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Nonbanks, Credit Provision and the Transmission of Monetary Policy in Denmark

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Abstract

This memo provides three insights into the inner workings of nonbank lending in Denmark. First, we show that nonbanks are an important source of funding for Danish firms and households, accounting for about 8 per cent of total unsecured corporate and consumer credit. Second, we show that the risk profiles of firms borrowing from banks and nonbanks appear similar. Instead, households borrowing from nonbanks appear to be riskier compared to those borrowing from banks.

Third, we provide evidence on how the presence of nonbank lenders influences the transmission of monetary policy. We show that nonbanks increase their share of total credit when interest rates are hiked, attenuating the transmission of monetary tightening. This shift in the credit share away from banks during episodes of monetary policy tightening is not accompanied by riskier lending, as nonbanks tend to increase their lending mainly to ex-ante safer firms and households.

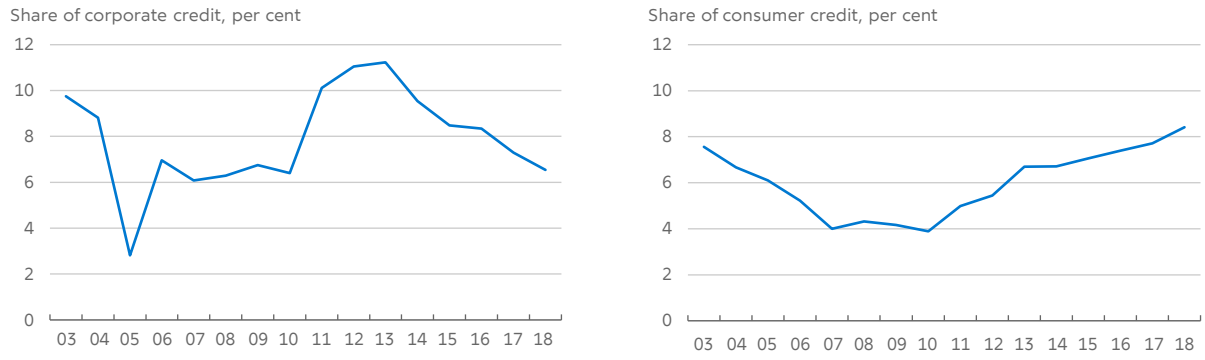
The rise of nonbank lenders raises many questions

Global lending markets have changed dramatically since the global financial crisis of 2007-2009. In response to the crisis, regulation of traditional banks tightened, which contributed to a drop in total bank credit. This development was accompanied by an increase in credit provided by various nonbank financial intermediaries who operate outside the scope of traditional banking regulation and supervision. The growing importance of nonbanks in today's credit markets raises a number of questions about their impact on the overall credit supply, financial stability and the transmission of monetary policy.

How important are nonbank lenders in corporate and consumer credit markets in Denmark? Who are these nonbank lenders and who borrows from them instead of borrowing from traditional banks? A key concern is whether less regulated nonbanks lend primarily to riskier borrowers, thus threatening financial stability. Lastly, how do nonbanks affect the transmission of monetary policy to credit markets? Does a tightening of monetary policy lead them to cut their lending, similar to traditional banks, or do they tend to increase their lending by picking up some of the slack left by traditional banks?

Share of nonbank credit in corporate and consumer credit markets

Chart 1



Note.: The shares are computed as the ratio between loan balances served by nonbanks to total unsecured loan balances in a given year.

Source: Statistics Denmark and own computations.

These questions have been the topic of several international analyses in recent years. However, the existing evidence on the role of nonbanks in credit markets is almost exclusively based on data from the United States, where nonbanks today account for more than 50 per cent of mortgage originations and half of all consumer credit.[1] Due to the many differences between credit markets in the United States and Europe, it is not clear whether existing insights apply to European nonbanks. In this memo, we provide an answer to these questions by presenting novel evidence on the role of nonbank lenders in the Danish corporate and consumer credit markets.

To this end, we use loan-level data from the Danish Tax Agency (SKAT) on the universe of unsecured loans extended between 2003 and 2018 to Danish non-financial corporations and individuals by banks and nonbanks.[2] Nonbanks in our sample are financial firms that are not deposit-taking institutions or mortgage banks. These are mainly specialised finance companies, financial leasing firms, wealth managers other than insurance companies and pension funds, and consumer finance companies. The loan-level data is based on tax filings by credit granting institutions in Denmark that report outstanding balances on loans at the end of a calendar year, as well as interest paid on these loans over the course of said year. We combine these two datasets with annual information on the balance sheets and income statements of firms, and tax records of households, as recorded by Statistics Denmark. This information allows us to get a better understanding of the characteristics of borrowers relying primarily on credit from nonbanks and compare them to the characteristics of borrowers at traditional banks.

We find that the share of nonbank credit in total unsecured credit is substantial, averaging around 8 per cent of total credit in both the consumer credit and the corporate credit markets. Considering that the value of unsecured credit in Denmark is equal to approximately 50 per cent of Danish GDP, our results highlight that nonbanks are economically significant actors in Danish credit markets.

When it comes to borrower characteristics, we find that firms that rely mainly on nonbank lenders have larger balance sheets and slightly worse financial

[1] See, for example, Chernenko et al. (2020), Elliott et al. (2019), Elliott et al. (2021) and Fleckenstein et al. (2020).
[2] Unsecured loans do not include mortgages.

ratios. While households relying mainly on nonbank credit borrow less than those relying on traditional banks, nonbank borrowers tend to have less disposable income and are somewhat more likely to have recently unemployed members.

In a regression analysis that uses monetary policy shocks from the euro area, which are exogenous to Danish economic conditions, we also show that nonbanks react differently to changes in monetary policy compared to banks in Denmark. Our empirical strategy relies on the fact that Danish monetary policy is exogenous to Danish economic conditions, as the sole objective of monetary policy in Denmark is to maintain a fixed exchange rate between the Danish krone and the euro. We find a significant increase in the volume of outstanding nonbank debt relative to bank debt in both corporate and consumer credit markets in response to a monetary tightening. Our results indicate that a surprise increase of interest rates of one per cent would yield an additional supply of nonbank credit equal to 2.5 per cent of Danish GDP. Focusing on corporate credit, the implied increase in nonbank loans would be equivalent to 1.5 per cent of total outstanding corporate credit (secured and unsecured).

Our findings suggest that the presence of nonbank lenders attenuates the effectiveness of contractionary monetary policy in achieving lower credit growth. This result should be interpreted with care in a context where Danish monetary policy does not try to achieve a certain level of credit growth through interest rates changes, but rather focuses solely on its fixed exchange rate objective. Our results also suggest that nonbanks increase their lending especially to ex-ante safer borrowers when it comes to households, and to firms with less sales.

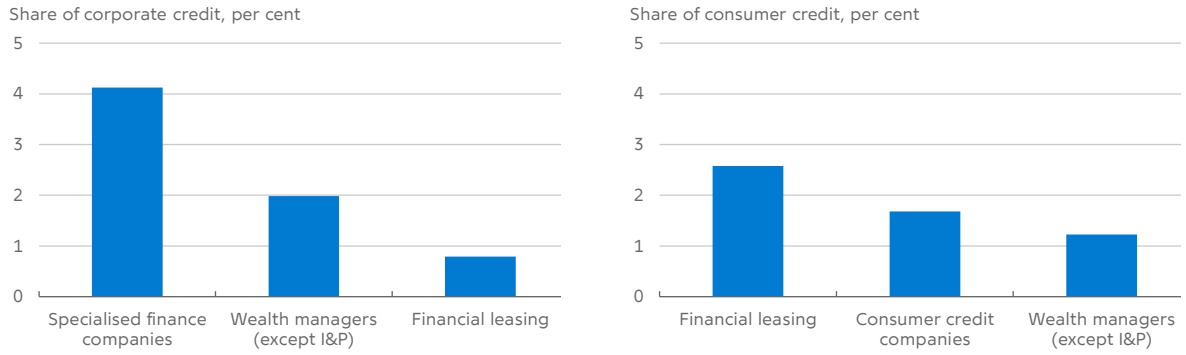
Nonbanks are important players in consumer and corporate credit markets

Chart 1 depicts the share of unsecured credit extended by nonbank lenders relative to total unsecured credit in Denmark. The chart on the left shows that nonbank lenders accounted on average for 7.9 per cent of total unsecured credit to non-financial corporations (NFCs) between 2003 and 2018. The share of nonbanks of total corporate lending dropped from about 10 per cent to 3 per cent between 2003 and 2005. It then increased to around 12 per cent in 2013, but has been on a steady decline since then. Danish firms have been deleveraging since the global financial crisis, and this deleveraging may have influenced the decline in the nonbank share. As banks have more long-lasting relationships with firms, it may have become increasingly difficult for nonbanks to increase their market share in an environment where most borrowers deleverage and there is little inflow of new borrowers.

The chart on the right describes the evolution of debt issued by nonbanks to Danish households as a share of total unsecured consumer credit. The nonbank share dropped from around 8 per cent to 4 per cent between 2003 and 2007. It stayed relatively constant during the global financial crisis and immediately after, but increased considerably since 2010, reaching 8.4 per cent in 2018. This evolution highlights the importance of assessing potential threats to financial stability and the transmission of monetary policy that may arise if nonbanks become an even bigger player in consumer and corporate credit markets.

Largest nonbank lender industries in corporate and consumer credit markets

Chart 2



Note.: The shares are computed as the ratio between loan balances served by a given nonbank industry to total loan balances across all lender industries in a given year. Lender industries are defined based on 6-digit NACE codes. I&P stands for Insurance and Pension.

Source: Statistics Denmark and own computations.

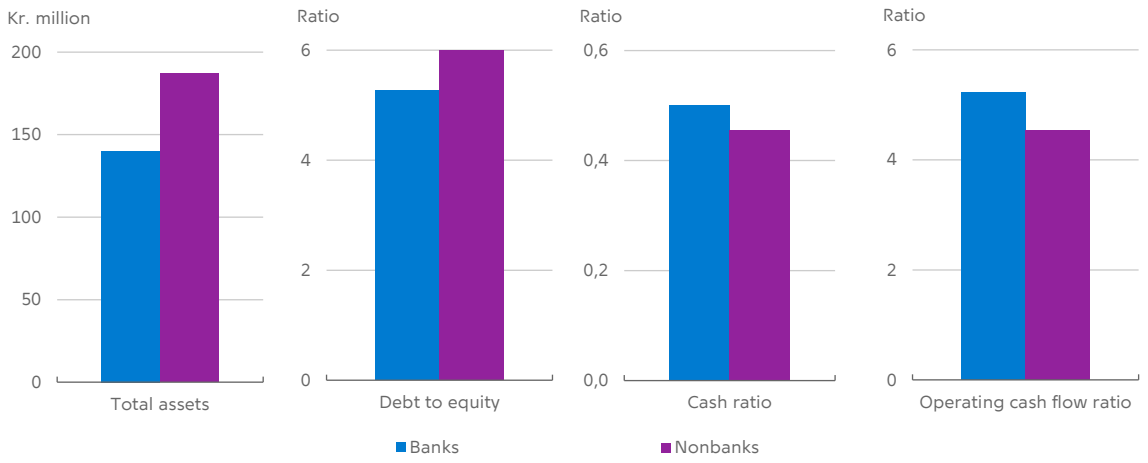
To better understand the nature of nonbank lenders in Denmark we investigate the main nonbank industries. Chart 2 depicts the share of credit to NFCs and households extended by the three largest nonbank lender industries, accounting for roughly 80 per cent of the nonbank lending market, which we determine by using the 6-digit NACE industry codes for each lender in our data.

The chart on the left shows that nonbanks not involved in monetary intermediation, such as specialised finance companies, are the most important type of nonbank lender in the Danish corporate credit market. They account for more than 4 per cent of total unsecured corporate loans. Typically, these institutions finance themselves by issuing bonds and their lending can take a variety of forms, such as loans, international trade financing, and the provision of long-term finance to industry by industrial loan companies. These lenders tend to have a competitive advantage in terms of lending to particular industries, but are also likely to be more sensitive to idiosyncratic demand shocks due to their highly concentrated lending portfolio relative to the portfolio of a typical bank.

The second largest type of nonbanks in the Danish corporate credit market comprises wealth managers, venture capital firms and investment funds that invest for their own account in securities, bonds and other instruments. These institutions account for nearly 2 per cent of all unsecured corporate credit, and roughly 25 per cent of the nonbank lending market. Lastly, firms engaged in financial leasing are the third largest nonbank lender type and account for about 0.8 per cent of unsecured corporate credit.

Corporate credit: Borrower characteristics

Chart 3



Note.: All values in the charts above are averages of the respective variables. Firms are grouped into bank vs. nonbank depending on the lender type from which they borrow most. Firms' cash ratio measures their cash and cash equivalents relative to their outstanding short-term debt. The operating cash flow ratio illustrates firms' sales and other operating income relative to their short-term debt.

Source: Statistics Denmark and own computations.

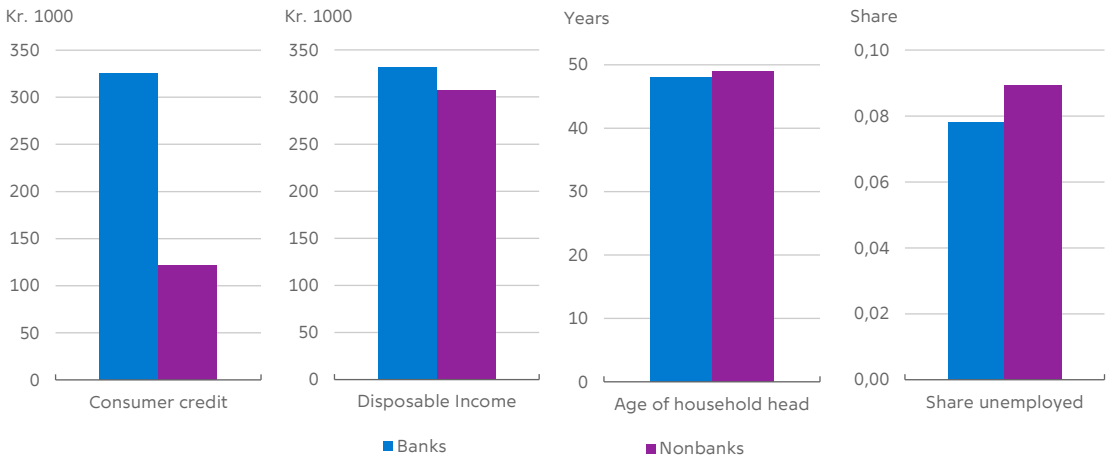
In the consumer credit market, the right panel of Chart 2 shows that financial leasing companies dominate the list of nonbank lenders. These lenders are responsible for close to 3 per cent of total consumer credit in Denmark. Consumer credit companies that are not deposit-taking institutions account for about 1.5 per cent, while wealth managers, other than insurance companies and pension funds, extend around 1 per cent of total consumer credit. Overall, our evidence suggests that a variety of nonbanks are important in consumer credit markets while the distribution of nonbank lenders in the corporate credit market is more concentrated around specialised finance companies.

How do nonbank borrowers differ from bank borrowers?

We now turn our attention to debtors and analyse how borrowers from nonbanks differ from those borrowing from traditional banks. Comparing debtors across the two types of lenders can help us get a preliminary understanding of whether nonbanks have a riskier customer base relative to that of banks. Between 2003 and 2018, NFCs in Denmark had on average 1.8 lenders in a given year. However, this average masks substantial differences in corporate lending relationships. While the median firm borrowed from only one lender, 10 per cent of firms had at least 3 distinct lenders in a given year. Nevertheless, most firms can be clearly classified as bank or nonbank borrowers since the majority of NFCs obtain their funding exclusively from one type of lender. In other words, relatively few firms have simultaneous debts with both bank and nonbank lenders.

Consumer credit: Borrower characteristics

Chart 4



Note.: All values in the charts above are averages of the respective variables. Households are grouped into bank vs. nonbank depending on the lender type from which they borrow most. Consumer credit is the total amount of loans taken out by the household in our loan-level data. Disposable income is measured as income after tax and interest payments but including rent value of own property. Share unemployed stands for the share of households that have had an unemployed member during the previous 24 months.

Source: Statistics Denmark and own computations.

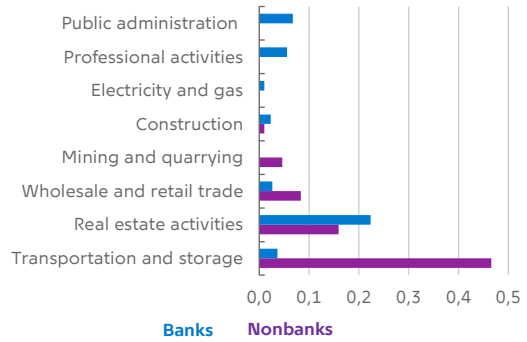
Chart 3 depicts several key firm characteristics by their main type of lender, which is the lender type holding more than 50 per cent of the firm's outstanding loan volume. Nonbank borrowers have larger balance sheets as measured by total assets and somewhat worse financial ratios compared to bank borrowers. While the differences we document in Chart 3 are not statistically significant, nonbank borrowers may still be perceived as slightly riskier from a creditor's perspective. The chart highlights this by contrasting three important financial ratios across the two types of borrower groups. Nonbank borrowers rely more on debt financing than bank borrowers, as measured by their debt-to-equity ratios. Moreover, nonbank borrowers are somewhat less liquid and profitable compared to bank borrowers, as highlighted by their cash ratios and their operating cash flow ratios.

Next, we contrast households that borrow primarily from nonbanks to the ones that rely mainly on bank financing. Households have on average 2.12 lending relationships in a given year. This average overemphasises the importance of multiple lenders per borrower, as most of the households in our sample borrow from only one lender. About 10 per cent of households have more than 4 lending relationships, which drives up the average number of lenders per household.

Chart 4 shows that households that are primarily served by banks have around kr. 325,000 in outstanding unsecured debt while households that borrow mostly from nonbanks are less indebted, with an outstanding balance of kr. 121,000.[3] Moreover, households borrowing mostly from nonbanks have slightly lower disposable incomes, tend to be older and are more likely to have been unemployed in the past 24 months. While quantitatively small, the differences between the two borrower groups are statistically significant. This may imply that lenders perceive nonbank borrowers as slightly riskier, similar to our results for corporate borrowers.

[3] Values are deflated to 2015 levels in order to account for inflation during our sample period.

Share of nonbank and bank debt held in various industries Chart 5



Note: Blue bars indicate the share of outstanding corporate bank debt in the respective industries relative to total outstanding bank debt. Similarly, purple bars indicate the share of corporate nonbank debt in the industry among total nonbank debt. Public administration includes defence sector. Professional activities include scientifice and technical activities. Electricity and gas include steam and air conditioning supply.

Source: Statistics Denmark and own computations

Sectoral differences in bank vs nonbank lending

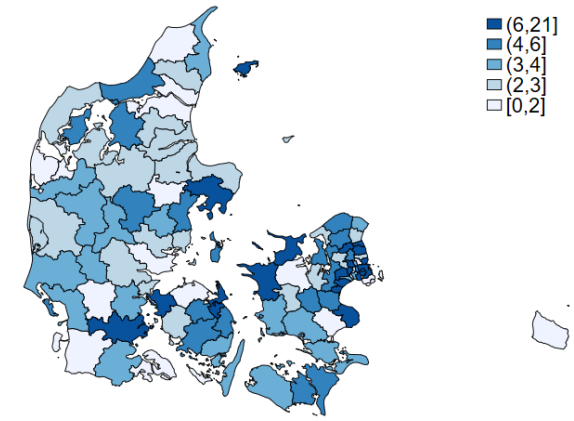
A potential explanation for the differences in financial ratios across bank and nonbank corporate borrowers may be that they operate in different industries, and consequently with different business and financing models. To explore this hypothesis, Chart 5 illustrates to which industries banks and nonbanks primarily lend most. For each lender type, the chart depicts the share of credit extended to borrowers in a given industry relative to total credit given by the respective lender type.

Chart 5 shows that nonbanks lend primarily to firms in the transport and storage industry (46 per cent of nonbank credit), and in particular to firms operating sea and coastal freight water transport. The industry receiving the second-most nonbank credit (16 per cent) consists of firms renting and operating real estate. Banks, on the other hand, do not appear to specialise in lending to any one industry as much as nonbanks do in lending to shipping and transport firms, although 22 per cent of bank credit is concentrated in the real estate sector. Consequently, the distribution of bank credit across borrower industries is less skewed.

Geographical distribution of nonbank lending

We also explore the degree to which nonbanks intermediate credit across different parts of Denmark. We use the location of borrowers, which in the case of firms is the location of their headquarters, to compute the share of nonbank credit in total unsecured credit within a municipality. Chart 6 documents how the share of nonbank corporate debt is distributed across Danish municipalities. There is some concentration of the nonbank debt share in the Capital Region, where most municipalities have an above average share of nonbank credit. As described in Chart 3, nonbanks tend to serve firms with larger total assets, and since larger firms tend to be concentrated around the Capital Region, it should come as no surprise that this region has an above average share of nonbank credit.

Nonbank share of total corporate credit by municipality (per cent) Chart 6



Note: Darker shades correspond to higher shares of nonbank debt relative to total debt within the municipality.

Source: Statistics Denmark and own computations

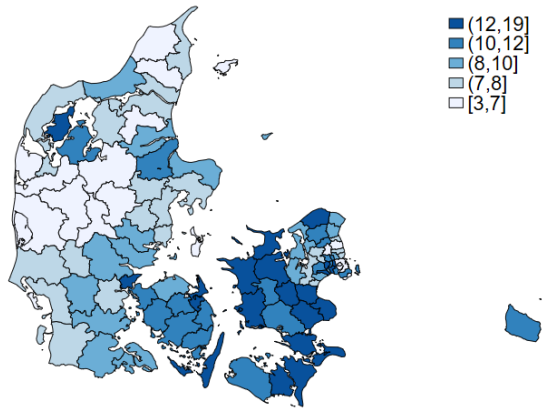
Contrary to corporate credit, lending by nonbanks to households as a fraction of total consumer credit is somewhat more concentrated in the eastern part of Denmark. As Chart 7 shows, nonbanks are responsible for a large share of total lending (above 10 per cent) in the Zealand Region, the Capital Region (with the exception of the municipalities of Copenhagen, Frederiksberg and some of the wealthier municipalities north of Copenhagen), as well as many municipalities on the island of Funen and the smaller islands surrounding it. Most municipalities in Jutland have lower than average shares of nonbank lending in total consumer credit.

Nonbanks and the transmission of monetary policy

Lastly, we explore how nonbank lenders affect the effectiveness of monetary policy transmission to credit supply in Denmark. Since a tightening of monetary policy increases the funding cost of all financial intermediaries relying on short-term funding, nonbanks may reduce their lending after an unexpected increase in policy interest rates, similarly to the well-known bank lending channel. However, several international studies have shown that tighter monetary policy induces a reduction in bank reserves and deposit flows from banks to nonbanks.[4] These conflicting predictions make it unclear whether the presence of nonbanks attenuates or strengthens the bank lending channel of monetary policy transmission.

To identify monetary policy shocks we exploit the fact that Denmark's monetary policy is aimed at keeping the exchange rate of the krone relative to the euro fixed within a fluctuation band, which effectively aligns its monetary policy to that of the European Central Bank(ECB). This introduces exogenous variation in policy rates, as the ECB does not set interest rates in the euro area based on changes in Danish GDP or local credit conditions. This allows us to use the monetary policy shock series computed for the euro area by Jarocinski and Karadi (2020) to proxy for changes in monetary policy in Denmark.

Nonbank share of total consumer credit by municipality (per cent) Chart 7



Note: Darker shades correspond to higher shares of nonbank debt relative to total debt within the municipality.

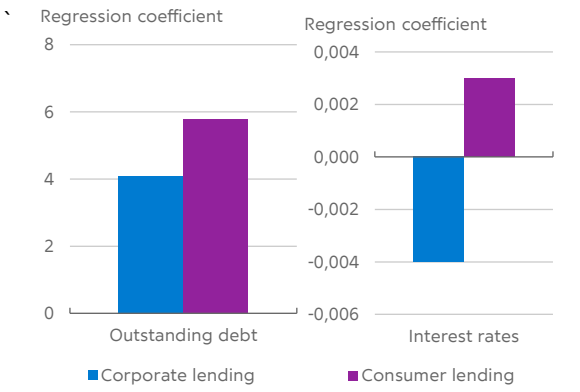
Source: Statistics Denmark and own computations

In our regression model, which is summarised in Box 1, we use these shock series to study changes in the volume of outstanding nonbank debt relative to bank debt in response to a monetary tightening. Our analysis controls for time varying credit demand and unobservable firm and household characteristics. Moreover, we account for macroeconomic conditions in Denmark (GDP, GDP forecast, and inflation), as well as stock market uncertainty (VIX index).

Chart 8 summarises the results from our regression analysis. Our results show that an unexpected monetary tightening leads to an increase in the outstanding level of nonbank debt relative to bank debt in both corporate and consumer credit markets. In particular, a one standard deviation increase of monetary policy rates increases the outstanding debt share of nonbanks significantly by about 4 per cent in the corporate credit market. This effect is statistically significant at the 5 per cent level. The relative increase of nonbank credit in response to a monetary tightening is even more pronounced in consumer credit markets. The share of total credit supply by nonbanks to consumers increases by about 6 per cent in response to a one standard deviation

[4] See Drechsler, Savov, and Schnabl (2017) as well as (Xiao, forthcoming).

Nonbanks and monetary policy transmission Chart 8



Note: Regression coefficients measure the response in outstanding debt and interest rates to a one standard deviation increase in the monetary policy measure.

Source: Statistics Denmark and own computations

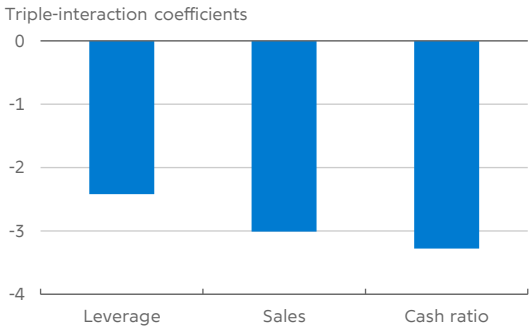
increase in interest rates, and this response is significant at the 1 per cent level.

Additionally, we contrast the response of bank and nonbank borrowers' interest rates to monetary policy shocks in Chart 8. We find that in both cases (i.e., firms and households) interest rates paid to nonbanks change only slightly after a surprise monetary tightening relative to the interest rates charged by banks.

The response of interest rates for corporate borrowers is negative but not statistically significant. The unresponsiveness of interest rates on corporate loans may be driven by the fact that these loans tend to be fixed rate loans, which insulate firms from fluctuations in interest rates in the short term. In contrast, we find a statistically significant increase in interest rates on nonbank loans relative to bank loans in consumer credit markets. This may be due to the fact that consumer loans more often feature variable interest rates or that their maturity is short, allowing to adjust interest rates more easily to monetary policy changes compared to corporate loans.

Next, we extend our baseline regression analysis, as described in Box 1, to study which types of borrowers benefit most from the increase in the share of nonbank credit supply after an increase in interest rates. In the case of NFCs, we study if firms' leverage or size, measured by their total sales, are important determinants of the relative increase in the share of nonbank credit they experience. Similarly, we study if nonbanks channel their funds to households depending on their leverage, income and unemployment status.

Triple interactions – Corporate credit Chart 9

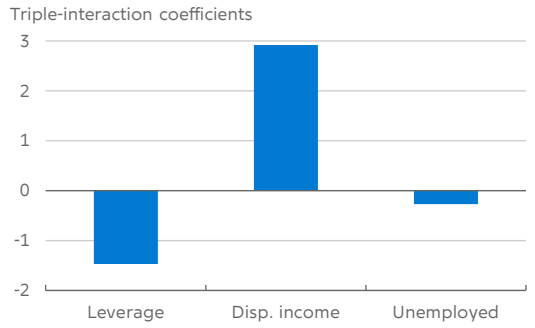


Note: Estimated coefficients measure by how much, relative to banks, nonbanks increase their lending to a particular risk group in response to a one standard deviation contractionary monetary policy shock. Leverage measures total liabilities to total assets. The cash ratio is the ratio of cash holdings to short-term debt.

Source: Statistics Denmark and own computations

Chart 9 shows that nonbanks extend relatively less credit in response to a monetary policy tightening to firms that have above-median leverage, as well as to the ones that have above-median sales or an above-median cash ratio. None of the coefficients on the triple interaction effects are statistically significant at the 5 per cent level. This suggests that we find no difference between bank and nonbank lenders in terms of risk profiles of their corporate borrowers after interest rate hikes.

Triple interactions – Consumer credit Chart 10



Note: Estimated coefficients measure by how much, relative to banks, nonbanks increase their lending to a particular risk group in response to a one standard deviation contractionary monetary policy shock. Leverage is total debt to assets; disposable income is income after tax and interest payments but including rent value of own property. Unemployed stands for households that have had a member unemployed during the previous 24 months.

Source: Statistics Denmark and own computations

Chart 10 presents a similar set of results in the case of consumer credit. It shows that, after a monetary tightening, nonbanks channel less credit compared to banks towards more leveraged households, opting instead to lend more to customers with higher disposable income and lower occurrence of unemployment spells. Effectively, the share of nonbank credit drops for these ex-ante riskier groups of households in response to an exogenous increase in interest rates.

Conclusions

In this memo we present descriptive evidence on the importance of nonbank lending in consumer and corporate credit markets in Denmark. We show that nonbanks are responsible for about 8 per cent of total unsecured credit and that these financial institutions lend to borrowers that have somewhat similar risk profiles to the ones that obtain credit from banks.

We also show that interest rate hikes lead to an increase of the share of nonbank credit of total credit. Thus, the presence of nonbanks in consumer and corporate markets attenuates the effectiveness of increased monetary policy interest rates to slow down credit growth in the economy. However, the relative increase in nonbank credit supply does not seem to be directed to ex-ante riskier borrowers, which may dampen potential financial stability concerns due to the increased market share of nonbank lenders.

It is important to note that our results should be viewed as evidence on how the bank lending channel operates in Denmark without any explicit intervention of Danmarks Nationalbank in terms of targeting certain credit market outcomes. The sole monetary policy objective of Danmarks Nationalbank during our period of analysis has been to safeguard the fixed exchange rate agreement.

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Box 1: Regression model

We use data at the borrower-lender-year level to estimate the following regression model in the consumer and corporate credit markets:

$$\mathrm{Y_{b,l,t}} = \alpha_{b,t} + \delta_l + \beta \mathrm{Nonbank\ dummy}_{l,t} \times \mathrm{Monetary\ policy\ shock}_{t-1} + \gamma \mathrm{Nonbank\ dummy}_{l,t} \times \mathrm{Macroeconomic\ controls}_{t-1} + \varepsilon_{b,l,t}$$

where the dependent variable Y is either log of total debt outstanding by borrower *b* to lender *l* in year *t* or the interest rate of that borrower charged by the same lender in year *t*. Interest rates are computed as the ratio of payments to mean outstanding debt, where the mean is computed between current year debt and previous year debt. We estimate the model separately for two samples, one in which borrowers *b* are firms and another in which they are households. Our regression model includes two fixed effects. $\alpha_{b,t}$ stands for the borrower-time fixed effect. This fixed effect at the level of the borrower is designed to capture the borrower demand channel which, coupled with our sample setting in which borrowers have lending agreements with multiple lenders, allows us to distinguish between credit demand and credit supply effects in the spirit of Khwaja and Mian (2008) and Jiménez et al. (2012). We also include lender fixed effects, δ_l, to ensure that time-invariant lender characteristics such as differences in business models don't drive our results.

Our main variable of interest when it comes to determining the role of nonbanks in the transmission of monetary policy is the interaction term between the nonbank dummy, ($\mathrm{Nonbank\ dummy}_{l,t}$), which is equal to one if lender *l* in year *t* is a nonbank, and the monetary policy shock in the previous year ($\mathrm{Monetary\ policy\ shock}_{t-1}$), which is the cumulative sum at the annual level of the Jarocinski and Karadi (2020) monetary policy shock series for the euro area. We use the monetary shock series for the euro area as a source of exogenous variation in Danish interest rates. This assumption relies on the fact that the Danish Krone is pegged to the Euro and any changes in interest rates initiated by the European Central Bank will immediately be arbitraged away by financial market participants, thus transferring near perfectly the monetary policy shocks from the Euro Area to Denmark. To ensure that we identify the differential effect of monetary policy across banks and nonbanks on corporate and consumer credit as opposed to a more general differential impact through varying economic conditions, we also include in our regression interaction terms between the nonbank dummy and a number of macroeconomic variables such as: the growth rate of real GDP in Denmark, a one-year forecast of the growth rate of GDP in Denmark, the inflation rate in Denmark, and a stock market volatility index (VIX).

We also examine whether nonbanks tailor their response to changes in monetary policy depending on the type of clientele that they have a lending arrangement with. To this end, we add to our main regression model above a triple interaction term which combines the nonbank dummy with the monetary policy shock series and another dummy that is based on firm or household characteristics. In the case of households, our triple interaction term is based on a dummy variable that takes the value of 1 if: (i) the households' debt-to-assets ratio is above the median ratio, (ii) the households' disposable income is higher than median income, and (iii) the household has had an unemployed member over the past 24 months. For firms, the dummy variable takes the value of 1 if the firm is above the respective median level of (i) leverage, (ii) sales, and (iii) cash ratio. All medians are computed at the annual level for each household or firm. The equation below describes our model that also includes an interaction term between the nonbank dummy and the borrower type dummy besides the triple interaction term.

$$\begin{aligned}\mathrm{Y_{b,l,t}} = \alpha_{b,t} + \delta_l + \beta \mathrm{Nonbank\ dummy}_{l,t} \times \mathrm{Monetary\ policy\ shock}_{t-1} + \gamma \mathrm{Nonbank\ dummy}_{l,t} \times \mathrm{Macroeconomic\ controls}_{t-1} \\ + \sigma \mathrm{Nonbank\ dummy}_{l,t} \times \mathrm{Monetary\ policy\ shock}_{t-1} \times \mathrm{Borrower\ type}_{l,t} \\ + \theta \mathrm{Nonbank\ dummy}_{l,t} \times \mathrm{Borrower\ type}_{l,t} + \varepsilon_{b,l,t}\end{aligned}$$

LOW ↓FOR LONG

Low for long

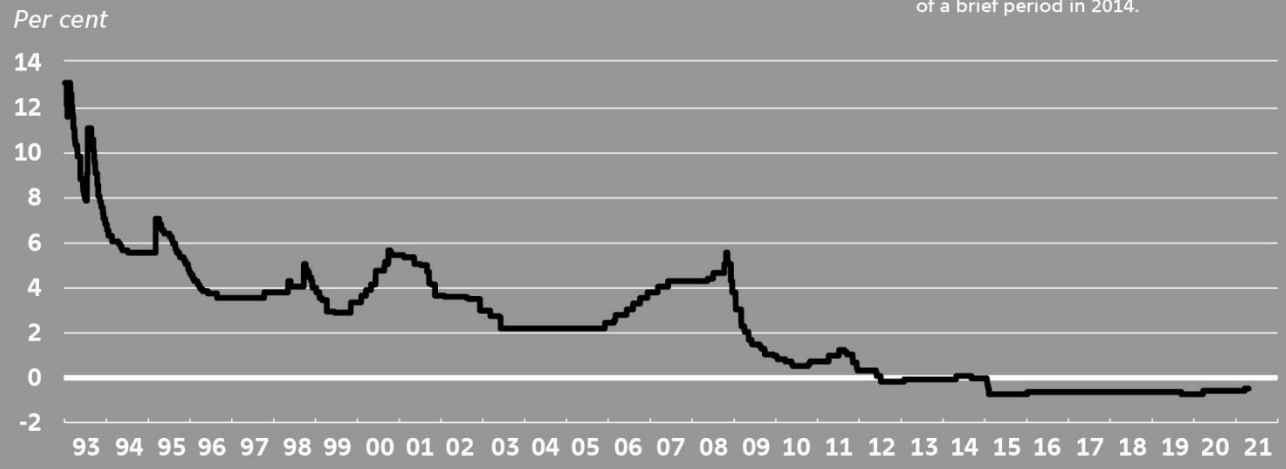
Denmark was the first country to introduce negative monetary policy rates in 2012. Since then, Switzerland, Sweden, Japan and the euro area have followed suit.

Very low and in some cases negative interest rates have characterised the past decade across the advanced economies. There are several reasons why interest rates have fallen to the current low levels. Low interest rates reflect the fact that inflation has been subdued in many countries, but structural changes in household and corporate savings and investment behaviour are also part of the explanation.

These developments have brought monetary policy and the economy into uncharted waters, which is why Danmarks Nationalbank will be issuing a series of publications on the topic of which this Economic Memo is one.

Danmarks Nationalbank's interest rate

Danmarks Nationalbank's key interest rate has been negative since the summer of 2012, with the exception of a brief period in 2014.



PUBLICATIONS

NEWS

News offers quick and accessible insight into an Analysis, an Economic Memo, a Working Paper or a Report from Danmarks Nationalbank. News is published continuously.

ANALYSIS

Analyses from Danmarks Nationalbank focus on economic and financial matters. Some Analyses are published at regular intervals, e.g. *Outlook for the Danish economy* and *Financial stability*. Other Analyses are published continuously.

REPORT

Reports comprise recurring reports and reviews of the functioning of Danmarks Nationalbank and include, for instance, the *Annual report* and the annual publication *Danish government borrowing and debt.*

ECONOMIC MEMO

An Economic Memo is a cross between an Analysis and a Working Paper and often shows the ongoing study of the authors. The publication series is primarily aimed at professionals. Economic Memos are published continuously.

WORKING PAPER

Working Papers present research projects by economists in Danmarks Nationalbank and their associates. The series is primarily targeted at professionals and people with an interest in academia. Working Papers are published continuously.

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