FSPOS

Finansiella Sektorns Privat-Offentliga Samverkan

The flow of payments in Sweden - How it works

The Payment Mediation Working Group

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Summary

The group for private-public co-operation in the financial sector (FSPOS) has conducted a survey of the transaction flows in the core of the payment system. The members of FSPOS are banks, insurance companies, securities brokers, Euroclear Sweden, BGC, NASDAQ OMX, the Swedish National Debt Office, the Social Insurance Office, the Riksbank and Finansinspektionen.

The Payment Mediation Working Group of FSPOS (WG Payment) initiated the survey when it identified a need to create a common understanding of the nature of transaction flows between the participants in the core of the payment system. The aim of the survey was to chart the transaction flows in the core of the payment system. The objective was to produce process charts that describe the flow of payments and payment information between the participants concerned for certain types of payment.

The idea is that the process charts should provide a common basis on which individuals in the organisations that form part of the core of the payment system can discuss matters with each other. The organisations should also be able to use the material to provide training regarding the transactions carried out in the system.

The eleven charted transaction flows are:

1. Credit transfers via an Internet bank (updated 2012)
2. Payments less than SEK 500 000 made via data clearing (DCL)
3. Pension payments (updated 2012)
4. Card payments made using debit cards
5. Securities trading: Purchases (supplemented 2010)
6. Share dividends
7. Payments from foreign banks to accounts in Swedish banks (UTL) (updated 2012)
8. Withdrawals from ATMs using debit cards
9. RTGS payments (Real Time Gross Settlement) (DOM)
10. Tax payments made via credit transfers (on file via BGC) (supplemented 2010, updated 2012)
11. Payments made using direct debiting (supplemented 2010, updated 2012)

The survey was carried out by holding working meetings and conducting interviews with representatives of the financial sector with a focus on the organisations belonging to WG Payment. These organisations are: the Swedish Bankers' Association, BGC, Euroclear Sweden, Handelsbanken, NASDAQ OMX, Nordea, SEB, Swedbank, the Riksbank and the Swedish National Debt Office.

Direct and indirect interdependencies and risk factors in the flows can be identified on the basis of an analysis of the transaction flows charted and presented in this

report. This in turn can lead to an identification of vulnerabilities and to proposals for improvements that can further strengthen the financial sector.

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Introduction

Background

The group for private-public co-operation in the financial sector (FSPOS) was founded in 2005 and consists of private and public participants in the financial sector in Sweden. The members of are banks, insurance companies, securities brokers, Euroclear Sweden, BGC, NASDAQ OMX, the Swedish National Debt Office, the Social Insurance Office, the Riksbank and Finansinspektionen (the Swedish Financial Supervisory Authority).

The Payment Mediation Working Group of FSPOS (WG Payment) identified a need to create a common understanding of the nature of transaction flows between the participants in the core of the payment system. This need led to a survey and the results of this survey are described in the process charts compiled in this document.

Aim and objective

The aim of the survey was to chart the transaction flows in the core of the payment system.

The objective was to produce process charts that describe the flow of payments and payment information between the participants concerned for certain types of payment.

Selected transaction flows

WG Payment initially selected nine transaction flows for the survey. The criteria for the selection were that the transaction flows should be important from the customer perspective and that they should illustrate different types of flow between different participants in the sector. A further two transaction flows were added during the course of the project.

The eleven transaction flows are:

1. Credit transfers via an Internet bank (updated 2012)
2. Payments less than SEK 500 000 made via data clearing (DCL)
3. Pension payments (updated 2012)
4. Card purchases made using debit cards
5. Securities trading: Purchases (supplemented in January 2010)
6. Share dividends
7. Payments from foreign banks to accounts in Swedish banks (UTL) (updated 2012)
8. Withdrawals from ATMs using debit cards
9. RTGS payments (Real Time Gross Settlement) (DOM)

10. Tax payments made via credit transfers (on file via BGC) (supplemented in January 2010, updated 2012)
11. Payments made using direct debiting (supplemented in January 2010, updated 2012)

Method

The survey was carried out by holding working meetings and conducting interviews with representatives of the financial sector with a focus on the organisations belonging to WG Payment. These organisations are: the Swedish Bankers' Association, BGC, Euroclear Sweden, Handelsbanken, NASDAQ OMX, Nordea, SEB, Swedbank, the Riksbank and the Swedish National Debt Office.

Who should use the process charts?

The idea is that the process charts should provide a common basis on which individuals in the organisations that form part of the core of the payment system can discuss matters with each other. The organisations should also be able to use the material to provide training regarding the transactions carried out in the system.

How should the process charts be used?

The process charts provide a general outline of a selection of transactions in the financial system. Individual organisations can add organisationally-specific information to these process charts before they are used as internal training materials.

Limitations

Generality

The process charts are so general that, in those cases where there are several parallel participants, they do not take into account the particular preconditions and approaches of individual participants.

Banks participating in RIX

The flows do not take into account that some banks are not RIX participants: a "bank" is to be regarded as a RIX participant unless otherwise specified.

Swedish participants

The transaction flows are limited geographically in such a way that they are based on the perspective of the Swedish financial system. This means that the flows illustrate participation in the transaction flows for Swedish payment products, mainly between participants in the Swedish financial system. Foreign participants are included in a few cases where this is relevant to illustrate a particular flow.

It is primarily flows between different participants that are described, although transactions that take place internally at the various participants are described in some cases.

The transaction flows

Only transaction flows that can be regarded as normal procedures in accordance with valid commercial agreements are dealt with in these process charts, not redundancy solutions.

The survey is based on existing transaction flows in the financial sector. An exception to this is transaction flow 5 – *Securities trading: Purchases* – which was supplemented in January 2010 to describe a flow involving a so-called CCP. On the other hand, the Payment Service Directive (PSD), which may affect several of the transaction flows in the future, is not taken into account. In the Swedish financial sector, the introduction of the PSD will, for example, mean that payments for which timing has not been particularly critical previously (for instance transaction flow 2 – *Payments less than SEK 500 000 made via DCL* and transaction flow 3 – *Pension payments* in this survey)will have to be made much more quickly. This may entail a time span of one day instead of several days.

Terms

"Settlement" refers to the transfer of liquidity between two parties in order to resolve their commitments to each other.

"Payment" refers to a bookkeeping entry entailing the debiting of one account and the crediting of another. In these transaction flows, a payment order is also categorised as a payment when it leads to a bookkeeping entry.

"Clearing" refers to the compilation and accounting of two parties mutual commitments to each other.

"Information" refers to the transfer of information, or to making available information, relating to the payment, for example a reconciliation, background data or a verification relating to the payment.

"Transactions" is here used as a collective term for payments, including cash settlements and payment information.

The importance of the financial sector

The financial system performs a large number of important functions. The system converts savings into funding, manages risks and makes it possible for payments to be made efficiently. These functions are based on a multitude of different

transactions being carried out each day. For example, SEK 448 billion (2011) passes through RIX, the Riksbank's settlement system, every day.

Transactions are in turn dependent on each other in many cases in that they take place sequentially or simultaneously. A disruption may therefore have serious consequences for the participants in the financial system and for public confidence in them, but also have direct economic consequences for private individuals. If a company is unable to pay wages to its employees then the employees will in turn not be able to pay their bills, and so on. Confidence in Sweden as a nation from a business and investment perspective is also dependent on the stability of the financial system. Organisations that provide financial services must be able to ensure that they can run socially-important services even if disruptions to their normal operations occur.

The core of the Swedish payment system is made up of BGC, OMX, the Riksbank, the Swedish National Debt Office, Euroclear Sweden and the major banks. These participants all play a critical role in the execution of financial services in society. See *Appendix 2 – The core of the payment system* for a description of these participants and their functions.

The consequences of a failure of any of the critical participants in the payment system were investigated within the framework of WG Payment's project "The resilience of the core of the payment system", which was conducted in 2006-2008. The project's conclusion was that the total collapse of a participant in the core of the payment system (without reserve routines etc.) would affect the financial system, its customers and society at large to such an extent that each of the respective participants is in some sense to be regarded as a Single Point of Failure. It is important to point out, however, that the participants' extensive redundancy measures and existing reserve routines provide a high degree of resilience to serious disruptions and shutdowns. This means that in practice none of the participants in the core are to be regarded as a Single Point of Failure for the payment system.

It is on the other hand of great importance that the existing reserve routines are maintained. The project therefore identified and prioritised improvement measures that reduce the consequences of serious shutdowns and strengthen the sector's resilience to disruptions. In 2008 and 2009, this work was continued by investigating, and where appropriate implementing, proposed improvement measures. The work also led to this survey.

Direct and indirect interdependencies and risk factors in the flows can be identified on the basis of an analysis of the transaction flows charted and presented in this report. This in turn can lead to an identification of vulnerabilities and to new proposals for improvements that can further strengthen the financial sector.

Supplements

Flow 5 (Securities trading: Purchases), flow 10 (Tax payments made via credit transfers) and flow 11 (Payments made using direct debiting) were supplemented in March 2010).

Flow 1 (Credit transfers via an Internet bank), flow 3 (Pension payments), flow 7 (Payments from foreign banks to accounts in Swedish banks), flow 10 (Tax payments made via credit transfers) and flow 11 (Payments made using direct debiting) were updated in March 2012).

Appendix 1 – Transaction flows

Instructions for users

Y axis: the participants included in the transaction flow
X axis: the time sequence within which an event takes place
Circle = initiation of a process
Numbered rectangle = event
Double rectangle = payment from one account to another account within one and the same organisation
Black rectangle = end of part of flow
Arrow = transfer of information or payment, internally within a participant or between different participants
I = information relating to the payment that the transaction flow describes
B = a payment takes place within the framework of the described transaction flow

Sequential description

The process charts describe the transaction flows sequentially. This means that events that take place simultaneously are on the same vertical axis. If an event takes place after a certain period of time has passed, short or long, it is placed further to the right on the process charts.

Explanatory text

Each transaction flow is preceded by an explanatory text that, step by step, describes the individual events that make up the transaction flow. Each point in the text describes a specific event and what happens before the flow reaches the next event. The events are numbered in chronological order in both the process charts and the explanatory text.

Typical examples

Each transaction flow is described with the aid of one or several typical examples, such as the transaction flow "Card purchases" which is described with the help of the example "The customer makes a purchase in a shop in Paris". The preconditions governing these examples are given in the boxes that introduce the text on each flow. There are of course other examples of card purchases and the examples presented are to be regarded as aids to concretise the transaction flow concerned, not as absolute truths.

The beginning and end of the transaction flow

It is impossible to completely separate a transaction flow from other transaction flows in the financial sector. A number of preconditions in the form of other transaction flows must function for a payment to be made.

The survey includes an example of the inflow of money to the State. This takes place in the form of the transaction flow ”Tax payments” which must work in order, for example, to cover the pension payments (flow 3) made by the Social Insurance Office. Otherwise, the process charts illustrate transaction flows that begin when a participant/customer initiates a payment.

The flows described in the process charts end when the right participants/customers receive the money relating to the payment in their accounts. Account statements and similar information are not covered except in the example "Credit transfers via and Internet bank" where this is of particular importance in order to describe the transaction flow. How the receiving participants then choose to use the money and how these choices are concretised in the form of payments are to be regarded as a separate transaction flows.

Abbreviations

ATM	Automatic Teller Machine
BGC	Bankgirocentralen
CCP	Central Counterparty
DCL	The Swedish Bankers’ Association’s data clearing (operated by BGC)
DOM	Domestic payment
ES	Euroclear Sweden (formerly VPC)
LSA	Liquidity settlement account in SEK, Riksbank account administered by ES
RIX	The Riksbank’s system for the transfer of funds in accounts
RTGS	Real Time Gross Settlement
SCR	The Government’s central account (held by the Swedish National Debt Office)
SWIFT	Society for Worldwide Interbank Financial Telecommunication
UTL	Transaction code for foreign clearing

Additional terms that are common in relation to the selected transaction flows and information on the core of the payment system can be found in Appendix 2.

Process charts with appertaining text

1. Credit transfers via an Internet bank

This example describes a payment (e.g. an invoice payment) from a company called Company X that pays its Supplier via its Internet bank. The Supplier requests payment to a bankgiro number, usually via an invoice, and asks the payer to cite an OCR reference number or other reference in connection with payment. This is so that the Supplier can identify the individual payment for reconciliation against its sales ledger. Company X can also send the payment as a file directly to BGC.

Updated 2012

1. Company X registers a credit transfer which should be made to the Supplier on a certain date via the company's Internet bank.

2. The payment is registered at Company X's bank.

3. Money is withdrawn from Company X's account at Company X's bank and is booked in the bank's internal account. A payment order is sent via a file from Company X to BGC.

4. At BGC the incoming file is placed in a queue (ahead of the next clearing session, 3 times per day at 08.31, 12.00 and 15.26). BGC compiles the clearing data for the Bankgiro product (BBF field 72) and initiates a SWIFT message (settlement notification) MT2020 to the Supplier's bank with delivery on condition that settlement in RIX is carried out.

5. SWIFT receives the information about the payment (MT202) which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

6. RIX receives the information about the payment and carries out settlement between Company X's bank and the Supplier's bank providing that sufficient funds to cover the payment are available in Company X's bank's account with RIX. Money is transferred from Company X's bank's account with RIX to the Supplier's bank's account with RIX. Confirmation (MT097) that settlement has taken place is generated.

7. After confirmation (MT097) from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Supplier's bank and informs BGC (MT012) that settlement has been carried out.

8. When all the settlements in a settlement round have been carried out, BGC sends a credit data file to the Supplier's bank.

9. The Supplier's bank receives the credit data file from BGC.

10. Using the credit data file from BGC as a basis, a transfer is made from the Supplier's bank's internal account to the supplier's account with the Supplier's bank. Under the product agreement, this must be booked in the recipient's account no later than 150 minutes after the Supplier's bank has received the credit data file from BGC (point 9).

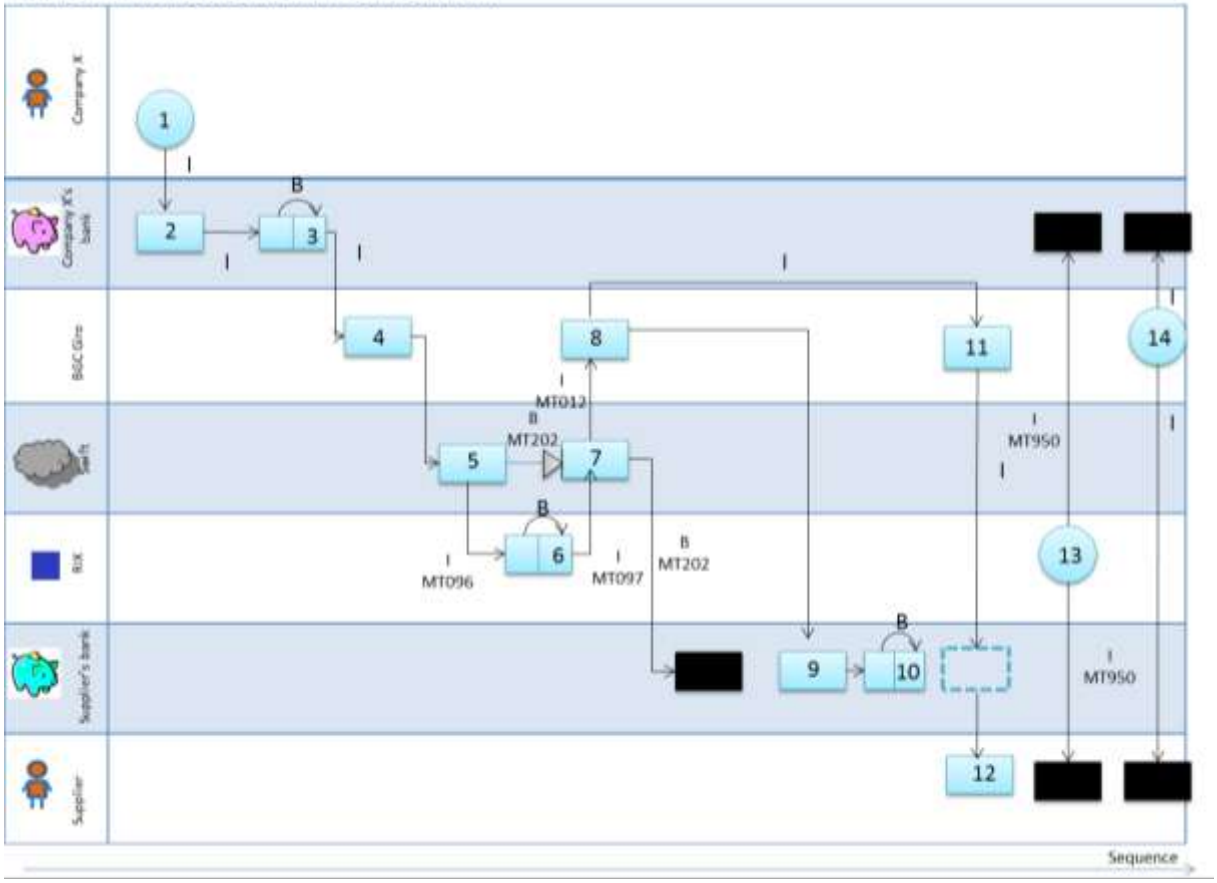
11. BGC draws up and sends a credit notification with information on each individual customer payment to the Supplier directly or via the Supplier's bank.

12. The Supplier receives the credit notification concerning the payments made and checks this against the sales ledger.

13. At the end of the day, RIX sends an account statement to the systems of Company X's bank and the Supplier's bank in order to check the day's RIX transactions.

14. Reconciliation files are sent at the end of the day from BGC to Company X's bank and the Supplier's bank so that the banks can check that the flows are correct.

1. Credit transfers via an Internet bank



2. Payments less than SEK 500 000 made via DCL

This transaction is an account-to-account payment and is illustrated, for example, by a wage payment. Wages are covered by special regulations under the Swedish Bankers' Associations' agreement on payment dates that lie in the future.

1a. Example: A company draws up a list of wages that should be paid on a certain day. The company sends the file via an agreed media to its bank (the Payer's bank).

1b. Example: A customer places a payment order – via his Internet bank, at a branch office or via his telephone bank – with his bank (the Payer's banks) for a payment to an account in the Recipients' bank.

2. The Payer's bank processes the payment order. Example: The bank reads the list of wages into its payment system. Depending on when the payment order was submitted a certain time lag may occur.

3. Money is withdrawn from the company's/customer's account at the Payer's bank and is booked in the Payer's bank's internal account. The value-dating regulations may vary depending on the company's/customer's agreement with the bank. (One day before the payment date).

4. The Payer's bank sends the data to DCL, which is operated by BGC. (The data should be sent no later than in the last file to BGC at 14.25 on the day before the payment date).

5. BGC compiles the clearing data for DCL and initiates a SWIFT message (settlement notification) MT2020 to the Recipient's bank with delivery on condition that settlement in RIX is carried out.

6. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

7. RIX receives the information about the payment and carries out settlement between the Payer's bank and the Recipient's bank providing that sufficient funds to cover the payment are available in the Payer's bank's account with RIX. Money is transferred from the Payer's bank's account with RIX to the Recipient's bank's

account with RIX. (In the case of wage payments, as in 1a above, settlement is carried out at 15.20 on the day before the payment date). Confirmation MT097 that settlement has taken place is generated.

8. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Recipient's bank and informs BGC (MT012) that settlement has been carried out.

9. When all the settlements in a settlement round have been carried out, BGC sends a credit data file to the Recipient's bank. (This is done no later than 19.00 on the day before the payment date).

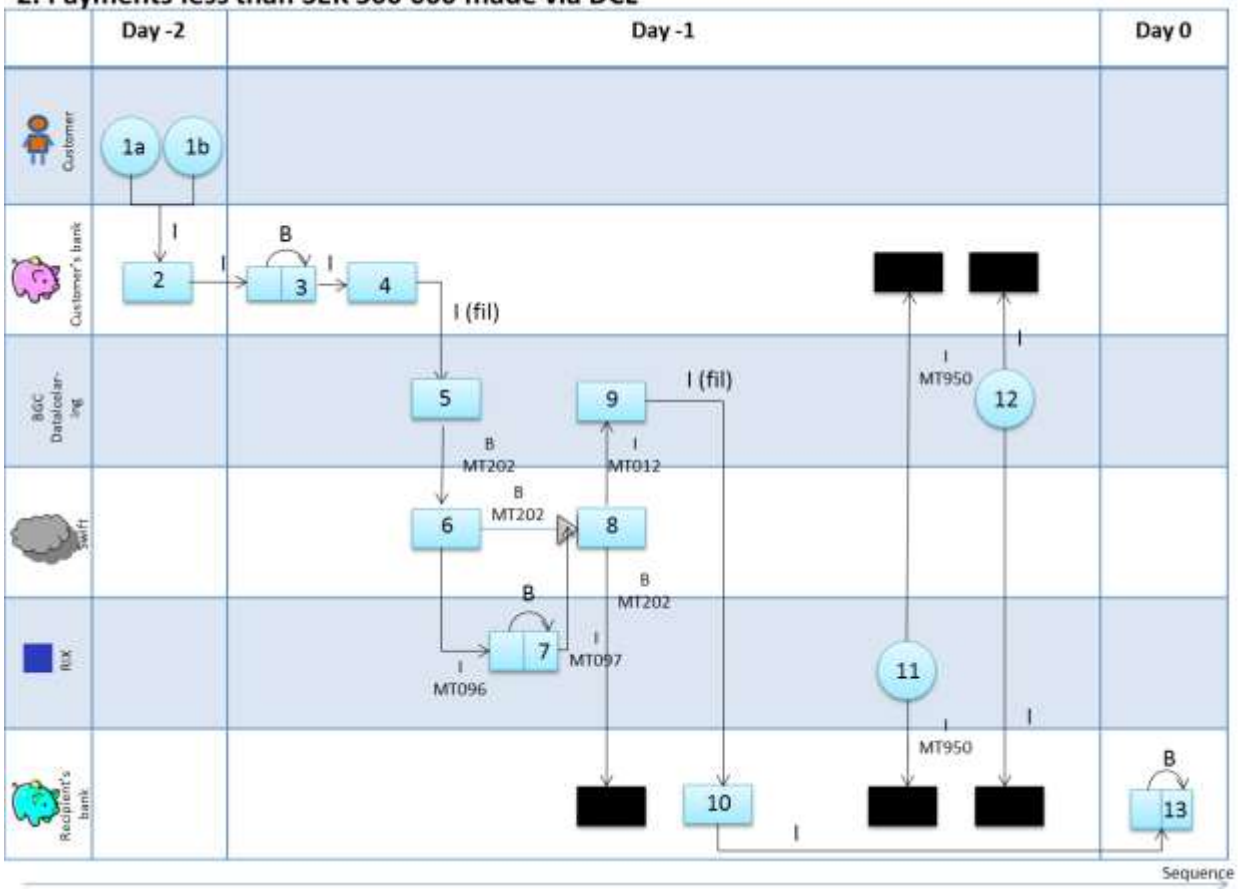
10. The Recipient's bank receives credit data files from BGC. This takes place before the settlement day.

11. At the end of the day, RIX sends an account statement to the systems of the Payer's bank and the Recipient's bank in order to check the day's RIX transactions.

12. Reconciliation files are sent at the end of the day from BGC to the Payer's bank and the Recipient's bank so that the banks can check that the flows are correct.

13. A transfer is made, on the basis of the credit data file from BGC, from the Recipient's bank's internal account to the employee's (Recipient's) account at the Recipient's bank. (In the case of wage payments the money enters the employee's account no later than the day before the payment, but only becomes available to the employee at 00.01 on the payment date).

2. Payments less than SEK 500 000 made via DCL



3. Pension payments

The example refers to a government payment in the form of a pension payment. At present, the government has signed framework agreements with 4 banks (framework banks). At present, the Social Insurance Office engages two framework banks, one of which manages the flows to other banks (see flow 3b-13b for this).

Updated 2012.

1. The Social Insurance Office sends a file to the Framework agreement Bank with the information that it wishes to make a pension payment to a citizen who is a pensioner and a customer of a bank in Sweden. (This takes place about 6–7 days before payment.)

2. Verification and processing take place in the Framework agreement Bank.

Depending on the bank in which the recipient has its account, the flow can take two paths here. For a Recipient with an account with one of the framework agreement banks, see a. For a Recipient with an account with a bank without a framework agreement, see b.

3a. A transfer is made from the Social Insurance Office's account with the Framework agreement Bank to the Recipient's account with the same bank. (According to the government's framework agreement, the money is to have entered the Recipient's account no later than the day before the pension payment date, but only becomes available to the Recipient at 00.01 on the payment date.) *(See 14. for the continuation of the flow.)*

3b. Money is withdrawn from the Social Insurance Office's account with the Framework agreement Bank and is booked in the Framework agreement Bank's internal account. (One day before pension payment date).

4b. The Framework agreement Bank creates a data clearing file and sends it to BGC.

5b. BGC compiles the clearing data for DCL and initiates a SWIFT message (settlement notification) MT2020 to the Recipient's bank with delivery on condition that settlement in RIX is carried out.

6b. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

7b. RIX receives the information about the payment and carries out settlement between the Framework agreement Bank and the Recipient's bank, providing that sufficient funds to cover the payment are available in the Framework agreement Bank. Money is transferred from the Framework agreement Bank's account with RIX to the Recipient's bank's account with RIX. Confirmation MT097 that settlement has taken place is generated.

8b. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Recipient's bank and sends information to BGC (MT012) that settlement has been carried out.

9b. When all the settlements in a settlement round have been carried out, BGC sends a credit data file to the Recipient's bank.

10b. The Recipient's bank receives credit data files from BGC.

11b. At the end of the day, RIX sends account statement MT950 to the Social Insurance Office's framework agreement bank and the Recipient's bank in order to verify the day's RIX transactions.

12b. Reconciliation files are sent from BGC to the Social Insurance Office's framework agreement bank and the Recipient's bank so that the banks can verify that the flows are correct.

13b. A transfer is carried out, on the basis of the credit data file from BGC, from the Recipient's bank's internal account with the Recipient's bank to the recipient's account. (According to the government's framework agreement, the money is to have entered the Recipient's account no later than the day before the pension payment date, but only becomes available to the Recipient at 00.01 on the payment date.)

The subsequent flow ensuing after the payment has reached the pension recipient will be reported in the future. This flow concludes the transaction and is the same for a and b.

Transfer between the framework agreement bank and the government's central account

14. A transfer is made from the National Debt Office's top account at each Framework agreement Bank to the Social Insurance Office's account at the same bank. Information on payment SWIFT message (MT941) is sent to the National Debt Office.

An RTGS payment starts here, see transaction flow 9

15. In its internal system, the National Debt Office initiates a SWIFT message (settlement notification) MT103 to all Framework agreement Banks with delivery on condition that settlement in RIX is carried out. This is to settle the liability that the National Debt Office has to each Framework agreement Bank.

16. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

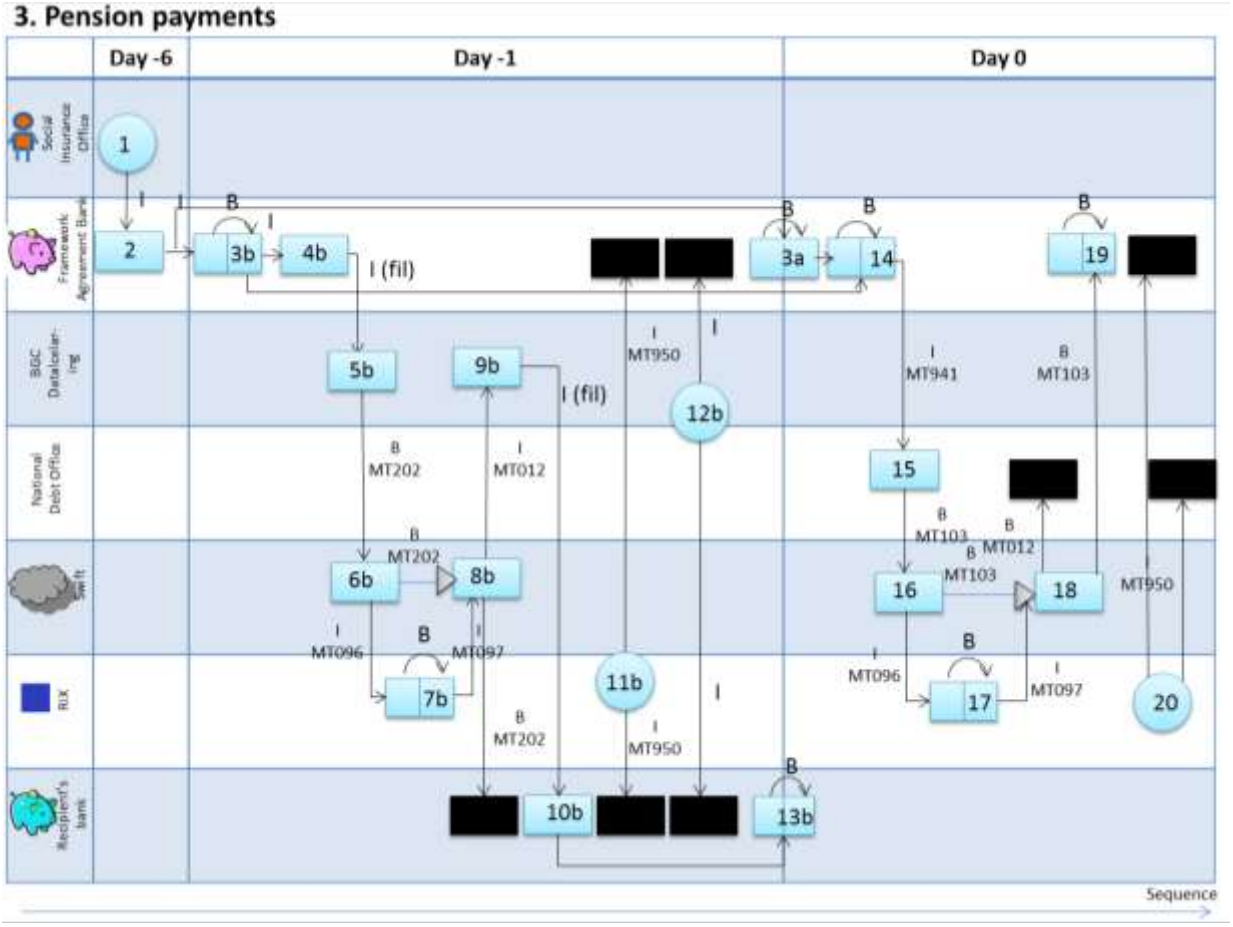
17. RIX receives the information about the payment and carries out settlement between the government's central account (SCR), held by the National Debt Office, and each Framework agreement Bank. Money is transferred from the government's central account with RIX to each Framework agreement Bank's account with RIX. Confirmation MT097 that settlement has taken place is generated.

18. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT103) to each respective Framework agreement Bank and sends information MT012 to the National Debt Office that settlement has been carried out.

19. A transfer is made to the National Debt Office's top account with the Framework agreement Bank which settles the liability that the National Debt Office has with the bank. This takes place no later than 15.00 on pension payment day.

20. At the end of the day, RIX sends account statement MT950 to the Social Insurance Office's framework agreement bank and the National Debt Office in order to verify the day's RIX transactions.

3. Pension payments



4. Card payments made using debit cards

The example refers to a Swedish customer buying goods in Paris with a chip-enabled Swedish debit card (VISA or Mastercard) issued by a Card-Issuing Bank. The purchase is made in EUR.

1. The customer purchases goods in a shop in Paris with his or her card.

2. The shop (designated "Merchant" in the international card system) has an agreement with a Collecting Bank as regards receiving payment for transactions carried out using cards approved by the international card system. The card is presented to the shop's card terminal. As the card is a chip card, the PIN code can be verified locally by the shop's terminal. The shop's terminal sends a security query to the Collecting Bank to verify that there are enough funds (balance control) to carry out the purchase. Depending on the shop's configuration, this security query can go via a data processing centre within the shop or via an external party operating the shop's system.

3. The Collecting Bank forwards the query to the VPN.

4. The VPN identifies the card-issuing bank with the aid of the card number and sends the transaction onwards to the Card-Issuing Bank's computer system.

5. The Card-Issuing Bank verifies the balance of the Customer's account in its ledger. The Card-Issuing Bank sends a response to the VPN confirming that an appropriate amount is present in the account and reserves the withdrawal in the customer's account (authorisation).

6. The VPN logs the information from the Card-Issuing Bank and sends a response to the Collecting Bank.

7. The Collecting Bank sends the information onwards to the shop.

8. Assuming that the card-issuing bank provides a positive response, a purchase settlement is created, following which the shop issues the goods to the Customer.

9. The Collecting Bank takes charge of the information from the shop's daily reconciliation and calculates how much the shop should receive in payment from card transactions that day.

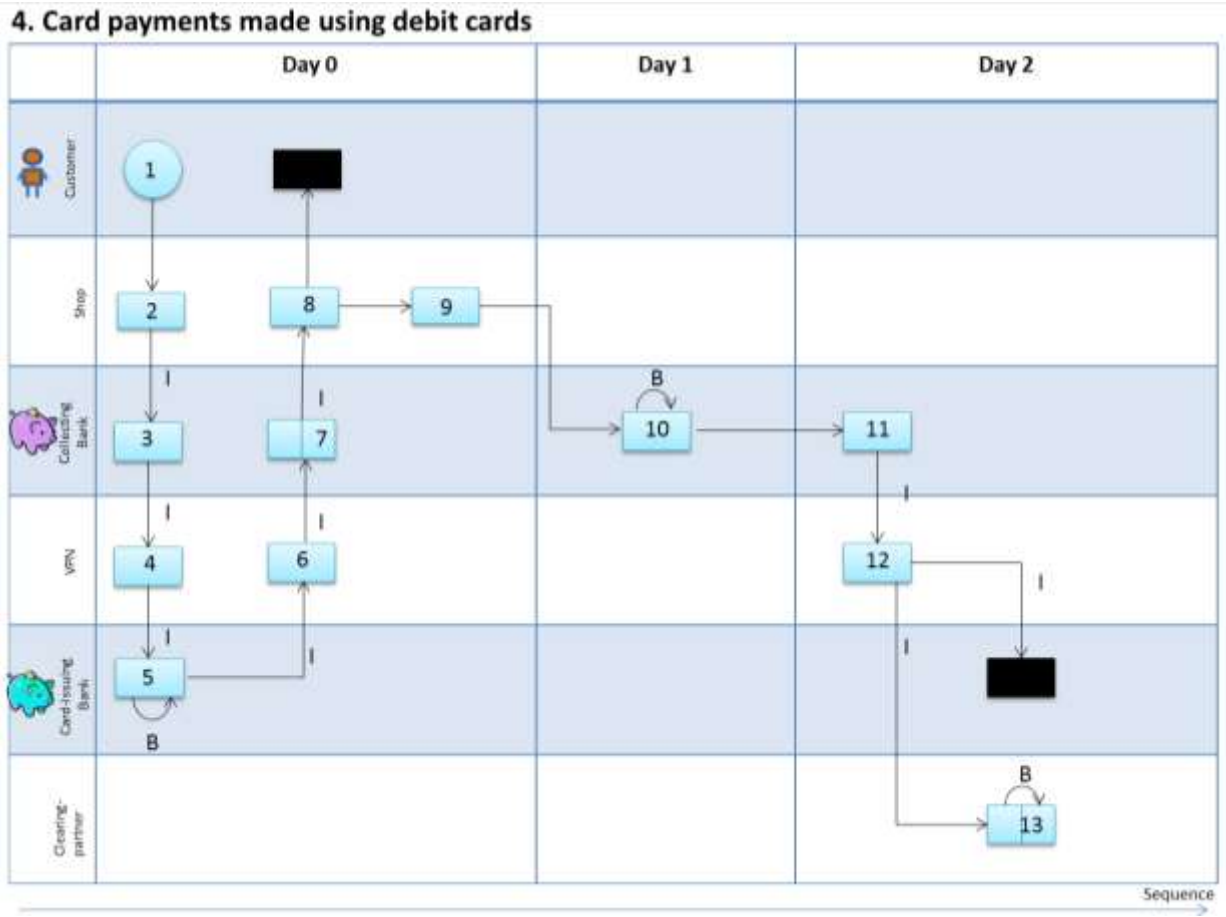
10. Money is transferred from the Collecting Bank's internal account to the shop's account in the Collecting Bank once a fee (Merchant Service Commission or MSC)

has been deducted from the purchase amount. Payment can also be made to another bank.

11. The Collecting Bank sends a clearing file to the VPN.

12. The VPN processes the clearing file and sends it to the Card-Issuing Bank and to the Clearing Partner who is the clearing counterparty for all European banks' card transactions with this type of card.

13. The Card-Issuing Bank makes a payment to the Collecting Bank via its Nostro Account with the Clearing Partner after making a deduction for an interchange fee.



5. Securities trading: Purchases

The example depicts a share purchase via a bank's online system. This process chart describes the transaction flow after the introduction of a CCP on 9 October 2009. The new solution requires the central counterparty to act as buyer towards the seller and seller towards the buyer in each securities transaction. The CCP thereby reduces counterparty risk.

Supplemented in 2010.

1. The Buyer, who is a customer of the Buyer's bank, enters an order via the bank's online system for placing orders for the purchase of a block of shares (spot).

2. The Buyer's bank issues an order to the marketplace via its own trading system. (The securities institution can trade on several marketplaces, for example Nasdaq OMX Nordic or Burgundy. The link between the securities institution and the marketplace is made via data communication.)

3. The order is put onto the marketplace and the transaction is settled. Information on the settlement is sent back to the Buyer's bank and to the CCP.

4. The Buyer's bank receives a confirmation that settlement has taken place. The Buyer sees the transaction in the bank's Internet application. The bank generates a contract note in the system that the customer can see in his or her online bank.

5. The CCP receives information on the settlement from the marketplace. The CCP receives this information continually over the whole day. The CCP calculates a daily net figure per security. The CCP sends information in a file to the Buyer's bank on the day's total purchases and sales by security. The CCP also sends a settlement instruction to ES with the net clearing figure (amount and liquidity) for each security.

6. The Buyer's bank receives the end-of-day information from the CCP and conducts an internal reconciliation against its own information on the day's transactions. The bank submits a settlement instruction to ES with the day's net figures for both amount and liquidity per security.

7. ES receives information from the CCP and the Buyer's bank on the day's netted settlement instructions. ES matches the settlement instructions with each other (counterparty, amount, security, liquidity and customer references must correspond). ES responds confirming that matching has taken place (/matching status) to the CCP and the Buyer's bank.

8. The Buyer's bank and the CCP receive the matching status from ES.

9. On settlement day, the Buyer's bank initiates a SWIFT message (settlement message) MT202 for transfer of the central bank liquidity to its liquidity settlement account (LSA) in ES.

10. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

11. RIX receives the information on the payment and carries out settlement between the Buyer's bank's RIX account and the RIX account administered by ES, providing that sufficient funds to cover the payment are available in the Buyer's account in RIX. Confirmation MT097 that settlement has taken place is generated.

12. After confirmation from RIX that settlement has taken place, SWIFT automatically sends payment (MT202) onwards to ES.

13. ES receives the payment MT202 and enters the money into the Buyer's bank's liquidity settlement account with ES and sends information on the payment to the Riksbank's system COLIN, which generates information for RIX.

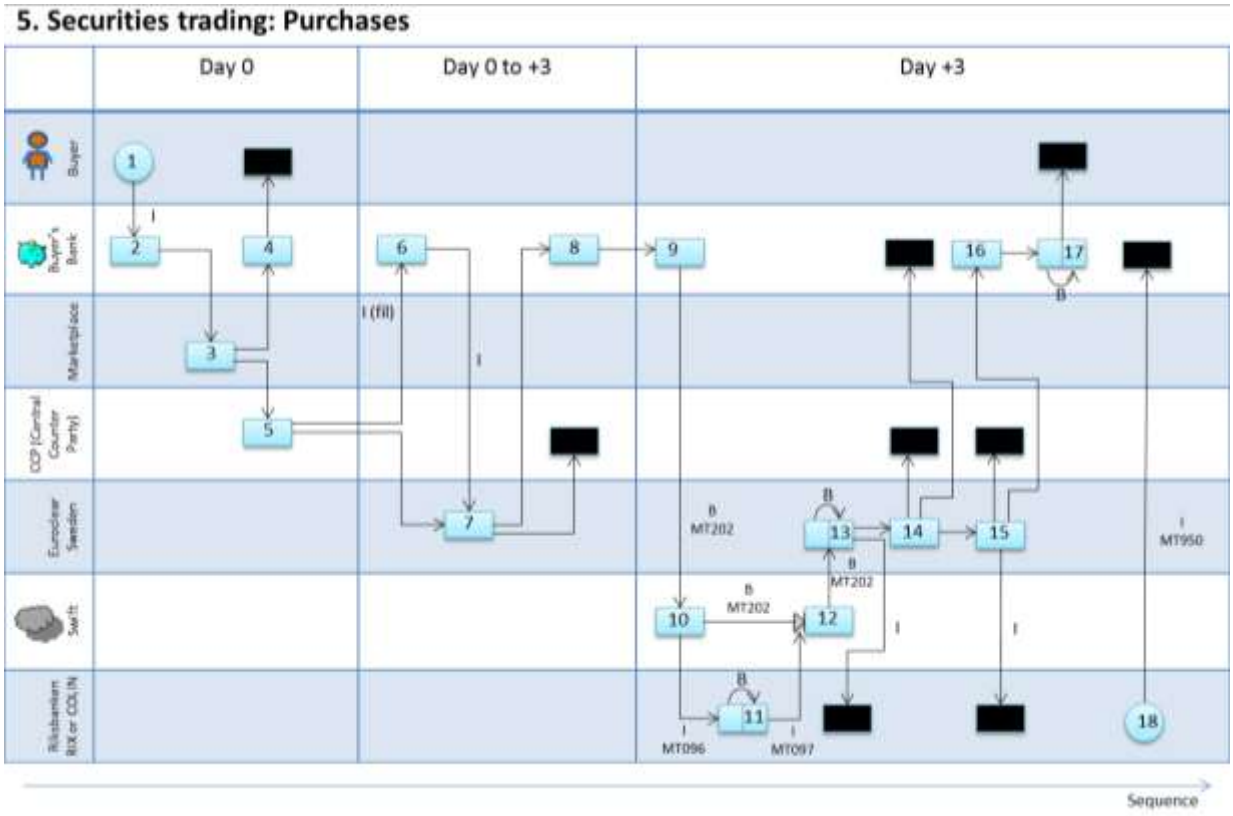
14. ES verifies that the CCP has the security and that the Buyer's bank has the liquidity at its disposal (cover check). The settlement instructions are marked as ready and confirmation is sent from ES back to the Buyer's bank and the CCP that the transaction has been marked and is ready for settlement.

15. Settlement is made of the day's instructions that have been marked as ready but not yet settled (this happens three times per day, at 10.00, 12.00 and 14.00). Settlement/reconciliation information is sent to the Buyer's bank and the CCP (after each settlement or at the end of the day – different securities institutions have different routines), as well as to the Riksbank's system COLIN, which generates information for RIX.

16. The Buyer's bank and the CCP receive the settlement/reconciliation information from ES.

17. The Buyer's bank transfers money from the Buyer's account to the bank's internal account.

18. At the end of the day, RIX sends account statement MT950 to the Buyer's bank in order to verify the RIX transactions. Reconciliation takes place between the reconciliation file and the internal accounts (the bookkeeping accounts).


5. Securities trading: Purchases
Day 0
Day 0 to +3
Day +3
Buyer
Buyer's Bank
Marketplace
CCP (Central Counter Party)
Euroclear Sweden
Swift
Riksbanken RIX or CODLN
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
I (fil)
I
B
MT202
MT096
MT097
MT950
Sequence

6. Share dividends

The example depicts a share dividend from an issuer to a shareholder's account in a bank. ES regularly sends a control file to the banks to ensure that the accounts of the payment recipients, that ES has stored, exist and are active.

1. The issuer orders a dividend order from ES – via an Internet-based system provided by ES for the issuers.

2. ES registers a preliminary dividend order in its internal system and informs the receiving banks that preliminary payment (dividend payment) has been confirmed.

3. The issuer confirms that a dividend payment will take place, including the current dividend amount. Confirmation takes place via the same Internet-based system as in 1.

4. ES receives confirmation that a dividend payment will take place and investigates which VPC account has holdings of the issuer's securities and is thus entitled to a dividend payment. In conjunction with this investigation, a calculation is made of the amount to be paid per VPC account, considering possible tax effects. Information on the amount to be paid, settlement account (bank account) per VPC account and which bank the settlement account belongs to are compiled in a file. Information that payment has been confirmed is sent to the receiving banks.

5. ES sends a file to BGC with information on bank account, bank and payment amount. This takes place the evening before payment date.

6. BGC sends a request in file format to the Issuer's bank to verify that the Issuer has money in its account.

7. The Issuer's bank makes a withdrawal from the Issuer's account, which is entered on the bank's internal account, and confirms that there are sufficient funds to cover the payment.

8. BGC receives confirmation, providing that there are sufficient funds in the file. BGC compiles the clearing data and initiates a SWIFT message (settlement notification) MT2020 to each Receiving Bank with delivery on condition that settlement in RIX is carried out.

9. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

10. RIX receives the information about the payment and carries out settlement between the Issuer's bank and the Receiving Banks, providing that sufficient funds to cover the payment are available in the Issuer's bank's account with RIX. Money is transferred from the Issuer's bank's account with RIX to the Receiving Banks' accounts with RIX. Confirmation MT097 that settlement has taken place is generated.

11. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Receiving Banks and sends information to BGC (MT012) that settlement has been carried out.

12. When all settlements in a settlement round have been carried out, BGC sends a credit data file to the Receiving Banks and a return accounting file to ES.

13. ES receives a confirmation from BGC that the payment of the dividend has been carried out. ES updates the system with the information that the dividend payment has been carried out. ES sends information via file to an external supplier who prints and sends notifications to the VPC account holders who have received dividend payments with the information that the dividends have been paid.

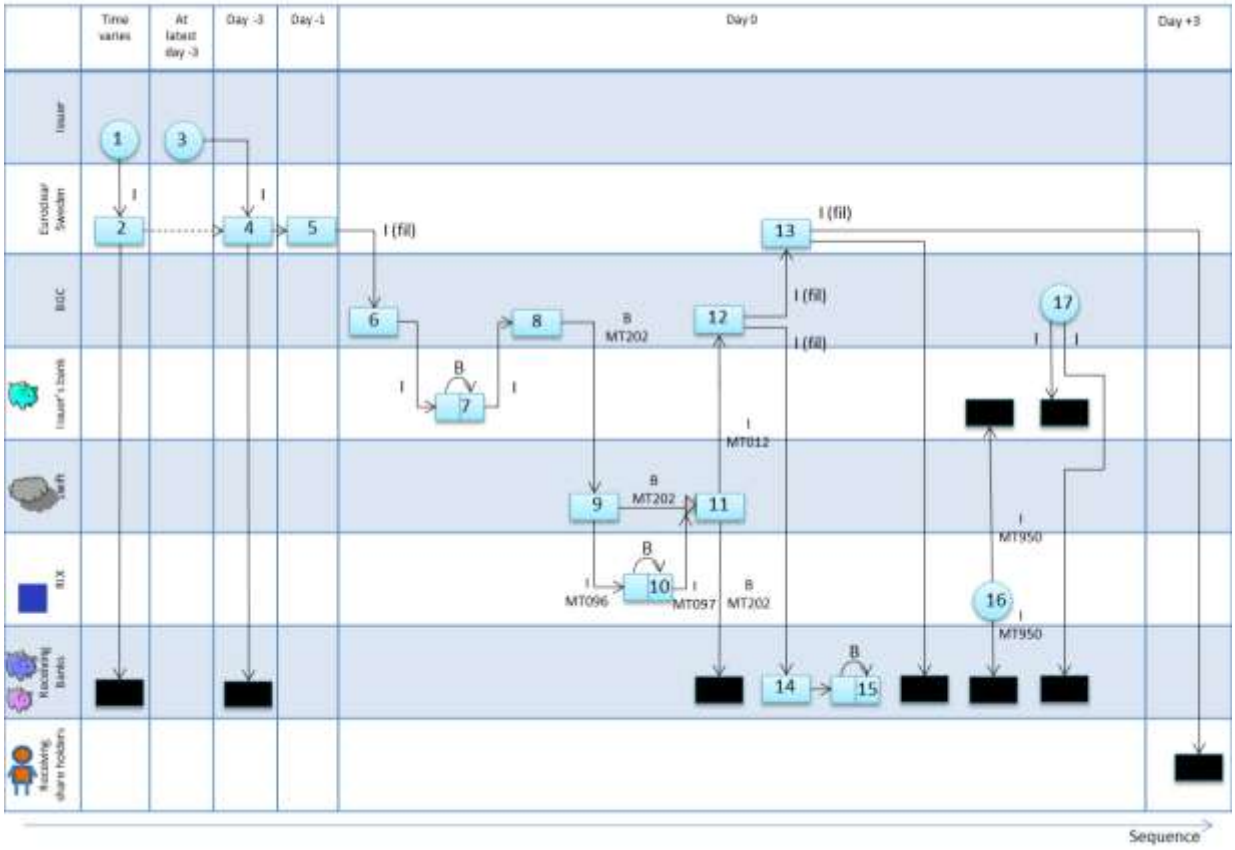
14. The Receiving Banks receive the credit data file from BGC.

15. A transfer is made from the Receiving Banks' internal accounts to the VPC account holders and the custody holder's account in the same bank.

16. At the end of the day, RIX sends account statement MT950 to the Receiving Banks' and Issuing Bank's systems to verify the day's RIX transactions.

17. Reconciliation files are sent from BGC to the Receiving Banks and the Issuing Bank so that the banks can verify that the flows are correct.

6. Share dividends



7. Payments from foreign banks to accounts in Swedish banks (UTL)

The example depicts a payment order from the United States in which the US bank has a different account relation to that of the payment recipient in Sweden. The US bank has a relationship with a Swedish bank. The payment recipient is a customer of another Swedish bank. In the example, USD is exchanged for SEK in the US bank.

The US bank chooses to send payment with coverage. If payment is made without coverage, the US bank sends MT103 directly to the correspondent bank, which carries out a normal settlement in RIX with the Receiving Bank.

Updated 2012.

1. The customer in the United States submits a payment order to his or her bank in the United States (US Bank).

2. Exchange from USD to SEK. The US bank initiates a payment order MT103 to the Recipient's bank and a MT202 to its related bank.

3. The payment order is managed by the Recipient's bank's system by being entered into the bank's internal account.

4. The US bank's loro account is debited by the US bank's Swedish bank, which initiates a SWIFT message (settlement notification) MT202 to the Recipient's bank with delivery on condition that settlement in RIX is carried out.

5. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

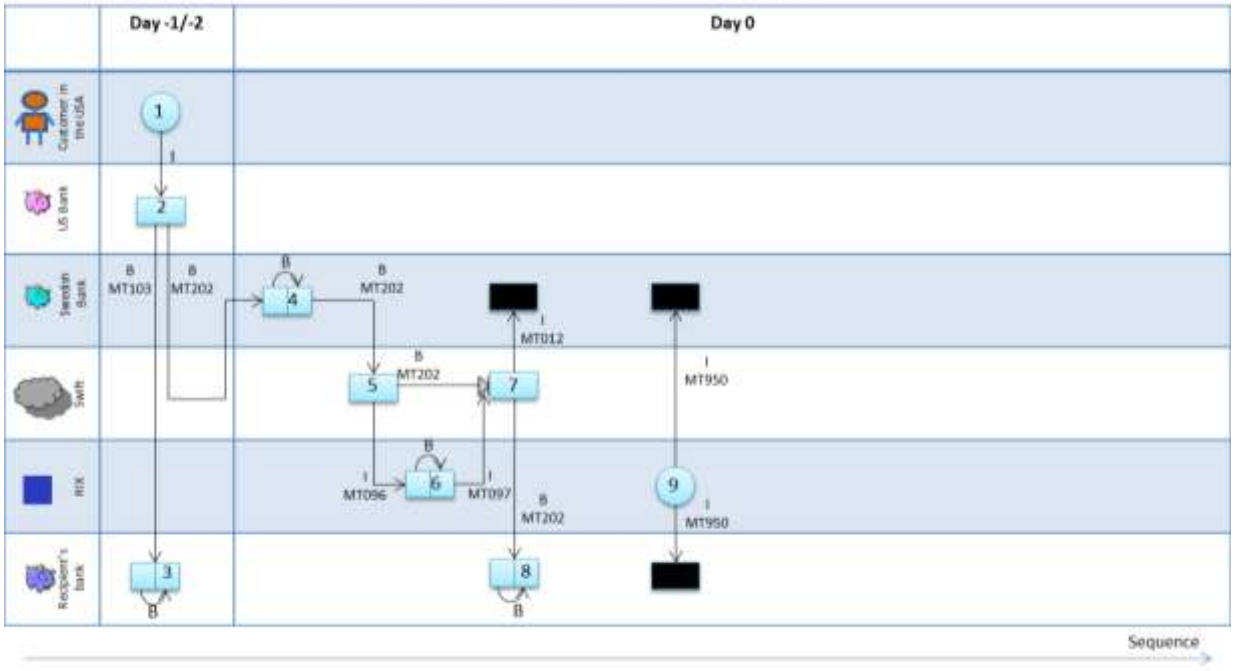
6. RIX receives the information about the payment and carries out settlement between the related Swedish bank and the Recipient's bank, providing that sufficient funds to cover the payment are available in the related Swedish bank. Money is transferred from the related Swedish bank's account with RIX to the Recipient's bank's account with RIX. Confirmation MT097 that settlement has taken place is generated.

7. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Recipient's bank and sends information MT012 to the related Swedish bank that settlement has been carried out.

8. The recipient's bank receives the payment (MT103). The bank debits the internal account and credits the customer's account.

9. At the end of the day, RIX sends account statement MT950 to the systems of the related Swedish bank and the Recipient's bank in order to verify the day's RIX transactions.

7. Payments from foreign banks to accounts in Swedish banks (UTL)



8. Withdrawals from ATMs using debit cards

The example refers to a withdrawal from an ATM using a Mastercard or Visa card. The flows differ in that Mastercard's VPN is BankNet, administered from Belgium, while Visa's VPN is VisaNet, administered from London. They also have different clearing partners. At present, VisaNet's clearing partner is SEB and BankNet's clearing partner is BGC on behalf of Handelsbanken. ATMs can communicate with several VPNs in parallel.

Although cash cards are still used to a limited extent, they are being phased out, so these flows are not described.

1. The customer makes a withdrawal with a Debit Card issued by the customer's bank (Card-Issuing Bank) from an ATM belonging to another bank (ATM Bank).

2. The ATM Bank's ATM connects with a VPN using a special communications computer.

3. The VPN processes information on the withdrawal amount and the PIN code used and then uses the card number to send the transaction on to the Card-Issuing Bank's computer system.

4. The Card-Issuing Bank verifies the balance of the Customer's account in its ledger and the PIN code in its security computer. The Card-Issuing Bank sends a response to the VPN confirming that an appropriate amount is present in the account and that the PIN code is correct, and carries out the withdrawal from or reserves the amount in the customer's account.

5. The VPN logs the information from the Card-Issuing Bank and sends a response to the ATM Bank's ATM.

6. The ATM bank's ATM issues the customer with cash and notes the transaction in the ATM's electronic journal and stores the information to produce a clearing file.

7. The ATM bank produces a clearing file on a daily basis that contains all of the bank's transactions and is sent to the VPN.

8. The VPN processes the clearing file and sends the clearing information to the Card-issuing bank and the ATM bank and to the party acting as Clearing Partner in RIX.

9. The Clearing Partner receives the clearing list and initiates in its capacity as agent for the Card-issuing bank a SWIFT message (settlement notification - MT103 or

MT202 depending on which Clearing Partner is used) according to information from the VPN that is addressed to the ATM bank for delivery on condition that settlement in RIX is carried out.

10. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

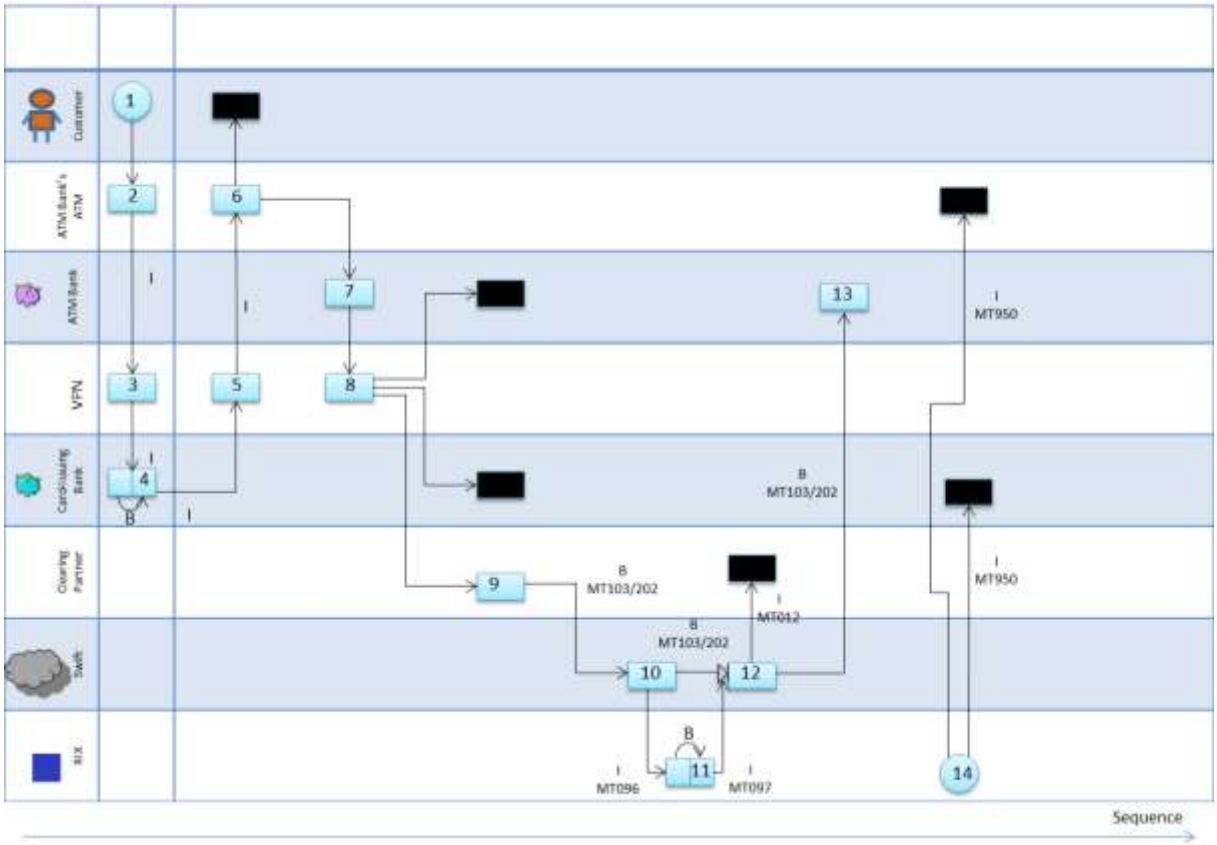
11. RIX receives the information about the payment and carries out settlement between the Card-issuer's bank and the ATM bank providing that sufficient funds to cover the payment are available in the Card-issuing bank's account with RIX. Money is transferred from the Card-issuing bank's account with RIX to the ATM bank's account with RIX. Confirmation MT097 that settlement has taken place is generated.

12. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT103/202) to the ATM bank and sends the notification MT012 to the Clearing Partner that settlement has been carried out.

13. The ATM bank receives the payment (MT103/202).

14. At the end of the day, RIX sends an account statement MT950 to the systems of the Card-issuing bank and the ATM bank in order to reconcile the day's RIX transactions.

8. Withdrawals from ATMs using debit cards



9. RTGS payment (DOM)

The example shows a payment of more than SEK 500 thousand from an account in one bank to an account in another bank. RTGS payments are regulated in the Swedish Banking Association's agreements and the purpose is to replace telephone transfers.

1. A Company/Customer (Payer) initiates a payment of more than SEK 500 thousand via its internet bank/branch office (telephone bank) to a recipient with an account in the Recipient's bank.

2. Withdrawals are made from the Payer's account with the Payer's bank and are registered on the Payer's bank's internal account with the Payer's bank.

3. The Payer's bank initiates on the basis of the information from the sender a SWIFT message (settlement notification) MT103 addressed to the Recipient's bank with delivery on condition that settlement in RIX is carried out.

4. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

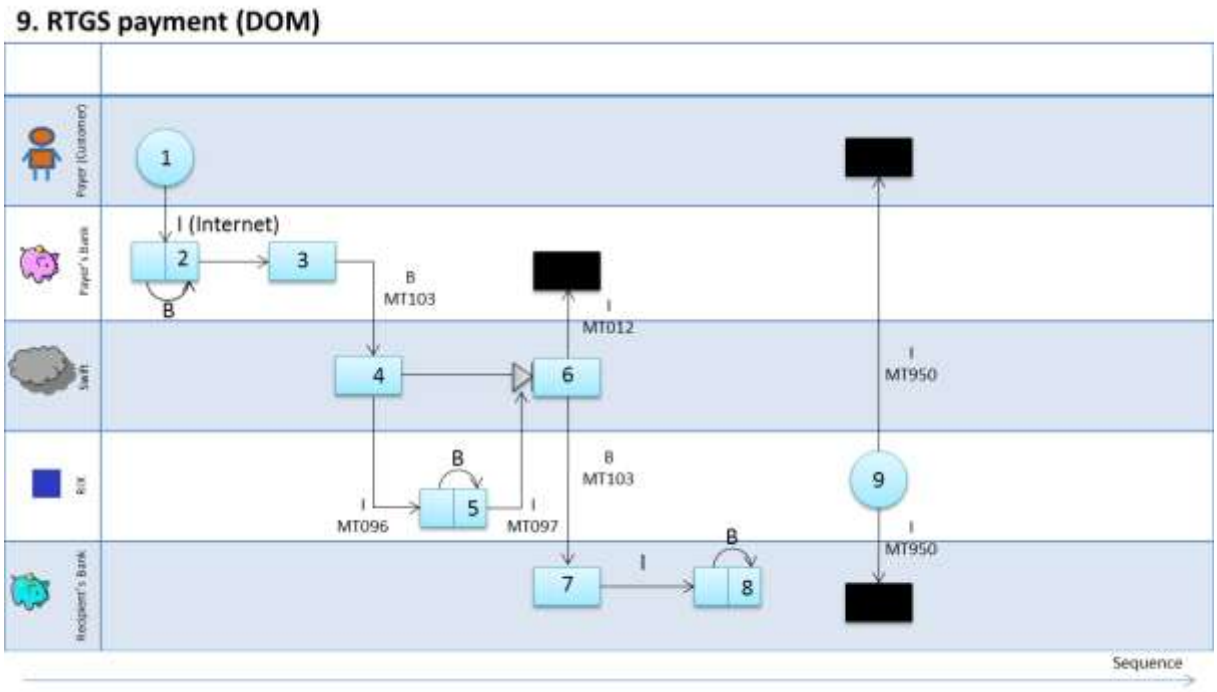
5. RIX receives the information about the payment and carries out settlement between the Payer's bank and the Recipient's bank providing that sufficient funds to cover the payment are available in the Payer's bank. Money is transferred from the Payer's bank's account with RIX to the Recipient's bank's account with RIX. Confirmation MT097 that settlement has taken place is generated.

6. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment MT103 to the Recipient's bank and notification MT012 to the Payer's bank that settlement has been carried out.

7. The recipient's bank receives the payment (MT103).

8. The transfer is made from the Recipient bank's internal account with the Recipient's bank to the Recipient's account with the Recipient's bank.

9. At the end of the day, RIX sends account statement MT950to the systems of the Payer's bank and the Recipient's bank in order to check the day's RIX transactions.



10. Tax payment through credit transfer (on file via BGC)

This example depicts a domestic tax payment from a large company called Taxpayer, which pays its tax through a credit transfer sent on file to BGC. Taxpayer can also go via its internet bank to make the tax payment via bank credit transfer. At present the majority of all tax payments are made via bank credit transfer, but they can also be made through a plusgiro credit transfer up until 15 May 2012. After that a bank credit transfer is necessary. Tax payments made by companies account for the largest share of tax payments in terms of volume.

Supplemented 2010, updated 2012.

1. Taxpayer registers a tax payment in its financial system in the same way as for other credit transfer payments. The tax payment will reach the Swedish Tax Agency the following day. A payment order is sent via a file from Taxpayer to BGC.

2. The payment is registered with BGC. BGC puts the payment in a queue (prior to the clearing point of the day, at 11.25 a.m.). BGC sends an inquiry regarding debiting Taxpayer's account to Taxpayer's bank.

3. Taxpayer's bank receives the notification from the BGC and makes a debit check and reserves the stated amount on Taxpayer's account with the bank. The stated amount is then transferred from Taxpayer's account with the bank to Taxpayer's bank's internal account. If the money is not available or it is not possible to debit the account for some other reason, Taxpayer's bank sends a notification of this to BGC.

4. BGC compiles the clearing data for the credit transfer product and initiates a SWIFT message (settlement notification) MT202 addressed to the Swedish Tax Agency's framework agreement bank for credit transfers, that is, the Recipient's bank (referred to as the Swedish Tax Agency's framework agreement bank) for delivery on condition that settlement in RIX is carried out.

5. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

6. RIX receives the information about the payment and carries out settlement between Taxpayer's bank and the Swedish Tax Agency's framework agreement bank providing that sufficient funds to cover the payment are available in Taxpayer's bank's account with RIX. Money is transferred from Taxpayer's bank's account with RIX to the Swedish Tax Agency's framework agreement bank's account with RIX. Confirmation MT097 that settlement has taken place is generated.

7. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Swedish Tax Agency's framework agreement bank and sends notification MT012 to BGC that settlement has been carried out. (This takes place at 14.00 hours)

8. When all settlements in a settlement round have been completed, BGC sends the credit data file to the Swedish Tax Agency's framework agreement bank (that is, the Recipient bank).

9. The Swedish Tax Agency's framework agreement bank receives credit data files from BGC.

10. A transfer is made, based on the credit data file from the BGC, from the Swedish Tax Agency's framework agreement bank's internal account to the Swedish Tax Agency's account with the Swedish Tax Agency's framework agreement bank.

11. BGC draws up and sends a credit notification to the Swedish Tax Agency, either directly or via the Swedish Tax Agency's framework agreement bank. BGC also creates a debit notification to Taxpayer which is sent directly or via Taxpayer's bank.

12. The Swedish Tax Agency receives a credit notification on payments received and registers them in its tax account system.

13. Taxpayer receives a debit notification that its payment has been made.

Transfer between the framework agreement bank and the government's central account

14. A transfer is made from the Swedish Tax Agency's account with the Swedish Tax Agency's framework agreement bank to the Swedish National Debt Office's top account with the same bank. Information on payment (MT941) is sent to the Swedish National Debt Office. (This takes place at 14.30 hours.)

15. A transfer is made from the Swedish National Debt Office's top account with the Swedish Tax Agency's framework agreement bank to the Swedish Tax Agency's framework agreement bank's internal account.

16. In its internal system, the Swedish Tax Agency's framework agreement bank initiates a SWIFT message (settlement notification) MT103 addressed to the Swedish National Debt Office with delivery on condition that settlement in RIX is carried out. This is to settle the liability that the Swedish Tax Agency's Framework agreement bank has to the Swedish National Debt Office.

17. SWIFT receives the information about the payment which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

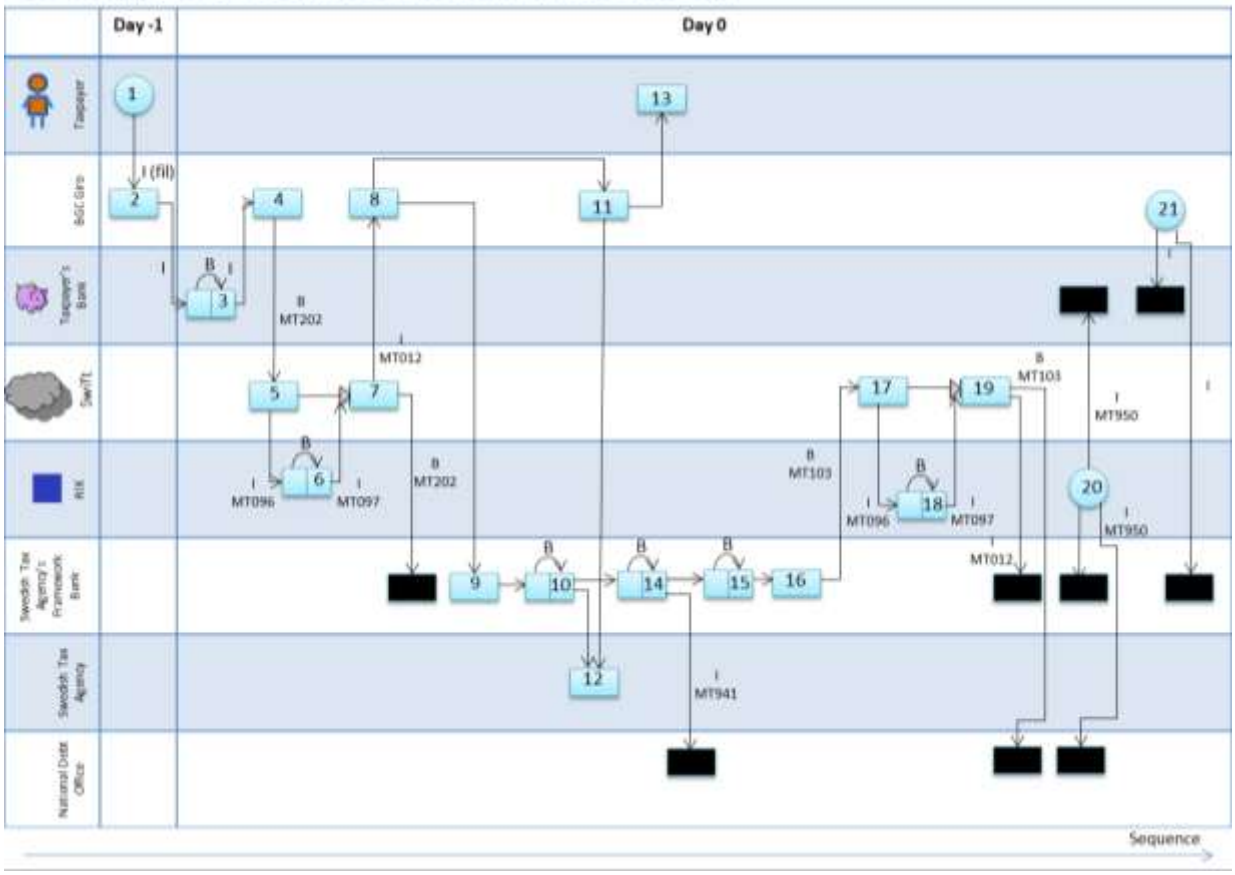
18. RIX receives the information about the payment and carries out settlement between the Swedish Tax Agency's framework agreement bank and the Government's central account (SCR), held by the Swedish National Debt Office. Money is transferred from the Swedish Tax Agency's framework agreement bank's account with RIX to the Government's central account with RIX. (This takes place no later than 15.00 hours.) The Swedish National Debt Office then invests this money on the intraday market. (This takes place between 15.00 and 16.00 hours.)

19. After confirmation from RIX that settlement is complete, SWIFT automatically sends the payment (MT103) to the Swedish National Debt Office and sends notification MT012 to the Swedish Tax Agency's framework agreement bank that settlement has been carried out.

20. At the end of the day, account statement MT950 is sent to the banks' and the Swedish National Debt Office's systems to reconcile the day's RIX transactions.

21. A reconciliation file is sent at the end of the day from BGC to the banks so that the banks can check that the flows are correct.

10. Tax payment through credit transfer (on file via BGC)



11. Payments via Direct debit

This example describes a payment from a payer, where the payer and the payment recipient have agreed to use direct debit. The payer has given consent for the payment recipient to make payments from the payer's bank account or credit transfer number via Direct debit.

Supplemented 2010, updated 2012.

1. The payment recipient sends a file with payment data for payment orders to BGC. The Payment Recipient informs the Payer of the payment, for instance by sending an invoice.

2. BGC sends a debit notification for checking the debit (cover check) to the Payer's bank on the payment date.

3. The Payer's bank makes a cover check. If there is money in the Payer's account, the Payer's account is debited and the amount is credited to the bank's internal account.

4. BGC compiles the clearing data for the Bankgiro product and initiates a SWIFT message (settlement notification) MT202 addressed to the Recipient's bank.

5. SWIFT receives the information about the payment (MT202) which is placed on hold while awaiting settlement in RIX and sends a copy of the payment (MT096) to RIX.

6. RIX receives the information (MT096) on the payment and carries out settlement between the Payer's bank and the Payment Recipient's bank providing that sufficient funds to cover the payment are available in the Payer's bank's account with RIX. Money is transferred from the Payer's bank's account with RIX to the Payment Recipient's bank's account with RIX. Confirmation (MT097) that settlement has taken place is generated.

7. After confirmation (MT097) from RIX that settlement is complete, SWIFT automatically sends the payment (MT202) to the Payment Recipient's bank and informs BGC (MT012) that settlement has been carried out.

8. When all the settlements in a settlement round have been carried out, BGC sends a credit data file to the Payment Recipient's bank.

9. The Payment Recipient's bank receives credit data files from BGC.

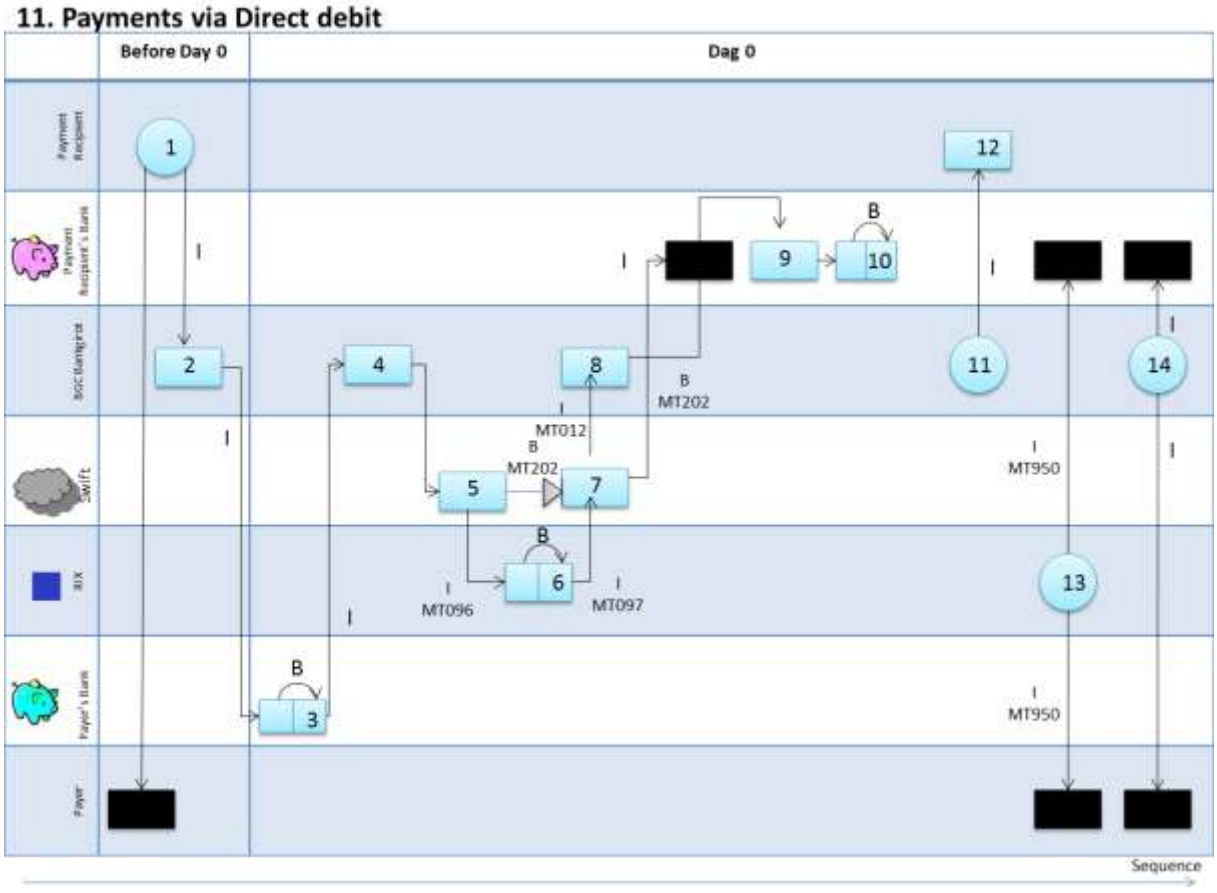
10. A transfer is made from the Payment Recipient's bank's internal account to the Payment Recipient's account.

11. BGC creates and makes available an account of various events in direct debits via a file sent to the payment recipient or via the Autogiro Online system.

12. The Payment Recipient receives the account of payments made and not made and reconciles its sales ledger.

13. At the end of the day, account statement MT950 is sent to the Payment Recipient's bank's system and the Payer's bank's system to reconcile the day's RIX transactions. Reconciliation takes place between the reconciliation file and the internal accounts (the bookkeeping accounts).

14. Reconciliation files are sent at the end of the day from BGC to the Payment Recipient's bank and the Payer's bank so that the banks can check that the flows are correct.



Appendix 2 – The core of the payment system[1]

The core of the Swedish payment system is made up of BGC, NASDAQ OMX, the Riksbank, the Swedish National Debt Office, Euroclear Sweden and the major banks. These participants all play a critical role in the execution of financial services in society. This section presents the participants in the core of the payment system, with a focus on the activities carried out by each respective participant within the Swedish payment system. This is followed by a description of the critical dependence on international agents, which are necessary to be able to carry out the activities mentioned.

Bankgirocentralen BGC AB[2]

Bankgirocentralen BGC AB (hereinafter referred to as BGC), which is owned by the banks, is the main intermediary of retail payments between the banks in Sweden. BGC supplies payment products and services for clearing and settlement.

The most important product is Bankgirot. Its system is open to all banks operating in Sweden. When payments are made, a bankgiro number is used, which is not an account, but an address that points to an optional bank account. The bank account can therefore be changed without this affecting the use of the payment products linked to the bankgiro number. A total of around 70 per cent of Swedish companies use Bankgirot's payment services. Bankgirocentralen BGC AB signed an agreement in 2008 that VocaLink would take over the operation and development of Bankgirot. At present (2012), all direct debit transactions (autogiro) are processed via VocaLink.

In addition, BGC also handles the production of the payment product DCL (Dataclearingen) on behalf of the Swedish Bankers' Association.

Every day BGC mediates around 4.4 million transactions to a total value of SEK 25 billion, and on peak days this figure can exceed SEK 50 billion. BGC is also responsible for ensuring that debts and claims between the banks are regulated with the Riksbank, what is known as clearing and settlement.

NASDAQ OMX

NASDAQ OMX Nordiska Börs Stockholm AB (Nasdaq OMX) is the central marketplace for trading in, among other things, shares, premium bonds, convertibles, warrants, bonds and exchange-traded funds in Sweden. In addition, trading and clearing in Swedish, Finnish, Norwegian, Danish, Baltic, Russian and Icelandic derivatives is offered, such as stock options, index options, interest derivatives, equity and index futures as well as certain OTC derivatives. During 2011

[1] This is partly based on "The resilience of the core of the payments system", FSPOS (2008)
[2] Bankgirocentralen BGC AB will change its name to Bankgirot during 2012

an average of 233,000 equity transaction took place through Nasdaq OMX, with a total turnover of SEK 15 billion per day.

NASDAQ OMX Derivatives Markets

NASDAQ OMX Derivatives Markets (NASDAQ OMX DM) is the secondary legal name of NOMX STO and is used for operations involving the trading and clearing of derivative instruments.

While transactions in shares and debt securities are cleared and settled in Euroclear Sweden's system for securities settlement, NASDAQ OMX Derivatives Markets (NASDAQ OMX DM) takes care of trading and clearing of derivatives transactions. NASDAQ OMX DM functions as central counterparty in these transactions. This means that NASDAQ OMX DM acts as seller to all buyers and as buyer to all sellers. Both the buying and the selling party thus have NASDAQ OMX DM as the legal counterparty.

Verizon Financial Network

Verizon Financial Network (VFN) is a fibre network used by banks and brokers for communication with NASDAQ OMX regarding trading and clearing. The network can also be used by market agents for communication with the Riksbank's payment system, RIX.

Major banks

At the core of the payment system there are currently four major banks, which together have a market share of almost 80 per cent of the deposits made by private and corporate customers in Sweden. The major bank described in this section refers to a bank which has functions that are the lowest common denominator between the four major commercial banks in Sweden: Nordea, SEB, Svenska Handelsbanken and Swedbank. Special functions that are not common to all of the banks, or which require particular explanation, are presented under the section other agents and critical functions.

Major bank functions as a financial intermediary and mediates financial services, such as deposits and lending, payments, cash supply and investment for both individuals and companies. Major bank is a part-owner in the RIX system, in Euroclear Sweden for clearing and settlement of securities, in OMX for clearing and settlement of derivatives, in BGC for mediation of payments, including clearing and settlement, and in CLS for clearing and settlement of foreign exchange transactions. Clearing and settlement are carried out by the major bank on its own behalf and on behalf of its customers, but are also offered as a service to smaller banks and other financial agents.

Card transactions

The banks supply cards to individuals and companies to make payments with and withdraw cash from ATMs. The card transactions have led to a decline in the need for cash in society.

Wage payments

The banks mediate payments of wages from employers to employees.

Nostro and Loro accounts

To make a payment in another currency than their domestic one, banks often use the services of banks in other countries. For example, if a Swedish bank wants to make payments in US dollars, it opens an account (nostro account) with an American bank. This is similar to a normal current account from which deposits and payments are made. The American bank is called a correspondent bank and participates in its turn in the American payment system through which payments are forwarded to the final recipient of the payment. The major banks are thereby part of a network of correspondent banks in many different countries. Similarly, Swedish banks have accounts in SEK for foreign banks (loro accounts) and manage the foreign bank's payments in SEK from this account.

PlusGirot

PlusGirot is a credit transfer function, which is part of Nordea, and used for mediating payments between accounts held by companies and individuals. Payments between the plusgiro accounts take place through transfer within a ledger in Nordea. Payments from other banks to plusgiro accounts are settled in RIX.

Government payments

Four of the major banks are currently responsible for the public authorities' payments through framework agreements with the Swedish National Debt Office. These payments include payments of pensions, child allowance and study allowances. The banks are also responsible for mediating payments made to public authorities, including tax payments from companies and individuals.

The Riksbank

One of the Riksbank's tasks is to promote a safe and efficient payment system. Within the scope of this task, the Riksbank has operational responsibility for RIX, the system that enables banks to safely execute large-value electronic payments between one another.

Settlement

The Riksbank's RIX system is the Swedish system for large-value payments and the central junction for the Swedish payment system. This system, which is supplied by the Riksbank, enables transfers between banks without exposing them to credit or liquidity risk. All payments between banks and other players are processed in RIX. Today there are 25 participants in the system, including the four major banks, the

clearing houses and the Swedish National Debt Office. During 2011 around 13,500 transactions were made every day. In terms of turnover this corresponds to around SEK 450 billion a day (2011).

Payments in RIX are settled on a real-time gross settlement (RTGS) basis. The payments are transferred electronically between the accounts the RIX participants have with the Riksbank. This means that payments are settled one by one, and that the funds transferred into participants' accounts become immediately available for making payments. Cover checks for the payments are made in RIX, but the banks pledge securities in Euroclear Sweden to obtain credit in the RIX system. Information on these securities is mediated between Euroclear Sweden and RIX.

Cash supply

The Riksbank is responsible for providing Swedish banknotes and coins. This responsibility includes providing banknotes and coins, destroying banknotes and coins that can no longer be used and receiving banknotes that have become invalid. The Riksbank supplies the banks with cash through two offices. The banks, or their agents, then distribute the cash to the retail trade and the general public.

The Swedish National Debt Office

The Swedish National Debt Office is the authority that is responsible for managing the state finances. This includes four areas of responsibility: acting as internal bank for the Swedish state, managing the Swedish national debt, supplying government guarantees and loans and providing Bank support. AG Betalning focuses mainly on the Swedish National Debt Offices first two tasks as mentioned above.

The state's internal bank

The authorities' incoming and outgoing payments are made via bank accounts with the banks that have framework agreements with the Swedish National Debt Office. These bank accounts are connected to the Swedish National Debt Office's top accounts with each framework agreement bank. The authorities' incoming and outgoing payments are netted in the top accounts. Covering or emptying resets the authority's balance on its account so that there is never liquidity in the authority's bank account overnight. Depending on whether there is a surplus or a deficit on the top account, it is centrally invested or funded by the Swedish National Debt Office so that the final account balance every day is zero. Several times a day liquidity is transferred between the top accounts and the state's central account with the Riksbank (SCR).

The Swedish National Debt Office is responsible for the state's central account with the Riksbank and for liquidity management between the state and the framework agreement banks. The Swedish National Debt Office also provides loans to the

authorities for investments and the authorities invest their temporary liquidity surpluses in accounts with the Debt Office.

Management of the national debt

The Swedish National Debt Office funds and manages the national debt by borrowing and investing money both in Sweden and abroad. In particular, the Swedish National Debt Office borrows money from large institutions, but also from individuals and companies, for instance, through government bonds and lottery bonds. Auctions of bonds and government securities take place through Nasdaq OMX and the securities are registered during the time to maturity with Euroclear Sweden. In addition, the Swedish National Debt Office has extensive trading in derivative instruments. As the state deals with such large volumes, the Swedish National Debt Office plays an important role in providing the system with liquidity early in the morning when overnight loans are paid back.

Government guarantees and loans

The Swedish National Debt Office offers government guarantees and provides loans to companies and projects according to decisions by the Riksdag (the Swedish parliament) and the Government to facilitate investments in infrastructure, such as building bridges and roads.

Bank support

The Swedish National Debt Office plays a central role in the state's measures to safeguard financial stability. Its area of responsibility includes loan guarantees and capital injections to solvent banks and managing emergency support to banks in distress. The Swedish National Debt Office also has responsibility for the deposit guarantee.

Euroclear Sweden

As of October 2008, VPC AB is part of the Euroclear group. In February 2009 VPC's legal name was changed to Euroclear Sweden (ES).

ES acts as securities depository and clearing organisation and supplies services to issues, intermediaries and investors, with regard to the issuance and management of financial instruments, as well as clearing and settlement of transactions.

ES applies gross settlement with regard to both securities and payments. Each instruction is checked in the ES system with regard to ability to pay and security prior to being marked as ready on the settlement date. The ability to pay for each transaction in SEK is checked against the liquidity in the settlement banks' central bank accounts (LSA) in ES. A corresponding check is made on all clearing members' accounts (CMA) to ensure that the transactions do not exceed the set limits. The

settlement banks for the transactions in SEK are all members of RIX. When settlement and cover checks are made, ES has had the possibility to provide credit on behalf of the Riksbank to the settlement banks in return for the Riksbank receiving collateral in the form of eligible assets. The banks pledge securities with ES to obtain credit in connection with cover checks of the payments made in the RIX system. Information on these securities is mediated between ES and RIX.

Payments made in connection with securities reaching maturity and corporate actions (for instance, dividend payments) are also administered by ES. In some cases payment is made in connection with settlement via the central bank accounts in ES and the Riksbank and in other cases payment is made via BGC.

CCP

In October 2009, NasdaqOmx introduced Central Counterparty Clearing (CCP) on the Nordic markets, including the Stockholm stock exchange, together with European Multilateral Clearing Facility N.V. (EMCF). The CCP function includes Large Cap on the Stockholm stock exchange. NasdaqOmx has for some time been carrying out a project on the launch of Interoperability on the Stockholm stock exchange, that is, that several CCPs can cooperate. If the project proceeds according to plan, this function will be introduced in April 2012.

Issuer

An issuer is an institution that issues securities, for instance, a bank that issues certificates, a government that issues government bonds or a company that issues shares.

Spot

The spot price is the price that, for instance, a security has on the market right now for immediate delivery. The price that a security has for delivery and payment at a point in the future is called the forward price.

International agents

In addition to the activities described with regard to the participants at the core of the payment system, there are a number of international agents which are critical to the execution of financial services.

SWIFT

SWIFT is a member-owned organisation that runs a worldwide network for exchanging financial messages. A SWIFT message can, for instance, entail an instruction to transfer money. The actual transfer (settlement) is then made in RIX.

VeriSign

VeriSign is a listed company, originally from the United States, which supplies internet infrastructure services that enable transactions, protect data and supply information in a secure manner.

Virtual Private Network (VPN)

VPN is an encrypted Virtual Private Network. Visa's VPN is called VisaNet and Mastercard's VPN is called Banknet. Put simply, these networks link card issuers and those redeeming card payments.

Appendix 3 – Vulnerabilities and proposed measures

This appendix is separated from the main report for reasons of security. It will only be distributed to recipients who have good reason to read the contents.