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Low interest rates boost bank deposits

Bank deposits have increased in recent years

kr. 1,200 billion

This is equivalent to 60 per cent of GDP. Households' deposits amount to kr. 880 billion or 45 per cent of GDP

Growth in deposits is not surprising

It can be explained

Deposit growth is explained by an increase in the number of transactions in the economy and a lower yield-spread

Low bond yield increases bank deposits

Small interest rate loss

The typical alternative to holding bank deposits is holding a bond, which is a close substitute to a bank deposit

Low bond yields imply a small interest rate loss on holding bank deposits

Bank deposits have increased in recent years, currently amounting to more than kr. 1,200 billion, with households holding kr. 880 billion,[1] or 45 per cent of the gross domestic product, GDP. Deposits have been growing, also viewed over an extended period of time.

Households and firms hold deposits – and thus money – with banks to be able to complete transactions, i.e. trades in the broad sense of the word, cf. Box 1. In line with the economy grows, bank deposits typically also increase. However, the rise since the millennium change has been stronger than what can be explained by the higher transaction need alone.

Bank deposits also serve as savings, which typically yield a current return. The lower the deposit rate relative to what is obtainable from other placements of funds, for instance bonds, the less propitious it is to hold funds as bank deposits.

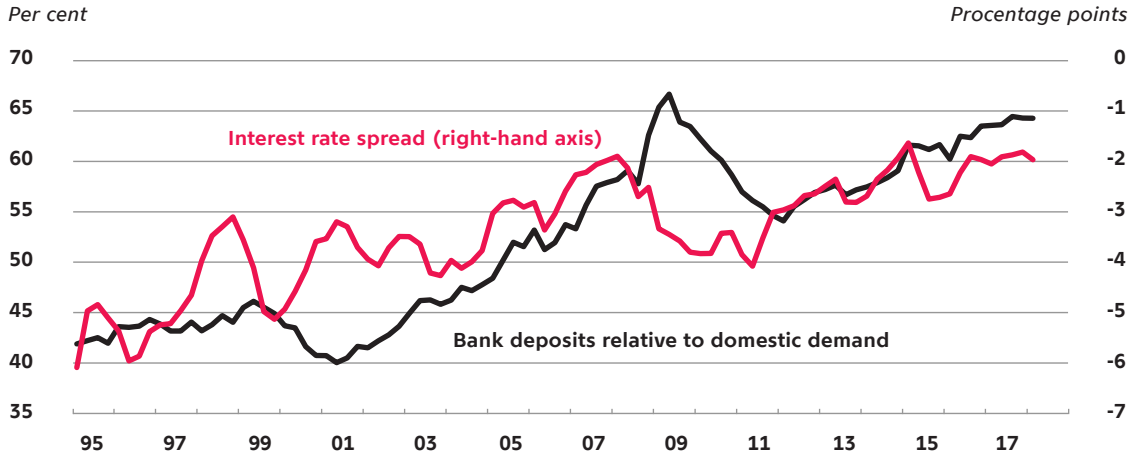
Although the deposit rate has dropped to zero or close to zero, long-term yields have declined even further – albeit from a higher level. As a result, the spread between deposit rates and long-term yields has narrowed, cf. Chart 1. A decrease in the bond yield relative to the deposit rate reduces the interest rate loss of holding bank deposits rather than holding bonds or servicing debt. When the price of something goes down, demand will go up. This also applies to bank deposits.

The combination of higher transaction volumes and a narrowing of the interest rate spread goes a long way towards explaining the increase in bank deposits, cf. Box 2. Thus, it is natural that households are currently holding large funds in banks in the form of low-interest bank deposits. Most households want to have liquid funds for regular transactions, and relative to the alternatives, the financial loss of holding bank deposits has been limited in recent years.

Three components explain money demand

In a statistical analysis, money demand is determined by a measure of the nominal transaction volume and the costs of holding money, cf. Box 2.[2] Households' and firms' housing wealth is also included. These

Growing bank deposits follow the narrowing of the interest rate spread Chart 1



Note: The interest rate spread is calculated as the spread between the banks' deposit rate, which is the average of households', the general-government's and non-financial corporations' yields to maturity and the yield on a 30-year mortgage bond.
Source: Danmarks Nationalbank and Abildgren (2018).

1 This figure covers employees, pensioners, etc.

2 Money demand in Denmark has previously been estimated by Anders Møller Christensen and Hugo Frey Jensen (1987), Niels Lynggård Hansen (1996), Allan Bødskov Andersen (2004), Jens Bang-Andersen, Lars Risbjerg and Morten Spange (2014).

three components determine money demand in the longer run, but deviations from the long-run relationship may occur in the short run.

Nominal domestic demand is used as a measure of transaction volume. If the value of banknotes and coins as well as bank deposits is measured against demand, one obtains the cash ratio. The cash ratio has been increasing sharply since the millennium change, cf. Chart 1. This indicates that the transaction need alone cannot explain the demand for bank deposits.

Given the widespread use of mortgage credit in Denmark, purchase of a mortgage bond or repayment of a mortgage debt can be regarded as the best alternative to placing funds in deposit accounts. The alternative to the bank deposit rate used here is the

What is money?

Box 1

Money is essentially liquid claims that are stable in value and can be used to facilitate the transactions continuously taking place in an economy. Money is also used for savings, i.e. as a store of value, and as an economic measuring unit.

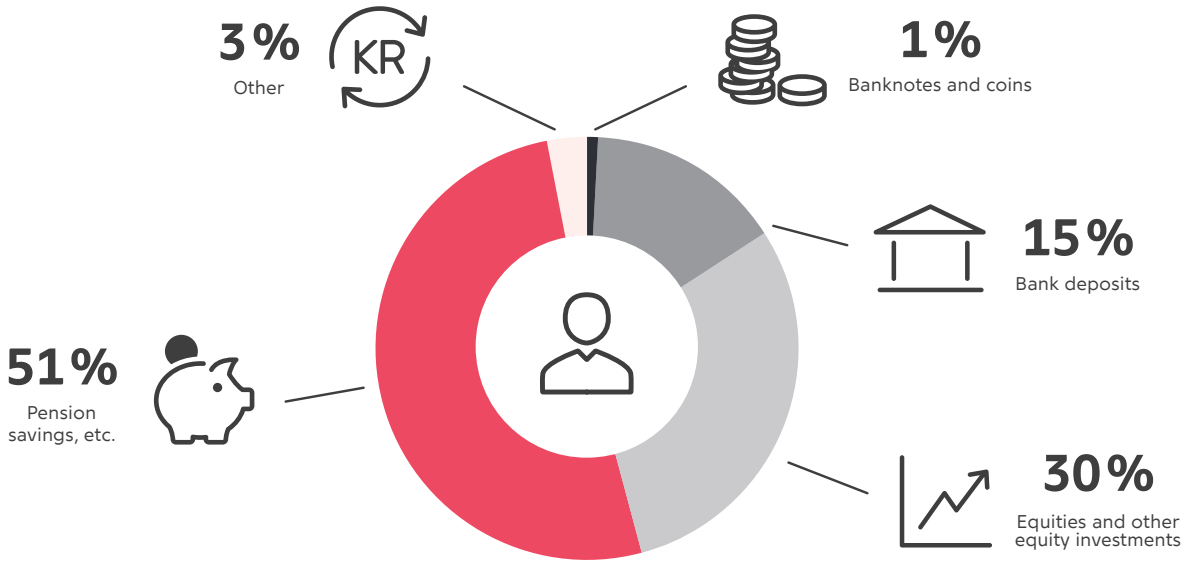
In practice, the definition of money, and by extension the money stock, is not unambiguous, and it has changed over time with the implementation of new payment technologies. Thus, various monetary aggregates can be defined, M0 to M3.

Besides banknotes and coins the standard definition of money usually includes demand deposits with banks, M1. M2 also comprises time deposits and deposits redeemable at notice. This reflects that deposits with banks can be used as a means of payment alongside banknotes and coins and are considered equally safe. M3 also comprises short-term bonds issued by banks and mortgage banks.

Households and firms continually consider the allocation of their financial assets between banknotes and coins, bank deposits and investment in financial assets such as equities and bonds.

The largest financial assets are equity and pension savings, while banknotes and coins as well as deposits account for just slightly more than 15 per cent of households' total financial assets, cf. the chart. Thus, regardless of its definition, the money stock accounts for only a small proportion of households' total financial assets.

Households' financial assets



Note: The category "Other" covers other securities, loans, financial derivatives, employee options, trade credits and other unpaid outstanding accounts. "Pension savings, etc." covers financial claims held by customers on insurance companies and pension funds.
Source: Danmarks Nationalbank.

yield on a 30-year mortgage bond, as it is relatively safe and highly liquid. If the bond yield decreases relative to the deposit rate, i.e. the interest rate spread narrows, money demand is expected to rise.

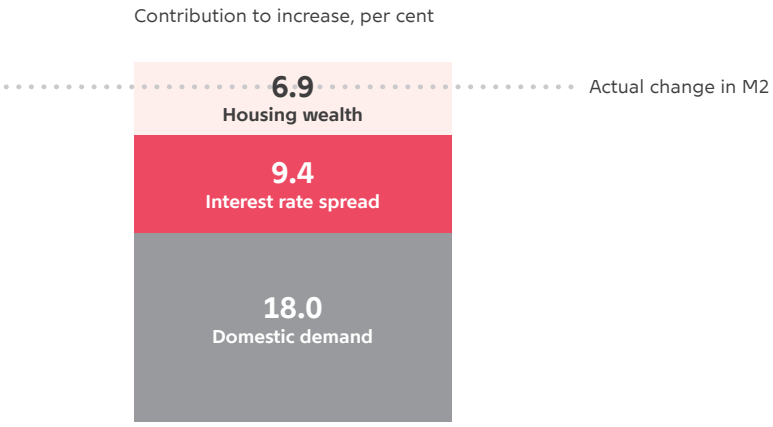
Higher housing wealth is also likely to increase money demand. This can be attributed to a number of factors. Firstly, increases in housing wealth typically coincide with higher turnover in the housing market. This may lead to higher demand for housing loans, which will, to some extent, result in deposit growth. Secondly, higher housing wealth may cause households to change the composition of their balance sheets via a wealth effect, which may entail changes in the demand for money. Thirdly, a rise in housing wealth will increase the value of the collateral pledged by households and thus improve borrowing access, just as higher house prices, all else equal, increase the amount which a potential buyer needs to borrow. Increased borrowing tends to be reflected in higher bank deposits.

The estimation results show that when the transaction need – measured in terms of domestic demand – increases by 1 per cent, money demand also rises by 1 per cent. This is not surprising, given that consumption and investment in general require transactions. A narrowing of the interest rate spread between the deposit rate and the 30-year mortgage yield by 1 percentage point increases money demand by 5 per cent. Finally, 1 per cent housing wealth growth will cause demand to rise by 0.3 per cent.

The three model components and their contributions to explaining growth in the value of banknotes and coins as well as bank deposits since 2011 are illustrated in Chart 2. The transaction need accounts for the greatest contribution to the increase in the money stock. Narrowing of the interest rate spread and housing wealth growth have also contributed to a greater need for store of value placement. It is demonstrated that the narrowing of the interest rate spread since 2011 has served to increase money demand by 9.4 per cent out of a total rise of 30 per cent. This indicates that the lower interest rate loss from placing funds in deposit accounts since 2011 has made a substantial contribution to the growth in demand for bank deposits.

Explanatory components driving money growth since 2011

Chart 2



Note: Individual contributions are calculated based on equation (4) in Box 2. The difference between the actual change in the money stock (M2) and the estimated one is negligible. This reflects that the cointegrated VAR model is well-specified and that the long-run structure of the explanatory variables captures the exogenous variation in the money stock well.
Source: Danmarks Nationalbank and own calculations.

Econometric analysis of the money demand

Box 2

In economic theory, money demand is determined based on the transaction motive and the opportunity costs of holding money. Housing wealth is also included in money demand function, cf. Bang-Andersen et al. (2014). Thus, money market equilibrium is consistent with:

$$\frac{M}{P} = L\left(\underbrace{Y_r}_{+}, \underbrace{R_{ind}}_{+}, \underbrace{R_{alt}}_{-}, \underbrace{W_h}_{+}\right), \qquad (1)$$

where M denotes the nominal money stock (M2), P the price level, Y_r the transaction need in real terms measured by domestic demand, R_{ind} the banks' deposit rate, R_{alt} the alternative return and W_h housing wealth.[1] In the theoretical literature, the following functional form of money demand is typically assumed:

$$m = y + \varphi_1(R_{ind} - R_{alt}) + \varphi_2 w_h, \quad \varphi_1, \varphi_2 > 0 \qquad (2)$$

Lower-case letters denote variables in logarithms and y denotes domestic demand in nominal terms.[2] The symmetric effect of interest rate changes ensures that the interest rate spread, not individual interest rates, represents the opportunity costs of holding money.

Money demand is estimated using a cointegrated VAR model. Data is from the 1st quarter of 1987 to the 1st quarter of 2018, and all series except interest rates are seasonally adjusted. It cannot be ruled out that the variables follow a linear trend. Moreover, the widening of the interest rate spread in 1994 indicates a shift in the mean value, caused by the currency crises in 1992-93. Therefore, a relevant point is a model that includes a mean shift dummy in 1994 ($D_{m1994,t}$) and a trend in potential cointegration relations. If a combination of the "general-to-specific" procedure and information criteria is applied, it turns out that two lags are satisfactory in terms of incorporating the autoregressive nature of the variables. In error-correction form, the model can thus be written as:

$$\Delta x_t = \Pi x_{t-1} + T\Delta x_{t-1} + \alpha\beta_1' t + \alpha\beta_2' D_{m1994,t} + \mu + \phi D_t + \varepsilon_t, \qquad (3)$$

where $x_t' = (m_t, y_t, R_{ind_t}, R_{alt_t}, w_{h_t})$, $\Pi = \alpha\beta'$ has reduced rank (denoted by r), and ε_t denotes Gaussian innovations, which are assumed to be identically and independently distributed. β and α are 5 x r matrices if r ≤ 5. β denotes the unidentified relationship between cointegration relations, while the column vectors of α reflect the respective adjustment coefficients, cf. Juselius (2007). The vector D_t denotes a set of dummy variables. These variables are introduced to ensure a well-specified model. Statistical tests indicate that $x_t \sim I(1)$. There are no indications of non-constant parameters.

Several tests indicate that the cointegration rank is 1 or 2.[3] Identification of the model's long-run structure leads to an acceptable system.[4] Thus, the structure of β is empirically identified. The cointegration vector is consistent, inter alia, with the following long-run equilibrium of money demand:

$$m_t = y_t + \underbrace{5.0}_{(0,58)}\left(R_{ind_t} - R_{alt_t}\right) + \underbrace{0.306}_{(0,027)} w_{h_t} - \underbrace{0.231}_{(0,05)} D_{m1994,t} \qquad (4)$$

Standard errors are denoted in parentheses. Given that the cointegration relation is equal to (2), the model is economically identified. The relation reflects that, in the longer run (i.e. when the actual money stock has converged to the desired money stock), money demand is driven by the transaction volume, the interest rate spread and housing wealth. The long-run effects are that a 1 per cent rise in domestic demand and housing wealth will cause money demand to increase by 1 and 0.3 per cent, respectively. Moreover, a 1 percentage point narrowing of the interest rate spread will contribute to an overall 5 per cent increase in money demand.

1. In the analysis, the 30-year mortgage yield is used as the alternative return to placing funds in demand accounts. The reason is that with the widespread use of mortgage credit in Denmark, purchase of mortgage bonds or servicing of mortgages may be regarded as the best alternative to placing funds in deposit accounts.
2. A nominal relationship is more appropriate in the case of Denmark, one reason being very stable price developments over the past three decades.
3. These tests are simulations of Johansen's likelihood ratio test, bootstrap, roots in the companion matrix, adjustment coefficients, graphs of the cointegration relations and recursive trace tests. The cointegrating vector is more or less unaffected by the determination of the cointegration rank.
4. This approach is based on the introduction of r(r-1)=2 "just identifying" restrictions that transforms β to an echelon matrix with a unique structure. This ensures compliance with the rank condition.

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ABOUT ANALYSIS

As a consequence of Danmarks Nationalbank's role in society we conduct analyses of economic and financial conditions.

Analyses are published continuously and include e.g. assessments of the current cyclical position and the financial stability.

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ECONOMICS AND MONETARY POLICY

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