

DANMARKS NATIONALBANK

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Banks from more than 100 countries send payments via Kronos



Kronos supports financial stability

Time-critical payments

between the banks are settled in Danmarks Nationalbank's system Kronos. Almost all Danish banks participate directly in Kronos. Without Kronos it would be costly and risky for banks to exchange payments.



Operational risks are reduced

1,800 banks

from 117 countries participate indirectly in Kronos through a direct participant. This reflects that Denmark has many trading partners. Indirect participation can be a good solution that reduces operational risks.



Need for active risk management

Dependencies

between the indirect participants and their settlement banks makes it important that both parties actively manage risks. The individual bank must weigh the pros and cons of participating directly or indirectly in Kronos.

As banker to the banks, Danmarks Nationalbank makes accounts available for credit institutions and other actors assessed to be significant to the settlement of payments in Denmark. Danmarks Nationalbank's account holders use Kronos to send payments to each other. Some banks choose to participate indirectly in Kronos instead of holding current accounts at Danmarks Nationalbank. This means that they send their payments via banks that are direct participants. Private individuals and firms do not have direct access to accounts at Danmarks Nationalbank and cannot participate in Kronos, neither directly nor indirectly, cf. Chart 1.

High participation rate among Danish credit institutions

Virtually all Danish banks and mortgage banks participate directly in Kronos. Add to this a number of branches of foreign banks and a few other participants.¹ There are 88 direct Kronos participants in total.

In Kronos, participants can deposit and exchange kroner. Depositing kroner in Kronos is risk-free as Danmarks Nationalbank guarantees the deposits of participants. Furthermore, Danmarks Nationalbank ensures that exchange of payments takes place in real time and with settlement finality so that they cannot be revoked.

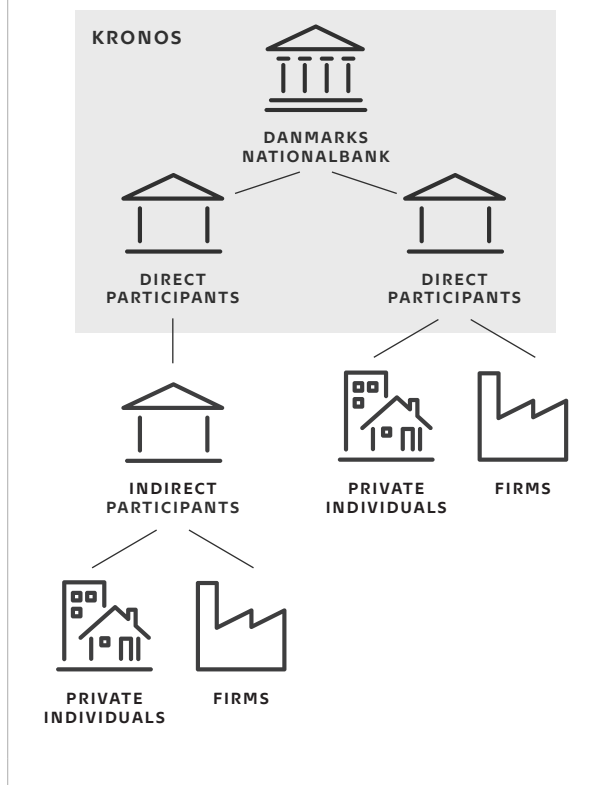
Without Kronos as fulcrum, it would be costly and risky for banks to exchange payments. As such Kronos helps to support financial stability in Denmark.

Many foreign banks are indirect participants

All in all, approximately 1,800 banks from 117 different countries participated indirectly in Kronos in the 1st half of 2017, cf. Chart 2. That is from more than half of all countries in the world. Nearly one third of the banks that participated indirectly in Kronos were based in the UK, Germany, the USA or Switzerland. This is not surprising, as all four countries are major financial hubs where many banks have branches.

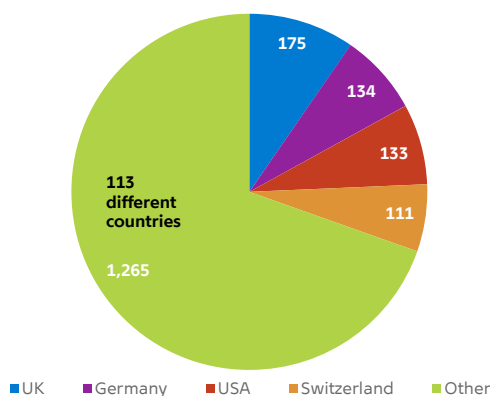
Banks can participate directly or indirectly in Kronos

Chart 1



Most indirect participants from UK, Germany, USA and Switzerland

Chart 2



Note: The chart indicates, by home country, the number of banks that have indirectly initiated payments in Kronos in the first half of 2017.

Source: Danmarks Nationalbank.

¹ Other participants include Danmarks Nationalbank, payment and settlement systems, central counterparties and investment firms.

Participation reflects Denmark's status as a trading nation

Denmark is an open country with many trading partners. This means that many citizens and firms from other countries conduct business in Denmark. The resulting need to make payments is solved by their banks participating directly or indirectly in Kronos.

Many foreign banks do not find it attractive to participate directly in Kronos because Denmark is a small market, and because it requires a banking licence in Denmark and knowledge of Kronos at the operational level.

Substantial foreign activity in Kronos

Some 60 per cent of all activity in Kronos is now initiated by indirect participants, while direct participants acting on their own behalf account for just over 40 per cent of the system's total turnover, cf. Chart 3.

Among the indirect participants, foreign banks account for approximately 50 per cent of the aggregate Kronos activity, while foreign branches of groups participating directly in Kronos and Danish banks that are indirect participants account for only just under 10 per cent of activity.

Most indirect participants are very small

The system activity of the vast majority of indirect participants in Kronos is negligible.

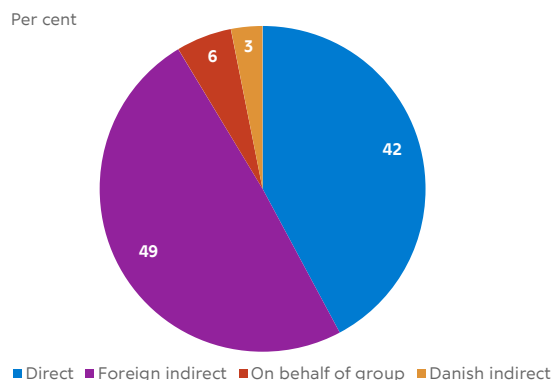
Of the about 1,800 indirect participants, only 30 accounted for more than 0.5 per cent of the value of Kronos payments, and of these only 16 accounted for more than 1 per cent.

Large banks behind many indirect participants

When foreign banks want to make payments in Danish kroner, they mainly go via one of the large Danish banks. This means that the five largest Danish banks, i.e. the Danish Financial Supervisory Authority's group 1 banks², serve almost 90 per cent of the indirect participants cf. Chart 4. This corresponds to some 1,500 banks.

Foreign indirect participants account for a large proportion of payments in Kronos

Chart 3

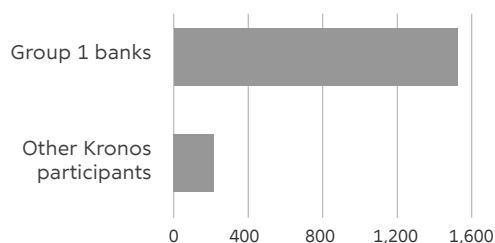


Note: The chart indicates the value of payments in Kronos in the first half of 2017 broken down by the payment initiator.

Source: Danmarks Nationalbank.

Most indirect participants make payments via the large Danish banks

Chart 4



Note: The chart indicates the number of indirect participants who have made payments in Kronos in the first half of 2017, broken down by whether they participated via a group 1 bank or not. Nordea, who is a major participant in Kronos, has been added to the group 1 banks.

Source: Danmarks Nationalbank.

² In 2017, the Danish Financial Supervisory Authority's group 1 includes Danske Bank, Sydbank, Jyske Bank and Nykredit Bank. Although not based in Denmark, Nordea has been included in this group as it is a major participant in Kronos.

Each bank must consider the pros and cons of participation

Indirect participation involves a number of dependencies in relation to the direct participant making payments on one's behalf. These include credit risk on deposits in another bank, liquidity risk arising from being dependent on the direct participant's liquidity situation, and reliance on the direct participant's operational setup.

All the same, it may be easier to act as an indirect participant if the volume of business in kroner is modest. Indirect participants can leave all practical issues in relation to Kronos participation to a direct participant who knows the Danish market, monetary policy day, etc.

So the individual bank should always consider whether it makes most sense to participate directly or indirectly in Kronos. However, it is important to bear in mind the risks associated with the model chosen, cf. Chart 5.

Society benefits from indirect participation

As a main rule, direct participation in Kronos is desirable from a socio-economic point of view.

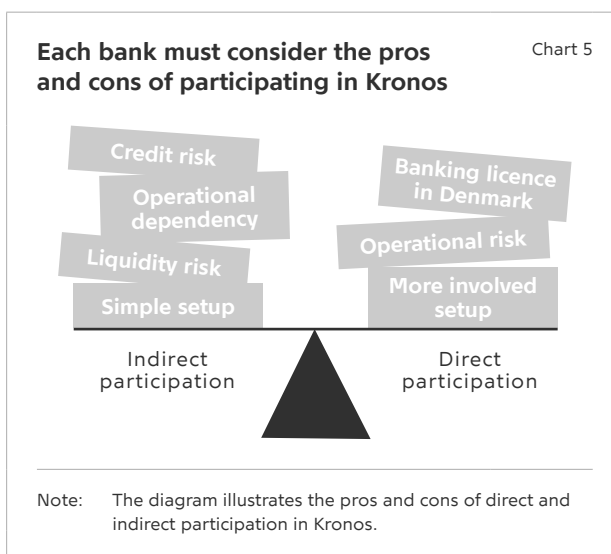
But if a participant has insufficient knowledge of the Danish market or insufficient resources to ensure qualified staffing within the Kronos opening hours, errors and unintended incidents may entail operational risk, which can also affect other participants.

For example, if a participant's account is overdrawn at the close of the day, this may mean that the end of the monetary policy day is postponed, which affects all system participants, irrespective of whose account is overdrawn.






Hence, Danmarks Nationalbank sees indirect participation as a good solution for banks without in-depth knowledge of the Danish market or the necessary operational capacity to participate. In this way, settlement of kroner is left to market participants who have Danish kroner as a major market and who therefore have a strong interest in ensuring that settlement is as smooth as possible.

Participation varies across countries

Among other central banks that own systems similar to Kronos, the number of direct participants varies substantially, cf. Table 1. This is due to differences



Large variation in participation across countries Table 1

Country	System	Number of direct participants
	Kronos	88
	CHAPS	26
	TARGET2	1,076
	NBO	127
	RIX	31

Note: The table indicates the number of direct participants in real-time gross settlement systems in selected countries and the euro area.
Source: Danmarks Nationalbank, CHAPS ([link](#)), Target Annual Report 2015 ([link](#)), Norges Bank ([link](#)), Sveriges Riksbank ([link](#)).

in the size of the markets and the number of banks, among other factors.

Two examples from the European Central Bank (ECB) and the Bank of England (BoE) highlight the different conditions applying in the various markets.

In its TARGET Annual Report 2015, the ECB concludes that indirect participation in TARGET2, the Eurosystem's interbank payment system, is both low and stable.³ In TARGET2, approximately 10 per cent of the aggregate value of payments is initiated by indirect participants. This is considerably lower than the Kronos level, but it is important to keep in mind that the euro area is a much larger market and attracts direct participation by more foreign banks.

In 2013, the BoE found that the indirect participation in the UK's interbank payment system, CHAPS, was very high, and the BoE has therefore taken steps to increase direct participation in the system.⁴ The share of activity generated by indirect participants was more or less on a level with that of Kronos, but the BoE found that activity was concentrated on few, but large indirect participants.

Danmarks Nationalbank regularly reflects on the use of Kronos with a view to maintaining a safe and efficient payment system that supports financial stability.

3 European Central Bank, *TARGET Annual Report 2015* ([link](#)).

4 Bank of England, *Tiering in CHAPS* ([link](#)).

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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