

Digital euro – potential implications for payments, fixed exchange rate policy and financial stability in Denmark

The European Central Bank and the European Commission are working on the development of a digital euro and the accompanying regulatory framework. A potential future decision on issuing a digital euro is still pending, and a number of design choices and rules have yet to be clarified. Denmark is closely linked to the euro area through, for example, the fixed exchange rate policy, payment systems and financial conditions. If a digital euro becomes a reality, it may therefore have implications for Denmark. This analysis describes the potential implications a digital euro can pose to safe and efficient payments, the fixed exchange rate policy and financial stability in Denmark.

Written by**Gregory Kidd**
Principal Portfolio Manager**Julia Weismann Seixas**
Senior Financial Digitalization Expert**Lasse Holm**
Senior Bank Analyst**Lizette Eistrup Jensen**
Principal Liquidity Analyst**Marcus Clausen Brock**
Retail Payments Economist**Morten Spange**
Chief Monetary Policy Advisor**Nicolaj Schou Andersen**
Principal Portfolio Manager**Samuel Eddie Mogensen**
Digitalization Task Force Lead

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A digital euro could potentially lead to cheaper payments for Danish citizens visiting the euro area

Danish citizens visiting the euro area can access a digital euro for use within the euro area. A digital euro could potentially serve as a cheaper alternative to existing solutions. This is among other things because the European Central Bank itself will cover certain operational costs of the payment system.



A possible agreement on the use of the digital euro within Denmark is expected to lead to limited use

The use of a potential digital euro in Denmark requires a voluntary agreement. If such an agreement is reached, it is expected to result in very limited use of digital euros for domestic payments. This is among other things due to exchange costs as well as the role and function of the Danish krone in Denmark.



A digital euro with low holding limits is not expected to have significant consequences for the fixed exchange rate policy or financial stability in Denmark

Even in the case of a potential agreement on the use of a digital euro in Denmark, a digital euro with low holding limits is not expected to have significant consequences for the fixed exchange rate policy or financial stability in Denmark.

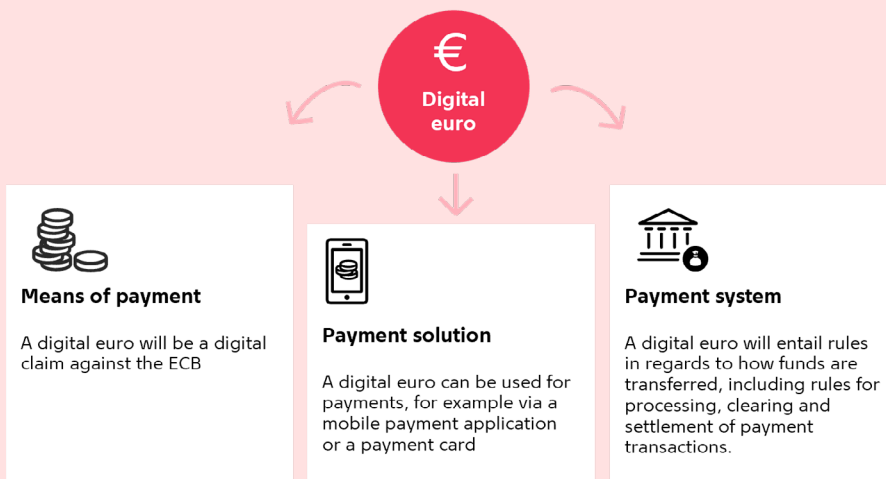
Why is this important?

Digitalisation is transforming both our society and the financial sector. Many central banks are investigating issuance of central bank digital currencies and associated questions. Under the auspices of the European Central Bank, work is being done in relation to the introduction of a central bank digital currency for individuals and businesses in the euro area– a so-called ‘digital euro’. At Danmarks Nationalbank, we are monitoring technological developments, including other countries’ work with new types of assets and payment solutions.



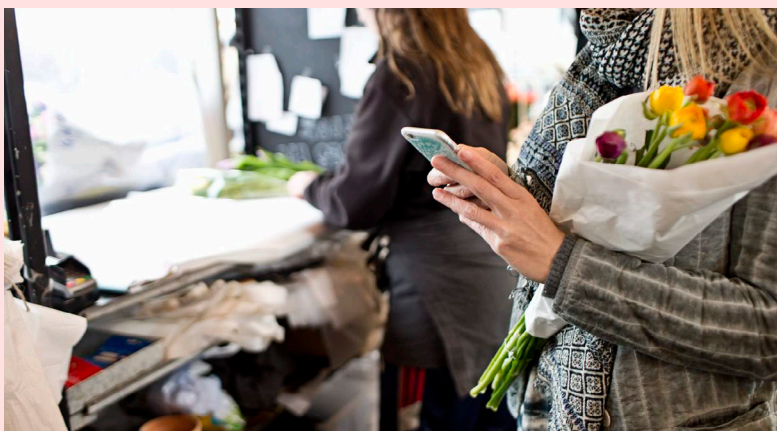
A digital euro is not expected to have significant consequences for the fixed exchange rate policy or financial stability in Denmark if it is introduced with low holding limits

Main chart: A digital Euro will be a means of payment, a payment solution and a payment system



Note: Functionalities that a digital euro is likely to possess.

Source: Danmarks Nationalbank. The chart is based on material from the European Commission and the European Central Bank.



Topics

Digitalisation

Payments

Fixed exchange rate policy

Financial stability

01 Introduction and summary

The European Central Bank (the 'ECB') and the European Commission (the 'EU Commission') are working to develop a so-called *digital euro*, i.e. a central bank digital currency in euro for individuals and businesses.¹

A possible digital euro may have an effect on the situation in Denmark. The financial system in Denmark is closely linked to the euro area in a number of areas. The fixed exchange rate policy, common payment systems, trade and tourism are some of the factors that increase Denmark's financial links to the euro area.² New initiatives, such as a digital euro, are consequently important to analyse in order to identify potential consequences for Denmark.

This analysis describes a digital euro, and what implications a potential launch of a digital euro may pose to the fixed exchange rate policy, financial stability and safe and efficient payments in Denmark.³ The analysis is based on material from the ECB and the EU Commission's proposal for a regulation on the establishment of a digital euro.⁴ The descriptions and assessments provided in the analysis are subject to a number of reservations, as the content of the legal framework that will regulate the digital euro have not yet been finalised, and a number of important design choices for a possible digital euro are also still uncertain.

A digital euro will only be usable in the euro area. The use of a digital euro in Denmark will require a request from the Danish Government to the EU Commission, the other EU member states and the ECB. An agreement will then be concluded between the ECB and Danmarks Nationalbank. This analysis does not assess whether such an agreement would be expedient.⁵

Since 2017, Danmarks Nationalbank has dealt with central bank digital currencies and has continuously assessed the pros and cons of issuing these, including the relevant operational, economic, legal and financial risks.⁶ Danmarks Nationalbank's overall assessment is that it is not clear how a central bank digital currency in kroner for Danish citizens will create significant added value relative to the existing solutions in Denmark. The background for this assessment is described in Danmarks Nationalbank's analysis *New types of digital money*.⁷

Potential consequences for Danish citizens and Denmark as a result of a digital euro

A digital euro is expected to be a new means of payment, a new payment solution and a new payment system.

A digital euro will, as a starting point, only be usable in the euro area, and Danish citizens staying in the euro area will be able to access and use a digital euro within the euro area. Danish citizens already have access to the euro in

¹For a more detailed description of central bank digital currencies see Danmarks Nationalbank, *New types of digital money*, 2022, ([link](#)).

² Danmarks Nationalbank conducts monetary policy within the framework of the fixed exchange rate policy. In other words, the sole purpose of Denmark's monetary policy interest rates is to keep the krone stable against the euro.

³ Financial stability means that the financial sector is sufficiently resilient to withstand economic or financial crises.

⁴See the EU Commission, *Proposal for a regulation on the establishment of the digital euro*, 2023, ([link](#)).

⁵ Danmarks Nationalbank are providing its opinion to the EU Commissions regulatory proposal on the establishment of the digital euro in its response to the consultation, 2023, ([link](#)).

⁶See Danmarks Nationalbank, *Central bank digital currency in Denmark?*, 2017, ([link](#)).

⁷ Danmarks Nationalbank, *New types of digital money*, 2022, ([link](#)).

digital form via bank deposits in euro. Some Danish banks offer Danish citizens euro accounts and the possibility to pay in euro via linked payment cards. The access to euro in digital form is thereby not new however, a digital euro could potentially give Danish citizens visiting the euro area a cheaper digital means of payment. This is among other things due to fees will be regulated and that the European Central Bank will incur costs for operating of the system.

If an agreement on the use of a digital euro is concluded in Denmark, it is expected that a digital euro will only have a minor effect on domestic retail payments. This is among other things because payments with a digital euro will be associated with exchange costs and thereby be more expensive compared to current solutions. In addition, Danish citizens are predominantly satisfied with the domestic payment solutions currently available.

Furthermore, the dominant role of the Danish krone in Denmark will limit the use of digital euro for domestic payments. For example, salaries are paid in kroner, as is the case for all payments to and from the public sector. Moreover, since there is great trust in kroner, the risk of co-called currency substitution, where a foreign currency takes over the role of the national currency is minimal in a Danish context.

A digital euro is not deemed to have significant consequences for the fixed exchange rate policy or financial stability in Denmark if low holding limits are implemented.⁸ If an agreement on the use of a digital euro in Denmark is concluded, it may lead to the need for a monetary policy response by Danmarks Nationalbank. If, contrary to expectations, Danish citizens should find it very attractive to hold digital euro, this could however lead to a decrease in the demand for kroner, which can be handled with the existing monetary policy instruments. If holding limits for the digital euro are implemented on a par with what has previously been communicated by the ECB, and even if this holding limit is fully utilised, it is neither expected to affect Danish banks' ability to comply with their funding and liquidity requirements.⁹






If the holding limits become significantly higher than expected, this may be of importance to the conclusions drawn in the section of the analysis on fixed exchange rate policy and financial stability. Chart 1 summarises the analysis conclusions.

⁸ The ECB has previously communicated a holding limit of 3,000 euro for individuals and zero euro for businesses. See European Central Bank, *Fabio Panetta: Interview with Les Echos*, 2023, ([link](#)), European Central Bank, *Fabio Panetta: Interview with Der Spiegel*, 2021 ([link](#)), European Central Bank, *Fabio Panetta, Evolution or revolution? The impact of a digital euro on the financial system*, 2021, ([link](#)) and European Central Bank, *Progress on the investigation phase of a digital euro - third report*, 2023, ([link](#)).

⁹ See reference in footnote 8 of this analysis.

CHART 1

Summary of analysis conclusions

Scenarios	 Safe and efficient payments	 Fixed exchange rate policy	 Financial stability
 A digital euro which solely can be used within the euro area	A digital euro could potentially lead to cheaper payments within the EU for both consumers and merchants. This is among other things because, the ECB itself will cover certain operational costs of the payment system. Danish citizens visiting the euro area will get access to a potential cheaper digital means of payment.	A digital euro with low holding limits is not expected to have significant consequences for the fixed exchange rate policy in Denmark. This is among other things because a digital euro solely can be used by Danish citizens visiting the euro area.	A digital euro with low holding limits is not expected to have significant consequences for the financial stability in Denmark. This is among other things because a digital euro solely can be used by Danish citizens visiting the euro area.
 A digital euro which can be used in Denmark	A possible agreement on the use of the digital euro in Denmark is expected to lead to a very limited use of digital euro for domestic payments, due to, among other things, the exchange costs. A possible agreement would primarily affect Danish merchants, who would be able to accept digital euro from euro area tourists.	A possible agreement on the use of the digital euro in Denmark is not expected to have significant consequences for the fixed exchange rate policy in Denmark, if the holding limits are low. Large and rapid conversions of kroner to euro, whether this is a conversion to digital euro, euro-deposits or euro-cash, may potentially lead to a monetary policy response from Danmarks Nationalbank.	A possible agreement on the use of the digital euro in Denmark is not expected to have significant consequences for the financial stability in Denmark, if the holding limits are low. Danish citizens' access to digital euro with low holding limits are furthermore not expected to be of significance for Danish Banks' ability to comply with funding- and liquidity requirements.

02

A digital euro – process and design

The ECB has worked with a digital euro since 2020 and in November 2023, the ECB commenced a so-called ‘preparation phase’ for the digital euro project. During this phase, the ECB will test specific digital euro solutions.¹⁰ The preparation phase does not necessarily mean that a decision will be made to issue a digital euro. Such a decision also requires that the regulatory basis has been implemented.¹¹

In July 2023, the EU Commission published a proposal for a regulation on the establishment of the digital euro, which will provide the legal framework for a possible digital euro.¹² The legal framework is, of course, not final, and several design choices regarding payments with, and storage of, digital euro are still unresolved. This analysis should therefore be read subject to the possibility of changes to descriptions and conclusions.

According to the ECB and the EU Commission, the purpose of a digital euro is:

- To ensure citizens’ access to a central bank digital currency;
- To provide a digital payment solution for citizens in euro area member states that can be used across euro area member states;
- To give citizens in euro area member states access to a payment solution that protects their privacy. Including an offline functionality that can provide similar privacy protection as cash;
- To ensure financial inclusion in the euro area;
- To strengthen strategic autonomy and the resilience of the European market infrastructure and
- To strengthen innovation and competition in the European payment market.

According to the ECB and the EU Commission, the purpose of a digital euro is not to replace but to complement cash, as well as to provide more payment options for citizens in the euro area.¹³

Based on the current information from the ECB and the EU Commission, a digital euro will be a new means of payment, a new payment solution and a new payment system. Chart 2 summarizes the probable functionalities of a digital euro.

¹⁰ See European Central Bank, *Eurosystem proceeds to next phase of the digital euro project*, 2023, ([link](#)) and The European Centralbank, *Report on a digital euro*, 2020, ([link](#)).

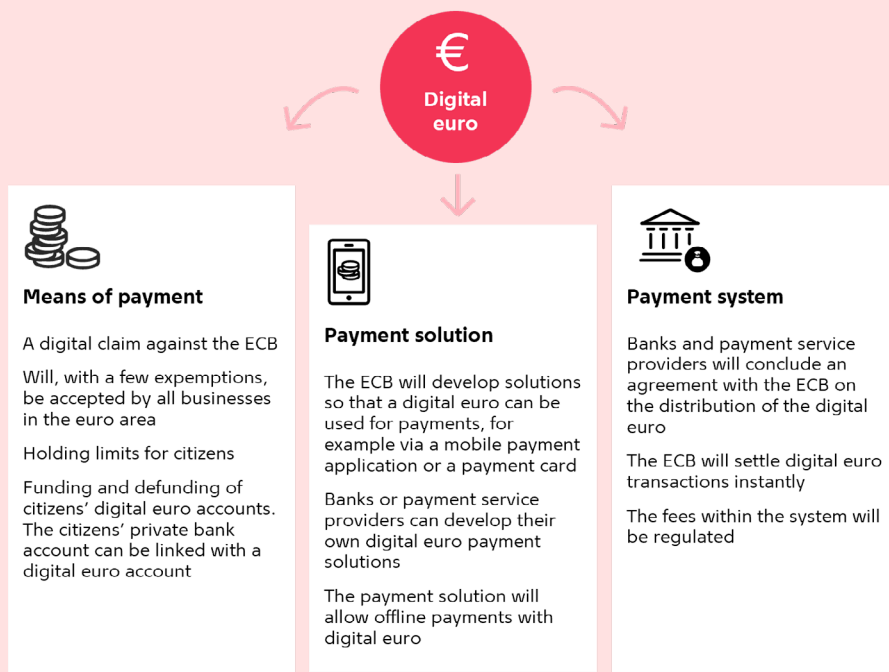
¹¹ See European Central Bank, *Request to postpone the decision on the digital euro “realisation phase”*, 2023, ([link](#)).

¹² See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, 2023, ([link](#)).

¹³ See European Central Bank, *A stocktake on the digital euro*, 2023, ([link](#)).

CHART 2

A digital euro will be a means of payment, a payment solution and a payment system



Note: Functionalities that a digital euro is likely to possess.
Source: Danmarks Nationalbank. The overview is based on material from the ECB and the EU Commission.

A digital euro – a new means of payment

A digital euro will be a new digital means of payment in the euro area. Today, bank deposits and cash are used to pay for goods and services, and a digital euro will constitute a new alternative to these means of payment.

A digital euro will be a digital claim against the ECB. Until now, it has only been possible for citizens to have a physical claim against the ECB in the form of euro cash and digital claims against private banks in the form of bank deposits.¹⁴ However, a digital euro will also allow citizens to have a digital claim against the ECB.

Restrictions on individuals' and businesses' digital euro holdings

Citizens will be able to hold digital euro, but the option will be limited, among things for the sake of financial stability.¹⁵

According to the EU Commission's proposal for a regulation, the ECB will be given the competence to implement measures to limit individuals' and businesses' holdings of digital euro.¹⁶ The holding limits have not yet been set,

¹⁴ Depositors' and investors' deposits in private banks are covered by the deposit guarantee scheme (the Guarantee Fund) for up to approximately kr. 750,000 in the event of a bank failure. The purpose of the deposit guarantee is to provide cover for depositors as well as investors, and the guarantee is financed by the banks.

¹⁵ See European Central Bank, *A stocktake on the digital euro, 2023* ([link](#)).

¹⁶ See EU Commission, *Proposal for a regulation on the establishment of the digital euro, article 16, 2023* ([link](#)).

but the ECB has mentioned a holding limit of 3,000 euro for individuals and zero euro for businesses.¹⁷ In practice, a holding limit of zero euro for businesses would mean that received digital euro amounts would automatically be converted into bank deposits and that the businesses' bank deposits would automatically be converted into digital euro if they wanted to make a payment in digital euro.¹⁸

It also follows from the proposal for a regulation that individuals' holdings of digital euro, like cash, will bear interest at 0 per cent per annum.¹⁹

Automatic account debits may increase usability of a digital euro

To prevent frictions in individuals' payments with digital euro due to holding limits, the ECB finds that mechanisms could be introduced to ensure that individuals and businesses can use digital euro for payments that exceed any holding limit. This can be done by linking a digital euro account to a bank account. This ensures that payments are not rejected because the amount exceeds the holding limit.²⁰

A digital euro – a new payment solution

A digital euro will be a new payment solution, i.e. a user-oriented solution that can be used by citizens residing or staying in the euro area. According to the EU Commission's proposal for a regulation, it will, for example, be possible to use a new mobile payment application developed by the ECB as well as alternative solutions offered by payment service providers such as banks.²¹

Payment service providers, such as banks, are expected to be responsible for distributing digital euro to the citizens. Under the proposal for a regulation, distributors must provide customers with access to the user-oriented solution developed by the ECB and may also choose to offer their own user-oriented solution, such as a mobile payment application or a payment card.²² The payment solution must be usable for making person-to-person transfers and for processing payments in both physical and online payment environments. Furthermore, according to the proposal for a regulation, the payment solution must also be usable offline, i.e. without an Internet connection.

A digital euro is expected to be free of charge for citizens

According to the EU Commission's proposal for a regulation, citizens in the euro area will be able to use the digital euro free of charge. This means that distributors cannot charge citizens a fee for their access to, or payment with, digital euro. Correspondingly, businesses will not be allowed to charge citizens a fee when paying with digital euro.

Distributors of a digital euro must also offer certain basic services free of charge. These services include onboarding of customers, initiation and authentication of payments, validation, settlement activities as well as automatic or manual debits on the citizen's digital euro account. The activities also require the distributors to

¹⁷ See European Central Bank, *Fabio Panetta: Interview with Les Echos*, 2023 ([link](#)), European Central Bank, *Fabio Panetta: Interview with Der Spiegel*, 2021 ([link](#)), European Central Bank, *Fabio Panetta, Evolution or revolution? The impact of a digital euro on the financial system*, 2021 ([link](#)) and European Central Bank, *Progress on the investigation phase of a digital euro – third report*, 2023 ([link](#)).

¹⁸ See European Central Bank, *A stocktake on the digital euro*, 2023 ([link](#)).

¹⁹ See EU Commission, *Proposal for a Regulation on the establishment of the digital euro*, article 16, 2023 ([link](#)).

²⁰ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 14, annex II, 2023 ([link](#)) and European Central Bank, *A stocktake on the digital euro*, 2023 ([link](#)).

²¹ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 28, 2023 ([link](#)).

²² See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 28, 2023 ([link](#)).

implement know-your-customer procedures as well as relevant checks in relation to preventing money laundering and terrorist financing.²³

Euro area merchants expected to be required to receive digital euro

A digital euro will be usable in physical as well as online stores, and merchants in the euro area will generally be obliged to accept the new payment solution if they already receive digital payments such as a payment card. According to the proposed regulation, a digital euro will have the status of legal tender, which means that, with some exceptions, it will be mandatory for stores to accept digital euro.²⁴

This legal tender status will also mean that the digital euro will not have to be programmable, for example that its use is limited to the purchase of selected goods and services. According to the proposal for a regulation, a digital euro must be fully exchangeable for euro cash and bank deposits, which means that no restrictions can be imposed on its ability to meet a payment obligation.²⁵

A digital euro – a new payment system

A digital euro will be a new payment system in the euro area.²⁶ A payment system is a system for transferring funds with common rules for processing, clearing and settling payment transactions. These procedures are known from, for example, the credit card companies Mastercard and Visa.

The ECB will be responsible for the development and operation of the payment system

The ECB will be responsible for the development and operation of the system that will support payments with digital euro. Development and operation include laying down technical standards and rules for the use of a digital euro as well as developing the infrastructure that supports the use of a digital euro. In addition, the ECB will handle the final settlement of all digital euro payments.

According to the EU Commission's regulatory proposal, digital euro transactions must be settled immediately, and it will be up to the ECB to decide on the most expedient infrastructure for this.²⁷ The ECB has not yet decided on which technology is most expedient for supporting digital euro payments.²⁸

The ECB will bear the costs for developing and operating the digital euro payment system

The ECB will not charge the consumer's and the merchant's bank any fee, and the costs for developing and operating the digital euro payment system will thus be borne by the ECB.²⁹ This will represent a significant difference from existing payment systems, where the consumer's and merchant's bank typically pay licence fees to the credit card companies.

²³ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 14, Annex II, 2023 ([link](#)).

²⁴ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 15 and Article 17, 2023 ([link](#)).

²⁵ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 24, 2023 ([link](#)).

²⁶ See European Central Bank, *A stocktake on the digital euro*, 2023 ([link](#)).

²⁷ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 30, 2023 ([link](#)).

²⁸ See European Central Bank, *Digital euro – Prototype summary and lessons learned*, 2023 ([link](#)).

²⁹ The ECB is owned by all the central banks in the EU member states. The respective central banks all pay an amount to the ECB. The amount depends on the size of each country's population and economy. The costs for developing and operating the digital euro will thus be paid indirectly by the national central banks. See European Central Bank, *Who owns the ECB?*, 2023 ([link](#)).

A digital euro is expected to be associated with certain fees

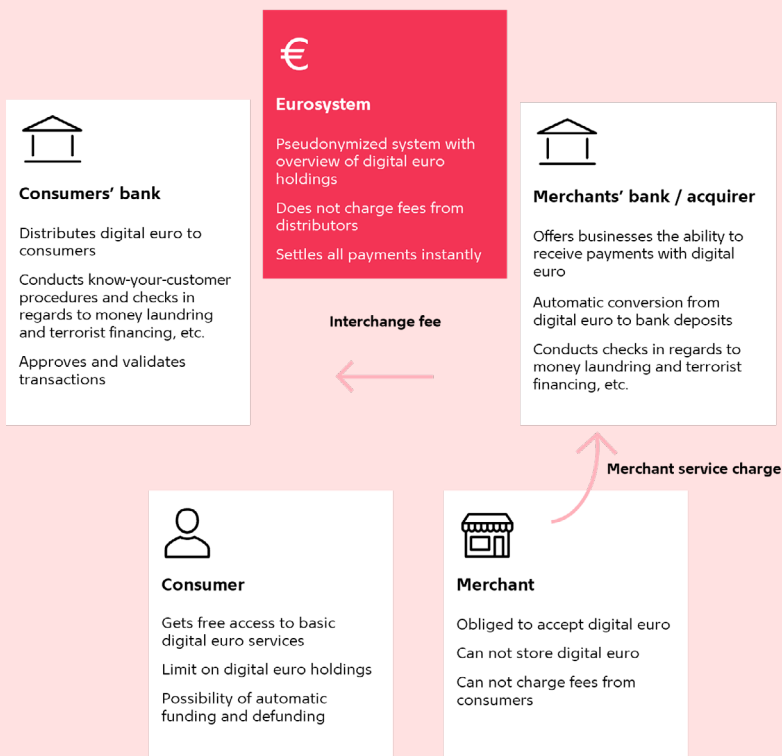
According to the EU Commission’s proposal for a regulation, there may be a need to compensate distributors of a digital euro for the costs associated with distribution. As it will not be permitted to charge fees to the consumer, the distributors’ revenues will consist of so-called interchange fees. The interchange fee is a fee that the consumer’s bank receives from the merchant’s bank or acquirer, see chart 3.

Similarly, the merchant’s bank or acquirer may charge a so-called merchant service charge payable by the merchant. Receiving digital euro will therefore be associated with costs for the merchants.

The ECB will be mandated to set limits on the size of the merchant service charges and the interchange fees. These fees must, for example, be fixed so that they cover the distributors’ costs, including a reasonable profit, for the distribution of a digital euro. In addition, the fees must not be higher than the fees charged for comparable digital means of payment, such as payments by debit card or instant payments.³⁰

CHART 3

A digital euro will be associated with certain fees



Note: Overview of the payment system that will support payments with a digital euro as well as the roles and responsibilities of key players.

Source: Danmarks Nationalbank. The overview is based on material from the ECB and the EU Commission.

³⁰ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 17, 2023 (link).

Danish citizens' access to and use of a digital euro

Danish citizens will be able to use a digital euro when visiting the euro area. Use of a digital euro in Denmark is not possible without concluding an agreement.

A digital euro is expected to be usable by Danish citizens in the euro area

The primary purpose of a digital euro is to meet the needs of citizens in the euro area. Therefore, according to the EU Commission's proposal for a regulation, a digital euro will only be distributable to persons residing or staying in the euro area.

Specifically, a digital euro can be distributed to the following natural and legal persons: 1) Natural and legal persons residing or established in the Member States whose currency is the euro; 2) natural and legal persons who opened a digital euro account at the time they resided or were established in the Member States whose currency is the euro, but no longer reside or are established in such Member States; and 3) visitors.³¹

There is consequently nothing to prevent Danish citizens travelling in the euro area from accessing a digital euro. How this access can be achieved in practice is still unclear. Like foreign banks and payment service providers, Danish banks and payment service providers will have the opportunity to distribute a digital euro both in the euro area and to Danish citizens visiting a euro area member state.³²

It should be noted in this context that Danish citizens already today have access to the euro in digital form via bank deposits in euro. Some Danish banks offer Danish citizens euro accounts, and it is possible to pay in euro via linked payment cards. At the same time, today there is basically nothing to prevent Danish citizens from opening euro accounts with other European banks.

However, access to the digital euro may be more useful than bank deposits in euro when it comes to payments. The reason for this is that euro area merchants will generally be required to accept digital euro, as opposed to solutions based on bank deposits, for example international payment cards, which merchants can refuse to accept.

A digital euro is expected to be usable in Denmark, if an agreement is concluded

The use of a digital euro by citizens and merchants in Denmark is subject to a political desire for it, as well as a subsequent agreement between the ECB and Danmarks Nationalbank. According to the proposed regulation, it is stated that the non-euro member state must request access to the use of a digital euro from the European Commission, the other EU member states, and the ECB. Following this, an agreement must be reached between the ECB and the central bank of the respective member state, including the terms for the use of a potential digital euro.

Currently, the terms for the use of a digital euro in non-euro member states are not determined. It is unclear to what extent an agreed-upon use of a digital euro in non-euro member states will be subject to the same regulations that govern usage in the euro area. The proposal for regulation states that the member state

³¹ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 13, 2023 ([link](#)).

³² See EU Commission, *Proposal for a regulation on the provision of digital euro services by payment service providers incorporated in Member States whose currency is not the euro*, 2023 ([link](#)).

must adopt national legislation ensuring compliance with the relevant requirements in the regulation, but it is not explicitly specified which provisions are considered relevant regarding the use of a digital euro in a non-euro country. For example, the proposed regulation includes a provision obliging merchants in the euro area to accept payments with digital euros, which is not considered a relevant requirement for the use of a digital euro in a non-euro member state. In this analysis, it is assumed that a potential use of a digital euro in Denmark will not entail such an obligation.³³

³³ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 18, 2023 ([link](#)).

03

A digital euro - impact on safe and efficient payments

An establishment of a digital euro could potentially lead to cheaper cross-border payments for Danish citizens visiting a euro area member state.

If an agreement on the use of a digital euro in Denmark is concluded, Danish citizens will have the opportunity to use a digital euro in Danish stores that choose to accept a digital euro. However, the assessment is that a digital euro will be used to a lesser extent by Danish citizens in Denmark. The primary reason for this is that the use of a digital euro for payments in Denmark will be connected with exchange costs, making payments with digital euro more expensive than payments made in Danish kroner. Furthermore, Danish citizens are very satisfied with the digital payment solutions available today.

If use of a digital euro becomes widespread in the euro area, it may be attractive for Danish merchants to accept digital euro to accommodate that tourists from the euro area may prefer paying with a digital euro.

Importance of a digital euro for Danish citizens in the euro area

Payment cards are currently the most widely used digital payment solutions in the EU. A digital euro will be an alternative to current digital payment solutions – also for Danish citizens staying in the euro area.

A digital euro could lead to cheaper payments for Danish citizens in the euro area

According to the EU Commission's proposal for a regulation, Danish citizens visiting a euro area member area will have access to and be able to use a digital euro. Payments with digital euro may potentially be cheaper than the current digital payment solutions. A digital euro can therefore provide an alternative to the international payment cards and cash that Danish citizens typically use when visiting the euro area.³⁴

One reason why a digital euro can potentially be an attractive alternative to international payment cards in particular is that the ECB itself bears the costs for developing and operating the payment system. The ECB will not charge any fees from the banks and payment service providers that distribute digital euro. The fees mentioned are the so-called licence fees charged by payment card providers to card issuers and card acquirers.

In addition, according to the EU Commission's regulatory proposal, the interchange fee and merchant service charge will be determined by the ECB and will be the lower of either: 1) the costs associated with offering digital euro

³⁴There is also widespread use of payment cards in Denmark. In Denmark, approximately 9 in 10 payments are made using solutions based on payment cards. The most popular payment cards are the national payment card, *Dankort*, as well as the international payment cards Visa and Mastercard. For more information, see Danmarks Nationalbank, *Denmark is among the most digitalised countries when it comes to payments, 2022* ([link](#)).

services or 2) the fees charged for comparable payment solutions.³⁵ It is therefore to be expected that fees for digital euro will be on a par with, or lower than, the fees charged for international debit cards or instant payments.

Every time a Danish citizen uses an international payment card in a euro area member state, the citizen's bank typically charges a currency conversion fee of up to 1.0 per cent and 1.5 per cent of the transaction amount.³⁶ This fee is significantly higher than the fee charged for an ordinary currency exchange with a bank, for example a SEPA credit transfer, where fees of approximately 0.3 per cent can be observed.³⁷ In the case of, for example, a SEPA credit transfer in connection with the use of a digital euro, the currency conversion fee for a digital euro may therefore turn out to be lower than the fees observed for international payment cards.

Importance of a digital euro for payments in Denmark

If an agreement on the use of a digital euro in Denmark is concluded, Danish citizens will be able to use a digital euro, and merchants will be able to receive digital euro.³⁸ Danish citizens and foreign tourists will therefore be able to use digital euro in Danish stores that choose to accept it. However, a possible agreement on the use of a digital euro in Denmark is deemed to have only a minor impact on Danish retail payments. Although Danish citizens will probably not use a digital euro in Denmark, it may still potentially be attractive for certain Danish merchants to accept digital euro. This applies, in particular, to Danish merchants with many customers from the euro area. In addition, a digital euro may potentially strengthen the resilience of the European payments infrastructure, which may also be of importance to Denmark.

Danish citizens are expected to use digital euro for payments in Denmark to only a very limited extent

A digital euro that can be used in Denmark will not immediately be more attractive than existing solutions, as payment with digital euro in Denmark will involve an exchange from Danish kroner to digital euro. This exchange is associated with costs which, other things equal, will make it more expensive to use a digital euro for payments for goods priced in Danish kroner.

Furthermore, a digital euro is not expected to meet a payment need that is not already covered by existing payment solutions. In Danmarks Nationalbank's latest household survey from 2023, only 4 per cent of the Danish population stated that existing digital payment solutions do not meet their needs, see chart 4.³⁹

If an agreement is concluded on its use in Denmark, a digital euro is expected to be used in physical stores, in e-commerce and for payments between private individuals. But existing digital payment solutions in Denmark are today also used in these situations.⁴⁰ It is therefore difficult to see what need a digital euro meets for Danish citizens' payments in Denmark.

³⁵ See EU Commission, *Proposal for a regulation on the establishment of the digital euro*, article 17, 2023 ([link](#))

³⁶ See, for example, the Danish Competition and Consumer Authority, *Konkurrencerådet griber ind over for bankers valutatillæg* (The Danish Competition Council intervenes against the banks' currency surcharge), 2022 ([link](#)).

³⁷ See, for example, Danske Bank, *exchange rates* ([link](#)).

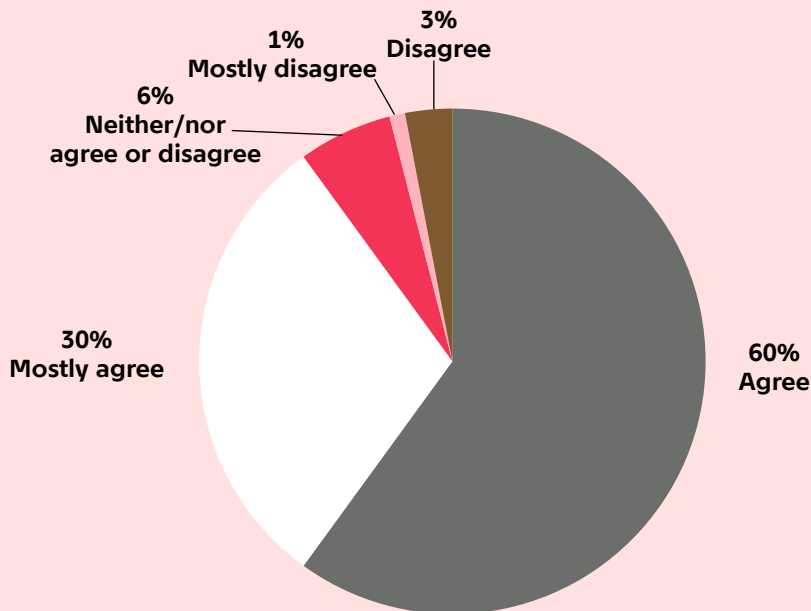
³⁸ To be able to accept digital euro, the Danish merchant will need to enter into an agreement with an acquirer or a bank that distributes digital euro. This acquirer or bank may be Danish or have its origin in another EU member state.

³⁹ Danmarks Nationalbank's Household Survey 2023 was conducted in April and May. A total of 2,737 representatively selected citizens completed the survey.

⁴⁰ See European Central Bank, *Progress on the investigation phase of a digital euro*, 2023 ([link](#)).

CHART 4

Existing digital payment solutions largely meet the needs of Danish citizens



Note: The respondents were asked the following question: To what extent do you agree with the following statement: *“The current digital payment methods that exists today meet my needs.”*
Source: Danmarks Nationalbank’s Household Survey 2023.

A digital euro may be attractive for Danish merchants with customers from the euro area

If use of a digital euro becomes widespread in the euro area, it is likely that tourists from the euro area will want to use the digital euro when visiting Denmark.

Today, several Danish merchants accept euro cash as a means of payment to accommodate tourists’ preferences. If use of a digital euro becomes widespread in the euro area, Danish business may want to be able to receive digital euro from tourists. At the same time, the merchant will expectedly achieve a cost reduction by receiving digital euro compared to euro cash payments, as handling euro cash is associated with several costs such as collection, counting and exchange.

Danish merchants may also find it advantageous to offer tourists payment with a digital euro if it becomes cheaper to accept payments with it compared to international payment cards.

A digital euro and the resilience of the retail payments infrastructure

Depending on its actual design, a digital euro could potentially strengthen the resilience of the retail payments infrastructure. However, this is contingent on the digital euro being structured in a way that makes it operationally independent of existing systems, for example, by involving other actors and alternative infrastructure. The more integrated a payment solution is with existing systems, the less it can be used as a contingency measure in the event of disruptions to the existing systems.

The considerations above will also apply if an agreement is reached on the use of a digital euro in Denmark and if a digital euro becomes widespread among Danish businesses and citizens. However, it is still unclear how a digital euro will be designed in practice, making it challenging to assess the actual impact it may have on the resilience of the retail payment infrastructure.

04

A digital euro – impact on the fixed exchange rate policy in Denmark

A digital euro is not expected to have significant consequences for the fixed exchange rate policy in Denmark. This is primarily because a digital euro is only expected to have a modest effect on the demand for Danish kroner. This is expected to remain the case even if an agreement on the use of a digital euro is concluded in Denmark, where the maximum demand is limited by the implementation of a low holding limit. If, contrary to expectations, the holding limit is set very high and a situation arises in which a digital euro is regarded as attractive for Danish citizens, then this may influence the conclusions drawn in this section.

A digital euro is not expected to give rise to a monetary policy response

If an agreement on the use of a digital euro in Denmark is concluded, Danish citizens will be able to exchange Danish bank deposits in kroner for digital euro. Access to a store of value in euro, via a digital euro, could potentially be more accessible than existing options. It could therefore, despite not being interest bearing, become potentially more attractive than euro denominated deposits with private banks, which Danish citizens already have access to today. This could, for example, be the case during financial turmoil.

If, contrary to expectations, Danish citizens should find it very attractive to hold digital euro rather than bank deposits in kroner, it will, all things being equal, lead to a decrease in krone demand. The speed at which citizens transfer deposits in Danish kroner from Danish banks to digital euro, as well as the size of the transferred amounts, are decisive for any monetary policy response. If Danish citizens gain access to a digital euro with low holding limits, for example 3,000 euro as previously indicated by the ECB, and the conversion from Danish kroner to digital euro is done gradually, the reduced demand for Danish kroner is expected to be offset by other private market players.⁴¹ In such a situation, there will most likely be no need for intervention from Danmarks Nationalbank. In more extreme cases, where all Danish citizens suddenly exchange Danish kroner for digital euro, the situation is envisaged to be manageable with existing monetary policy tools. For an elaboration on the significance of a digital euro on the demand for Danish kroner, bank deposits and Danmarks Nationalbank's possible response, see box 1.

A digital euro is not expected to lead to increased movements in the krone exchange rate

In the event that, to a greater extent than today, citizens use access to a digital euro to move money back and forth between euro and Danish kroner, this could create greater fluctuations in the demand for Danish kroner. This may be the case, for example, if citizens transfer deposits in Danish banks to digital euro in connection with holidays abroad and transfer them back again at the end of their holiday. However, these seasonal fluctuations in connection with citizens' retail payments in euro are already seen today and have a very limited impact

⁴¹ The ECB has repeatedly communicated a holding limit of 3,000 euro for individuals and a zero limit for businesses. These are deemed low holding limits.

on the demand for Danish kroner. A digital euro with low holding limits is therefore not expected to lead to an increased need for intervention during holiday periods when the demand for euro may be higher.

BOX 1

The impact of a digital euro on the demand for kroner, bank deposits and Danmarks Nationalbank's possible response

The distribution and use of a digital euro in Denmark may affect the financial balances of citizens, banks and Danmarks Nationalbank. If a citizen exchanges deposits in Danish kroner for digital euro, this happens via the citizen's bank. In this connection, the citizen's bank, which is a monetary policy counterparty to Danmarks Nationalbank, writes down the citizen's deposits in Danish kroner against transferring euro to the ECB. The transfer can be done by the citizen's bank itself if the bank has an account with the ECB. Otherwise, it takes place via a foreign correspondent bank. It is not of decisive importance whether the transfer happens one way or the other.

The citizen's potential conversion from Danish kroner to digital euro involves a currency exchange. Therefore, a digital euro will not only affect the banks' deposit base, but also their currency risk. Banks are limited in their ability to hold large mismatches in their currency exposures on their balance sheets. In the event of large changes in the banks' foreign exchange exposures, the banks will try to offset them in the foreign exchange market. This is done by selling Danish kroner against foreign currency to other market players, for example the insurance and pension sector.

A study conducted by the Bank for International Settlements shows that the global turnover in the spot and forward markets in Danish kroner was approximately kr. 100 billion per banking day in 2022.¹ If a digital euro with a threshold of 3,000 euro applies in Denmark, and Danes fully utilize this limit within one banking day, the total amount converted will be roughly of the same magnitude as average daily turnover on the spot and forward markets in Danish kroner (). A gradual conversion over an extended period, however, will constitute a smaller share of the daily turnover in the krone market and can therefore be expected to be handled without intervention in the foreign exchange market by Danmarks Nationalbank.

If other market players do not wish to assume this exchange rate risk, Danmarks Nationalbank may need to intervene in the foreign exchange market as a result of the fixed exchange rate policy to ensure that the Danish krone is not weakened. In such a case, intervention will involve the purchase of Danish kroner against the sale of euro, which, in the short term, will reduce Danmarks Nationalbank's balance sheet. On the assets side of the balance sheet, the foreign exchange reserve will fall and, on the liabilities side, the net position – the banks' net deposits with Danmarks Nationalbank – will decrease.

¹ See Danmarks Nationalbank, *Significantly higher turnover in kroner and larger Danish foreign exchange market, 2022* ([link](#)).

05

A digital euro – impact on financial stability in Denmark

A digital euro is not expected to have significant consequences for financial stability in Denmark if it is introduced with low holding limits.⁴² This also applies even if an agreement on the use of a digital euro is concluded in Denmark, where the maximum demand is limited by implementation of a low holding limit.

Any impact on financial stability will depend on the speed and magnitude that Danish citizens move deposits from Danish banks to a digital euro. In a situation where Danish banks lose a significant amount of deposits from Danish citizens, this may impact the banks' assets and funding. This may potentially lead to greater dependence on other funding sources.

Conversely, if against expectations, the holding limits are set high, or omitted altogether, this may potentially increase the risk of so-called *bank runs*, i.e. a situation in which an unusually large number of customers withdraw their deposits with the bank within a short space of time.⁴³ If a situation arises in which a digital euro is regarded as attractive for Danish citizens and the holding limits are set high, then this may also have an effect on the conclusions drawn in this section.

Banks may potentially become more dependent on market funding

A possible agreement on the use of a digital euro without low holding limits in Denmark could potentially impact the banks' balance sheets. A reduction in the banks' deposit base may be due to financial turmoil or other factors. In a scenario in which banks experience a slight reduction in their deposit base, as well as greater deposit base fluctuations, the banks can adjust their funding with, for example, market-based funding. The individual banks may potentially become more dependent on other funding sources than deposits if a digital euro is introduced without low holding limits.

Dependence on market funding has previously affected financial stability. This was the case during the financial crisis in 2007-2013, when banks, as a whole, had built up large deposit deficits during parts of the period. These were largely financed by short-term market funding and loans from foreign credit institutions. Short-term funding via international money and capital markets is usually less stable and more sensitive to changes in the institutions' own creditworthiness than deposits and long-term market funding.⁴⁴

Moreover, if banks become more dependent on market funding, it may be more difficult for small institutions to fund their assets, and, in times of uncertainty and

⁴² The ECB has repeatedly communicated a holding limit of 3,000 euro for individuals and a zero limit for businesses, these are deemed as low holding limits.

⁴³ For a more detailed description of central bank digital currencies and the risk of bank runs, see Danmarks Nationalbank's Analysis *Central bank digital currency in Denmark?*, 2017 ([link](#)).

⁴⁴ See pages 21-22 in Kim Abildgren, *Monetary History of Denmark 2005-2020*, Danmarks Nationalbank, 2023 ([link](#)).

low investment appetite among investors, these institutions will also be more exposed to a lack of market access relative to large institutions.⁴⁵

A digital euro is not expected to have a major impact on Danish banks' compliance with funding and liquidity requirements

A digital euro without low holding limits may potentially increase the requirements for the banks' management of liquidity and funding risk if their deposit base becomes less stable. The stability of banks' deposits depends on various factors, including the type of deposits, customer groups, and whether the deposits are covered by deposit insurance. For systemic banks in Denmark, deposits are characterized by a lower degree of stability compared to deposits in smaller non-systemic banks. This difference is among others due to a slightly larger proportion of demand deposits in systemic banks, i.e., deposits that customers can immediately withdraw. Additionally, there is a significantly lower proportion of deposits covered by deposit insurance in systemic banks compared to non-systemic banks. In practice, this places higher demands on liquidity risk management in systemic banks. Deposits from large corporations and financial customers are generally less stable than deposits from retail customers and typically react quickly to a loss of confidence in a bank's financial situation.⁴⁶

If banks lose deposits due to the introduction of a digital euro, it can impact their compliance with funding and liquidity requirements. If the deposits cannot be replaced by other long-term funding sources, it could potentially lead to lack of compliance with the funding requirement.⁴⁷ Failure to meet the liquidity requirement occurs when banks do not have sufficient liquid assets to cover, among other things, the decrease in deposits.⁴⁸ However, if a digital euro becomes a reality, banks are expected to take it into account in their risk management of liquidity and funding. A digital euro with low holding limits is not deemed to be of significance to the banks' deposit base and consequently to their compliance with the funding and liquidity requirements.

⁴⁵ See the Danish Financial Supervisory Authority's note 'Limited market access for Danish O-SIIs and non-O-SIIs under a severe stress scenario', juni 2021 ([link](#)).

⁴⁶ See Danmarks Nationalbank, Interest rate hikes affect the banks and their customers, *Danmarks Nationalbank Analysis (Financial stability)*, no 6, june 2023, ([link](#)).

⁴⁷ For example, the net stable funding ratio (NSFR) requirement. For a more detailed description of NSFR, see Danmarks Nationalbank's Financial Stability report for the first half of 2023, *Interest rate hikes affect the banks and their customers, 2023* ([link](#)).

⁴⁸ For example, the liquidity coverage ratio (LCR) requirement. For a more detailed description of LCR, see Danmarks Nationalbank's Financial Stability report for the first half of 2023, *Interest rate hikes affect the banks and their customers, 2023* ([link](#)).

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The analysis consists of a Danish and an English version. In case of doubt as to the correctness of the translation, the Danish version will prevail.

Danmarks Nationalbank
Langelinie Allé 47
DK-2100 Copenhagen Ø
+45 3363 6363

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