

OPPORTUNITIES AND CHALLENGES IN A CASHLESS SOCIETY

Lessons from Sweden

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Research on innovation in payment systems

- When do merchants stop accepting cash?
- Effects on retail industries from new digital platforms
- Interoperability for mobile payments and digital services
- The growth of mobile, electronic payment services in Sweden
- Disruptive innovations in the payment system – Swish
- Mobile payments, more than transactions
- The cashless society
- Test of a proof-of-concept mobile payment service in Sweden
- The future payment system

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CONCLUSIONS

- The development in Sweden builds on a long tradition.
- Politicians have generally left the development to the market.
- Sweden may well become a cashless society, but not before the year 2030. But already in 2020 the use of cash is likely to be marginal.
- Sweden is in a "tipping point" situation regarding the use of cash.
- Technological innovation, the legal system, business interests of service providers (bank, Fintech) and service users (merchants) and consumers' trust in the payment system are critical factors behind change towards a more electronic payment system.
- Co-opetition for digital platforms must be stimulated.
- Innovation for financially excluded groups must be stimulated – but not done! – by the government and its organizations

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OVERVIEW OF PRESENTATION

1. Global trends in payments
2. Evolution of the Swedish payment system
3. The system behind payments and in particular cash payments
4. Critical factors behind change
5. Will Sweden become cashless?
6. Financial inclusion in Sweden
7. Conclusions and summary

1. GLOBAL TRENDS IN PAYMENTS

10 GLOBAL TRENDS IN PAYMENTS

1. Innovation is happening close to merchants and consumers
2. Regulation and cooperation enables innovation
3. New infrastructure for clearing and settlement
4. Real-time systems
5. Application of block-chain
6. More "closed loop" payments
7. More and new actors like payment service providers and new services
8. More cross-border payments
9. Development of security and id-solutions
10. Disruptive innovation and leap frogging in new markets

Source: Capgemini consulting

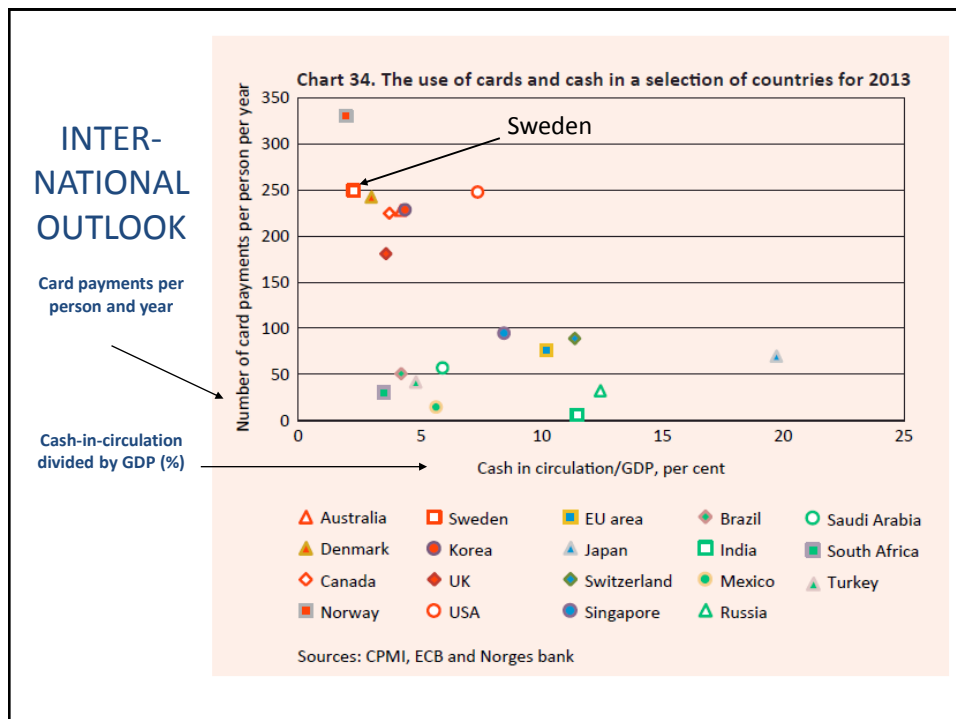
2. EVOLUTION OF THE SWEDISH PAYMENT SYSTEM

CRITICAL EVENTS IN THE SWEDISH SYSTEM

- **1960s:** companies started to pay wages and salaries directly to employees' bank accounts (electronically) instead of via cash. This laid the foundation for an electronic banking system.
- **1990s:** the system for card payments was built and checks were phased out via new fees.
- **Mid-2000s:** a string of brutal robberies led unions in public transportation, banking and merchants to actively reduce the use of cash through lobbying (Tryggare rörelsen, Kontantfritt.nu).
- **Mid-2000s:** banks, telecom operators and new firms saw business potential in launching new payment services and intensified their efforts to develop such services.
- **December 12, 2012, at 00.12:** the new mobile payment service Swish was launched in Sweden. After a slow start it has become a natural and efficient substitute to cash.
- **2010s:** E-commerce grows which stimulate new payment solutions from banks, social media and entrepreneurs (Apple, Google, Paypal, Klarna, Seamless, Izettle, etc.) which is attractive for young people that are active on the Internet.
- **2012:** one cash-in-handling transit service company – Panaxia – files for bankruptcy after criminal acts. This led to a reduced trust in the industry as well as higher service fees.
- **2014 and onwards:** banks reduce cash handling services.
- **2015-2017:** new bills and coins are introduced in Sweden
- *....the story continues on a daily basis with new actors, innovations and regulations*

THE CURRENT SITUATION IN SWEDEN

- The use of cash is low and decreasing rapidly
- The use of cards is high and increasing
- The use of mobile payment services is high for person-to-person payments but low for retail payments



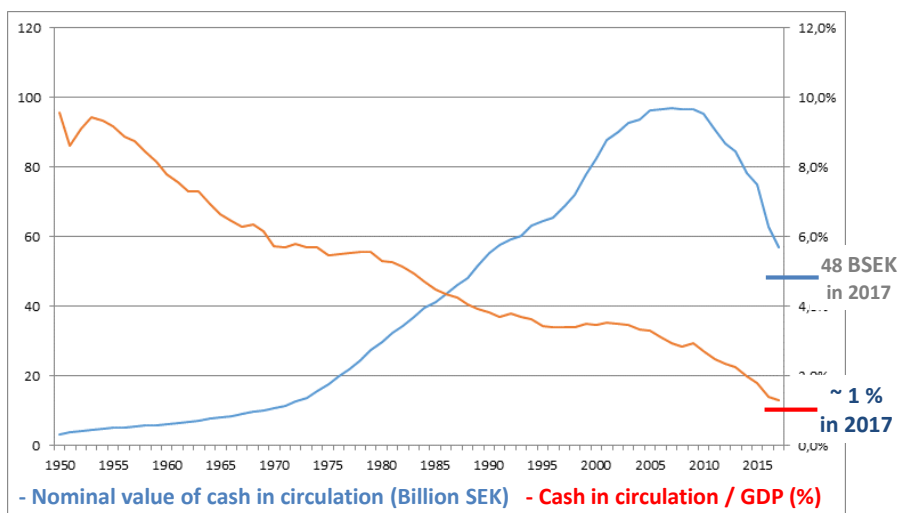
PAYMENTS TO MERCHANTS 2016

Average numbers from the most cash-intensive industries
(food, clothing, tobacco stores, newspaper stands, etc.).

Payment service	Share of value (%)
Debit cards	46,8
Cash	18,5
Credit and charge card	17,6
Invoicing	10,4
Merchants' own cards	3,0
Other cards (like employers' cards)	2,6
Mobile payments	0,4
Others (like coupons, loyalty bonuses, etc.)	0,7
Total	100

Source: Current study (When will merchants stop accepting cash? Preliminary results June 2017 based on 741 replies from Swedish merchants.

HISTORIC DEVELOPMENT OF CASH IN SWEDEN



Source: Sveriges Riksbank www.riksbank.se

CASH IN CIRCULATION DECREASES RAPIDLY

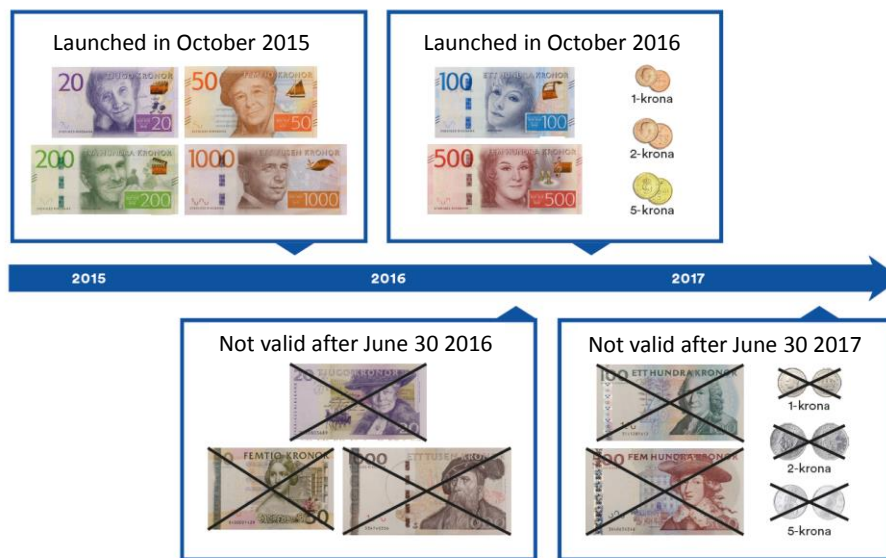
Value in Billion SEK	December 31, 2014	December 31, 2015	December 31, 2016	Change in 2016 (%)	July 31, 2017	Change in 2017 (%)
Bills and coins in circulation	83,2	73,5	62,4	-12,2 %	47,6	-23,7 %
Bills in circulation	77,9	68,2	57,5	-12,8 %	44,9	-22 %
Coins in circulation	5,3	5,3	4,9	-5,7 %	2,7	-45 %

It should be noted that Sweden is currently introducing new bills and coins, and:

- More than half of the decrease in bills in 2017 is caused by old bills not longer being valid
- Around 2/3 of the decrease in coins in 2017 is caused by old coins not longer being valid

Source: Sveriges Riksbank

NEW BILLS AND COINS IN SWEDEN



SWEDES TRUST - BUT DO NOT USE - CASH

From a survey covering 1000 Swedes in 2013:

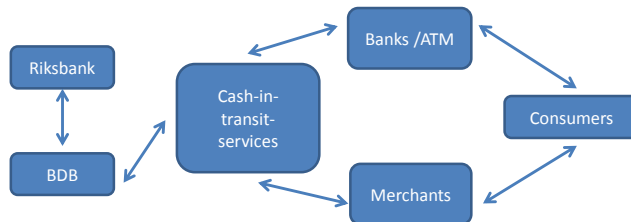
- 88 percent of respondents put high trust in cash
- 67 percent of respondents believe that access to cash is a human right
- ...but the actual use of cash is low and decreasing

Source: Det kontantlösa samhället (undersökning Insight Intelligence m fl; hösten 2013)

3. SYSTEM BEHIND PAYMENTS AND IN PARTICULAR CASH PAYMENTS

SYSTEM FOR CASH HANDLING

- The Riksbank:
 - Does not govern the value of cash in circulation; this is decided by consumer demand.
 - Is responsible for providing Sweden with banknotes and coins by: issuing banknotes and coins, destroying worn-out banknotes and coins, and redeeming invalid banknotes.
 - Formed the Cash Handling Advisory Board in 2006. The Cash Handling Advisory Board is a forum for discussing issues in the field of cash handling in society.
- Printing cash (SEK) is outsourced to a private company – Crane Currency
- The largest banks formed Bankernas Depå AB (BDB) that provide cash
 - BDB collects cash from the Riksbank, which is then transferred to banks and merchants via cash-in-transit services. ATMs and merchants provide the public with access to cash. When cash is worn out, it is returned to the Riksbank (via BDB) for destruction.



GOVERNMENT OF SWEDEN

The Government has the following objectives for cash handling:

- Everybody in the society should have access to basic payment services. It is primarily the market that should provide such services and the Government should oversee this.
- Companies, organizations and persons should have good accessibility to services like withdrawals and deposits of cash.
- The state has a responsibility for these services if the market does not provide them.

<http://www.regeringen.se/artiklar/2015/05/en-fungerande-kontanthering/>

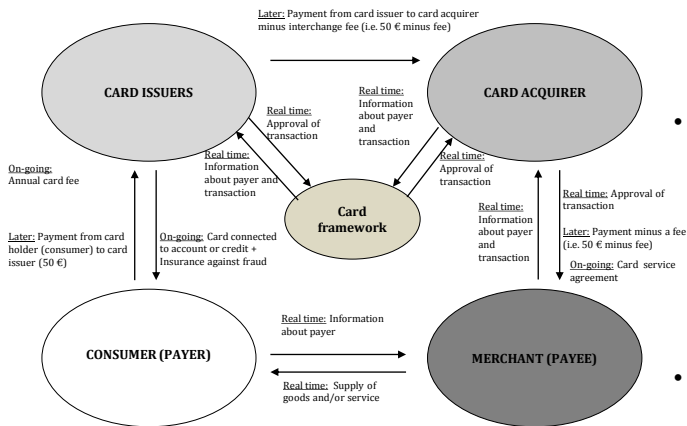
LEGAL SITUATION OF CASH

- Central bank law¹ stipulates that cash is legal tender and should be accepted by those receiving a payment
- Commercial law (Avtalsrätten) states that two parties – a merchant and a consumer; or a bank and a consumer – can enter an agreement where the central bank law is set aside. This agreement can be written or oral.
 - The Riksbank has no authority to decide commercial banks' routines for cash handling services
 - If a store has a sign saying that cash is not accepted as a way to pay in this store, the consumer is assumed to have entered this agreement if he/she steps into the store and wants to buy something.
- It should be noted that this situation has not been tested and tried for privately owned merchants in the lower courts and not for publically owned services in the Supreme Court of Sweden.
 - A case in the lower courts for health care services provided by public actors concluded that cash must be accepted

1. Riksbankslagen - Lagen (1988:1385) om Sveriges riksbank i dess lydelse den 1 juli 2012

4. CRITICAL FACTORS BEHIND CHANGE

THE CARD SYSTEM – A DOMINANT DESIGN



- Cards account for around 70 percent of transactions (value) in stores
- Many mobile payment services (Izettle, Apple Pay, Samsung Pay, Masterpass, Secure, etc.) build their solution on cards
- Cards are strong in e-commerce



SWISH – A SUBSTITUTE TO CASH

On December 12, 2012, at 00:12, the new mobile payment Swish was launched in the Swedish market by the six banks.

Swish is a disruptive innovation in the mobile payment service industry that has succeeded in creating an interoperable service for the Swedish market that has become a successful substitute to cash.

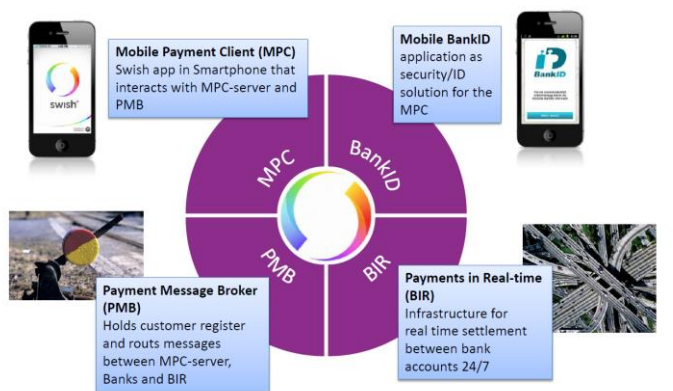
Source: www.getswish.se

PAYMENTS IN REAL-TIME (BIR)

- Bankgirot – in collaboration with the banks and The Riksbank – have created a system for real-time payments (24/7/365) between banks.
- The first service that was based on this system was Swish that was launched in December 2012 (00:12 on 2012-12-12).

THE SWISH SYSTEM

The Swish Concept - Components



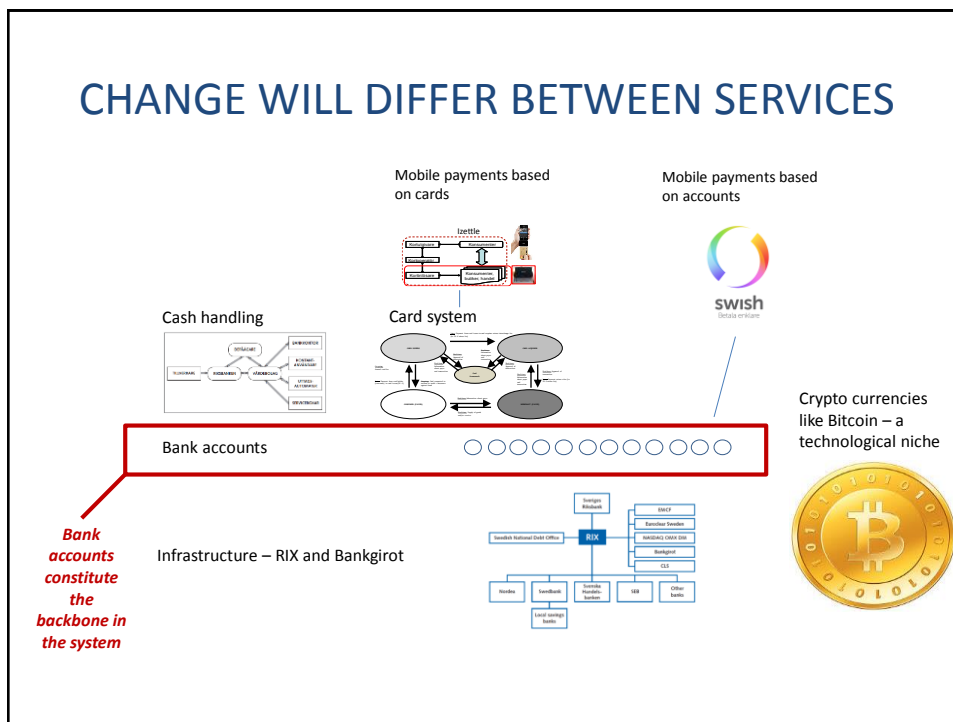
CRITICAL SUCCESS FACTORS BEHIND SWISH

- There is a long tradition of **cooperation** between banks in Sweden to create infrastructure and services that can be shared by several banks even if the banks in the end compete in their ambitions to sell financial services. This has also led to a fit between regulatory frameworks and business operations.
 - System for electronic payments of wages and salaries; Giro-system for payment handling; ATM services; Internet banking; E-identification system; Swish
- **Collaboration between actors** as banks, IT-system developers, IT-infrastructure providers, merchant, processors as well as clearing and settlement providers is a pre-requisite for developing innovative services in an ICT-dominated industry.
- **Collaboration with governmental agencies** – the central bank, tax authorities and other critical agencies - was another critical success factor in the development of innovative payment services such as Swish.
- The benefits from collaboration must of course be weighed against the **risk of too weak competition** and too high fees for payment services.

THERE ARE OTHER INNOVATIVE SERVICES!

- **Izettle** – started with portable POS-terminals for card payments but now have solutions for cards, invoices and also integrated with cash registers and administration system www.settle.com
- **Klarna** – started with invoice solutions for e-commerce but now have a large number of solutions and has also become a bank www.klarna.se
- **Tink** – started with payment solutions but now has a solutions for a consumers' private economy. Work close to banks as SEB www.tink.se
- **Seamless** – started with top-up solutions for mobile phones but has a number of solutions. Works close to Mastercard www.seamless.com
- ...and many others – see: <http://data.stockholmfin.tech/>

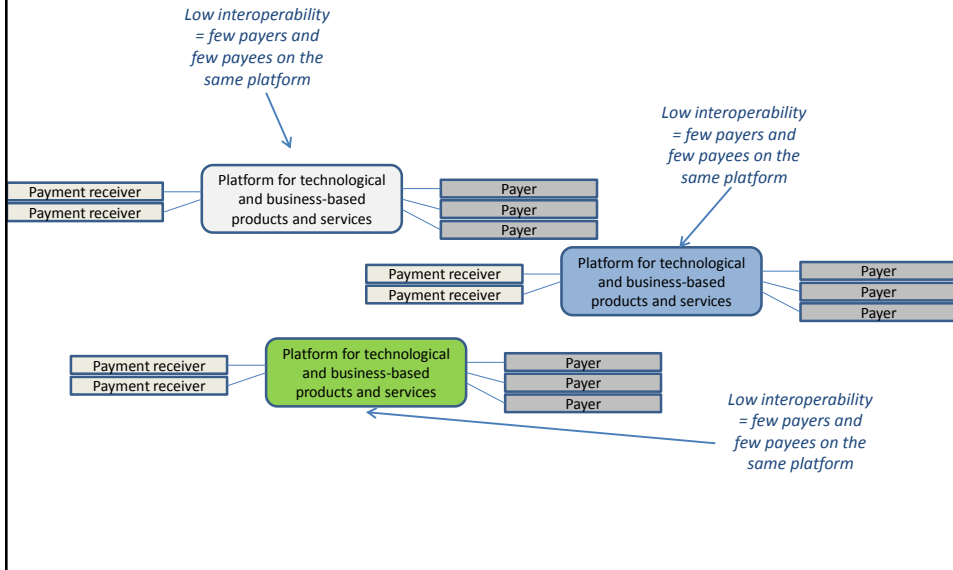
CHANGE WILL DIFFER BETWEEN SERVICES



INCREASED FRAGMENTATION

- **More suppliers:** Banks / Telcos / Card companies / PSPs / PISPs / AISPs/ technology and process providers / invaders (social media) /
- **More technologies and products:** cash / cards / Internet / mobile services / crypto currencies / NFC /
- **More channels:** stores / E- and M-commerce / peer-to-peer networks
- **New regulation:** PSD I och II / SEPA / GSMA / Account directive / AML / cash register law / ...
- **Internationalisation:** banks are internationalizing and specialized actors (like Vocallink, Seamless) offer their services in an international market

BUT AVOID MANY PARALLEL PLATFORMS!



THE COMPETITION PARADOX

- **Markets are – according to robust research – working better if there is competition.** Normally in the form of higher efficiency, lower prices, higher customer orientation, better dynamic capability when external shocks appear, better work environments, better products and services, etc.
 - *Even if we sometime see the opposite effects*
- But in the digital platforms industries there is a high need for cooperation to create basic infrastructure for services with high inter-operability, which means **there are advantages with less competition related to central features of the system.**

5. WILL SWEDEN BECOME CASHLESS?

WILL SWEDEN BECOME CASHLESS?



	PAYMENT SERVICE PROVIDERS (PSP)	MERCHANTS	BANKS	CASH-IN-TRANSIT SERVICE COMPANY	TOTAL
BEFORE 2020	0	0	1	0	1
BETWEEN 2020 AND 2030	5	2	4	1	12
BETWEEN 2030 AND 2050	16	4	5	4	29
NEVER	4	0	2	9	15

Answers from participants in four workshops and one survey

Source: Arvidsson, N. 2013. Det kontantlösa samhället (The cashless society)

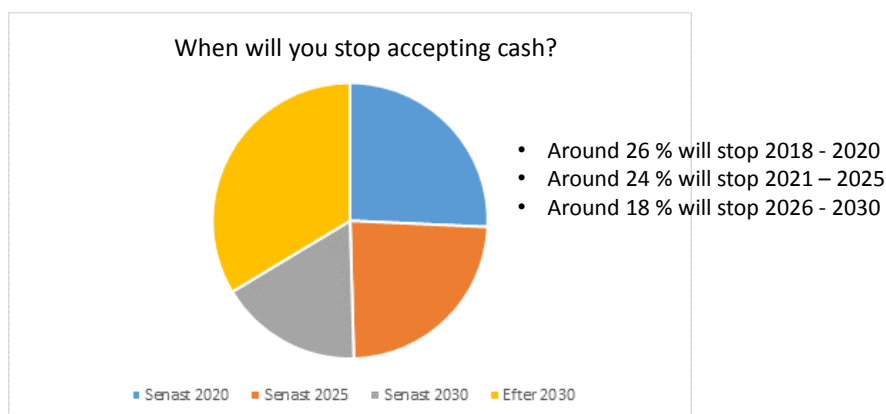
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WILL SWEDEN BECOME CASHLESS?

- These are the answers from a study of 1000 Swedes
- Do you think Sweden will become a cashless society?
 - Yes, after 40 years from now: 3 percent
 - Yes, after 30 years from now: 6 percent
 - Yes, after 20 years from now: 22 percent
 - Yes, after 10 years from now: 23 percent
 - Yes, it is already cashless: 2 percent
 - No, never: 39 percent

Source: Det kontantlösa samhället (undersökning Insight Intelligence m fl; hösten 2013)

HALF OF SWEDISH MERCHANTS WILL HAVE STOPPED ACCEPTING CASH BY 2025!



Source: Current study (When will merchants stop accepting cash? Preliminary results June 2017 based on 741 replies from Swedish merchants.

WHAT CAUSES MERCHANTS TO KEEP / NOT KEEP CASH?

Rank – most important factors at the top	Answer (average; scale 1-5)
1. Our customers sees it as a negative thing if we stop accepting cash	4,0
2. Not accepting cash would have a negative impact on our sales	3,9
3. Not accepting cash would make our store more safe and secure for our employees	3,3
4. Less and less customers use cash	3,2
5. If the entire industry stopped accepting cash, we would do it too	3,2

Based on 741 replies to a survey in our current study.

The scale is: 1 = This would no impact at all on our decision and 5 = This would have a major impact on our decision.

THE FUTURE OF CASH IN SWEDEN

- We expect a continued decrease of the use of cash but with a slower development after the period where all new cash has been introduced and the old cash has disappeared.
- But we also believe merchants are likely to start copying each other and the question is if there exists a tipping point after which the decrease of the use of cash speeds up as there will be fewer and fewer that accepts cash as a means of payments.
 - **Tipping point:** *"that magic moment when ideas, trends and social behavior cross a threshold, tip and spread like wildfire"* (Malcolm Gladwell)

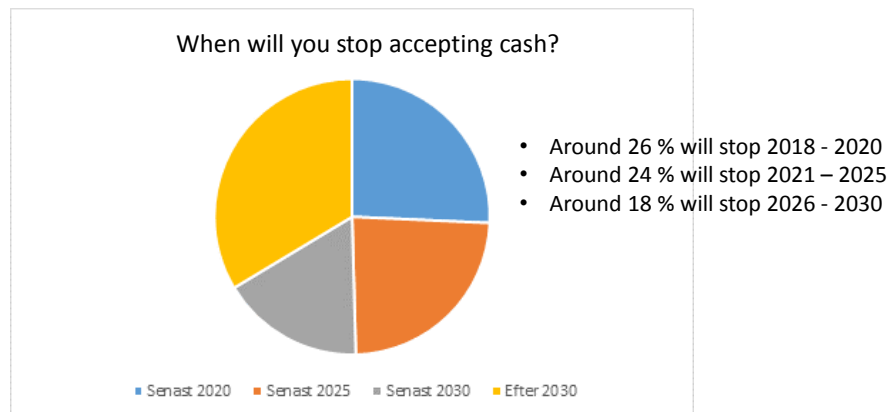
THE CRITICAL FACTOR: A *TIPPING POINT*

”...three characteristics – one, **contagiousness**; two, the fact that **little causes can have big effects**; and three, that **change happens not gradually but at one dramatic moment** – are the same principles that define how measles moves through a grade-school classroom or the flu attacks every winter. Of the three, the third trait – the idea that epidemics can rise or fall in one dramatic moment – is the most important, because it is the principle that makes sense of the first two and that permits the greatest insight into why modern change happens the way it does. The name given to that one dramatic in an epidemic when everything change all at once is the Tipping Point”.

(From: “*The Tipping Point – How little things can make a big difference*”, Malcolm Gladwell, p. 9).

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SO...PERHAPS THIS IS AN UNDERESTIMATION OF WHEN MERCHANTS WILL STOP ACCEPTING CASH?



Source: Current study (When will merchants stop accepting cash? Preliminary results June 2017 based on 741 replies from Swedish merchants).

A COUNTER FORCE: A CASH REBELLION

- Companies in the cash handling system (cash-in-transit service companies, guard companies, etc.) has launched a campaign arguing that cash must remain in Sweden. It is led by the former chief of police Björn Eriksson.
- They say that banks promote a cashless society simply because they would earn higher profits if cash is replaced by electronic services.
- They argue that cash must be kept since: they guarantee integrity for persons; they reduce segregation in our society; smaller companies and people in rural areas are dependent on cash; the payment system would be more vulnerable if cash disappears; and electronic money tend to increase debt and poor financial control by consumers.
- Political parties – like the Center party – have started to act.

<http://www.kontantupproret.se/>



6. FINANCIAL INCLUSION IN SWEDEN

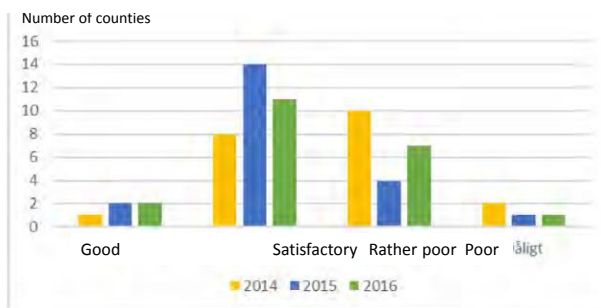
ACCESS TO BASIC PAYMENT SERVICES

- Most people have relatively good access to basic payment services as new digital services are used relatively often.
- People with cognitive and/or physical disabilities, elderly, asylum seekers and new immigrants, smaller merchants in rural areas and organizations have problems to access basic payment services.
- Problems are related to large geographical distances to service providers and poor access to broadband as well as poor mobile coverage. The geographical areas where this is true have increased in 2016.
- Main factors behind this development are the quality of digital services, the reduction of cash handling services, increase of immigrant and the introduction of new bills and coins in Sweden.

Source: Report by the Swedish County Administration Board (www.lst.se)

ACCESS TO BASIC PAYMENT SERVICES

Access to basic payment services 2016 – report by
Länsstyrelserna (county administration board)



Källa: Pupos, Tillväxtanalys

Source: Report by the Swedish County Administration Board (www.lst.se)

PUBLIC PROCUREMENT OF INNOVATIVE PAYMENT SERVICE 2016

An innovation procurement of payment services began as an effort to stimulate the market to develop innovative solutions for individuals who have difficulty managing electronic payments.

It has become clear that market development has primarily been directed at entrepreneurs and individuals who already can handle digital payment services.

A pre-study showed there are at least a million and a half who could benefit from innovative digital payment solutions. This could be greater given the increase in the groups of older and that a million Swedes have no Internet, and that one in four Swedes do not have a smartphone.

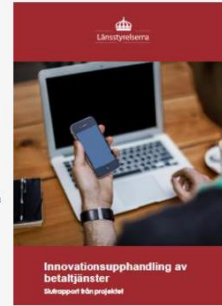
Innovationsupphandling av betaltjänster

Lösningsnummer: 2017-05
ISBN/ISSN-nr: 1654-7691
Publicerad: 2007
Sidantal: 91

En innovationsupphandling av betaltjänster inleddes som ett försök att stimulera marknaden att arbeta fram innovativa lösningar för individer som har svårt att hantera elektroniska betalningar.

Minst en och en halv miljoner personer i samhället bedöms ha nytta av innovativa, digitala betal lösningar, troligen fler. Upphandlingen fick dock avbrytas på grund av för få inkomna anbud. Idéer och teknologi finns att tillgå. Det som gjorde att marknadsaktörerna avstod från att delta berodde främst på att de kände osäkerhet kring hur en innovationsupphandling fungerar särskilt med tanke på konkurrenssituationen. Projektet har bland annat bidragit till en bättre dialog mellan marknadsaktörer och myndigheter, vilket skapat ökad förståelse kring de behov som finns och omfattning av individer som berörs av betaltjänstproblem.

I denna rapport lyfts även förslag på lösningar att arbeta vidare med för myndigheter, organisationer och marknadsaktörer.



PUBLIC PROCUREMENT OF INNOVATIVE PAYMENT SERVICE 2016

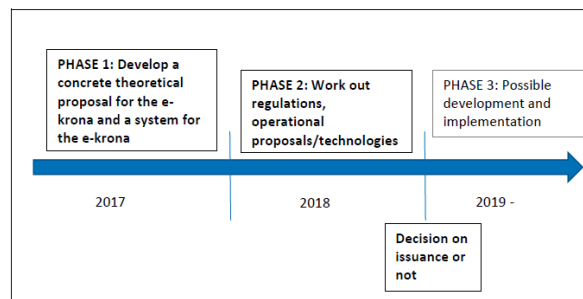
- Market participants did not bid because there was a lack of knowledge and uncertainty about how an innovation procurement functions.
- Stakeholders had needed more time and some form of support to develop their tender proposals.
- There was uncertainty as to participate because of business competition.
- Market participants still believe that an innovation procurement can be an appropriate method of development in the area.
- They also believe that there are ideas and technology available to provide innovative solutions (like contactless, pre-paid cards)
- They were positive about that public authorities take responsibility for the digital transition by creating opportunities for cross-border collaboration in the payment area.

PUBLIC PROCUREMENT OF INNOVATIVE PAYMENT SERVICE 2016

- The project contributed to a **better dialogue between the market and authorities**. This in turn has created increased understanding of the problems that selected target groups perceive and an insight that it's more people with these needs for solutions than previously thought.
- **Market participants believe that there is a need for a common system / platform open for all players to link their services to by the customers' needs**. They argue that it requires large financial resources, a neutral driving and coordinating part during the development period, and clarity about who / which ones to bear the continuous responsibility for future maintenance and operation of the system / platform.
- To ensure that everyone in society has access to basic payment services, **the state will probably have to take continuous responsibility for the most vulnerable**. This can be done by contributing funds and expertise to the development of customized payment services and the system of premiums for certain target groups and payment services.

E-KRONA BY THE RIKSBANK

- "If the market can make use of the new technology to launch new and popular payment services, why shouldn't the Riksbank be able to do the same?" says Deputy Governor Cecilia Skingsley. She points out that the Riksbank has not taken a decision on issuing e-krona, and that the Riksbank will continue issuing banknotes and coins as long as there is demand for them in society.
- The aim of the project is to analyse the Riksbank's possibilities for issuing an electronic means of payment, to develop proposals for the qualities this means of payment, the e-krona, should possess, and to address the issue of the advantages and disadvantages of a decision by the Riksbank to issue or not to issue an electronic means of payment.



http://www.riksbank.se/Documents/Avdelningar/AFS/2017/Projektplan%20e-kronan_170314_eng.pdf
<http://www.riksbank.se/en/Press-and-published/Speeches/2016/Skingsley-Should-the-Riksbank-issue-e-krona/>

CASES WHERE NEW TECHNOLOGIES STIMULATE FINANCIAL INCLUSION

- Homeless people in Stockholm sell a magazine called **Situation Stockholm** to get money to food and housing, and accept card and mobile payments. They sell 33 100 magazines per month which brings 1,6 million SEK (around 215 000 USD) where 50 % is earned by the sellers.
<http://www.situationsthlm.se/>
- Churches – like **Södermalmskyrkan** in Stockholm – accept card payments and mobile payments for donations <https://www.sodermalmsskyrkan.se/>
- **Donations to aid organizations** like the Red Cross, Save the Children, Mediciniers sans frontier, Amnesty International and many others
<https://www.getswish.se/insamlingsorganisationer/>



7. CONCLUSIONS AND SUMMARY

SOME CRITICAL CHALLENGES ON THE ROUTE TOWARDS A CASHLESS SOCIETY

- To create reliability and trust in new services that substitute cash
- To develop emergency plans for a payment system without cash
- To develop business models and business systems that provide potential business opportunities and possibilities for entrepreneurial firms and competitive services
- To realize high interoperability for new services
- To make sure laws, regulations, public procurement, governmental support etc. lead to open and competitive markets
- To have transparent plans and ideas for how societal gains from an improved payment system are shared and invested
- To engage consumers – all types and especially those in risk of financial exclusion through a digital divide - in the change process

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FINANCIAL INCLUSION

- Invest in critical infrastructure for electronic banking – payments, savings and loans – with the central bank as a central actor
- Use public procurement to build demand for advanced services directly focusing on the groups that are - or risk becoming - financially excluded
 - Involve these consumer groups – or their spokesmen – in the process
 - Work hard to avoid a digital divide related to payments
- Make sure the actors – banks, card operators, payment service providers, merchants, consumers, etc. – have incentives to work towards financial inclusion
- Ensure a level playing field for payment services – each service (cash, cards, mobile payment services, etc.) should stand on it's own feet

CONCLUSIONS

- The development in Sweden builds on a long tradition.
- Politicians have generally left the development to the market.
- Sweden may well become a cashless society, but not before the year 2030. But already in 2020 the use of cash is likely to be marginal.
- Sweden is in a "tipping point" situation regarding the use of cash.
- Technological innovation, the legal system, business interests of service providers (bank, Fintech) and service users (merchants) and consumers' trust in the payment system are critical factors behind change towards a more electronic payment system.
- Co-opetition for digital platforms must be stimulated.
- Innovation for financially excluded groups must be stimulated – but not done! – by the government and its organizations

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KTH Industriell teknik
och management



THANK YOU!

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