

# Transformation into a Cashless Sweden

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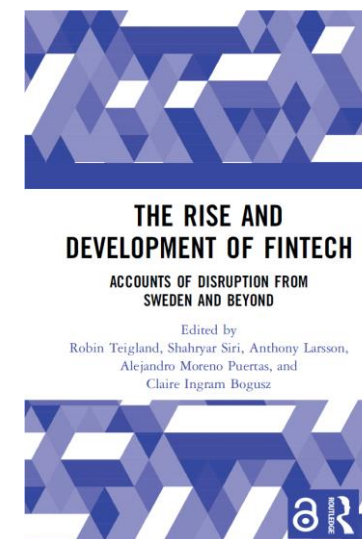
## Research on innovation in payment systems

- 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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# CONTENT

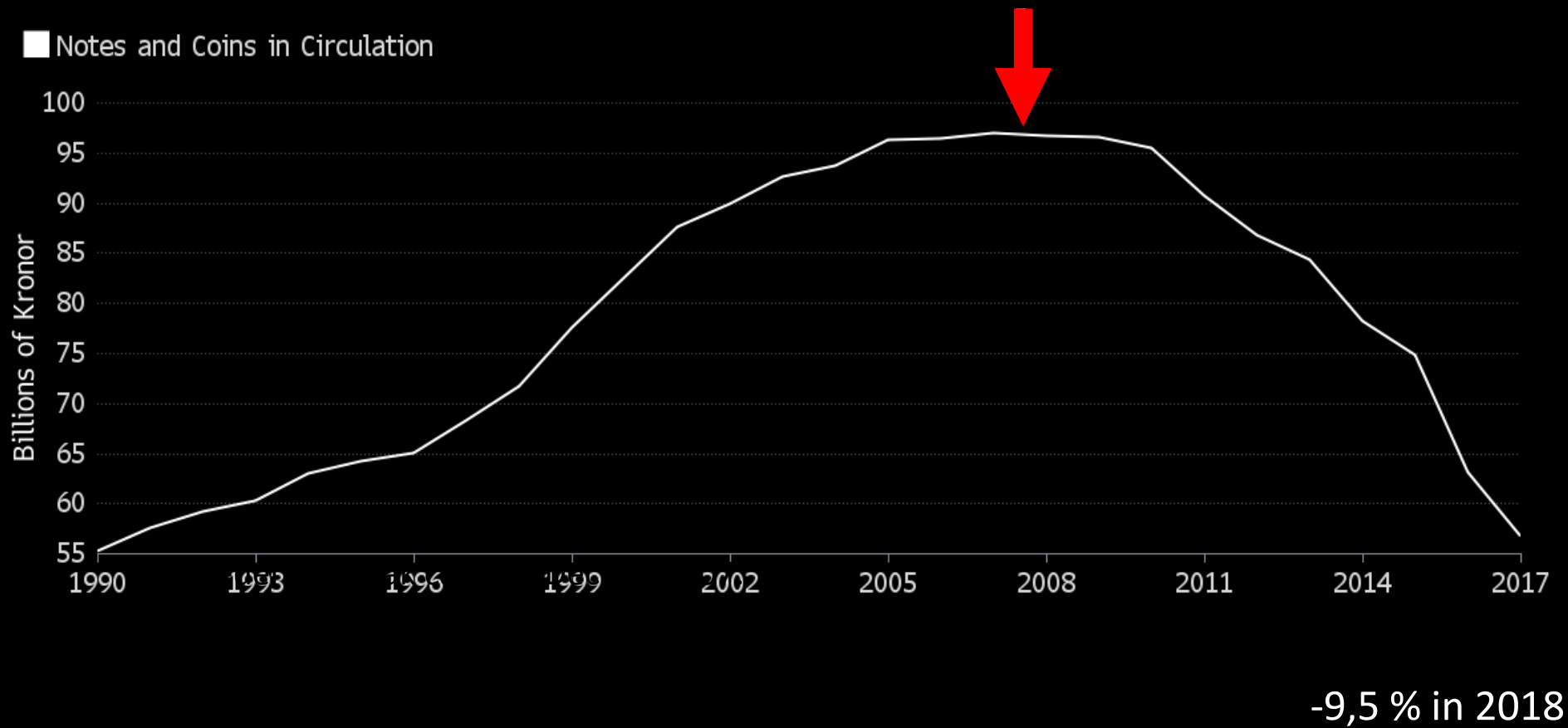
1. Sweden's route towards a cashless society
2. Key factors in the development of cashless society
3. How this is affecting people's lives
4. Implications for other countries
5. Conclusions and summary

# SUMMARY OF MY PRESENTATION

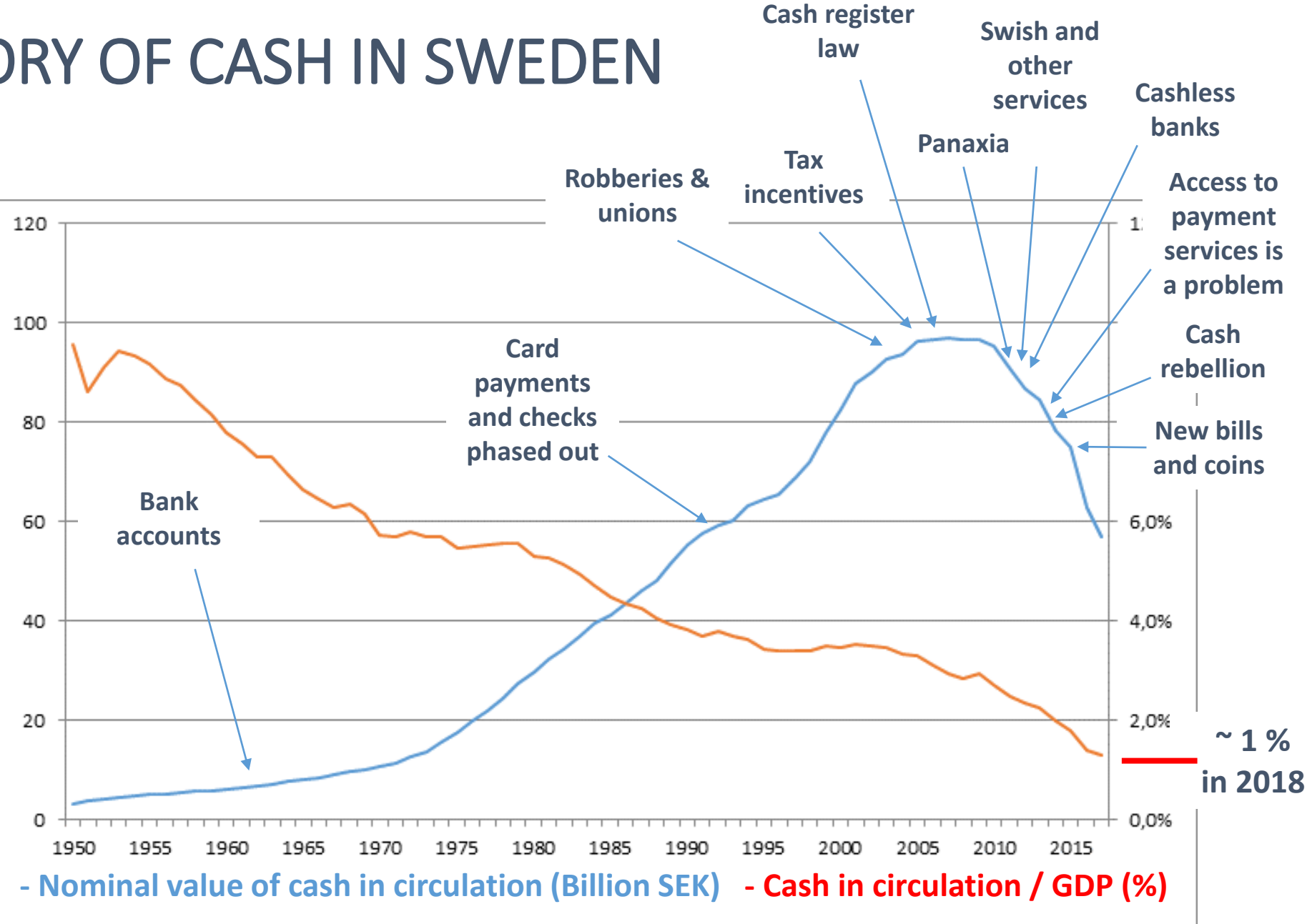
1. Sweden is moving towards a practically cash-free society.
2. Social concerns grow as access to cash deteriorates.
3. Digital currencies are highly interesting and may replace cash.
4. There are many actions that can be taken to reduce the use of cash.

# 1. SWEDEN'S ROUTE TOWARDS A CASHLESS SOCIETY

# CASH IN SWEDEN PEAKED DECEMBER 21, 2007



# HISTORY OF CASH IN SWEDEN



Source: Sveriges Riksbank [www.riksbank.se](http://www.riksbank.se)

# CARDS DOMINATE RETAIL PAYMENTS

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

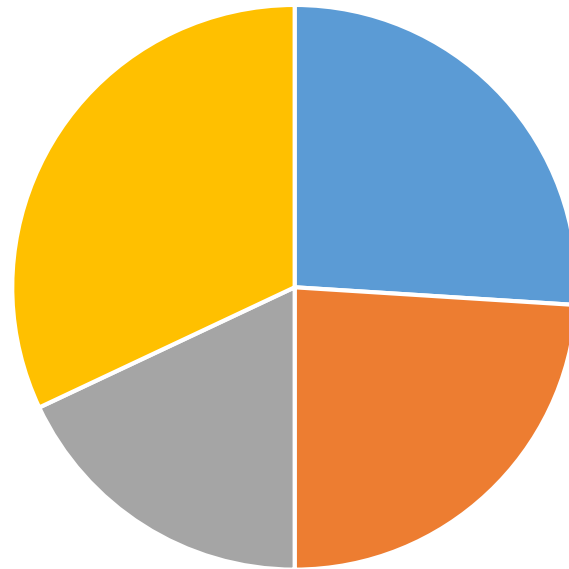
Payment service	Share of value (%)
Cards – total	71
- Debit cards	47
- Credit and charge cards	18
- Merchants' own cards (to customers)	3
- Other cards (like employers' cards)	3
Cash	18
Invoicing	10
Others (like coupons, loyalty bonuses, etc.)	0,6
Mobile payments	0,4
<i>Total</i>	<i>100</i>

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



# 50 PERCENT OF MERCHANTS WILL HAVE STOPPED ACCEPTING CASH BY 2025!

When will you stop accepting cash?



■ Before 2020 ■ 2021 - 2025 ■ 2026 - 2030 ■ After 2030

This is probably an underestimation:

- We can expect costs for cash handling will increase
- We can expect that access to ATMs and deposit machines will decrease – especially in rural areas
- This does not consider the effect from negative network economics as fewer payers use cash and fewer payment receivers accept cash

# Sweden may be practically cashless in 2023!

2023

January	February	March	April
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
May	June	July	August
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September	October	November	December
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

*This is when we practically say goodbye to cash in Sweden....we think*

- 97 percent of merchants accepted cash in 2017 but...
- merchants have no incentives to accept cash when the overall sales in cash is below 7 percent of total sales...
- and if the current rate of the decline of the use cash continues, this will happen in 2023.

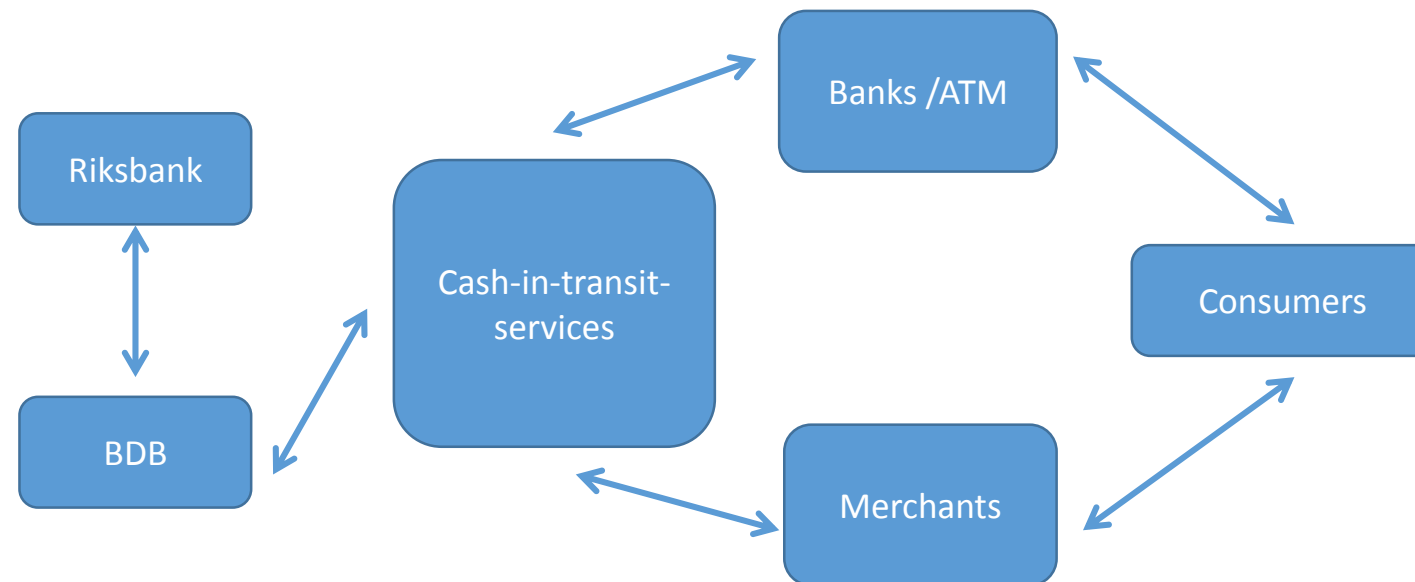
## 2. KEY FACTORS IN THE DEVELOPMENT OF CASHLESS SOCIETY

# SWEDISH GOVERNMENT LEAVE IT TO THE MARKET

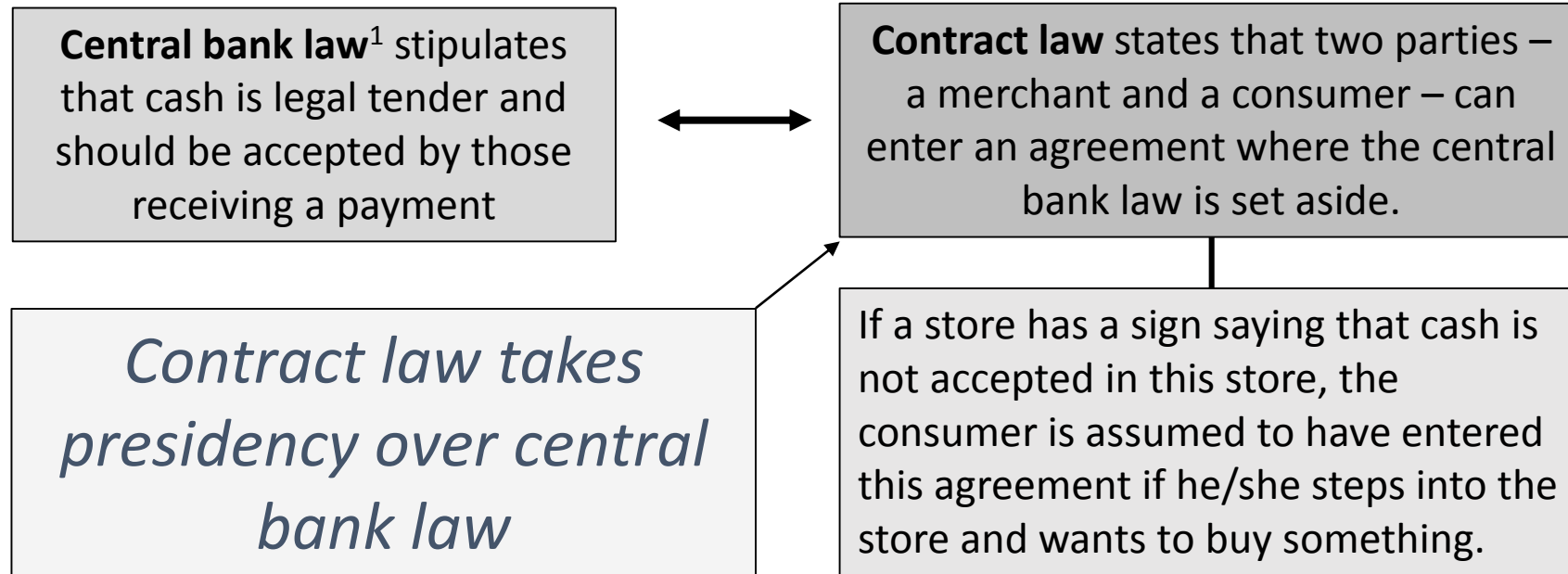
- **The objective:**
  - **Everybody in the society should have access to basic payment services.**
- **The responsibility:**
  - **Banks and other actors** have the primary responsibility to provide cash handling services.
  - The **central bank – the Riksbank** - has the responsibility to provide cash but the volume is decided by demand. The central bank also runs a cash handling board which focuses on solving operational problems related to cash handling.
  - **County administration boards** have the responsibility to study and evaluate access to basic payment services in Sweden and to initiate support and services that improve this access.
  - The **post and telecommunication board** (pts) has the role to support county administration boards and to support development of user-friendly electronic communication services in Sweden.
  - The **state of Sweden**'s responsibility only relates to areas where the market fails to provide these services.

# OUTSOURCED SYSTEM FOR CASH REDUCES USE

- The Riksbank is responsible for issuing banknotes and coins, destroying worn-out banknotes and coins, and redeeming invalid banknotes.
- Printing cash (SEK) is outsourced to a private company – Crane Currency
- Cash depots and cash distribution is managed by Bankernas Depå AB (BDB) and cash-in-transit service companies (Loomis, Nokas)



# LAWS MAKES IT POSSIBLE TO REFUSE CASH



**It is ok for a merchant to say no to cash!**

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

# LAWS MAKES IT POSSIBLE TO REFUSE CASH





# 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 for person-to-person payments.

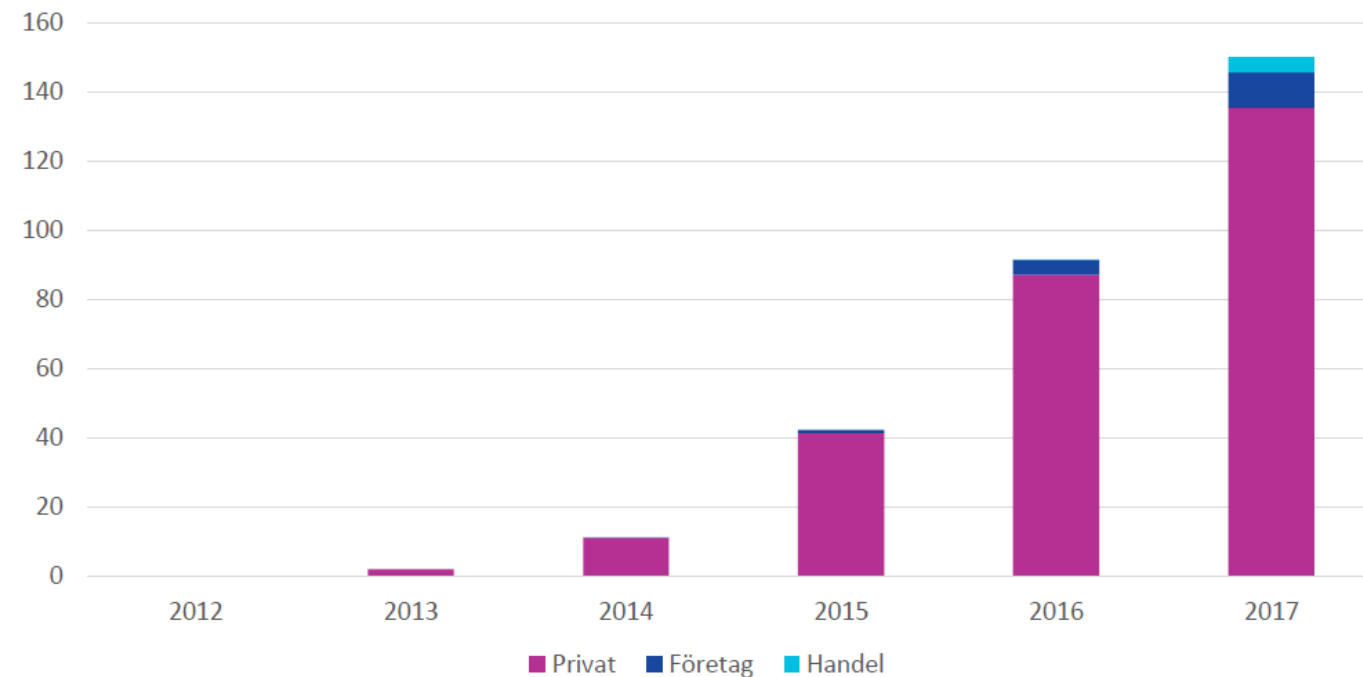




# SWISH – A SUBSTITUTE TO CASH

Value of Swish transactions 2013 – 2017 (Billion SEK)

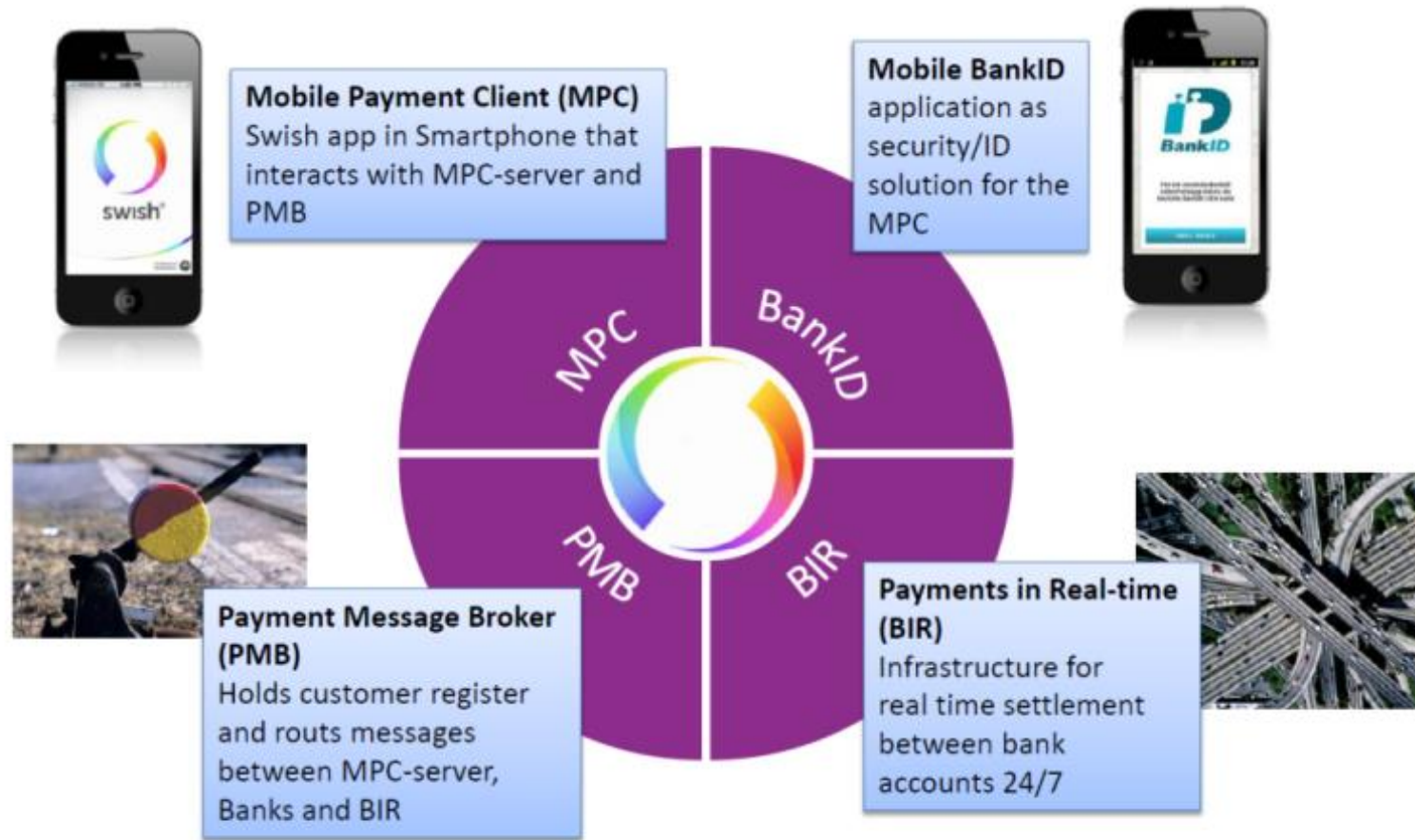
Swish total



- Sweden has 10 million inhabitants where 8,2 million are older than 15; Swish covers 70 %
- The value of card payments are 62 billion SEK per month; Swish is 20 % of this.

# Swish

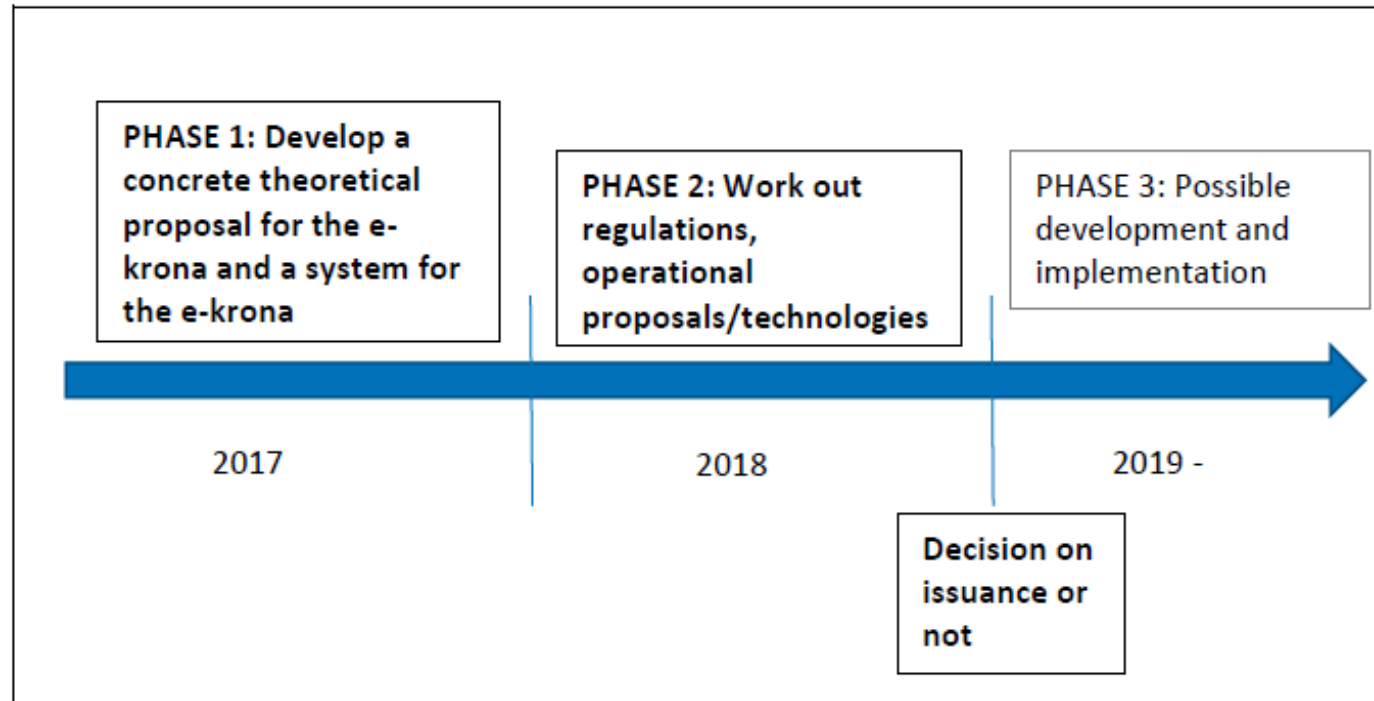
## The Swish Concept - Components



# CENTRAL BANK DIGITAL CURRENCY: E-KRONA BY THE RIKSBANK IS A POSSIBLE PAYMENT SERVICE IN THE FUTURE

***"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.



The current review of the Central Bank Law in Sweden may make it possible for the Central Bank to issue electronic cash (CBDC)

[http://www.riksbank.se/Documents/Avdelningar/AFS/2017/Projektplan%20e-kronan\\_170314\\_eng.pdf](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/>

<http://www.riksbank.se/en/Press-and-published/Notices/2017/This-is-what-an-e-krona-could-look-like/>

# DIGITAL CURRENCIES – LIKE BITCOIN – DOES NOT MEET CRITICAL DEMANDS ON PAYMENTS

	<b>Cryptocurrency (Bitcoin)</b>
<b>Medium of exchange</b> - accepted means for economic transactions	<b>Low.</b> Few accept Bitcoin as a medium of exchange. Primarily used in Internet transactions within the Bitcoin community.
<b>Unit of account</b> – base for comparisons of value in the trade	<b>Low/Medium.</b> Few prices are quoted in Bitcoin. But it is convertible to other currencies.
<b>Store of value</b> – how well value is stored over time	<b>Low.</b> Depends on the exchange rate for Bitcoin on markets and this is highly volatile.

# KEY FACTORS TURNING SWEDEN INTO A CASHLESS SOCIETY

1. Wages and salaries being paid directly into bank accounts
2. A well-functioning system for card payments (technology and business models)
3. Laws on bank secrecy / private information guarantees trust from consumers
4. Outsourced and privatized system makes consumer demand decide cash use
5. Unions lobbied against cash from employee perspective, i.e. to avoid robberies
6. Cash register laws made stores say no to cash and report sales to tax authorities

# KEY FACTORS TURNING SWEDEN INTO A CASHLESS SOCIETY

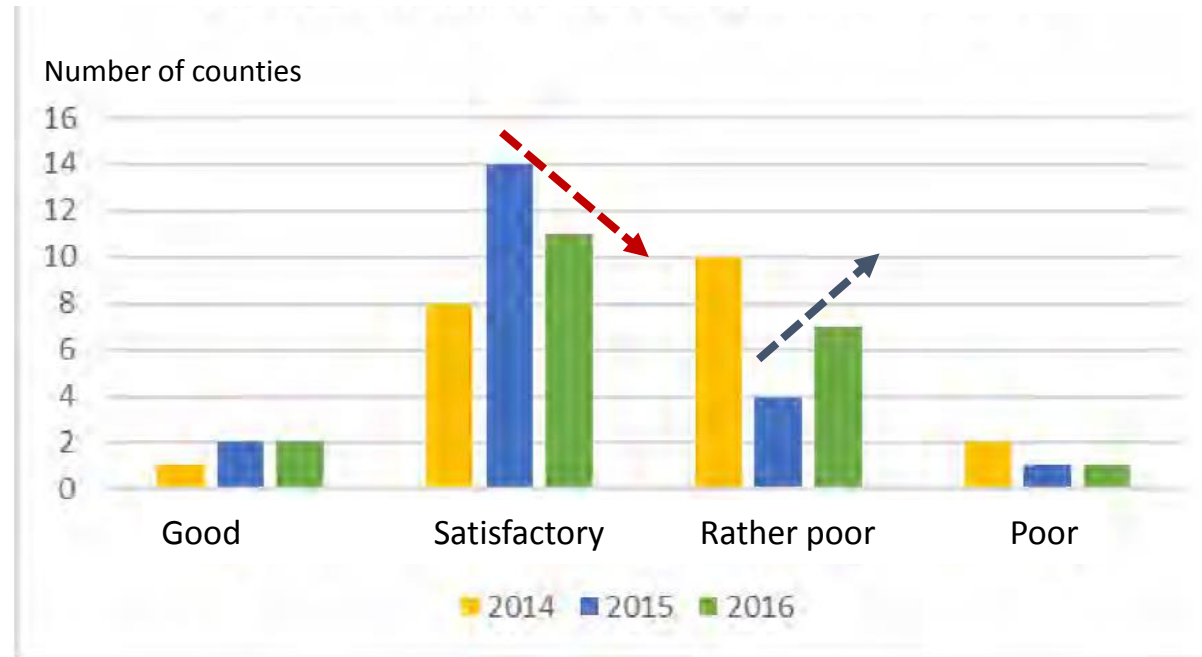
7. Tax incentives made household services (cleaning and construction) “white”
8. Banks’ business models make them uninterested in cash-handling services
9. Crimes by cash-in-transit service provider made stores less interested in cash
10. New innovative services directly substituted cash (Swish and Izettle)
11. Technology-interested and skilled consumers prefer mobile payments over cash
12. Factors working against a reduction of cash which need to be handled
  - Problems for groups that suffer (elderly, disabled, immigrants, unbanked) which – for good reasons! - are studied by County Administration Boards
  - Lobbying from cash-in-transit service companies and elderly – “a cash rebellion”

### 3. HOW THIS IS AFFECTING PEOPLE'S LIVES

# SOME FACE POOR ACCESS TO PAYMENT SERVICES

Counties / regions with **Satisfactory** access to basic payment services are decreasing

Counties / regions with **Rather poor** access to basic payment services are increasing



Källa: Pupos, Tillväxtanalys



# OTHERS ACHIEVE FINANCIAL INCLUSION VIA NEW SERVICES

- Homeless people in Stockholm sell a magazine called ***Situation Stockholm*** to get money to food and housing, and accept card and mobile payments. <http://www.situationsthlm.se/>
- Churches – like ***Svenska Kyrkan i Sundbyberg*** - in Stockholm – accept card payments and mobile payments for donations <https://www.svenskakyrkan.se/sundbyberg>
- ***Donations to aid organizations*** like the Red Cross, Save the Children, Mediciniers sans frontier (MSF), Amnesty International and many others can be done via mobile payments <https://www.getswish.se/insamlingsorganisationer/>



## 4. IMPLICATIONS FOR OTHER COUNTRIES

# ACTIONS LEADING TOWARD A CASHLESS SOCIETY

- Payment system
  - Create a well-functioning system for electronic payments (technologies and business models)
  - Stimulate a cash system where consumer demand of cash plays a central role
  - Lobby for a reduction of cash from an employee perspective, i.e. to avoid robberies
- Roles and rules for critical actors
  - Make sure all consumers are banked and that bank accounts are the key to all payments
  - Make sure payments to and from the state (taxes, well-fare, fines, etc.) are electronic
  - Make sure employers pay wages and salaries directly into bank accounts
  - Educate consumers to start trusting and using electronic payments over cash
  - Provide help to groups that suffer the most when cash is reduced

# ACTIONS LEADING TOWARD A CASHLESS SOCIETY

- Innovation policies and legal framework
  - Use public procurement to procure innovative payment services that replace cash
  - Build laws on bank secrecy and personal information to guarantee trust from consumers
  - Make it legally possible for merchants to say no to cash and only accept electronic payments
  - Stimulate Fintech companies that can launch innovative services that replace cash – create innovation milieus for start-ups and innovative providers
  - Introduce cash register laws making it difficult for stores to hide sales from tax authorities
  - Build tax incentives to turn “grey” payments into “white” payments (household services?)
  - Introduce a framework similar to the Payment Service Directives (PSD) in the European Union to stimulate competition, low fees and innovation

# AIMS WITH PSD2

The PSD2 updates and complements the EU rules put in place by the Payment Services Directive (2007/64/EC). Its main objectives are to:

- Contribute to a more integrated and efficient European payments market
- Improve the level playing field for payment service providers (including new players)
  - Third party providers (TPP)
  - Payment initiation service providers (PISP)
  - Account information service providers (AISP)
- Make payments safer and more secure
- Protect consumers
- Encourage lower prices for payments

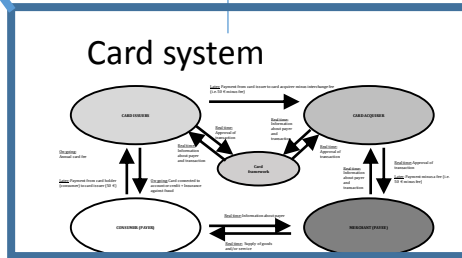
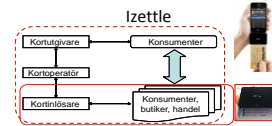
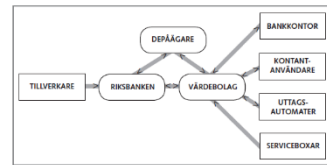
# PAYMENT SERVICES THE TRADITIONAL WAY

Dominant design

Mobile payments based on cards

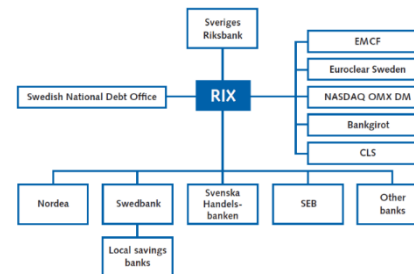
Mobile payments based on accounts

Cash handling



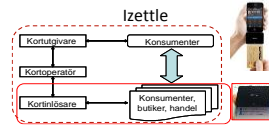
**Bank accounts constitute the backbone in the system. These give bank a strong position to sell (e.g.) card payments**

Infrastructure – RIX and Bankgirot



# PAYMENT SERVICES IN A NEW WAY

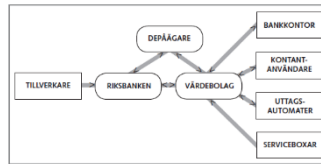
Mobile payments based on cards



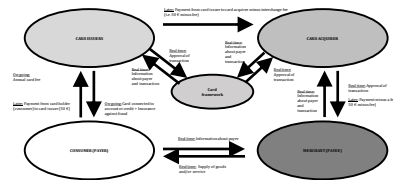
Mobile payments based on accounts



Cash handling



Card system



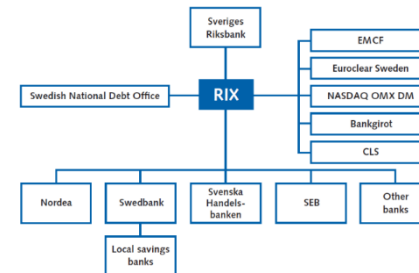
New payment services sold by PISP:s to consumers

New account information services sold by AISP:s to consumers

Bank accounts



Infrastructure – RIX and Bankgirot



# A NEW LANDSCAPE FOR PAYMENTS



This is how it can become after PSD2

- Bank services**
- Card services
  - Swish
  - Direct debit transfers
  - Mobile payment services
  - Block-chain based services

- Services provided by Third Parties (TPPs)**
- Card services
  - Swish
  - Direct debit transfers
  - Mobile payment services
  - Block-chain based services



*Bank accounts may become bit pipes to other services that are sold directly to consumers by TPPs.*



## 5. CONCLUSIONS AND SUMMARY

# SUMMARY

## **1. Sweden is moving fast towards a practically cash-free society.**

- Cash peaked 2007 and Sweden may be practically cashless in 2023!
- Consumers use cash in 18 % of retail payments and over 50 % of bank offices are cash-free.
- The average merchant in Sweden will not earn money from cash-based sales after 2023.

## **2. There are social concerns as access to basic payment services deteriorates.**

- Elderly, people with physical and cognitive disabilities, immigrants and small- and medium-sized companies in rural areas.

## **3. Digital currencies are highly interesting and may replace cash.**

- Central bank digital currencies are very interesting but not yet here.
- Crypto-currencies – like Bitcoin – are here but not yet a viable option.

## **4. There are many actions that can be taken to reduce the use of cash.**

- Create trust in an electronic payment system
- Build a payment system that favors electronic payments
- Educate consumers



**KTH Industriell teknik  
och management**



# Thank you! Questions?

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# PUBLICATIONS IN THE AREA OF PAYMENTS

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