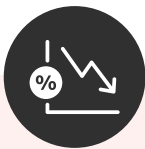


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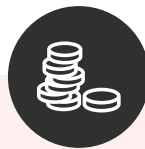
Corporations deleverage and invest when charged negative interest rates on bank deposits



Negative interest rates raise many questions

A world of negative interest rates is uncharted territory, raising a number of questions about the impact on the economy and the financial system.

[Read more](#)



Change banks and deleverage

Many corporations pay banks for holding deposits. Corporations that are charged negative rates on their bank deposits change banks more often and opt to deleverage.

[Read more](#)



Invest more and hire more employees

When the deposit rate enters negative territory, corporations increase their investment in new capital equipment and create more new jobs.

[Read more](#)

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.

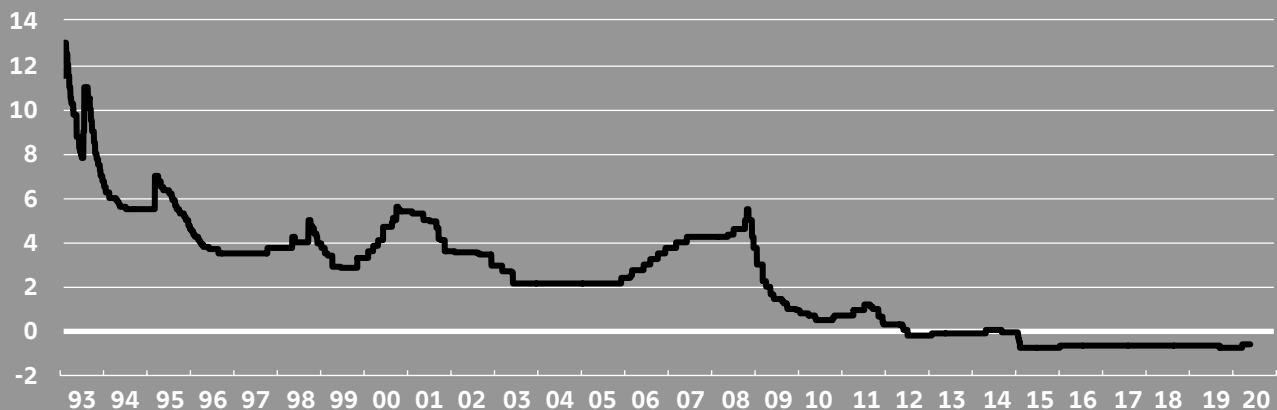
Corporations respond to negative bank deposit rates.

They change banks and deleverage.

They also increase their investment in new capital equipment and create more new jobs.

Danmarks Nationalbank's interest rate

Per cent



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



Negative interest rates raise many questions

Danmarks Nationalbank was the first central bank in the world to take its key monetary policy interest rate into negative territory. Subsequently, several other countries have followed suit. A world of negative interest rates is uncharted territory, raising a number of questions about the impact on the economy and the financial system.

How do low and negative interest rates impact the behaviour of households and corporations? What is their effect on bank business models? Do negative interest rates lead to increased corporate risk-taking and a build-up of risks in the financial system? To what extent has the lowering of monetary policy interest rates into negative territory stimulated the economy? These questions are among the current focus areas of Danmarks Nationalbank's work and of the Danish Systemic Risk Council. These questions have also been debated and analysed internationally for several years.¹

Previous analyses by Danmarks Nationalbank have shown that the pass-through of Danmarks Nationalbank's interest rate changes to bank lending rates is still working after the shift to negative monetary policy interest rates, and that favourable financial conditions underpin the economy.²

Bank lending rates have not turned negative, but many Danish corporations and households are charged negative rates on their bank deposits. This analysis presents the main findings of a new study, examining the impact on corporate behaviour of the transition to negative deposit rates.

Path to low and negative monetary policy interest rates

Many countries have seen a sharp drop in monetary policy interest rates in the wake of the financial crisis, reflecting, in part, a more protracted low interest rate environment – a trend that had already manifested itself prior to the financial crisis. In addition, central banks have pursued accommodative monetary policies to stimulate demand during a period of spare capacity in the economy and inflation below the inflation targets of central banks.³ Monetary policy interest rates have now moved into negative territory in several countries.

Danish monetary policy is not guided by an inflation target, but rather on keeping the Danish krone stable vis-à-vis the euro. Under the fixed exchange rate policy, Danmarks Nationalbank's interest rates more or less mirror the interest rates set by the European Central Bank (ECB) for the euro area.⁴ So, in line with the post-crisis reduction in the ECB's monetary policy interest rates, Danmarks Nationalbank's monetary policy interest rates have also fallen considerably.

In fact, Danmarks Nationalbank had to lower its certificate of deposit rate into negative territory even before the ECB's rate turned negative. This occurred during the European sovereign debt crisis of 2012, which generated strong demand for Danish kroner, perceived as a 'safe haven' during the crisis. To prevent the Danish krone from appreciating too much, Danmarks Nationalbank lowered the certificate of deposit rate to -0.20 per cent on 5 July 2012. This was the first time in Danmarks Nationalbank's 200-year history that one of its interest rates moved into negative territory.⁵ A few years later, the interest rate on the ECB's deposit facility also turned negative, and Danmarks Nationalbank's certificate of deposit rate has been negative for most of the period since mid-2012.

1 See, for example, Rogoff (2017), Brunnermeier and Koby (2018), Eggertsson et al. (2019), Andersson and Jonung (2020) and Krostrup, Kuchler and Spange (2020).

2 See Adolfsen and Spange (2020) and Jensen and Pedersen (2019).

3 See, for example, Adolfsen and Pedersen (2019), Bielecki, Brzoza-Brzezina and Kolasa (2020) and Adolfsen, Bess and Pedersen (2020).

4 See, for example, Abildgren (2018).

5 See Jørgensen and Risbjerg (2012).

Many corporations are now paying banks for holding deposits

Danmarks Nationalbank's lowering of the certificate of deposit rate into negative territory was immediately transmitted to money market interest rates, which was crucial to the management of the krone rate. Gradually, the negative rate was also passed through to other interest rates in the economy.

The first corporate customers were charged negative interest rates on bank deposits already early in 2015, and at the start of 2020 the share of corporate deposits earning negative interest rates had increased to about 80 per cent, see Chart 1.

In a new study, Abildgren and Kuchler (2020) compare the behaviour of corporations that have been charged negative interest rates on bank deposits with the behaviour of similar corporations that have not (yet) been charged negative interest rates on their bank deposits.⁶

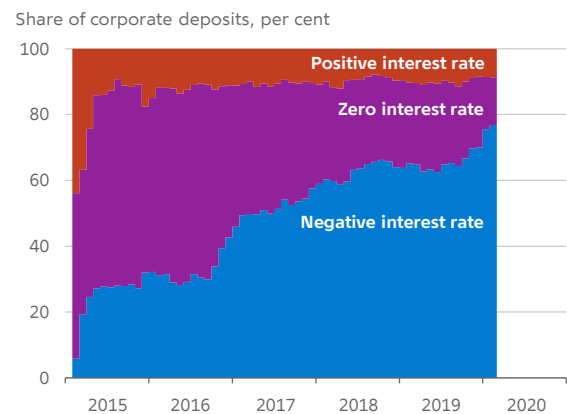
The study is based on comprehensive microdata from Statistics Denmark, the Danish Customs and Tax Administration (Skat), Bisnode and Danmarks Nationalbank and covers some 45,000 Danish corporations during the 2014-2018 period.

There is a clear tendency for corporations to change behaviour when faced with negative interest rates on their bank deposits. Negative rates prompt them to deleverage and turn to other financial assets. They also become more inclined to change banks, see Chart 2.

The study also shows that negative deposit rates prompt corporations to increase their investment in fixed capital (machinery, buildings, commercial vehicles, etc.) and employment compared with corporations that are not charged negative interest rates, see Chart 3. Two years after being charged negative interest rates on its bank deposits, the average corporation has increased its number of employees

Many corporations pay banks for holding deposits

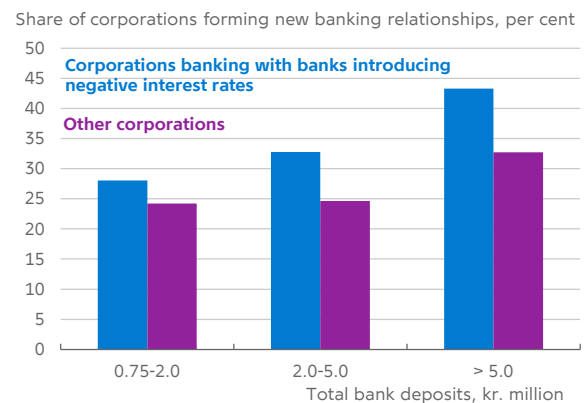
Chart 1



Source: Danmarks Nationalbank.

When charged negative deposit rates, corporations are more inclined to form new banking relationships

Chart 2



Note: Share of corporations shifting deposits to a new bank in a given year. Corporations are placed in the blue group when at least one of their existing banks had introduced negative deposit rates in the previous year.

Source: Abildgren and Kuchler (2020).

⁶ The comparison takes changes in interest rates into account, meaning that the result does not reflect the response to the interest rate change associated with interest rates falling below zero. In other words, the study maps the pure change in corporate behaviour from being charged negative rates.

by about 3 percentage points more than a similar corporation that has not been faced with negative deposit rates. And the corporation's investment ratio is about 0.5 percentage points higher. In a recent study, Altavilla et al. (2020) also found that euro area corporations with high cash holdings increase their investment when faced with negative deposit rates.

When faced with negative deposit rates, younger corporations, in particular, tend to increase employment, while older corporations tend to increase investment, see Chart 4. The high percentage increase in employment for younger corporations should be seen in the context that they are often small and in a growth phase. Rather than depositing current earnings into their bank accounts at negative interest rates, they seem to be inclined to increase employment slightly more than they would otherwise have done. Older corporations tend to be better consolidated than younger ones, and, therefore, able to increase their investment more rapidly when they see the need to do so.

What drives change in corporate behaviour?

The question is which mechanism drives the change in corporate behaviour when corporations are faced with negative interest rates on their bank deposits.

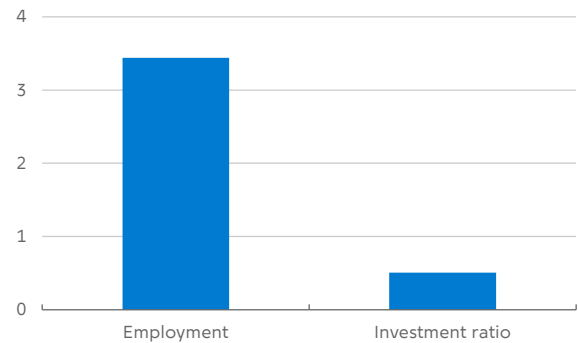
A possible explanation could be that corporations become more aware of their economic situation and financial position when having to pay banks for holding their deposits. This could, for instance, make them consider whether they have excess liquidity and would benefit from deleveraging. Or consider alternative investment options such as investing in new production equipment or taking on more employees. Corporations with large bank deposits are normally approached by their banks when the banks introduce negative deposit rates, and this may induce them to consider their alternatives.

Negative deposit rates may also increase the risk appetite of corporations, making them gravitate towards investment in production and jobs with a potentially higher (and positive) return than bank deposits – but also subject to greater risk.

Negative deposit rates lead to higher corporate employment and investment

Chart 3

Impact of negative deposit rates after two years, percentage points



Note: The chart shows the impact of the introduction of negative deposit rates on corporate employment and investment ratios. The calculation compares corporations whose banks introduced negative deposit rates at time 0 with other corporations. Employment is measured as full-time equivalents (FTEs), and the investment ratio is calculated as net investment to value added.

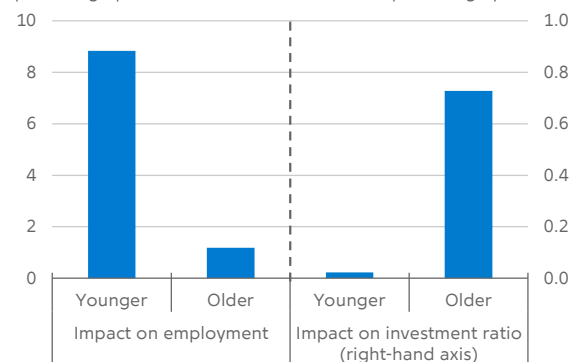
Source: Abildgren and Kuchler (2020).

Younger corporations increase employment, while older corporations increase investment

Chart 4

Impact after 2 years, percentage points

Impact after 2 years, percentage points



Note: See the note for Chart 3.

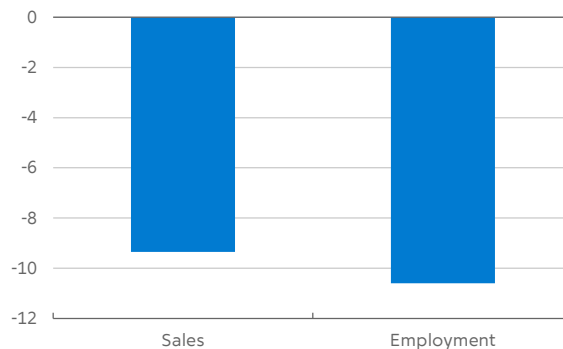
Source: Abildgren and Kuchler (2020).

Moreover, negative deposit rates could fundamentally impact corporations' perception of the future. For instance, because negative deposit rates send a very direct signal to the corporations affected regarding the general accommodative monetary conditions that stimulate the economy and induce the corporation's customers to increase demand. Or a signal that could be seen as heralding a protracted period of low interest rates, resulting in low corporate financing costs. Abildgren and Kuchler (2020) find that service operators faced with negative interest rates have a less pessimistic perception of the future than other service operators. The probability of a service operator expecting sales and employment to decline falls by about 10 percentage points during the first six months after the service operator has been faced with a negative deposit rate, see Chart 5.

Service operators become less pessimistic when charged negative deposit rates

Chart 5

Impact of negative deposit rates on the probability that a firm expects sales and employment to decrease, percentage points



Note: The chart shows the change in probability of a corporation expecting a decrease in sales and employment from the month prior to the introduction of negative deposit rates by one of the corporation's banks until six months after the introduction. Only corporations included in Statistics Denmark's tendency survey for the services sector are included in the calculations. The calculations take into account general changes in corporate expectations due to factors such as macroeconomic shocks and seasonal fluctuations.

Source: Abildgren and Kuchler (2020).

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PUBLICATIONS



NEWS

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



ANALYSIS

Analysis from Danmarks Nationalbank focuses on economic and financial matter. Some of the analyses are published with a regular frequency e.g. *Outlook for the Danish economy and Financial stability*. Other analyses are published continuously.



REPORT

Report comprises recurring reports and reviews of the functioning of Danmarks Nationalbank. For instance Report includes the *Annual report* and the annual publication *Danish government borrowing and debt*.



ECONOMIC MEMO

Economic Memo is a cross between Analysis and Working Paper and it often shows the ongoing study of the authors. The publication series is primarily targeted at professionals. Economic Memo is published continuously.



WORKING PAPER

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

The analysis consists of a Danish and an English version. In case of doubt regarding the correctness of the translation the Danish version is considered to be binding.

DANMARKS NATIONALBANK
LANGELINIE ALLÉ 47
DK-2100 COPENHAGEN Ø
WWW.NATIONALBANKEN.DK

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**DANMARKS
NATIONALBANK**

Kim Abildgren
Chief Advisor
kpa@nationalbanken.dk

Andreas Kuchler
Senior Economist
aku@nationalbanken.dk

ECONOMICS AND
MONETARY POLICY

CONTACT

Ole Mikkelsen
Communications
and Press Officer

omi@nationalbanken.dk
+45 3363 6027

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AND COMMUNICATIONS