A large part of the liberalisation – such as the deregulation of several cross-border capital restrictions during the 1970s and early 1980s, the dismantling of the ceilings on domestic bank lending in 1980, the removal of the last restrictions on capital account credit-transactions in 1988 and the further easing of the access to raise mortgage loans against free mortgageable value in the early 1990s – occurred in periods with slow economic growth.
- Danish commercial banks and savings banks have traditionally had a relatively high solvency ratio, which improved the resistance towards losses during the 1980s and early 1990s.¹³
- During the 1980s and the beginning of the 1990s a small number of banks came into financial distress, but the situation was far less severe than the banking crisis of the 1920s. In most cases larger banks took over smaller troubled banks, and only a few minor banks were liquidated. The banks did not have to deal with a huge amount of “bad loans” from one day to another. They had the time they needed to gradually improve on their credit-risk-management procedures. Another factor behind this development has been the mergers within the banking sector since the early 1990s, which have increased the focus on cost reductions and return on equity. From 1990 to 1995 the number of full-time employees within the banking sector declined by almost 15 per cent.¹⁴
- Finally, the simultaneous switch towards a more stability-oriented and transparent macroeconomic policy in Denmark during the 1980s – when financial liberalisation culminated and financial internationalisation significantly gained momentum – may also have played a role. Sound real-economic structures – and in particular that economic decisions made by households and firms can be based on the expectation of future macroeconomic stability – are vital to the long-term health of any financial system. The removal of the remaining capital controls during the 1980s might also in itself have fostered stability in macroeconomic policies and flexible labour-market structures by imposing a potential mechanism of market discipline. In a fixed-exchange-rate regime with free capital movements a lack of fiscal prudence and competitive wage setting – taking due account to productivity – might quickly be “punished” by pressure on the exchange rate and higher domestic long-term interest rates.

Some of these elements – gradualism and counter-cyclical timing of liberalisation initiatives – have also characterised the relative smooth process of liberalisation in a country like Austria, cf. Ritzberger-Grünwald (2006).

¹¹ Cf. e.g. D'Arcy & Kent (2001), Gerdrup (2003), Riiser (2005) and references therein.

¹² Cf. page 49 in Danmarks Nationalbank's *Annual Report and Accounts for the year 1992*.

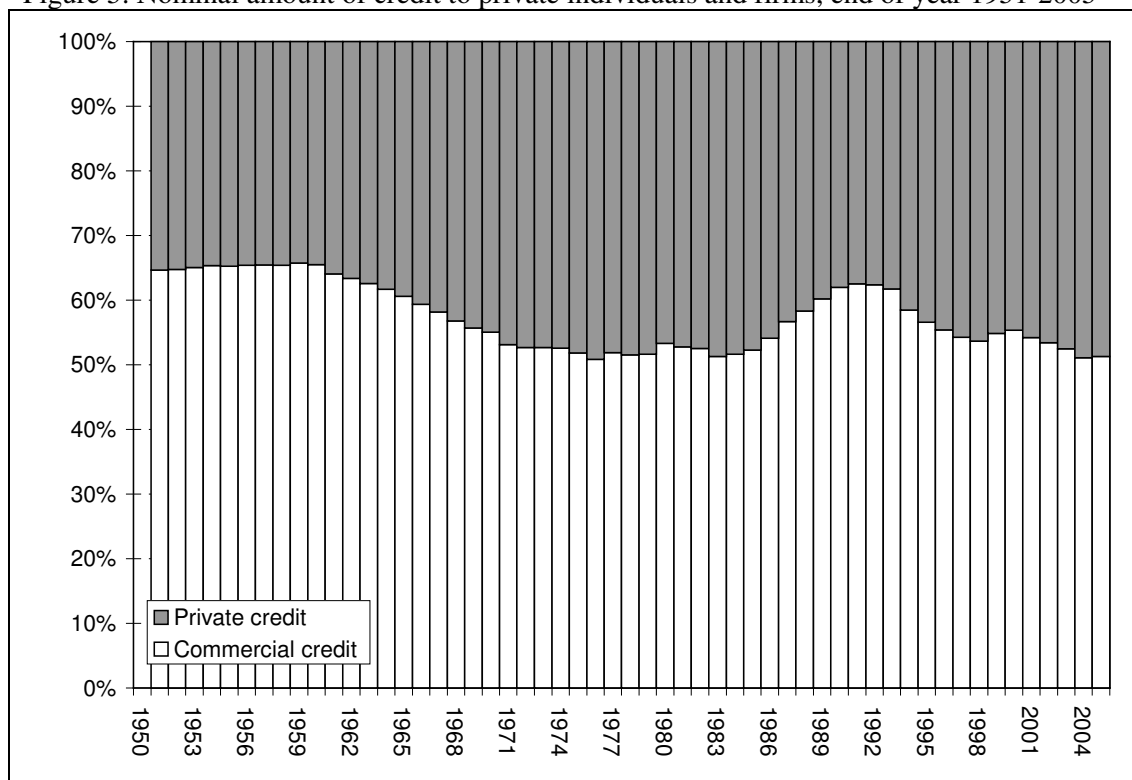
¹³ Cf. page 46 in Danmarks Nationalbank's *Annual Report and Accounts for the year 1991*.

¹⁴ Cf. page 54 in Danmarks Nationalbank's *Annual Report and Accounts for the year 1996*.

5. Trends in credit composition

Figure 5 plots the distribution of the total credit to the Danish firms and private individuals since 1951. It should be noted that “commercial credit” includes loans for private rental housing and subsidised housing, whereas “private credit” includes the owner-occupied housing sector. The distribution between private credit and commercial credit has roughly remained unchanged during the entire post-World War II period although with a slight tendency towards an increased share of private lending.

Figure 5: Nominal amount of credit to private individuals and firms, end of year 1951-2005

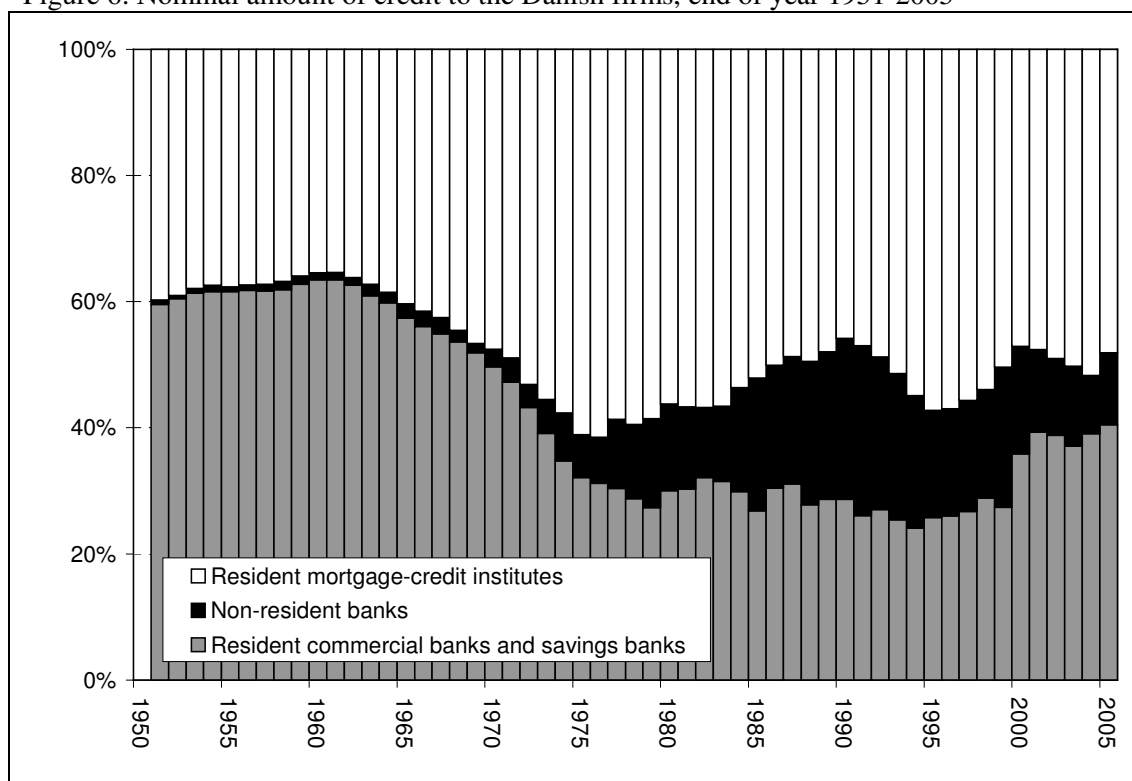


Source: See appendix A.

Figure 6 shows the distribution of total bank-credit by source to Danish firms since 1951. The market share of mortgage-credit institutes in commercial lending increased from around 40 per cent during the 1950s and early 1960s to around 50 per cent since the mid-1970s. During the 1950s and 1960s foreign credit did not play any significant role in the capital structure of Danish enterprises. The post-1970 period has – in step with the deregulation of cross-border capital controls – witnessed an increased importance of commercial lending from non-resident banks and the share of commercial lending from domestic banks has declined. The growing importance of commercial credit from non-domestic banks partly

reflects that Danish banks since the mid-1970s has established themselves abroad in order to meet the requirements for banking services of the Danish export sector.¹⁵

Figure 6: Nominal amount of credit to the Danish firms, end of year 1951-2005

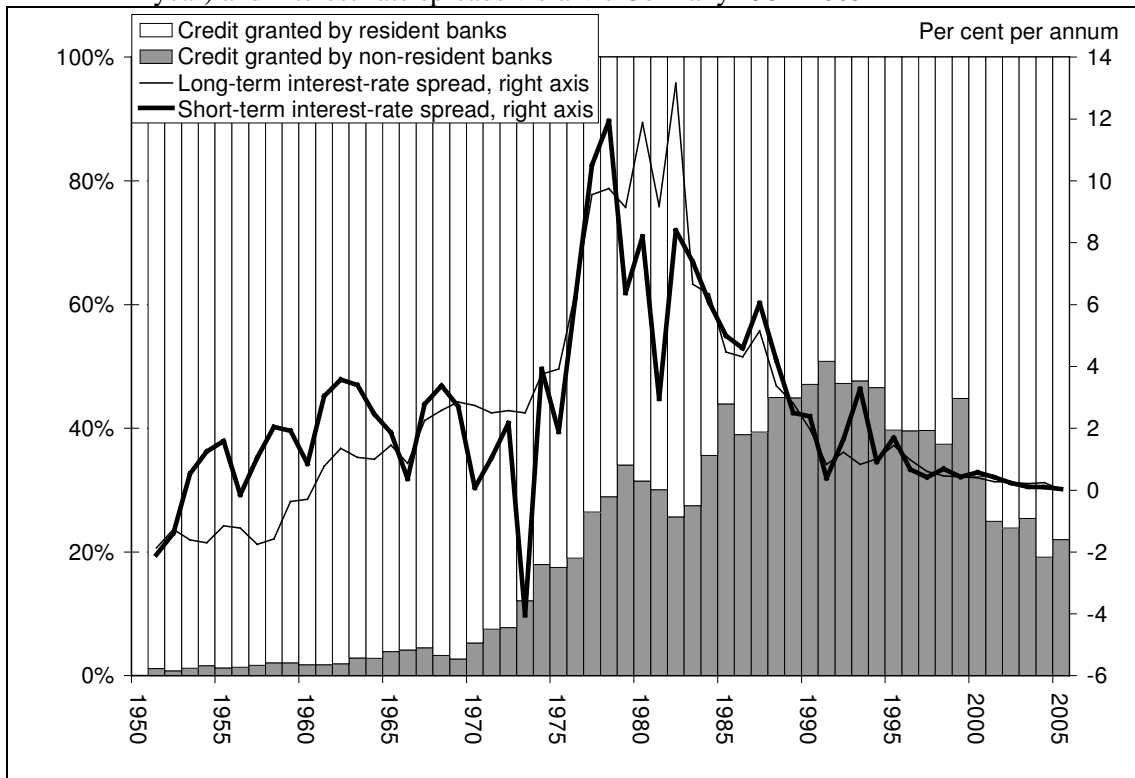


Source: See appendix A.

Figure 7a shows the relative distribution of credit to Danish firms from domestic and foreign banks together with the short- and long-term interest-rate spread between Denmark and Germany since 1951. In figure 7b exchange-rate-adjusted interest-rate spreads are used. Since the switch to a consistent fixed-exchange-rate policy in the early 1980s the interest-rate spreads between Denmark and Germany have narrowed significantly and in the recent one and a half decade the share of foreign bank credit to Danish firms has declined.

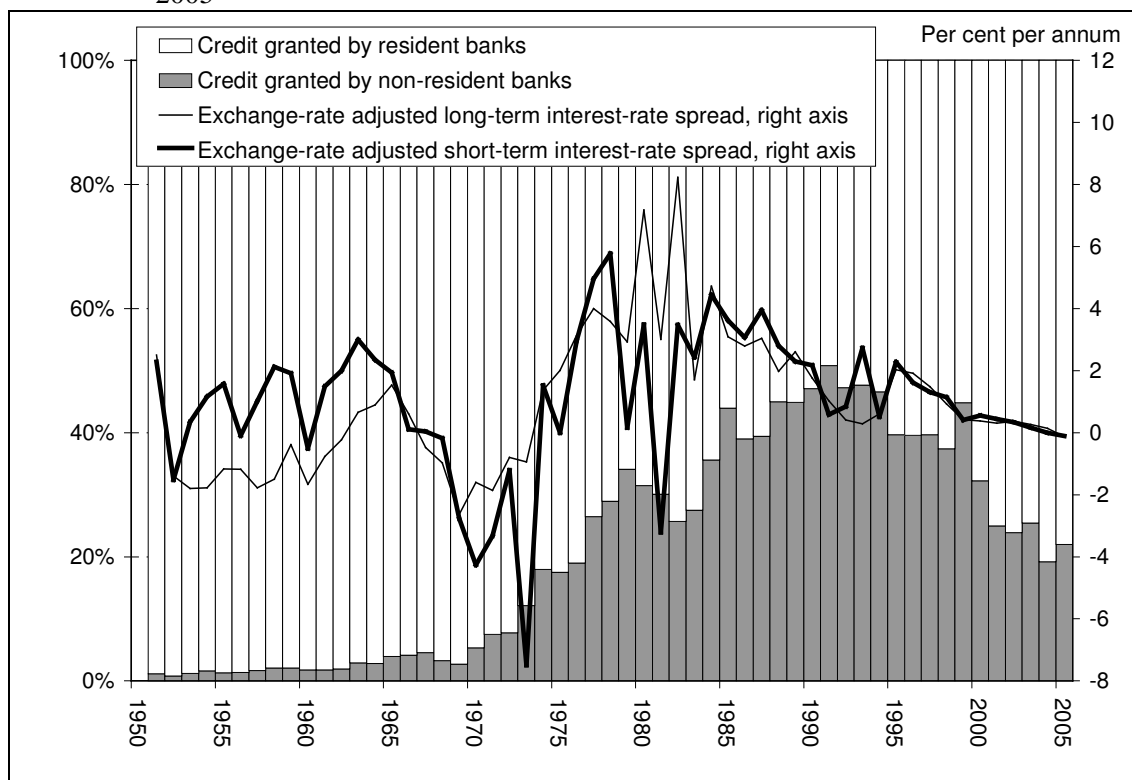
¹⁵ By the end of 1980 the Danish banks had 8 units abroad and a decade later the corresponding number was 39. The international orientation of the Danish banking sector has persisted during the most recent decades, cf. Abildgren (2006b).

Figure 7a: Relative distribution of the nominal amount of credit to the Danish firms (end of year) and interest-rate spreads vis-à-vis Germany 1951-2005



Source: See appendix A.

Figure 7b: Relative distribution of the nominal amount of credit to the Danish firms (end of year) and exchange-rate adjusted interest-rate spreads vis-à-vis Germany 1951-2005

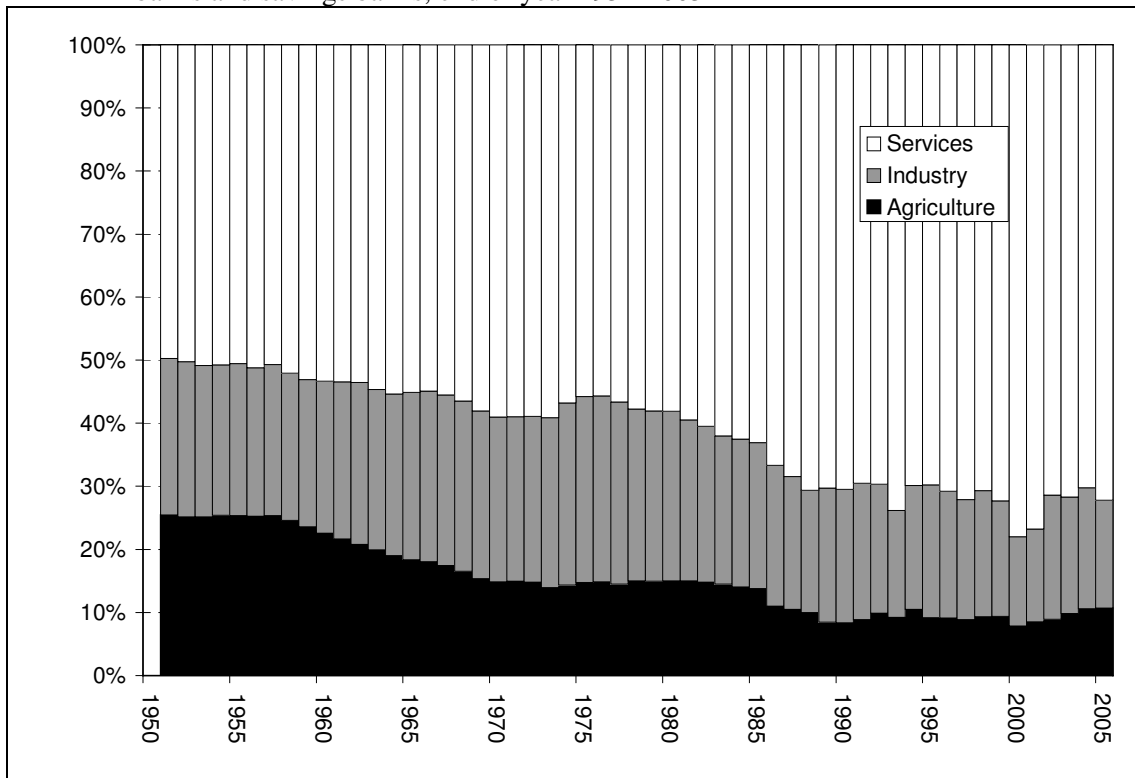


Note: The exchange rate adjusted interest-rate spread is equal to the actual interest-rate spread between Denmark and Germany less the expected rate of depreciation of the Danish krone vis-à-vis the euro (D-mark prior to 1999) measured in per cent per annum. The expected rate of depreciation in a given year is proxied by the simple average of the lagged, current and one year ahead actual rate of depreciation.

Source: See appendix A.

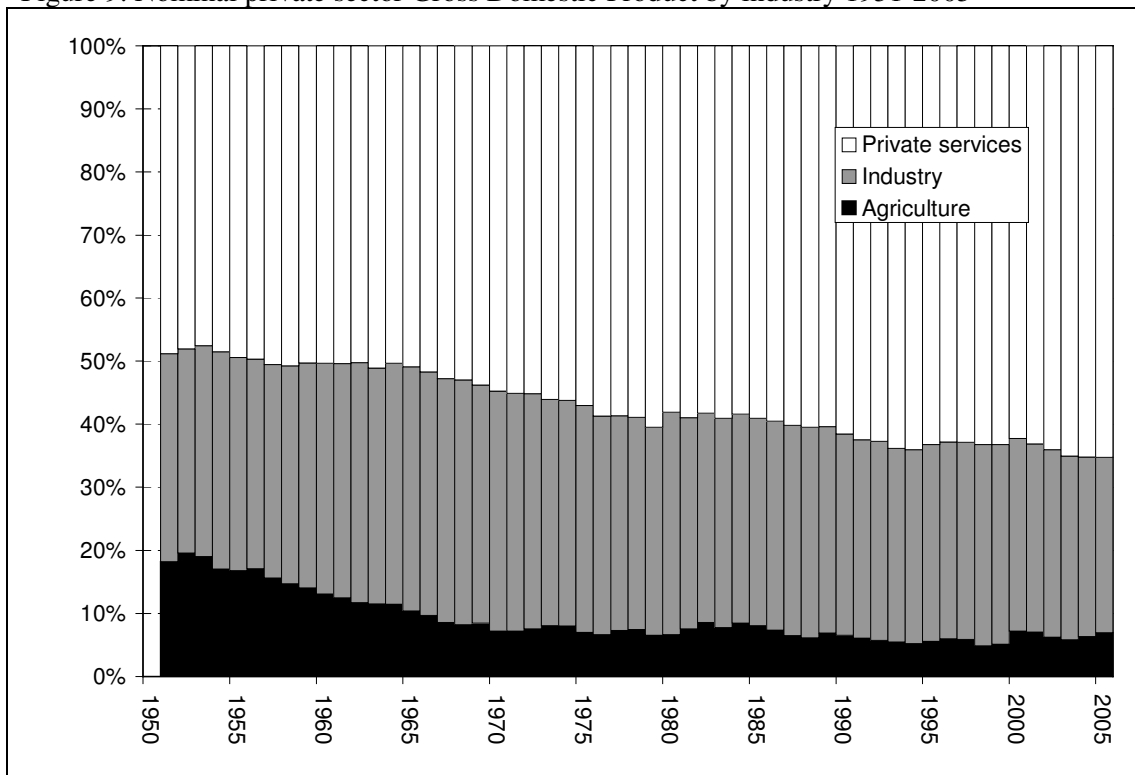
Figure 8 shows the distribution of commercial credit by industry extended by resident commercial banks and savings banks. The share of credit to agriculture and industry has declined over the period in step with the structural transformation of the Danish economy towards increased production of services, cf. figure 9.

Figure 8: Nominal domestic commercial credit by industry extended by resident commercial banks and savings banks, end of year 1951-2005



Source: See appendix A.

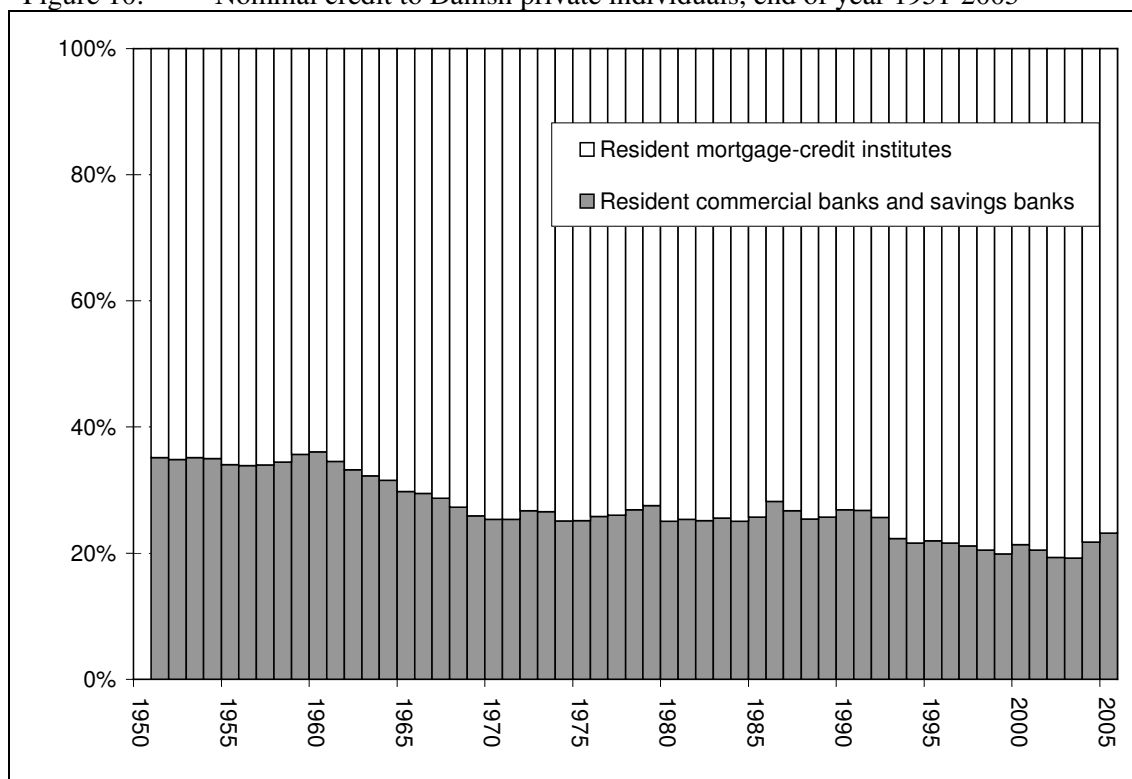
Figure 9: Nominal private sector Gross Domestic Product by industry 1951-2005



Source: See appendix A.

Finally, figure 10 shows the distribution of credit to Danish private individuals since 1951. Overall, the market share of mortgage-credit institutes has increased at the expense of credit from commercial banks and savings banks. For the most recent decades this trend might partly be the result of a gradual easing of the access to raise supplementary mortgage-credit loans against free mortgageable value in owner-occupied houses.

Figure 10: Nominal credit to Danish private individuals, end of year 1951-2005



Source: See appendix A.

6. Business-cycle fluctuations in credit by sectors and industries

Filtering methods can be used in an attempt to uncover the more or less “pure” stylised facts and empirical regularities in the cyclical movement and comovement of real credit and real output. Filters repack economic time series so a clearer view of their periodic oscillations is obtained. While the results of filtering exercises are purely descriptive - and don’t 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 credit cycle.

Two recent studies have taken a closer look on the behaviour of credit over the business cycle in Denmark. Based on a data set on a quarterly frequency for the period 1980-2005 Risbjerg (2006) studies cycles with duration of 6-32 quarters in nominal credit to respectively

Danish households and non-financial corporations from domestic banks and mortgage-credit institutes. Risbjerg finds that lending to households tend to increase during an upswing before lending to non-financial corporations using real GDP as the business cycle indicator. Abildgren (2006b) examines an annual data set for the period 1875-2005 on total real domestic and non-domestic credit extended by Danish banks and mortgage-credit institutes. He finds that real credit seems to have been almost contemporaneous with real GDP in cycles with a duration of 2-8 years and that the cyclical correlation pattern has been fairly stable over time when the pre- and post-World War II period are compared.

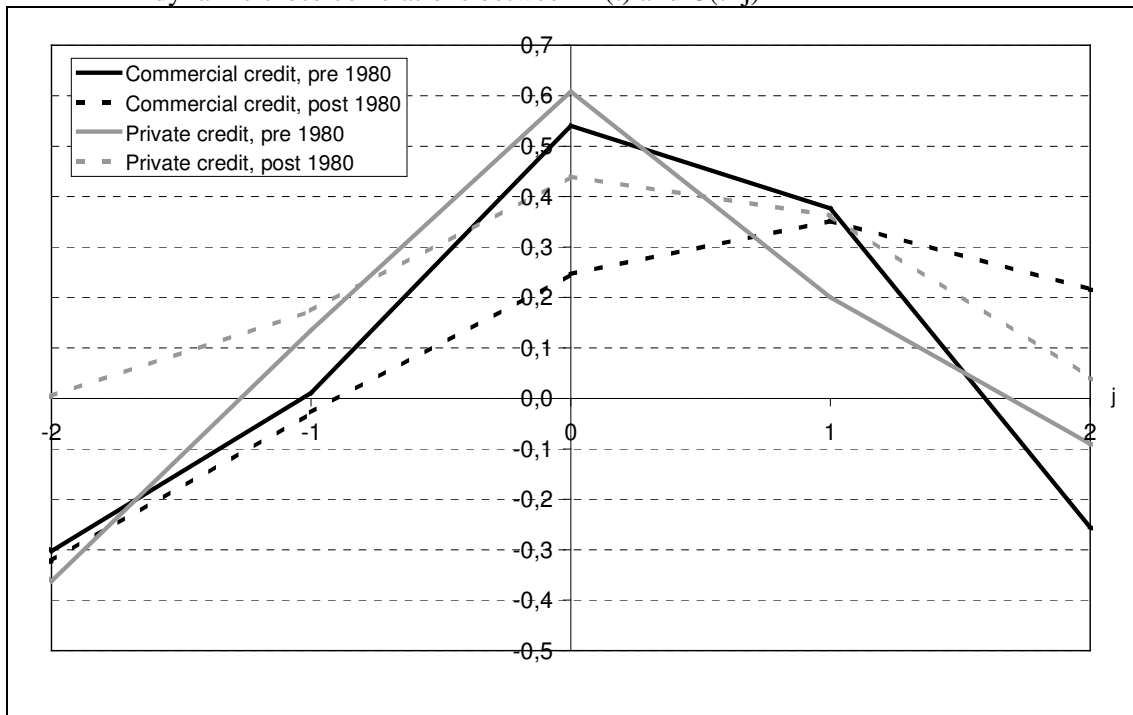
This section complements the two studies mentioned above and reviews the post-World War II cyclical correlation patterns between real output and real credit to residents by sector and industry by isolating the business cycle components of the time series using the Baxter & King (1999) approximate band-pass 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. Business cycles will be defined as deviations from the trend lasting from 2 to 8 years.¹⁶ Naturally, such a limitation is more or less arbitrary but it corresponds to the standard delimitation of the business cycle frequency in the literature.¹⁷

Figure 11 shows the dynamic cross-correlations between the cyclical components of credit by sector (deflated by CPI) granted by domestic and non-domestic credit institutions and the cyclical component of real private sector GDP. A shift in the correlation pattern seems to have occurred over time. In the pre-1980 period both commercial credit as well as private credit were contemporaneous with GDP and the contemporaneous correlation coefficients were fairly high (0.5-0.6). In the post-1980 period the peak correlation coefficients are smaller and commercial credit seems to be lagging the business cycle with one year. A similar shift in the cyclical correlation patterns over time for commercial credit is also visible when the data from domestic banks are viewed in isolation and disaggregated by industry, cf. figure 12a and 12b.

¹⁶ A symmetric moving average with 3 observations on each side is applied, i.e. the value of the cut-off parameter in the filter is 3 as suggested by Baxter & King for a data set on an annual frequency. In the paper at hand all the time series have been transformed by natural logarithms before filtering. By transforming a trended input series by natural logarithms before filtering, the cyclical component extracted from the data can be interpreted as the deviation from the trend measured in per cent. This facilitates the economic interpretation of the filtered time series data.

¹⁷ According to the NBER US business cycles has on average been around 5 years for the post-1854 period and a little more than 6 years in the post-1970 period. Hansen & Knudsen (2004) and Hansen (2005) indicate – using both the Baxter-King filter as well as the Hodrick-Prescott filter – that the post-1974 business cycles in Denmark have been somewhat longer. An upper limit of 8 years seems therefore suitable. The reason for 2 years as the lower limit (and not zero) is the wish to exclude very short-term random fluctuations from the business cycle component.

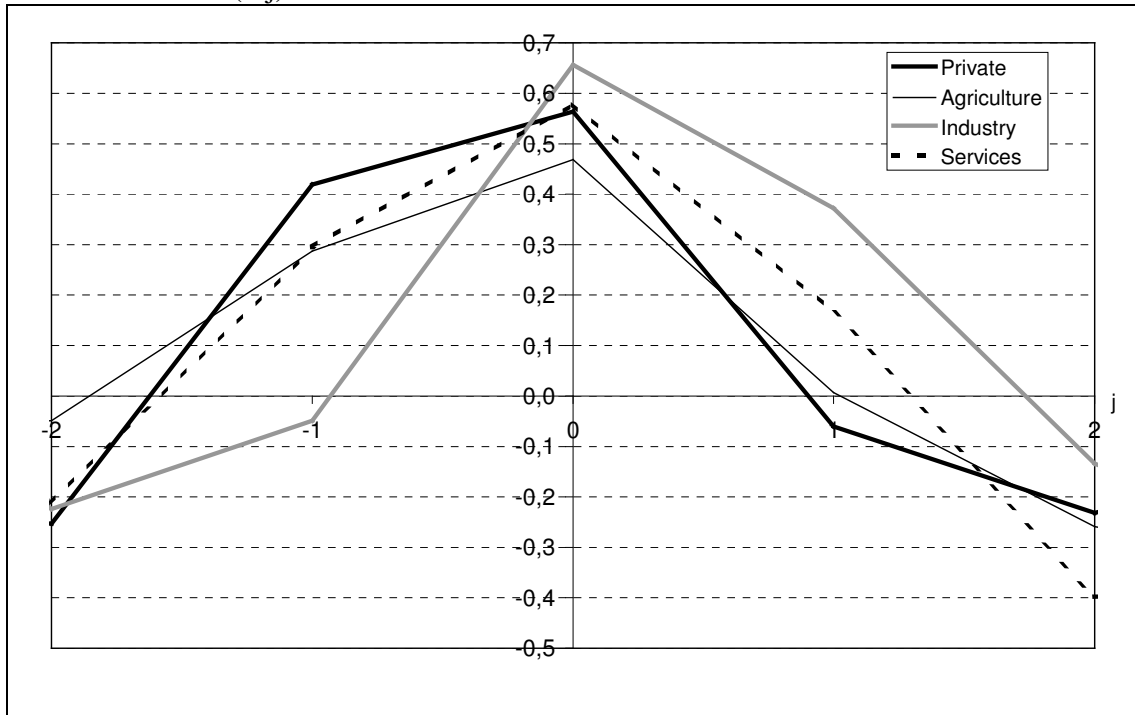
Figure 11: Real private sector GDP (Y) and real credit (C) 1951-2005, cycles of 2-8 years, dynamic cross-correlations between $Y(t)$ and $C(t+j)$



Notes: Y denotes private sector real GDP at factor costs while C denotes the total stock of credit by sector (deflated by CPI) granted by domestic commercial banks and savings banks, domestic mortgage-credit institutes and non-domestic banks. All peak correlations are significant different from zero at a 5 per cent level in the pre-1980 period. In the post-1980 period, the peak correlation is significant different from zero at a 10 per cent level for private credit but not significant for commercial credit. The significance probability relates to the slope parameter in an OLS-regression between the cyclical components of real GDP and real credit and a constant included.

Sources and calculation methods: See main text and appendix A.

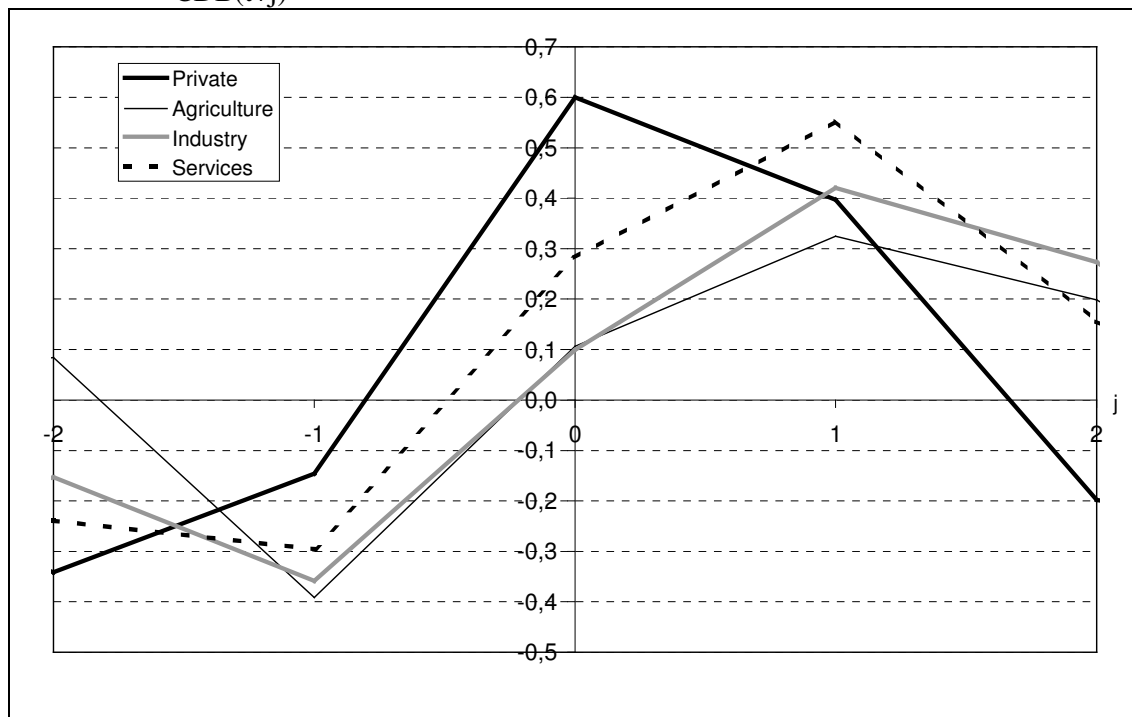
Figure 12a: Real private sector GDP (Y) and real credit from domestic banks (CDB) 1951-1979, cycles of 2-8 years, dynamic cross-correlations between $Y(t)$ and $CDB(t+j)$



Notes: Y denotes private sector real GDP at factor costs while CDB denotes the total stock of credit by industry (deflated by CPI) granted by domestic commercial banks and savings banks. All peak correlations are significant different from zero at a 5 per cent level. The significance probability relates to the slope parameter in an OLS-regression between the cyclical components of real GDP and real credit and a constant included.

Sources and calculation methods: See main text and appendix A.

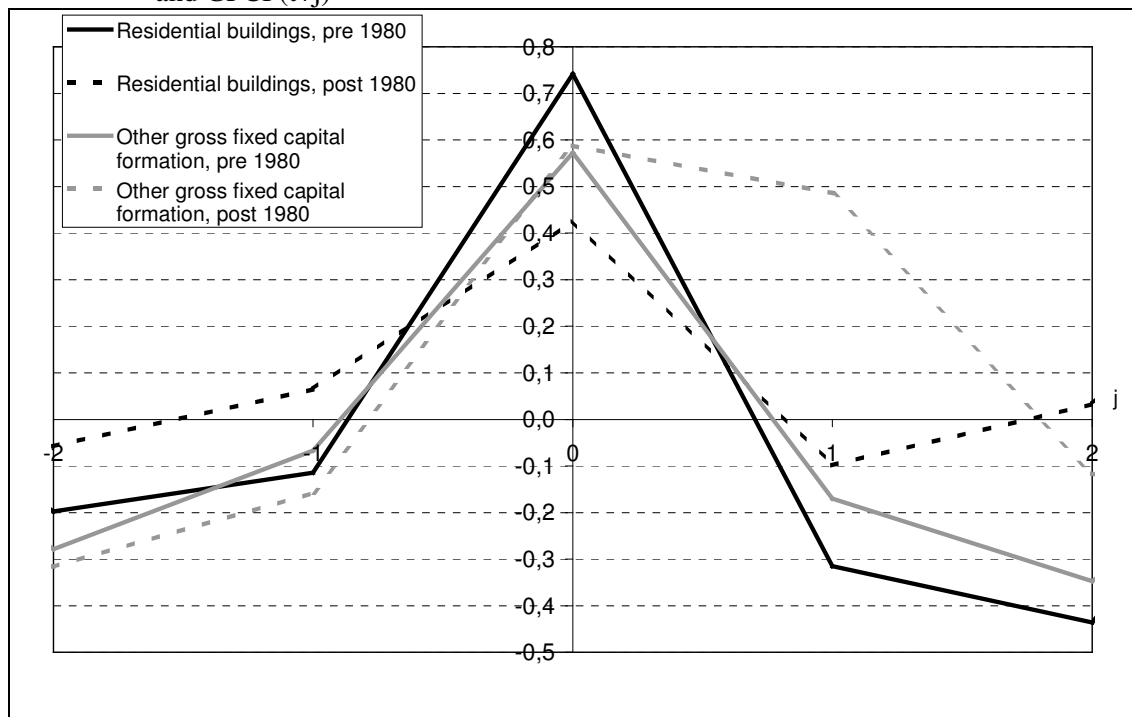
Figure 12b: Real private sector GDP (Y) and real credit from domestic banks (CDB) 1980-2005, cycles of 2-8 years, dynamic cross-correlations between $Y(t)$ and $CDB(t+j)$



Notes: Y denotes private sector real GDP at factor costs while CDB denotes the total stock of credit by industry (deflated by CPI) granted by domestic commercial banks and savings banks. All peak correlations are significant different from zero at a 5 or 10 per cent level except for credit to agriculture. The significance probability relates to the slope parameter in an OLS-regression between the cyclical components of real GDP and real credit and a constant included. Sources and calculation methods: See main text and appendix A.

The change in the cyclical behaviour of commercial credit in the post-1980 period do not seem to be the result of a change in the correlation patterns between economic activity and gross fixed capital formation, cf. figure 13. Measured by the peak correlation nominal private-sector GDP seems to have been contemporaneous with nominal gross fixed capital formation in both the pre- and post-1980 period. However, gross fixed capital formation excluding residential buildings (i.e. other construction, machinery and transport equipment, and agricultural breeding stocks) seems to a higher degree also to be lagging the business cycle in the post-1980 period than in the pre-1980 period.

Figure 13: Nominal private sector GDP (Y) and nominal gross fixed capital formation (GFCF) 1951-2005, cycles of 2-8 years, dynamic cross-correlations between $Y(t)$ and $GFCF(t+j)$



Notes: Y denotes private sector nominal GDP at factor costs while GFCF denotes nominal gross fixed capital formation in residential buildings or other gross fixed capital formation (i.e. other construction, machinery and transport equipment, and agricultural breeding stocks). All peak correlations are significant different from zero at a 5 or 10 per cent level. The significance probability relates to the slope parameter in an OLS-regression between the cyclical components of nominal GDP and nominal gross fixed capital formation and a constant included.

Sources and calculation methods: See main text and appendix A.

The lagging nature of commercial credit in the post-1980 period may indicate that firms finance their investments via other sources (including own funds from retained earnings) in the initial stages of an economic upturn, cf. also Andersen et al. (1999).

The reason for the change in correlation patterns over time is naturally open for interpretation. However, the closer correlation between credit and output during the pre-1980 period could be a result of the more restricted access to credit during this period. Firms takes their decisions regarding real investments and financing simultaneously, so credit rationing and exchange controls might have provided an incentive for firm to raise loans at an early stage in the business cycle in order to be sure to have command over the funding necessary for their planned investments.

However, the effectiveness of the pre-1980 quantitative restrictions has been questioned, cf. e.g. the assessment of the ceilings on domestic bank lending in the 1970s on page 135-136 in Mikkelsen (1993). Erik Hoffmeyer, Chairman of the Board of Governors of Danmarks Nationalbank in the period 1965-1994, has on several occasions made similar assessments:

“... If we look at the period from 1970 to 1980 where the credit ceiling functioned, it has in the debate often been noted that this was a wide-ranging mechanism of credit rationing aiming at a firm regulation of the total extension of credit.

I have often advocated that the crucial element in an assessment of the effect of the credit ceiling has to be how tight the administration was.

We had long periods and several periods where the credit ceiling in reality did not imply any limit on the total extension of credit...”

(English translation of a quotation from page 100 in Hoffmeyer (1985)).

“... During the 1960s it became clear that, in the view of the pressures developing in the economy, the instruments available were not adequate, and consequently in 1969 we replaced the deposit scheme with the a credit ceiling.

The credit ceiling functioned throughout the next 10 years, but I would like to emphasize that for us it was very important that the rationing aspect which the credit ceiling represented did not achieve a dominating influence.

It was always out belief that the price element – the interest rate – should be the most import control mechanism...”

(Quotation from page 13 in Hoffmeyer (1989)).

Another possible explanation for the change over time in the correlation pattern between real credit and real GDP could be the increased significance of commercial and industrial foundations in the Danish economy. Industrial foundations are non-profit organisations that typically have been established by the founder of a company or his/her relatives in order to manage a substantial ownership share in the company and operate the company in the “spirit” of the founder. No long-span statistics on the significance of foundation ownership in the Danish economy is available, but a few more sporadic pieces of information can be listed:

- Nine out of the twenty corporations in the leading Copenhagen Stock Exchange Index (OMXC-20) had in the mid-2000s at least one foundation among the principal shareholders and the commercial and industrial foundations owned around 40 per cent of the share capital in these 9 corporations.¹⁸
- In the early 2000s foundations controlled 19 out of the 100 largest Danish corporations – in Germany the corresponding number was 5.¹⁹
- Of the 171 companies listed during the entire period 1996-1999 on the Copenhagen Stock Exchange 20 companies were majority-controlled by an industrial foundation.²⁰
- Among the 30 largest Danish industrial corporations in 1987 respectively 1970 the number of firms controlled by a foundations was 6 respectively 4.²¹

Tax rules might partly explain why foundations have become relatively common in Denmark²² and the number of commercial and industrial foundations increased rapidly during

¹⁸ Cf. page 24 in Danmarks Nationalbank & Økonomi- og Erhvervsministeriet (2006).

¹⁹ Cf. page 22 in Federspiel (2003).

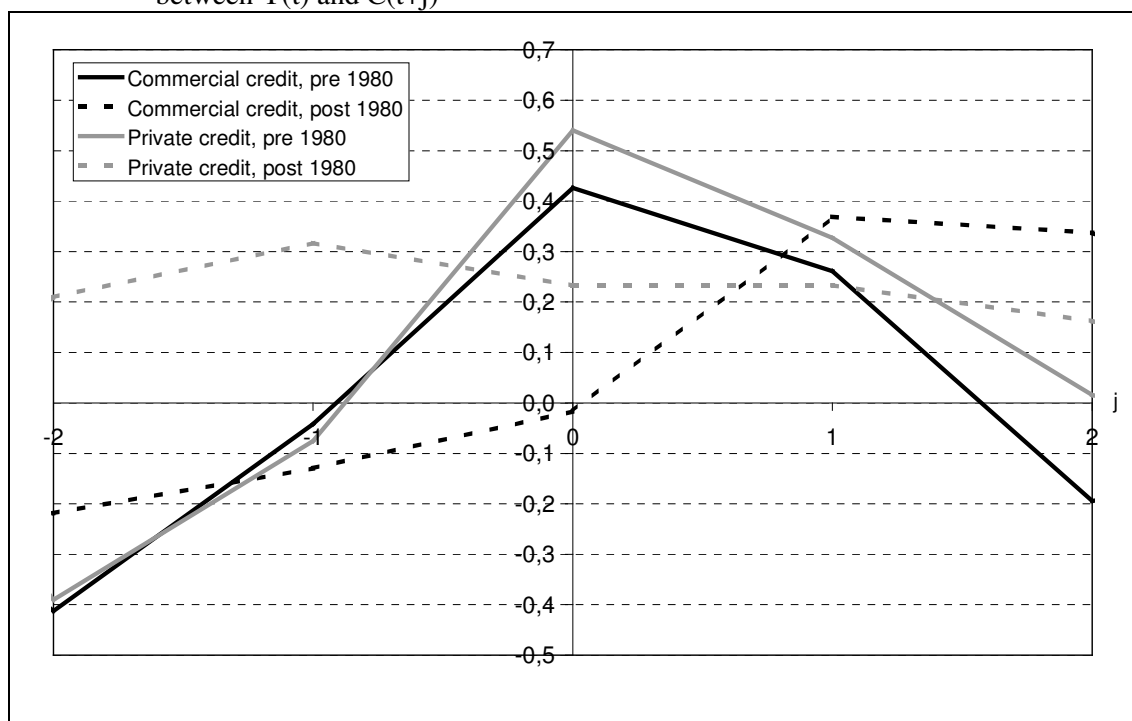
²⁰ Cf. page 15 in Rose & Thomsen (2002).

²¹ Cf. page 257 in Thomsen (1990).

the 1960s and 1970s.²³ Industrial foundations might be seen as “patient owners” without an urgent need for return on equity. In step with the increased capital accumulation in those foundations it might therefore have been possible for Danish firms to finance larger shares of their fixed investments in the initial stages of an upturn with own funds from retained earnings rather than loans from domestic and foreign credit institutes.

There seems also to have been a shift in the cyclical correlation patterns over time regarding real private credit from domestic mortgage-credit institutes, cf. figure 14. In the pre-1980 period real private credit seem to have been contemporaneous with private sector real GDP. In the post-1980 period the correlation coefficients for private credit are smaller and not very clearly related to the business cycle movements of GDP. This might partly be the result of the gradual easing of the access to raise supplementary loans against free mortgageable value in owner-occupied houses and a more diversified range of flexible products offered for home financing during the most recent decades.

Figure 14: Real private sector GDP (Y) and real credit from domestic mortgage-credit institutes (CDM) 1951-2005, cycles of 2-8 years, dynamic cross-correlations between $Y(t)$ and $C(t+j)$



Notes: Y denotes private sector real GDP at factor costs while CDM denotes the total stock of credit by sector (deflated by CPI) granted by domestic mortgage-credit institutes. All peak correlations are significant different from zero at a 5 per cent level in the pre-1980 period. In the post-1980 period, no peak correlations are significant different from zero. The significance probability relates to the slope parameter in an OLS-regression between the cyclical components of real GDP and real credit and a constant included.

Sources and calculation methods: See main text and appendix A.

²² Although recently reduced, the Danish tax-legislation on wealth, inheritance and capital gains might historically have provided the owners of a company with an incentive to donate ownership shares to a foundation. Furthermore, charitable donations by a foundation are tax-deductible, cf. Bjørn & Howard (2001).

²³ Cf. Andersen (2002) and Boje (1997).

7. Some final remarks and possible directions for further research

As indicated by the analysis in the paper at hand long-span data sets can throw some interesting light on trends and cycles in credit under different monetary regimes and different degrees of regulation of the financial system. However, the data set presented in this paper is only on an annual frequency. It would be interesting if future projects on long-span credit-data construction in Denmark would make an attempt to compile time series on credit by sector and industries at a somewhat higher frequency, preferable monthly or at least quarterly. This would permit more refined investigations of heterogeneity in the short-term cyclical behaviour of credit to different sectors and industries under different monetary regimes, macroeconomic environments and institutional settings, which might be of importance for a better understanding of the dynamics of monetary transmission and potential financial fragility. Furthermore, empirical research on the historical development of the role of commercial and industrial foundations in the financing of the Danish business sector might throw some interesting new light on the monetary transmission process in Denmark.

Internationally there has been a stronger tradition than in Denmark for the compilation of historical financial statistics. However, to the knowledge of the author of this paper no attempts have been made to compile long-span historical time series on credit by industry. In many countries reasonable consistent data sets on credit by institutional sector covering a time span of 50 years or more are also very scarce. Considering the huge research interest in monetary transmission and financial stability issues within the central-banking community during the most recent decade, there seems also to be scope for future projects on historical credit data by sector and industry in other countries as well.

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Appendix A: Data sources and calculation methods

Lending to the domestic non-MFI²⁴ sector extended by resident commercial banks and savings banks

Sources:

Various issues of: Danmarks Nationalbank, *Monetary Review*; Danmarks Nationalbank, *Annual Report and Accounts*; and Statistics Denmark, *Statistical ten-year review*. Other sources: Hoffmeyer (1960); Jeppesen (1969); Statistics Denmark, *StatBank Denmark*; and Winding (1958).

Comments:

(1) Since 1978: End of year figures. Prior to 1978: End of year figures estimated by linear interpolation based on end-March or end-April figures. (2) Gross lending, i.e. deposits are not deducted from the figures. (3) The domestic non-MFI sector covers all domestic sectors excluding Monetary Financial Institutions (i.e. the central bank, private banks, mortgage-credit institutes, other credit institutes and money-market funds) and the central government. The applied classification of industries and institutional sectors is the following:

- Agriculture comprises agriculture, fishing and quarrying. Including loans to self-employed farmers etc.
- Industry covers manufacturing, energy and water supply, and the private construction industry and handicrafts (but not the owner-occupied housing sector).
- Services covers wholesale and retail trade, hotels, restaurants, transport, communication, non-MFI financial intermediaries, business activity, rental housing, public sector (including building and construction by local governments), private services not mentioned above, and commercial loans where the type of industry is unknown.
- Private lending. Covers loans to wage earners, pensioners, etc., but not loans to self-employed persons. Includes the owner-occupied housing sector.

(4) Since 2000 the sectoral distribution are based on the break down of lending from major banks accounting for around 95 per cent of the total balance sheet of all commercial banks and savings banks. The figures have been scaled up to cover 100 per cent of the lending to the domestic non-MFI-sector utilising information on the sectoral break-down of lending by the last 5 per cent (i.e. the smallest institutions) in the 2nd quarter of 2000. (5) Prior to 1991 are loans to mortgage-credit institutes from commercial banks included within “other industries”. (6) Prior to 1978 are loans to quarrying from commercial banks included among loans to “manufacturing, energy and water supply”. (7) The breakdown by sector of building loans from commercial banks in the period 1951-1965 is based on information on the sectoral

²⁴ MFI = Monetary Financial Institutions, i.e. mainly credit institutes.

breakdown in the years 1966-1969 of building loans extended by a group of major banks covering around 90 per cent of all building loans extended by commercial banks. (8) The breakdown by sector of building loans from commercial banks in the period 1970-1977 is based on information on the sectoral breakdown of building-loan commitments in the relevant years extended by a group of major banks covering around 90-100 per cent of all building loans extended by commercial banks. (9) Prior to 1977 are all mortgage loans from commercial banks included among "Private lending". (10) The breakdown by sector of lending by savings banks in the period 1960-1977 is based on information on the sectoral breakdown in March 1959 (covering around 72 per cent of the lending by all savings banks) and March 1978 (covering around 100 per cent of the lending by all savings banks) and the development in total lending by savings banks during the period 1959-1978. (11) The breakdown by sector of lending by savings banks in the period 1951-1958 is based on information on the sectoral breakdown of loans against collateral security in March 1955 made by 27 savings banks (covering around 10 per cent of all loans against collateral security extended by savings banks), the sectoral breakdown of loans guaranteed by sureties in March 1955 made by 31 savings banks (covering around 16 per cent of all loans guaranteed by sureties extended by savings banks), the sectoral breakdown of loans to co-operative societies, associations etc. made by 56 savings banks (covering around 85 per cent of all loans co-operative societies, associations etc. extended by savings banks) and the type of loans extended by all savings banks in the period March 1951-1958. (12) Adjustments have been made so that none of the figures include FIH, which with effect from 2003 entered into the statistics on lending from commercial banks and savings banks.

Lending to the domestic non-MFI sector extended by resident mortgage credit institutes

Sources:

Various issues of: Danmarks Nationalbank, *Financial Statistics*; Danmarks Nationalbank, *Monetary Review*; Danmarks Nationalbank, *Annual Report and Accounts*; and Finanstidende. Other sources: Abildgren (2006b) and Finanstilsynet (2001).

Comments:

(1) End of year figures or estimated end of year figures. (2) Lending from mortgage funds is included with effect from 1960. (3) The applied classification of the institutional sectors is the following:

- Commercial lending covers loans secured by the following types of properties: Agricultural buildings, buildings used in trade and industry, office buildings, buildings used for private rental housing and subsidised housing and buildings used for social and cultural purposes etc.

- Private lending covers loans secured by owner-occupied dwellings.

(4) In the period prior to 1992 the figures are based on accumulated flow-of-funds calculations. Prior to 1971, the distribution of the total lending between commercial lending and private lending are furthermore based on the development in the property values by category in the national-wealth calculations in *Finanstidende*.

Commercial lending to the domestic non-MFI sector extended by non-resident banks

Sources:

Various issues of: Danmarks Nationalbank, *Financial Statistics*; Danmarks Nationalbank, *Monetary Review*; Danmarks Nationalbank, *Annual Report and Accounts*; and Statistics Denmark, *Statistical Yearbook*.

Comments:

(1) End of year figures. For the period 1962-1992 calculated on an accumulated flow-of-funds basis. (2) Gross lending, i.e. deposits are not deducted from the figures. (3) Covers credit to Danish non-MFI residents (excluding the central government) from non-resident banking institutions etc., including lending to Danish residents from Danish banks' units abroad. (4) It is assumed that all lending to the domestic non-MFI sector is commercial lending (including loans to self-employed persons).

Unemployment rate

Source:

Abildgren, K. (2006a).

Comments:

(1) Calculated as number of unemployed persons in per cent of the total labour force.

Current account surplus

Sources:

Various issues of: Danmarks Nationalbank, *Monetary Review*; and Statistics Denmark, *Statistical ten-year review*. Other sources: Statistics Denmark (2001).

Comments:

(1) Calculated as per cent of GDP.

General government budget surplus

Source:

Abildgren, K. (2006a).

Comments:

(1) Calculated as per cent of GDP.

Consumer Price Index (CPI)

Source:

Abildgren (2006b).

Comments:

(1) Annual averages.

Index for private sector real Gross Domestic Product (GDP) at factor costs

Sources:

Statistics Denmark (1995); and Statistics Denmark, *StatBank Denmark*.

Comments:

(1) 1951-1990: Based on annual growth in real GDP from national-account figures in constant 1980-prices. (2) Since 1991: Based on annual growth in real gross value added from national-account figures in constant chain-weighted 2000-prices.

Price index for one-family houses

Source:

Abildgren (2006b).

Comments:

(1) Annual averages. (2) Covers the cash-price development for one-family houses in ordinary free trade. (3) Adjusted for several break in series.

Housing wealth and the physical capital stock

Sources:

Various issues of: *Finanstidende*; and Statistics Denmark, *StatBank Denmark*. Other sources: Abildgren (2006b); and Olesen & Pedersen (2006).

Comments:

(1) End of year figures. (2) The market value of residential buildings (including land values) for the period since 1980 is presented in Olesen & Pedersen (2006). For the period 1965-1980 the development in the market value of residential buildings is estimated on the basis of the value for residential buildings (excluding land values) in constant prices from the national account statistics and the price index for one-family houses (including land values). For the period before 1965 the market value of residential buildings is based on the compilation of the national wealth in *Finanstidende*. (3) The value of other construction, machinery and transport equipment and agricultural breeding stock is based on the national account statistics for the period since 1965. For the period before 1965 the value of these capital goods is based on the compilation of the national wealth in *Finanstidende*. (4) Adjustments have been made for break in series in 1965 and 1980.

Private non-financial sector's net financial assets

Source:

Abildgren (2006b).

Comments:

(1) End of year figures. (2) Covers the non-financial private sector and local governments.

Nominal private sector Gross Domestic Product (GDP) at factor costs by industry

Sources:

Abildgren, K. (2005c); Hansen (1983); and Statistics Denmark, *StatBank Denmark*.

Comments:

(1) Current prices. (2) GDP measured as Gross Value Added. (3) Adjusted for break in series 1966 and 1990.

Short- and long-term interest rates

Sources:

For the period 1875-2003: Abildgren (2005a). The data set has been updated to 2006 from the same sources as stated in Abildgren, *op.cit.*

Comments:

(1) Annual averages. (2) Short-term interest rates: 3-month uncollateralised inter-bank interest rate. Germany since 1999: 3-month uncollateralised money market rate in the euro-area. (3) Long-term interest rates: Yield on 10-year government bonds.

Bilateral krone-euro exchange rate

Sources:

For the period 1875-2002: Abildgren (2005b). The data set has been updated to 2006 from the same sources as stated in Abildgren, *op.cit.*

Comments:

(1) Annual averages. (3) Prior to 1999 a synthetic value for the euro exchange rate has been calculated on the basis of the Deutsche mark exchange rate vis-à-vis Danish kroner and the irrevocably fixed conversion rate between euro and Deutsche mark on 1 January 1999.

Private consumption and investments

Sources:

Hansen, Kjærsgaard & Rosted (1988); Hansen (1983) and Statistics Denmark, *StatBank Denmark*.

Comments:

(1) Current prices. (2) Adjusted for break in series 1966.

Appendix B: Data

Table B.1: Lending to the domestic non-MFI sector extended by resident commercial banks and savings banks 1951-2005, end of year, million kroner

	Agriculture	Industry	Services	Commercial lending, total	Private lending	Total lending		
1951	1617	1580	3160	6357	2049	8406		
1952	1690	1648	3372	6710	2103	8813		
1953	1808	1731	3656	7195	2219	9413		
1954	1940	1819	3872	7631	2301	9931		
1955	2016	1911	4017	7945	2337	10281		
1956	2130	1986	4312	8429	2448	10877		
1957	2252	2122	4492	8865	2579	11444		
1958	2375	2252	5024	9651	2842	12493		
1959	2642	2621	5953	11215	3326	14541		
1960	2893	3087	6828	12807	3842	16650		
1961	3053	3510	7525	14089	4298	18387		
1962	3236	3990	8326	15552	4770	20322		
1963	3387	4318	9277	16982	5379	22361		
1964	3616	4884	10535	19035	6239	25275		
1965	3829	5520	11473	20822	7031	27853		
1966	4200	6289	12748	23237	8361	31598		
1967	4383	6796	13948	25127	9452	34580		
1968	4486	7326	15308	27121	10507	37628		
1969	4625	8011	17489	30125	11966	42090		
1970	4815	8452	19087	32354	13482	45836		
1971	4900	8560	19314	32774	15512	48286		
1972	5164	9184	20564	34912	19376	54288		
1973	5418	10418	22908	38744	23633	62378		
1974	5786	11651	22871	40308	26244	66552		
1975	6097	12197	23078	41371	30079	71450		
1976	6566	13024	24615	44205	35380	79585		
1977	7203	14308	28055	49567	39343	88910		
1978	7737	14041	29751	51529	45287	96816		
1979	8230	14849	31927	55006	51939	106945		
1980	10117	18115	39097	67329	49243	116572		
1981	10924	18582	43268	72774	54462	127236		
1982	12196	20317	49794	82307	58335	140642		
1983	12932	20963	55298	89193	68797	157990		
1984	14045	23503	62631	100179	78736	178915		
1985	15351	25692	70125	111168	97188	208356		
1986	16911	34271	102266	153448	120456	273904		
1987	19252	38569	125445	183266	120278	303544		
1988	17984	34971	127257	180212	117700	297912		
1989	17282	43180	142933	203395	120456	323851		
1990	18631	46977	156647	222255	127644	349899		
1991	18327	44661	143651	206639	127406	334045		
1992	20883	43061	146915	210859	120590	331449		
1993	17888	32955	143358	194201	105782	299983		
1994	17699	33123	117804	168626	107167	275793		
1995	16209	37112	122917	176238	115240	291478		
1996	16710	36853	129626	183189	122645	305834		
1997	17658	37946	143809	199413	132973	332386		
1998	21694	46554	164296	232544	142476	375020		
1999	23154	45324	178849	247327	147641	394968		
2000	27833	50371	277342	355547	170653	526200		
2001	34759	60087	313687	408533	179467	588000		
2002	37271	82201	298230	417703	181497	599200		
2003	41220	77383	300475	419078	196692	615770		
2004	48761	87845	322301	458906	244795	703702		
2005	59585	94972	401730	556287	302723	859010		

Table B.2: Lending to the domestic non-MFI sector extended by resident mortgage credit institutes 1951-2005, end of year, million kroner

	Commercial lending	Private lending	Total lending				
1951	4238	3780	8019				
1952	4329	3930	8258				
1953	4445	4089	8533				
1954	4634	4271	8906				
1955	4854	4524	9378				
1956	5089	4771	9860				
1957	5354	5012	10366				
1958	5736	5407	11143				
1959	6415	5999	12414				
1960	7150	6800	13950				
1961	7847	8148	15995				
1962	8977	9595	18573				
1963	10387	11292	21679				
1964	12248	13527	25775				
1965	14632	16569	31202				
1966	17194	19979	37173				
1967	19478	23476	42954				
1968	22520	27983	50502				
1969	27050	34218	61269				
1970	30955	39668	70623				
1971	33931	45688	79619				
1972	42872	53049	95921				
1973	54958	65350	120308				
1974	66784	78284	145068				
1975	78649	89620	168269				
1976	87114	101632	188746				
1977	95728	111968	207696				
1978	106487	123038	229525				
1979	117892	136598	254490				
1980	126053	147229	273282				
1981	136127	160294	296421				
1982	145527	173346	318873				
1983	160190	200206	360396				
1984	180071	235632	415702				
1985	215887	280892	496779				
1986	252349	306880	559229				
1987	286979	329771	616749				
1988	320737	345412	666148				
1989	340214	348459	688673				
1990	355194	347593	702787				
1991	372468	348106	720575				
1992	379756	349229	728985				
1993	392800	367700	760500				
1994	383600	389500	773100				
1995	391200	409200	800400				
1996	401700	445000	846700				
1997	414900	495000	909900				
1998	434900	552900	987800				
1999	454800	596100	1050900				
2000	466800	628600	1095400				
2001	494600	697200	1191800				
2002	527500	757100	1284600				
2003	567300	826200	1393500				
2004	607700	880700	1488400				
2005	660800	1002000	1662800				

Table B.3: Commercial lending to the domestic non-MFI sector extended by non-resident banks 1951-2005, end of year, million kroner

	Total						
1951	75						
1952	54						
1953	89						
1954	126						
1955	104						
1956	118						
1957	149						
1958	206						
1959	238						
1960	228						
1961	258						
1962	309						
1963	503						
1964	545						
1965	848						
1966	1009						
1967	1194						
1968	914						
1969	838						
1970	1821						
1971	2659						
1972	2937						
1973	5352						
1974	8832						
1975	8763						
1976	10357						
1977	17859						
1978	21008						
1979	28463						
1980	30917						
1981	31261						
1982	28478						
1983	33797						
1984	55418						
1985	87119						
1986	98138						
1987	119155						
1988	147300						
1989	165716						
1990	197734						
1991	213434						
1992	188834						
1993	177000						
1994	147000						
1995	116000						
1996	120000						
1997	131000						
1998	139000						
1999	201000						
2000	169000						
2001	136000						
2002	131000						
2003	143000						
2004	109000						
2005	157000						

Table B.4: Unemployment rate 1951-2005, per cent

1951	3.3						
1952	4.2						
1953	3.3						
1954	2.9						
1955	3.5						
1956	3.9						
1957	3.8						
1958	3.6						
1959	2.3						
1960	1.7						
1961	1.3						
1962	1.2						
1963	1.7						
1964	0.9						
1965	0.8						
1966	0.9						
1967	1.1						
1968	2.0						
1969	1.6						
1970	1.2						
1971	1.5						
1972	1.5						
1973	1.0						
1974	2.2						
1975	5.0						
1976	5.0						
1977	6.0						
1978	6.9						
1979	5.9						
1980	6.7						
1981	8.7						
1982	9.4						
1983	10.0						
1984	9.7						
1985	8.7						
1986	7.5						
1987	7.6						
1988	8.3						
1989	9.0						
1990	9.3						
1991	10.1						
1992	10.9						
1993	12.0						
1994	11.6						
1995	9.9						
1996	8.4						
1997	7.6						
1998	6.3						
1999	5.4						
2000	5.1						
2001	4.9						
2002	5.0						
2003	5.9						
2004	6.0						
2005	5.4						

Table B.5: Current account surplus 1951-2005, per cent of GDP

1951	0.7
1952	0.8
1953	1.1
1954	-1.9
1955	0.6
1956	-0.4
1957	0.9
1958	2.6
1959	0.3
1960	-1.0
1961	-1.7
1962	-3.3
1963	0.3
1964	-2.2
1965	-1.7
1966	-1.8
1967	-2.4
1968	-1.6
1969	-2.8
1970	-3.9
1971	-2.5
1972	-0.4
1973	-2.2
1974	-3.5
1975	-1.8
1976	-5.1
1977	-3.9
1978	-2.4
1979	-4.8
1980	-3.7
1981	-3.0
1982	-4.3
1983	-2.8
1984	-3.4
1985	-4.7
1986	-5.5
1987	-2.9
1988	-1.4
1989	-1.4
1990	0.5
1991	0.9
1992	2.1
1993	2.8
1994	1.5
1995	0.7
1996	1.5
1997	0.4
1998	-0.9
1999	1.8
2000	1.4
2001	3.1
2002	2.5
2003	3.4
2004	3.1
2005	3.8

Table B.6: General government budget surplus 1951-2005, per cent of GDP

1951	-0.4
1952	-0.4
1953	-1.0
1954	-0.7
1955	0.1
1956	0.6
1957	1.1
1958	1.3
1959	1.9
1960	2.2
1961	0.1
1962	-0.1
1963	0.6
1964	0.8
1965	0.6
1966	0.9
1967	-0.6
1968	-0.4
1969	-1.7
1970	1.3
1971	4.0
1972	3.9
1973	4.2
1974	2.6
1975	-1.9
1976	-0.6
1977	-0.7
1978	-0.8
1979	-2.2
1980	-3.7
1981	-7.0
1982	-9.8
1983	-7.9
1984	-4.6
1985	-2.7
1986	2.3
1987	1.5
1988	0.3
1989	-0.7
1990	-1.3
1991	-2.9
1992	-2.6
1993	-3.8
1994	-3.3
1995	-2.9
1996	-1.9
1997	-0.5
1998	0.0
1999	1.4
2000	2.3
2001	1.2
2002	0.2
2003	-0.1
2004	1.7
2005	4.1

Table B.7: Consumer price index (CPI) 1950-2005, 1980=100

1950	16.0
1951	17.9
1952	18.3
1953	18.2
1954	18.6
1955	19.8
1956	20.8
1957	21.0
1958	21.2
1959	21.7
1960	22.2
1961	23.2
1962	24.7
1963	26.0
1964	26.9
1965	28.6
1966	30.6
1967	32.9
1968	35.5
1969	36.7
1970	39.1
1971	41.4
1972	44.1
1973	48.2
1974	55.6
1975	60.9
1976	66.4
1977	73.8
1978	81.2
1979	89.0
1980	100.0
1981	111.7
1982	123.0
1983	131.5
1984	139.8
1985	146.4
1986	151.7
1987	157.8
1988	165.0
1989	172.9
1990	177.4
1991	181.7
1992	185.5
1993	187.8
1994	191.6
1995	195.6
1996	199.7
1997	204.1
1998	207.9
1999	213.0
2000	219.3
2001	224.4
2002	229.8
2003	234.7
2004	237.5
2005	241.7

Table B.8: Index for private sector real GDP at factor costs 1951-2005, 1980=100

1951	37.81
1952	37.88
1953	39.87
1954	41.09
1955	41.82
1956	42.22
1957	44.76
1958	46.05
1959	49.69
1960	52.92
1961	57.33
1962	60.45
1963	61.64
1964	67.53
1965	71.28
1966	72.52
1967	74.45
1968	77.67
1969	81.78
1970	81.75
1971	83.78
1972	88.04
1973	91.15
1974	91.36
1975	88.72
1976	93.61
1977	95.20
1978	96.23
1979	100.10
1980	100.00
1981	97.93
1982	100.57
1983	103.20
1984	108.77
1985	113.45
1986	118.09
1987	119.95
1988	122.71
1989	124.24
1990	127.24
1991	129.39
1992	132.05
1993	132.17
1994	139.66
1995	144.49
1996	147.95
1997	153.09
1998	155.58
1999	161.05
2000	169.14
2001	170.28
2002	170.45
2003	171.29
2004	174.00
2005	179.60

Table B.9: Price index for one-family houses 1951-2005, 1995=100

1951	4.9						
1952	5.0						
1953	5.1						
1954	5.3						
1955	5.5						
1956	5.6						
1957	6.0						
1958	6.1						
1959	6.5						
1960	7.3						
1961	9.2						
1962	10.3						
1963	11.1						
1964	12.6						
1965	13.5						
1966	15.4						
1967	16.3						
1968	16.9						
1969	17.8						
1970	20.7						
1971	22.1						
1972	24.3						
1973	28.9						
1974	33.8						
1975	36.7						
1976	40.2						
1977	45.5						
1978	52.8						
1979	58.1						
1980	57.3						
1981	54.5						
1982	53.4						
1983	65.1						
1984	75.1						
1985	87.6						
1986	98.3						
1987	90.5						
1988	92.0						
1989	92.0						
1990	86.0						
1991	86.0						
1992	84.0						
1993	83.0						
1994	93.0						
1995	100.0						
1996	110.9						
1997	123.5						
1998	134.4						
1999	143.7						
2000	153.0						
2001	162.0						
2002	168.0						
2003	173.2						
2004	188.6						
2005	220.9						

Table B.10: Housing wealth and the physical capital stock 1951-2005, end of year, current prices, million kroner

	Residential buildings	Other construction	Machinery and transport equipment	Agricultural breeding stock	Total			
1951	20475	32805	14941	2166	70387			
1952	21624	34699	16311	2258	74892			
1953	22669	36476	17556	2120	78820			
1954	24340	38608	18303	2258	83509			
1955	25698	40502	19174	2166	87541			
1956	27056	43345	21291	2258	93950			
1957	29564	47490	23283	2350	102687			
1958	31235	49740	24404	2350	107729			
1959	34578	55069	24777	2581	117005			
1960	39592	61701	26894	2442	130629			
1961	50666	70820	29260	2488	153233			
1962	58918	79228	32372	2350	172869			
1963	65918	86097	35734	2304	190053			
1964	75319	97111	38971	2811	214213			
1965	86497	109309	43080	2811	241697			
1966	104108	119960	47141	2670	273879			
1967	116526	129991	50327	2566	299410			
1968	126679	144351	53441	2730	327201			
1969	141876	160165	58503	3018	363562			
1970	173803	178036	64755	3066	419660			
1971	194805	194207	73594	3453	466059			
1972	228281	207887	80235	4359	520762			
1973	288622	235990	91239	4723	620574			
1974	349941	277582	107688	4996	740207			
1975	390559	309207	120942	5401	826109			
1976	443704	335200	139373	5761	924038			
1977	517211	366747	157877	6206	1048041			
1978	616030	407052	175559	6529	1205170			
1979	692927	466698	197400	6682	1363707			
1980	693700	530862	222087	7291	1453940			
1981	653400	589647	242885	8227	1494159			
1982	683800	648244	266819	8652	1607515			
1983	836000	692444	289315	8523	1826282			
1984	956100	729215	314974	8363	2008652			
1985	1227000	755003	345811	7774	2335588			
1986	1204800	786463	379838	6883	2377984			
1987	1168100	847685	405888	6361	2428034			
1988	1226800	914915	428886	6638	2577239			
1989	1184200	977037	462603	6646	2630486			
1990	1123400	1038364	491576	6297	2659637			
1991	1141800	1087711	522016	6092	2757619			
1992	1077400	1132602	545069	5947	2761018			
1993	1159300	1170537	556444	6127	2892408			
1994	1219100	1194328	563115	6653	2983196			
1995	1373700	1230912	584368	7047	3196027			
1996	1511200	1280184	606686	7384	3405454			
1997	1703200	1332242	626266	6458	3668166			
1998	1905200	1393289	644255	5829	3948573			
1999	2093100	1445659	659628	6338	4204725			
2000	2285800	1572616	688153	6912	4553481			
2001	2511200	1595714	719858	8662	4835434			
2002	2660700	1629506	729810	9256	5029272			
2003	2854400	1690016	758952	7732	5311100			
2004	3276700	1749803	775314	7213	5809030			
2005	4077500	1792509	799789	6670	6676468			

Table B.11: Private non-financial sector's net financial assets 1951-2005, end of year, current prices, million kroner

1951	3198
1952	3364
1953	3322
1954	1959
1955	1630
1956	1175
1957	962
1958	1500
1959	857
1960	213
1961	-409
1962	-2049
1963	-2661
1964	-5258
1965	-7243
1966	-10438
1967	-12673
1968	-14185
1969	-19886
1970	-24931
1971	-28042
1972	-30435
1973	-38600
1974	-47804
1975	-40385
1976	-49802
1977	-61065
1978	-60894
1979	-69425
1980	-68107
1981	-50951
1982	-17428
1983	15159
1984	16911
1985	-433
1986	-39146
1987	-69686
1988	-82617
1989	-71882
1990	-58144
1991	-1467
1992	47562
1993	110299
1994	174976
1995	183982
1996	214659
1997	178068
1998	167713
1999	290177
2000	201302
2001	175030
2002	164763
2003	210166
2004	271632
2005	298296

Table B.12: Private sector Gross Domestic Product (GDP) at factor costs by industry 1951-2005, current prices, million kroner

	Agriculture	Industry	Private services	Total			
1951	3676	6643	9843	20162			
1952	4179	6920	10268	21367			
1953	4289	7557	10732	22578			
1954	3997	8092	11399	23488			
1955	4111	8250	12075	24435			
1956	4447	8645	12935	26027			
1957	4354	9429	14081	27863			
1958	4241	9972	14642	28854			
1959	4475	11363	16009	31848			
1960	4532	12620	17397	34549			
1961	4765	14169	19250	38185			
1962	4962	16125	21298	42385			
1963	5159	16705	22832	44696			
1964	5833	19408	25562	50803			
1965	5859	21831	28713	56404			
1966	5947	23686	31715	61348			
1967	5676	25739	35087	66502			
1968	5964	28168	38472	72604			
1969	7003	31276	44520	82799			
1970	6440	33886	48789	89115			
1971	7104	37183	54388	98675			
1972	8465	41696	61696	111857			
1973	10505	46849	73107	130461			
1974	11559	51724	81297	144580			
1975	11184	57528	91255	159967			
1976	12163	63371	107299	182833			
1977	14824	68835	118718	202377			
1978	16509	74718	130839	222066			
1979	15821	79882	146309	242012			
1980	17305	91328	150671	259304			
1981	21034	93348	164464	278846			
1982	27395	105811	185782	318988			
1983	27275	116687	207656	351618			
1984	33367	130746	230707	394820			
1985	34744	141203	253427	429374			
1986	33739	152238	273161	459138			
1987	31350	161027	290893	483270			
1988	30435	165356	299292	495083			
1989	36441	173298	319753	529492			
1990	36618	178230	344233	559081			
1991	35492	183851	364949	584292			
1992	34749	191671	380515	606935			
1993	33223	187116	389195	609534			
1994	34223	200969	418766	653958			
1995	38147	213411	432295	683853			
1996	42535	221957	447126	711618			
1997	44035	233749	470508	748292			
1998	36965	242836	481486	761287			
1999	40749	252060	503578	796387			
2000	62545	264281	539495	866321			
2001	62590	265667	561804	890061			
2002	56582	269945	581564	908091			
2003	54031	269506	601262	924799			
2004	60701	273221	626057	959979			
2005	70802	284586	666930	1022318			

Table B.13: Short- and long-term interest rates in Denmark and Germany 1951-2005, per cent per annum

	Short-term interest rate - Denmark	Short-term interest rate - Germany	Long-term interest rate - Denmark	Long-term interest rate - Germany				
1951	5.00	7.08	5.13	6.99				
1952	5.00	6.39	5.28	6.54				
1953	4.88	4.34	5.10	6.71				
1954	5.00	3.75	5.28	6.97				
1955	5.79	4.20	5.55	6.70				
1956	6.00	6.15	5.68	6.90				
1957	6.00	4.95	5.75	7.50				
1958	5.65	3.60	5.23	6.80				
1959	5.15	3.22	5.40	5.77				
1960	5.96	5.10	6.10	6.40				
1961	6.63	3.59	6.68	5.90				
1962	7.00	3.42	7.24	5.90				
1963	6.81	3.41	7.11	6.05				
1964	6.54	4.09	7.23	6.23				
1965	7.00	5.14	8.49	7.04				
1966	7.00	6.63	8.98	8.12				
1967	7.04	4.27	9.21	6.96				
1968	7.17	3.79	9.03	6.45				
1969	8.50	5.79	9.69	6.84				
1970	9.50	9.42	11.07	8.33				
1971	8.19	7.15	10.50	7.99				
1972	7.77	5.61	10.44	7.87				
1973	8.10	12.14	11.83	9.33				
1974	13.34	9.43	14.13	10.38				
1975	6.47	4.58	12.39	8.48				
1976	10.28	4.08	14.19	7.80				
1977	14.48	3.98	15.71	6.16				
1978	15.42	3.48	15.48	5.73				
1979	12.63	6.25	16.57	7.42				
1980	16.93	8.73	20.38	8.50				
1981	14.84	11.89	19.55	10.38				
1982	16.92	8.52	22.11	8.95				
1983	12.81	5.43	14.55	7.89				
1984	11.77	5.71	14.12	7.78				
1985	10.33	5.34	11.33	6.87				
1986	9.23	4.64	10.20	5.88				
1987	10.11	4.06	11.29	6.14				
1988	8.53	4.33	9.87	6.49				
1989	9.59	7.09	9.70	6.89				
1990	10.89	8.51	10.63	8.67				
1991	9.70	9.31	9.27	8.43				
1992	11.04	9.38	8.99	7.77				
1993	10.41	7.13	7.28	6.45				
1994	6.13	5.22	7.85	6.85				
1995	6.07	4.38	8.27	6.82				
1996	3.87	3.20	7.19	6.22				
1997	3.66	3.24	6.26	5.66				
1998	4.15	3.46	5.03	4.57				
1999	3.31	2.88	4.94	4.51				
2000	4.91	4.33	5.66	5.27				
2001	4.62	4.20	5.09	4.81				
2002	3.48	3.25	5.05	4.79				
2003	2.38	2.27	4.31	4.10				
2004	2.14	2.05	4.30	4.06				
2005	2.17	2.14	3.40	3.38				

Table B.14: Bilateral krone-euro exchange rate 1949-2006, DKK per EUR

1949	3.7071						
1950	3.2213						
1951	3.2213						
1952	3.2213						
1953	3.2340						
1954	3.2396						
1955	3.2297						
1956	3.2359						
1957	3.2349						
1958	3.2323						
1959	3.2285						
1960	3.2359						
1961	3.3648						
1962	3.3791						
1963	3.3902						
1964	3.4061						
1965	3.3895						
1966	3.3822						
1967	3.4319						
1968	3.6701						
1969	3.7534						
1970	4.0251						
1971	4.1669						
1972	4.2647						
1973	4.4458						
1974	4.6124						
1975	4.5737						
1976	4.7012						
1977	5.0668						
1978	5.3762						
1979	5.6236						
1980	6.0709						
1981	6.1661						
1982	6.7185						
1983	7.0058						
1984	7.1192						
1985	7.0447						
1986	7.2951						
1987	7.4455						
1988	7.4975						
1989	7.6050						
1990	7.4887						
1991	7.5430						
1992	7.5599						
1993	7.6729						
1994	7.6657						
1995	7.6498						
1996	7.5382						
1997	7.4509						
1998	7.4486						
1999	7.4356						
2000	7.4537						
2001	7.4521						
2002	7.4304						
2003	7.4307						
2004	7.4398						
2005	7.4519						
2006	7.4591						

Table B.15: Private consumption and investments 1951-2005, million kroner in current prices

	Private consumption	Gross fixed capital formation				Total		
		Residential buildings	Other construction	Machinery and transport equipment	Agricultural breeding stock			
1951	16623	1453	1883	1533	-260	4610		
1952	17127	1577	2043	1763	232	5615		
1953	17866	1781	2136	1852	90	5859		
1954	19194	1962	2107	2010	27	6106		
1955	20071	1676	2162	1935	-156	5617		
1956	21246	1645	2540	2175	221	6581		
1957	21780	2061	2541	2383	34	7019		
1958	22911	1910	2643	2669	-32	7191		
1959	24754	2472	2960	3250	-90	8592		
1960	26643	2625	3547	3488	172	9833		
1961	29627	3295	4058	3983	164	11501		
1962	33297	3778	4339	4600	145	12862		
1963	35170	3756	4414	4557	-267	12460		
1964	39451	5037	5520	5616	122	16295		
1965	43287	5909	6373	5813	92	18186		
1966	48099	6503	6389	6533	-3	19422		
1967	53244	7613	7125	6859	-70	21527		
1968	58002	8008	7840	7477	-72	23253		
1969	64384	10567	8983	8505	-15	28040		
1970	71202	11029	10191	9820	-101	30939		
1971	76806	11503	11369	10518	-55	33335		
1972	83380	15877	12092	11899	89	39957		
1973	98111	18875	13298	13652	30	45855		
1974	109602	17369	16015	15996	53	49433		
1975	125185	16756	15929	16449	-139	48995		
1976	148087	21401	18339	21980	-56	61664		
1977	164757	21152	21084	24014	22	66272		
1978	181150	22819	23046	26852	94	72811		
1979	201195	24344	25435	28918	-191	78506		
1980	214760	22358	25432	28397	-261	75926		
1981	236363	18430	23101	27313	-164	68680		
1982	264553	19180	27412	34987	-152	81427		
1983	287735	23062	28502	39745	-321	90988		
1984	319510	29475	29658	48141	-296	106978		
1985	345966	30412	37083	59561	-91	126965		
1986	375492	37992	42677	68930	-324	149275		
1987	384220	39443	48304	65016	-447	152316		
1988	393679	36971	48544	60079	-181	145413		
1989	412680	35645	48832	68330	-53	152754		
1990	423180	33210	50433	70710	234	154587		
1991	442252	30372	46163	76697	-72	153160		
1992	458943	30966	47152	72449	-56	150511		
1993	461579	30531	45214	67760	44	143549		
1994	504144	34912	44444	77057	-54	156359		
1995	521793	39782	49088	86494	91	175455		
1996	541721	43092	58235	82951	99	184377		
1997	569026	48255	61767	93032	-19	203035		
1998	590289	50462	65714	101449	92	217717		
1999	599132	54766	62749	98808	78	216401		
2000	616682	61086	67642	109241	120	238089		
2001	631687	57752	73100	110497	-21	241328		
2002	652256	59535	69472	112665	-17	241655		
2003	666942	68054	67709	106805	-19	242549		
2004	708513	78408	67263	109899	-221	255349		
2005	754067	93492	68152	125720	-141	287223		