Developments in cashless payments in the EU and the introduction of a digital euro

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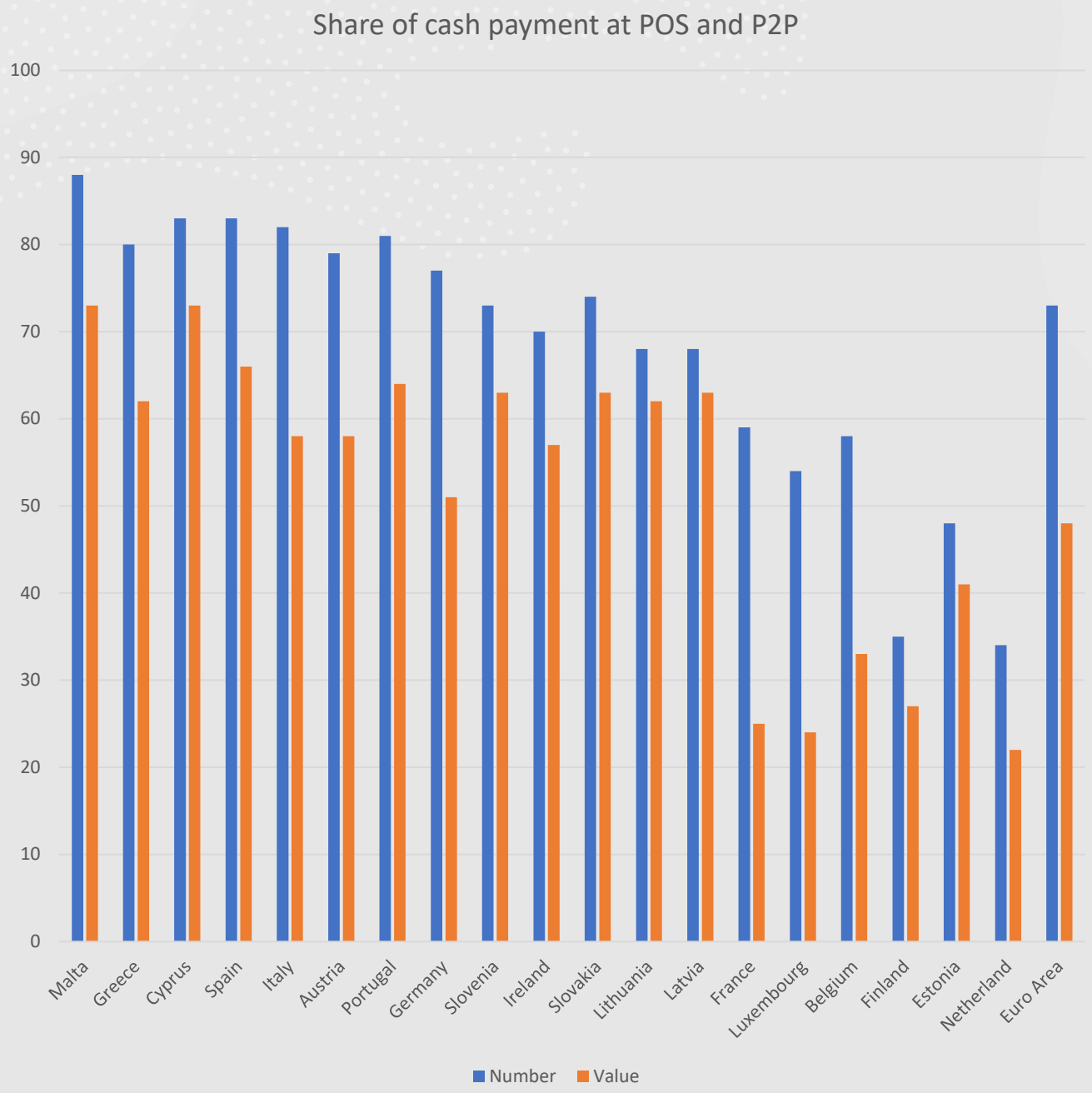
Summary of this presentation

- Cashless payments are increasing in the EU or Eurozone, as are contactless payments. The number of banks, branches and ATMs tends to decrease as cashless payments increase, with the introduction of cash payment caps in the EU and the regulation of interchange fee rates for card payments being noted as factors that have encouraged cashless payments.
- In Japan, there is no caps on cash payments and credit card interchange fee rate are high. As a result, cashless transactions have been slow to take off in Japan.
- The cashless transition has forced national central banks to provide an alternative means of payment to cash, with central bank digital currencies attracting attention. In Japan, it is expected to take longer.

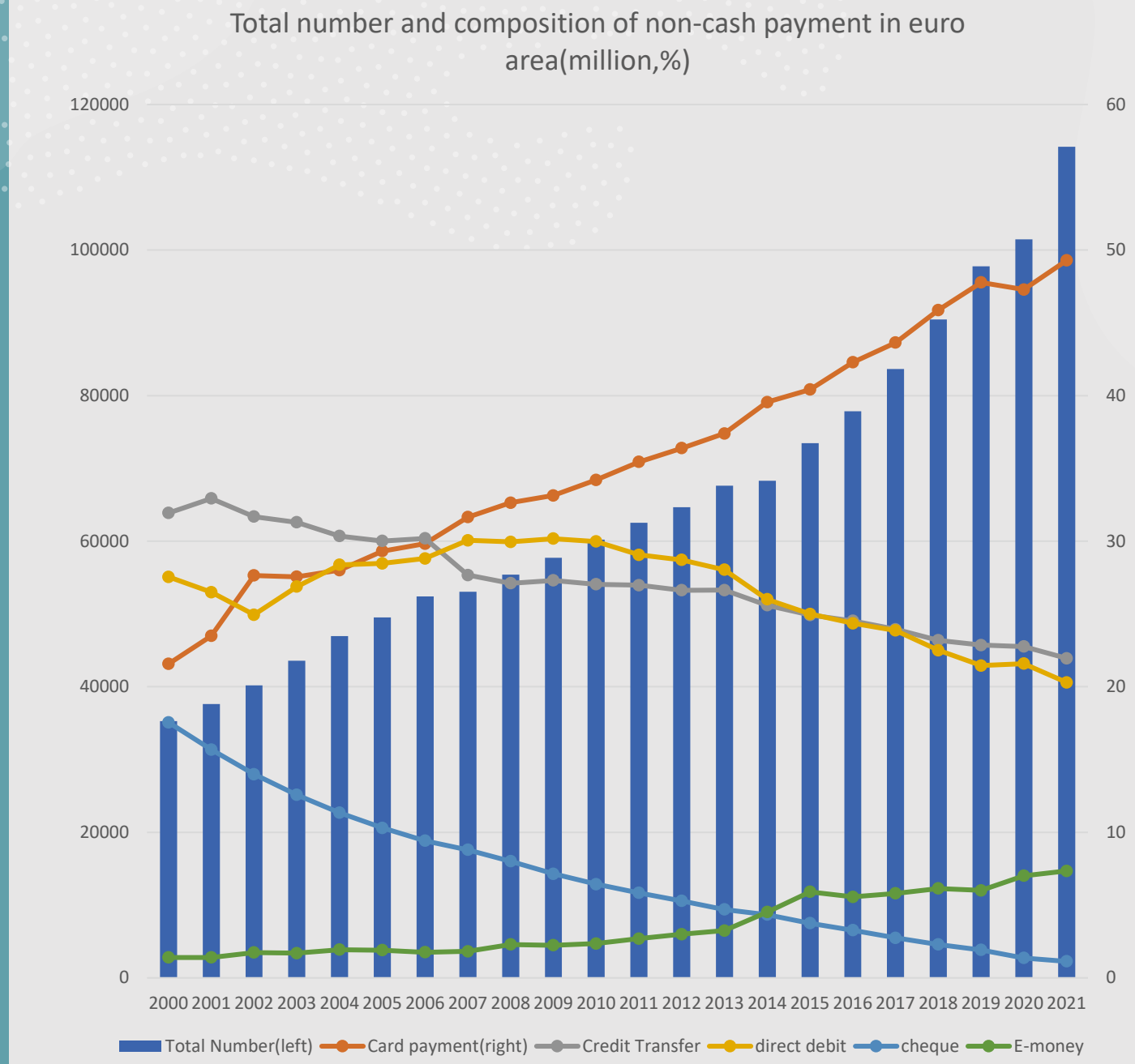
1.1 Cash and cashless payments in Europe Approximately 50% is cashless payment in Eurozone

- In Eurozone, cash payment ratio
  2016 78.8%(the number), 53.8%(the value)
  2020 73%(the number), 48%(the value) About 5% decreased.
- Cashless payment statistics in Europe includes credit transfer and cheque. Card payment is the main form of cashless payment.
- Cashless transaction will lead to the rise of U.S.-based company, and threaten the monetary sovereignty.
- In Japan, the ratio of cashless payment increased to 36%(2022,the value), the main form is credit card payment, and excludes the credit transfer and cheque.

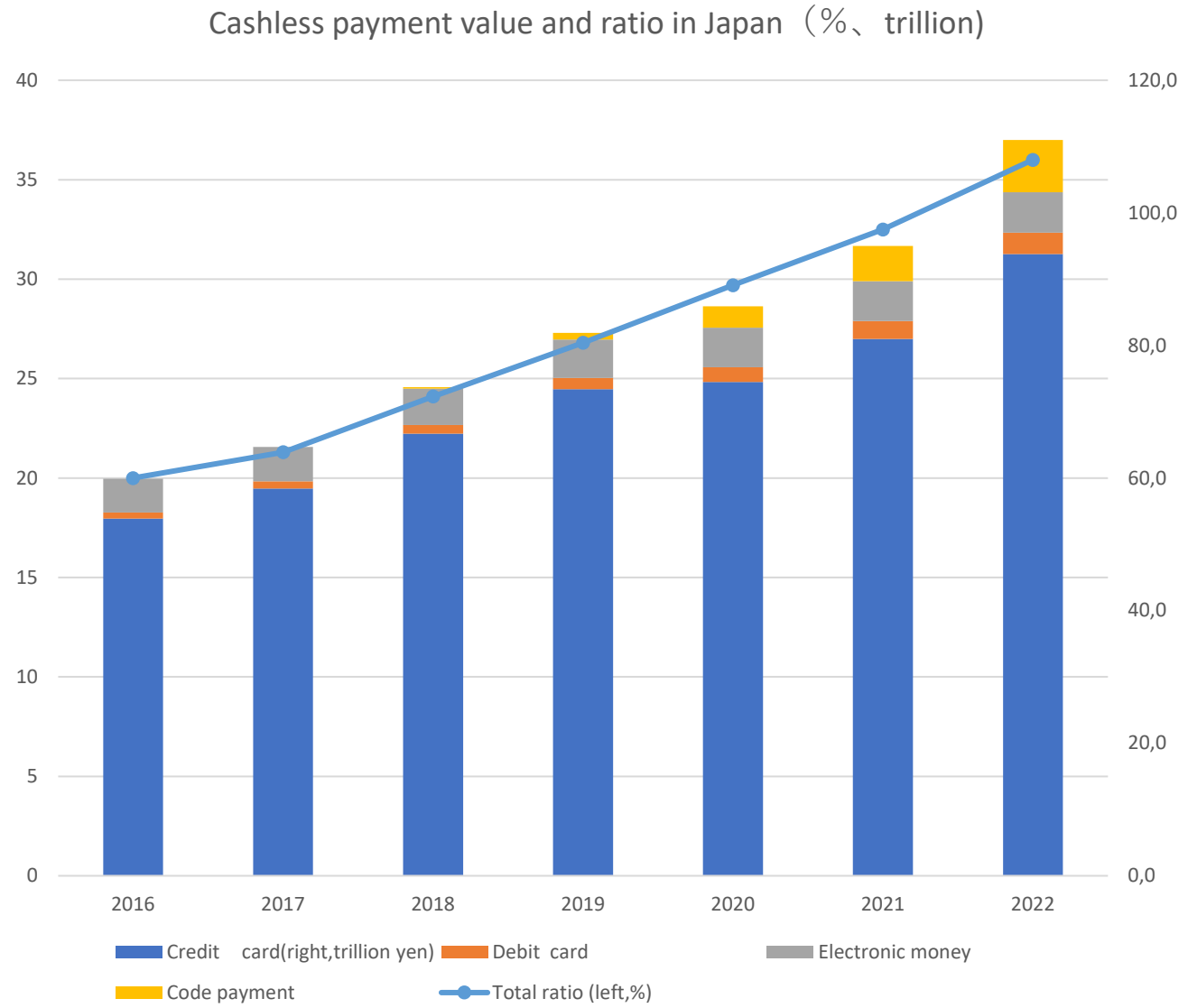
The Cash ratio tends to be higher in Southern European countries and lower in Northern Europe



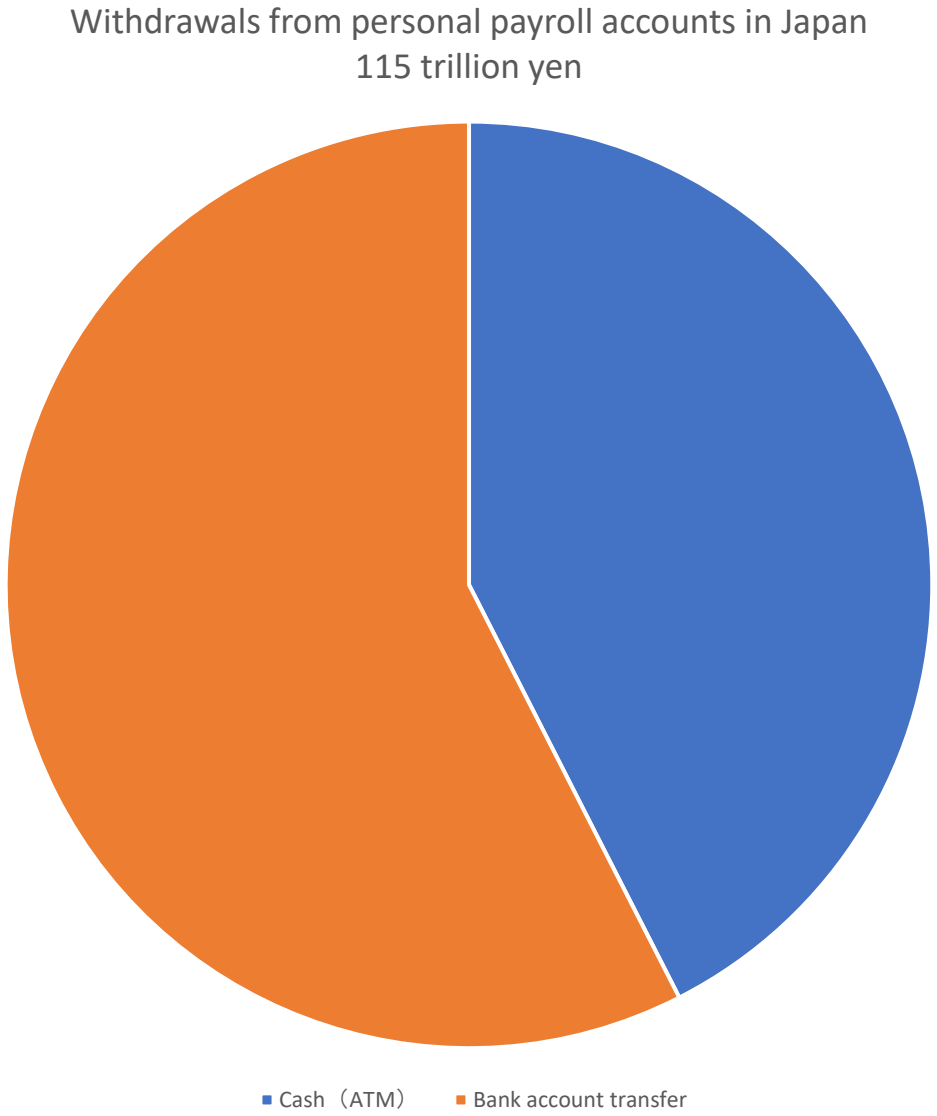
The total number of non-cash payment increased from 40 billion in 2002 to 110 billion in 2021



Cashless ratio increased to 36% in Japan but this statistics excludes credit transfer



57.5% is Bank account transfer by JBA



Why Japanese cashless statistics exclude credit transfer?

- From the perspective of obtaining regular and homogeneous data, the sum of 'E-Money Payment Transactions' and 'Card Payments (except e-money)' from the annual report 'Statistics on payment, clearing and settlement systems in the CPMI countries6' published by the Bank for International Settlements (BIS) is used.
- by Cashless Promotion Office, Ministry of Economy, Trade and Industry, Japan

Characteristics of cash

1 The costs of cash transaction are borne by the central bank and commercial banks.

2 Anonymity: cash transaction cannot be traced.

3 Speed of payment : cash payments are completed instantly.

4 Available 24 hours a day: cash payments are accepted at mid-night.

5 The costs of cash transaction are multifaceted : consumer considered free, but the price of good and services hides payment costs(e.g. fees on credit cards). (Jakub Gorka 2016)

The costs of payment

- In common with cash and non-cash,

  Time at cashier

  The background factor at POS: preparing cash and change,

  organising receipts for card payments
- Specific to cash, store the cash in a safe.
- Specific to non-cash, transaction cost(interchange fee etc.) and the terminal cost, including maintaining and updating software.

Deutsche Bundesbank(2019)

The introduction of a cap on cash payment caused a decline in cash payment in the EU

Cash Payment restrictions in European countries :an overview			
Country	Cash limits	Date of introduction	Reporting entities
Belgium	3000EUR	Jan-14	
Bulgaria	15000BGN	Feb-11	Natual persons and entrepreneurs
Czech	350000CZK	Jan-13	Natual persons and entrepreneurs
Denmark	10000DKK	Jul-12	Natual persons and entrepreneurs
France	3000EUR	Jan-02	Residents and non-resident trader
	15000EUR		Non-residents consumers
Greece	1500EUR	Jan-11	Payments between entrepreneur and consumer
	3000EUR		B2B payments
Hungary	1500000HUF	Jan-13	Legal persons
Italy	1000EUR	Dec-12	
Portugal	1000EUR	May-12	
Slovakia	5000EUR	Jan-13	Natual persons
	15000EUR		
Spain	2500EUR	Nov-12	Residents
	15000EUR		
(source)	Jakub Gorka(2016)	p62	

- Cash limits in Italy and Portugal are 1000EUR.

The background of cash payment caps

Money laundering

A specific quality of cash is its anonymity.

Cash is more likely to be used for crime and fraud.

Tax evasion and tax avoidance

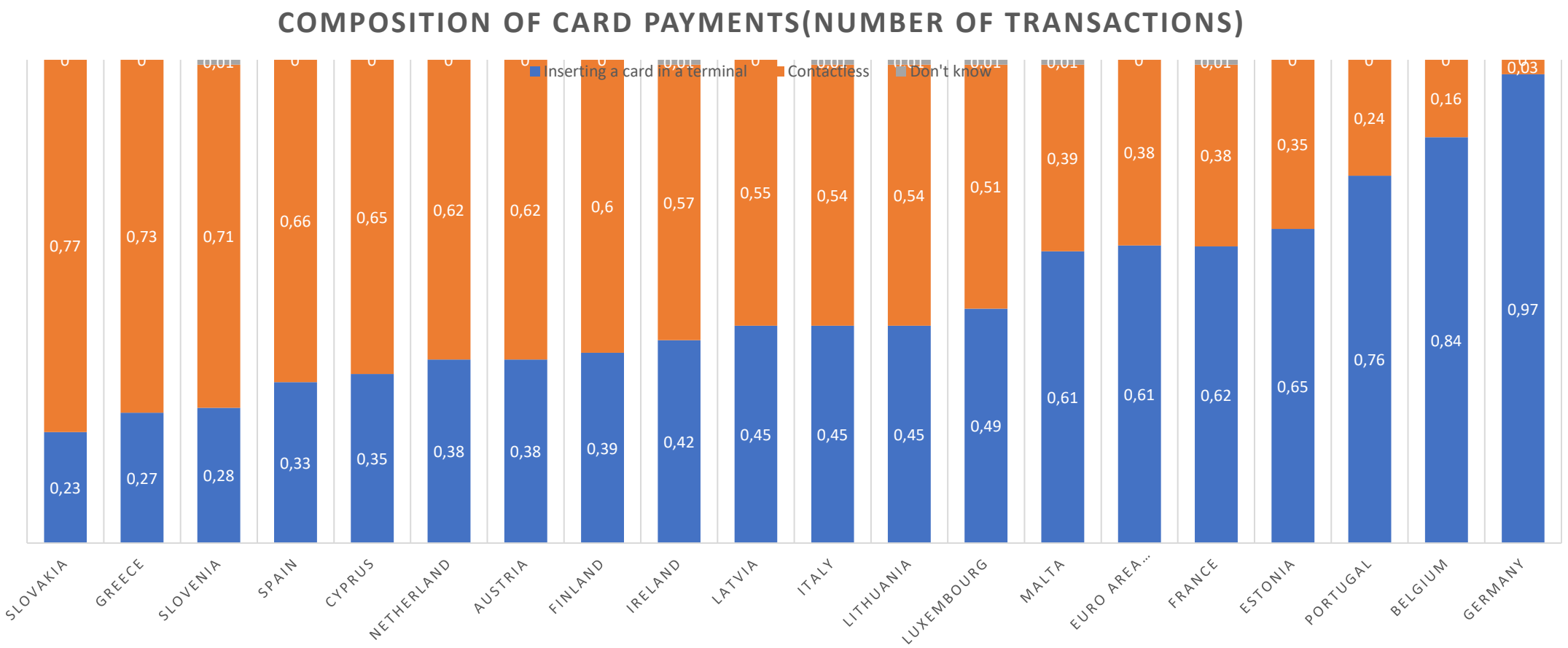
Cash transaction are not recorded, they were seen as easy to use for tax evasion and tax avoidance.

In Japan, there is no limit(cap) of cash payment until now.

1.2 Increase in contactless payments ~Near-field communication technology

- An advantage of contactless payment is time saving in the payment process.
- Contactless card payment can be made without inserting the card into a card reader.
- The proportion of contactless payment is high in Slovakia, Greece, Slovenia, and Spain(ECB, SPACE,2020). The increase in contactless payments in southern European countries can be attributed to the widespread use of smartphones.
- Traditional card insertion payment used to require expensive card-reading machines, but contarctless payment is seen to be increasing rapidly due to the widespread use of smartphones and other factors.

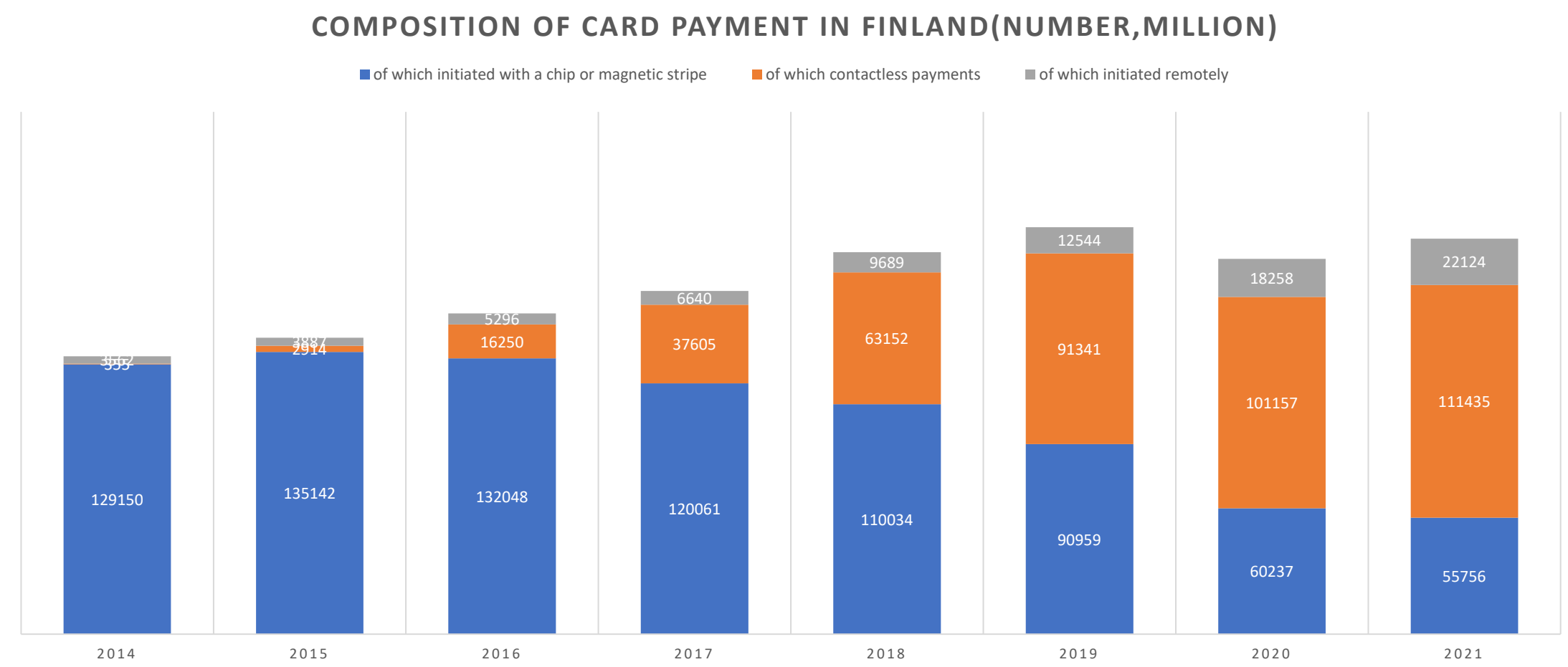
In Slovakia, Greece, Slovenia, Spain, Netherland and Finland , contactless is high.



The reasons for the development of fintech and cashless transactions in the northern countries

- Labour shortages have necessitated fintech at POS.
- Snow in the winter makes cash transport difficult.
- The digitalisation of society as a whole has affected the financial domain.
- As a result, the development of cashless payment, fintech and digitalization has a significant impact on bank management. The number of banks, bank branches and ATMs is decreasing.
- PSD2 lifted the ban on APIs from September 2019, and non-banking provider can access bank account information.

Contactless payment is increasing in Finland



1.3 Decrease in the number of banks,branches and ATMs

The number of banks is rapidly declining in the Nordic countries.

	Total number of credit insitutions in the northern european countries												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Estonia	18	17	16	31	37	39	38	36	37	40	39	40	35
Latvia	39	31	29	63	59	61	57	54	54	54	50	49	45
Lithuania	87	92	94	91	89	90	88	83	85	84	81	81	81
Finland	338	327	313	303	271	281	279	267	257	243	228	209	198
Netherlands	290	287	266	253	218	209	96	92	93	94	87	86	84
Denmark	161	161	161	161	119	113	110	100	98	98	100	94	92
Sweden	173	175	176	168	159	153	153	156	153	155	154	151	157
(Source) ECB Homepage(https://www.ecb.europa.eu/stats/ecb_statistics/escb/html/table.en.html?id=JDF_MFI_MFI_LIST)													
(Footnote)	Data is available at the end of callender year,but only 2022 October.												

The number of banks in Japan is decreasing, but profitability is low.

- The total number of banks in Japan was 160 in 1970, and decreased to 109 in 2020. City bank is large bank in Japan, 13 in 1985, and decreased to 5 in 2020 due to mergers. However, the number of regional bank remains almost the same.
- The banks in Japan are joint stock companies. The shinkin-bank and credit union are not joint stock companies, but are cooperative organization.
- The total number of credit institution in Japan was 1094 in 1980, and decreased to 508 in 2020.

The number of banks is also decreasing in Japan.

The Number of Bank and credit institution in Japan

	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
City Bank	13	13	13	15	13	13	13	12	11	9	6	6	5	5
Regional Bank	65	64	63	63	63	63	64	64	64	64	64	63	64	62
Trust Bank	6	7	7	7	7	7	7	7	—	8	7	6	4	4
Long-Term Credit Bank	2	3	3	3	3	3	3	3	3	1	0	0	0	0
Mutual Bank(Regional Bank II)	71	72	72	72	72	71	69	68	65	54	47	42	41	38
Bank Total	157	159	158	160	158	157	156	154	143	136	124	117	114	109
Shinkin Bank	553	538	526	502	471	461	456	451	418	371	292	271	265	254
Credit Union	357	461	529	532	489	476	448	407	370	—	172	158	153	145
Credit Institution Total	1067	1158	1213	1194	1118	1094	1060	1012	931	507	588	546	532	508

(source) Bank of Japan, etc.

Bank profitability

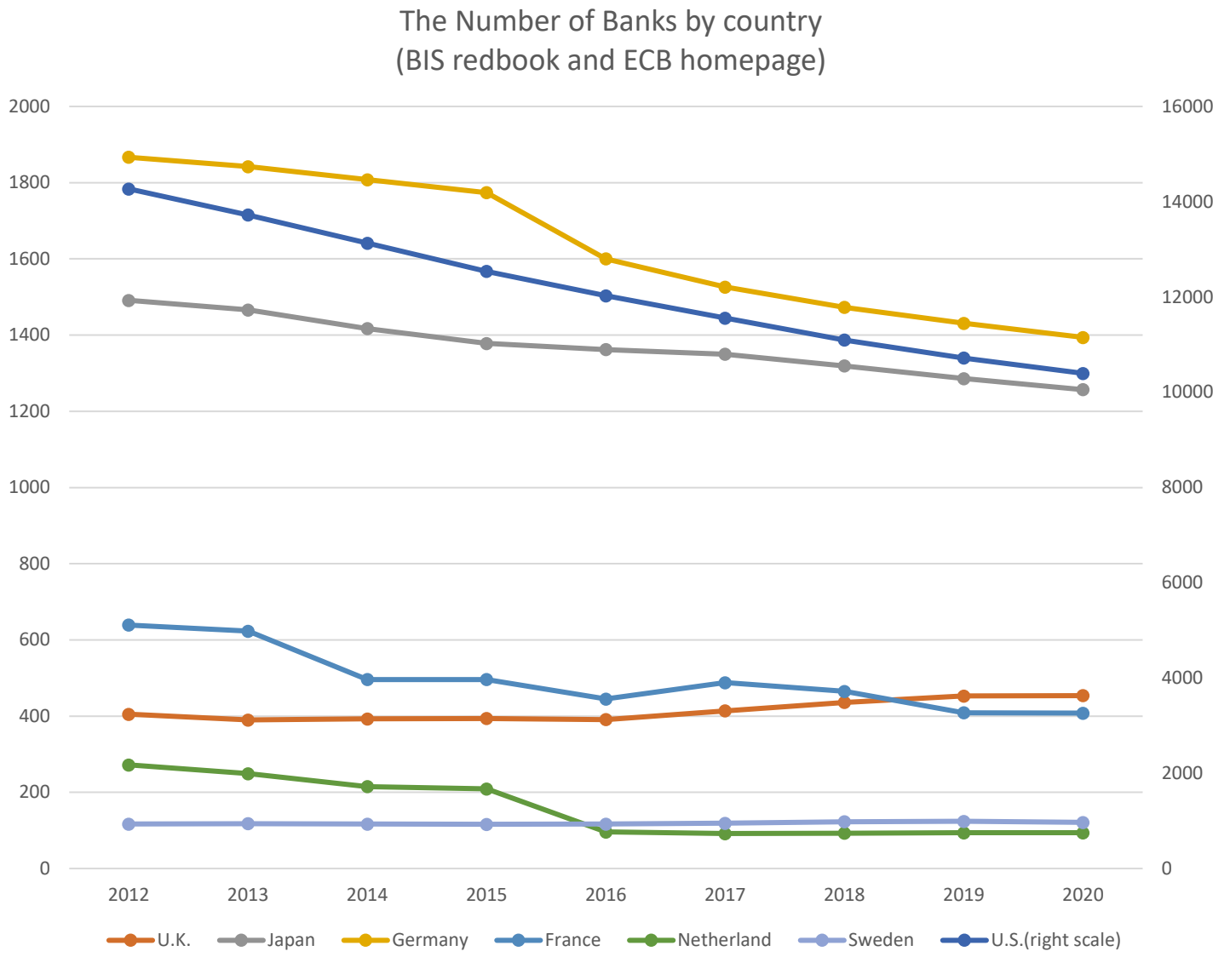
- ROE and ROA of the banks in northern European countries are high.Digitisation increases bank profitability and reduces costs.
- However, ROE and ROA of Japanese banks are low.

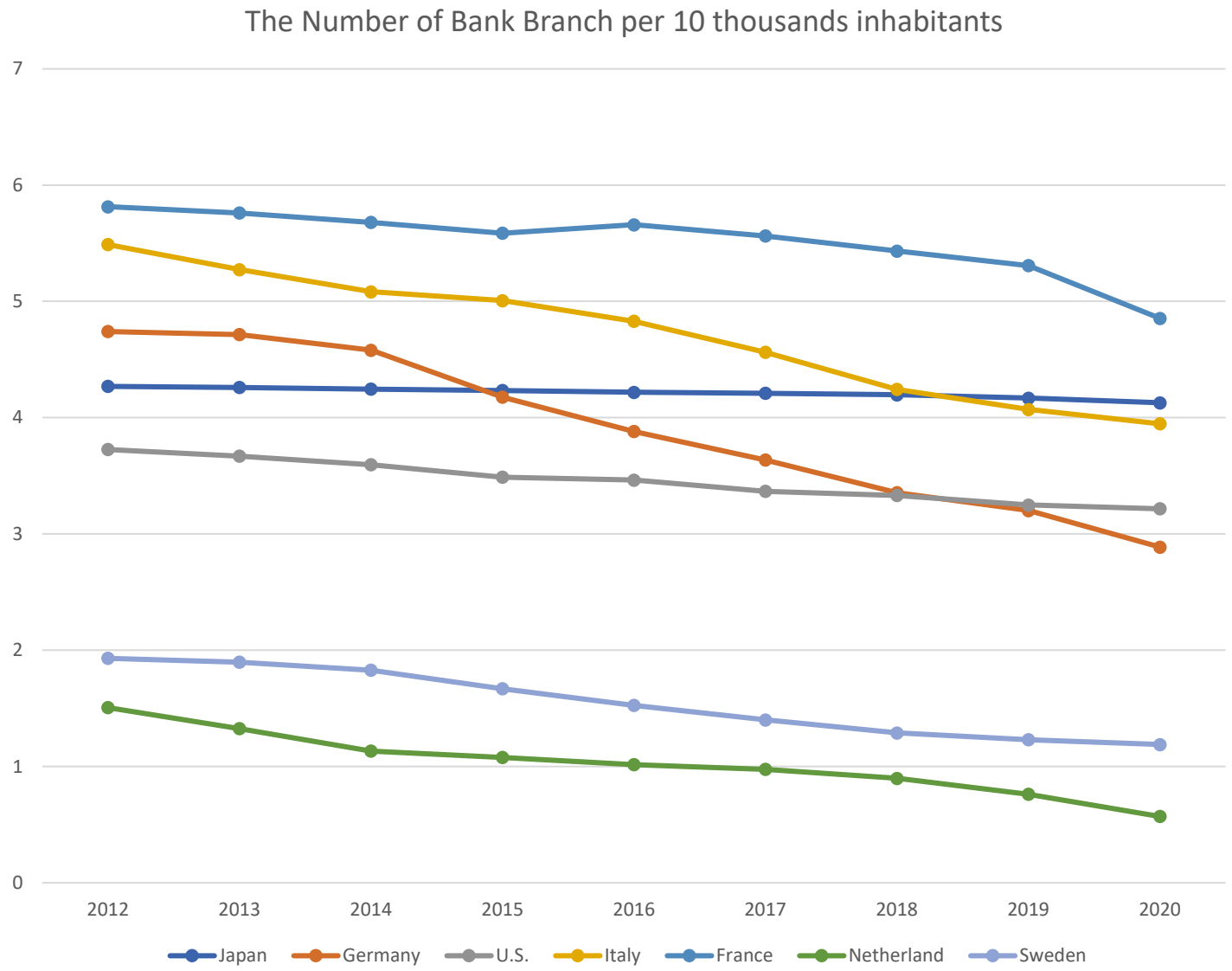
The Banks in the northern european countries and Japan							
					($ million,%)		
	Ranking	Tier 1 capital	Assets	Capital assets ratio	Pre-tax profit	ROE	ROA
Finland							
Nordea Group	66	32,968	648,128	5.09	5,609	13.2	0.67
OP Pohjola Group	136	13,597	197,852	6.87	1,281	7.55	0.52
Saving Bank Group	723	1,246	14,863	8.38	102	6.64	0.56
Denmark							
Danske Bank	78	26,199	599,975	4.37	2,526	7.52	0.33
Nykredit	139	13,208	255,103	5.18	1,635	10.23	0.53
Jyske Bank	257	5,729	98,647	5.81	614	8.45	0.49
Estonia							
Swedbank Estonia	FOS	1,725	18,769	9.19	248	12.43	1.14
Luminor Bank Estonia	620	1,625	15,133	10.74	94	5.22	0.56
SEB Pank	FOS	1,051	9,023	11.65	131	10.74	1.25
Latvia							
Swedbank Latvia	FOS	982	8,522	11.53	85	8.5	0.98
Japan							
MitsubishiUFJ FG	12	126,440	3,053,365	4.14	12,172	7.8	0.32
Sumitomo Mitsui FG	21	91,391	2,105,430	4.34	7,595	6.39	0.28
Mizuho FG	25	79,357	1,936,815	4.1	4,934	5.59	0.23
Netherland							
ING	40	58,773	1,081,042	5.44	7,698	9.47	0.51
Rabobank	48	46,278	726,790	6.37	5,542	9.07	0.58
ABN Amro	83	24,077	453,538	5.31	2,089	5.82	0.31
Sweden							
SEB Group	105	18,626	365,512	5.1	3,414	15.1	0.77
Svenska Handelsbanken	107	18,031	370,217	4.87	2,730	11.99	0.58
Swedbank	118	15,821	304,272	5.2	2,856	14.59	0.76
(source) The Banker, July 2022							

Cashless and fintech will have a significant impact on bank management.

- The Netherlands and Sweden are leading cashless and fintech countries. In these countries, the number of banks, branches and ATMs has declined significantly.
- In the Netherlands and Sweden, the number of bank branches and ATMs is also considerably lower.
- In the Netherlands, the number of ATMs is extremely low, but in Japan it is outstandingly high.
- About one third of all ATMs in Japan are convenience store ATMs.
- Convenience stores are a business type unique to Japan and Asia, selling food, drinks and everyday items.

The Netherlands and Sweden have very few banks.



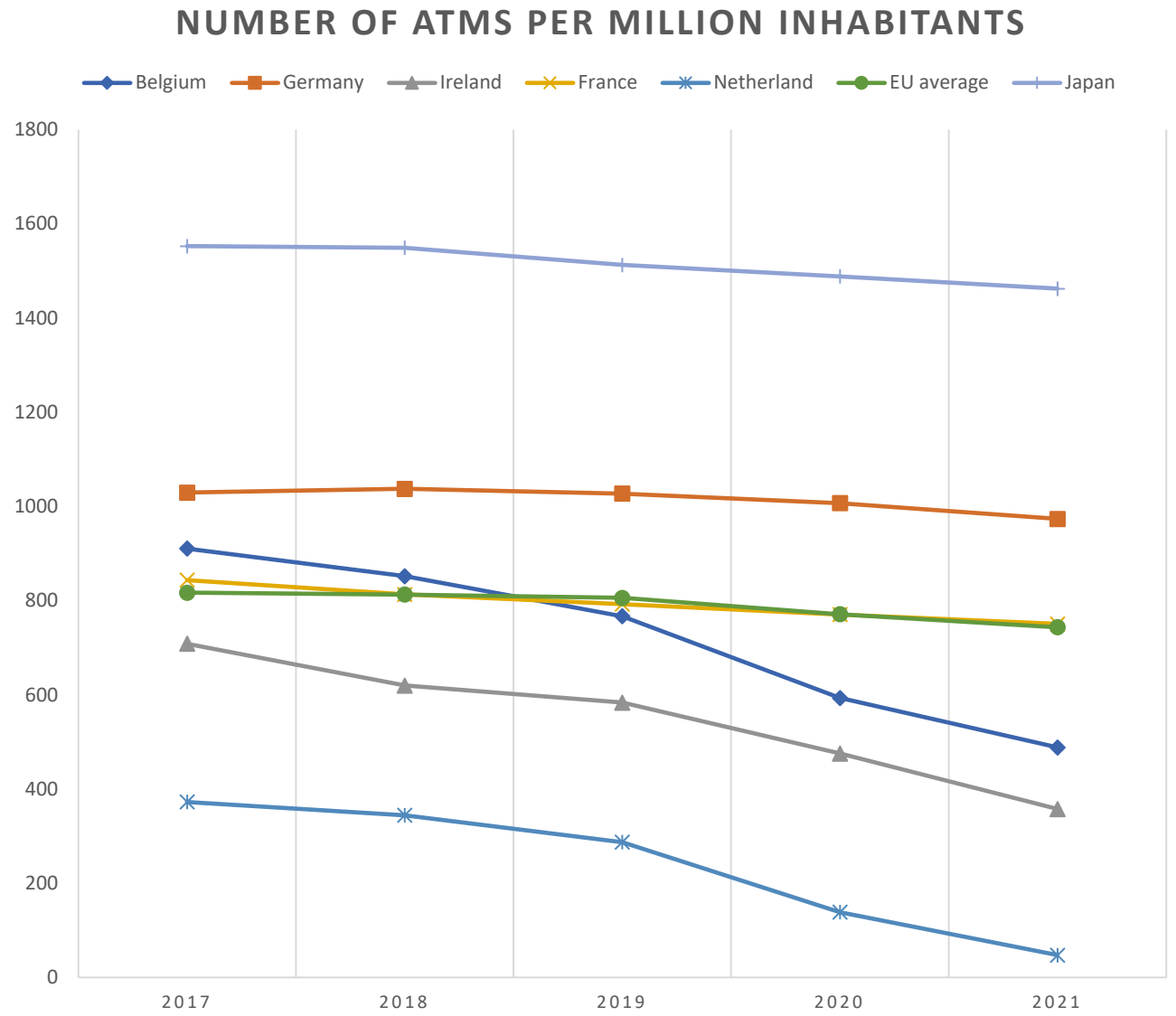


The number of bank branches and ATMs is also considerably lower in Netherland.

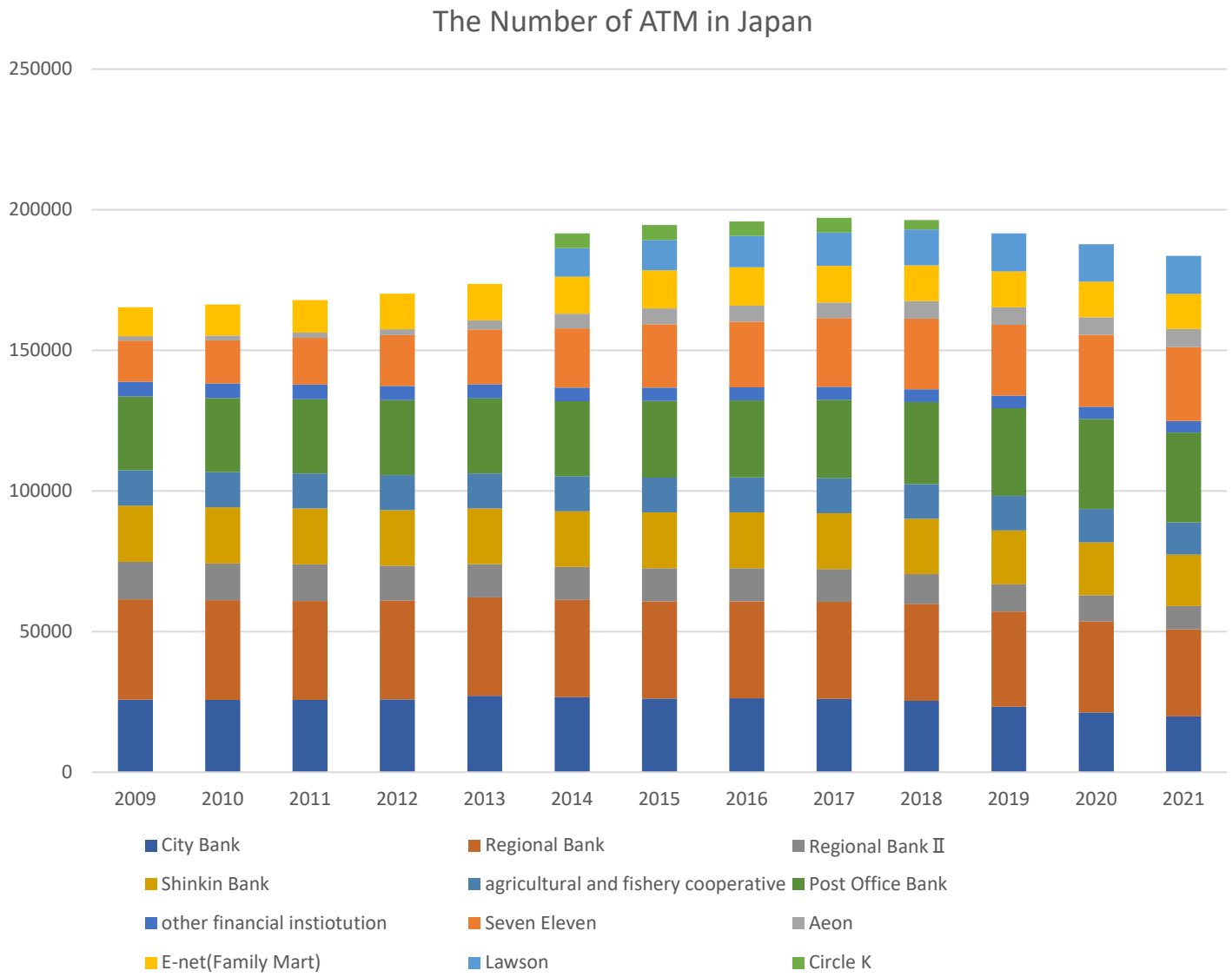
Statistics on ATMs in Japan

- Statistics on ATMs in Japan are compiled by the JBA, but do not include ATMs in convenience stores. Therefore, they are not included in the BIS statistics. The following statistics on convenience store ATMs were calculated by the reporter.
- Data on ATMs was collected from the annual reports of convenience store companies and calculated.
- In the following graph, ATMs in Japan include convenience store ATMs.

In the Netherlands, the number of ATMs is extremely low, but in Japan it is outstandingly high.



About one third of all ATMs in Japan are convenience store(Seven-eleven etc.) ATMs.



2.1 Card payments and interchange fee rates

- Thus, an inverse relationship can be observed between the development of cashless and fintech technology and the number of banks, branches and ATMs.
- The basis of cashless payments and fintech is card payments.
- With EU integration, bank transfer and debit cards were largely harmonized across countries. For card payments, differences still remained in 2010. One of the remaining variances related to interchange fees for card payments.

Poland, Cyprus, Portugal were the countries with the highest interchange fee rates in 2010

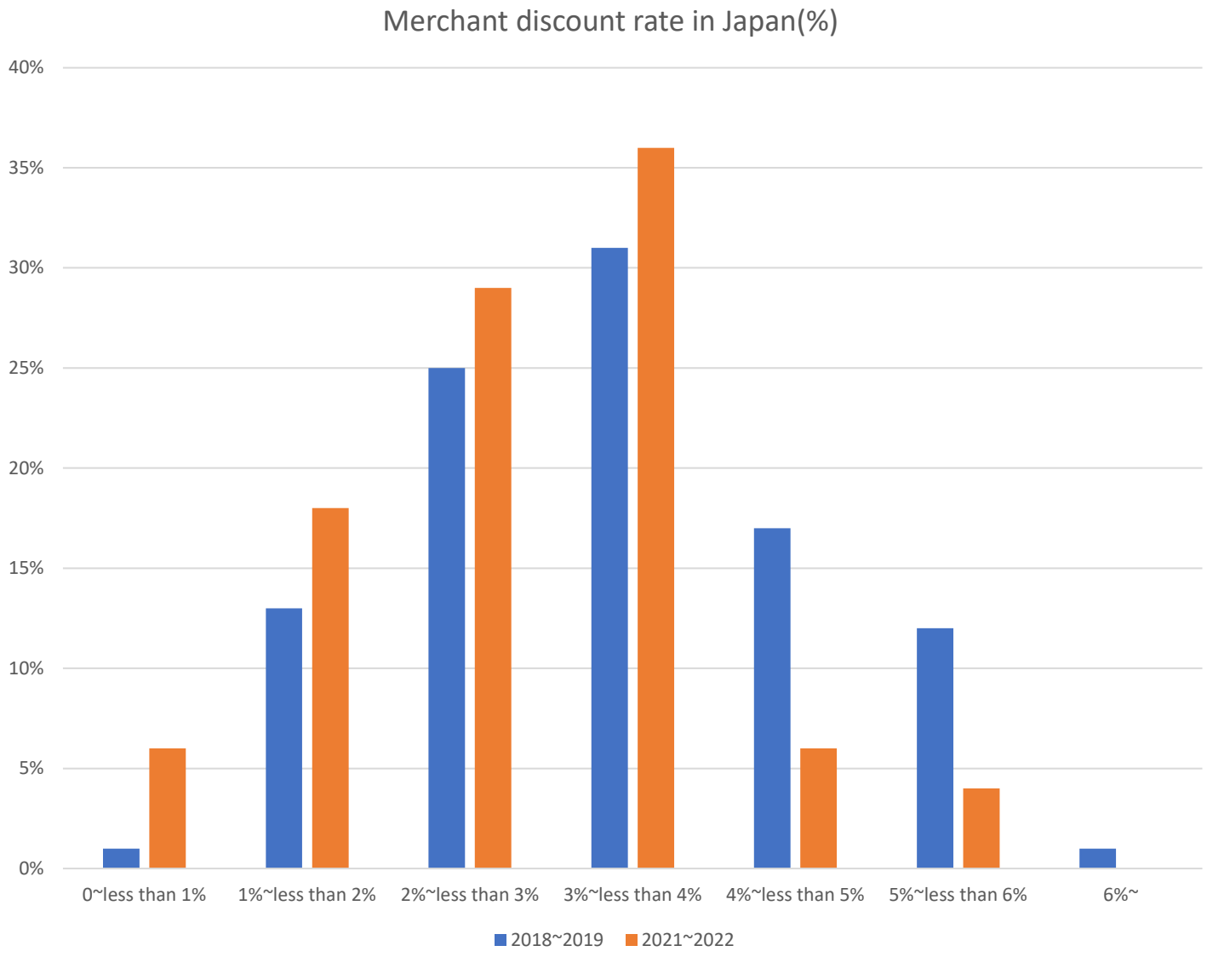
	Overview of Interchange Fee Arrangements for Debit and Credit Card Payments in Europe				
	Payment card scheme	Scope	Type of transaction	Interchange fee	
				Debit	Credit
Poland	Master	International	General trade	1.60%	1.45%
	Visa	International	General trade	1.45%+€0.05	1.50%
Cyprus	Master	International	General trade	1.75%	1.75%
	Visa	International	General trade	1.50%	1.50%
Portugal	Multibanco	Domestic	General trade	0.8%(€0.05~1)	na
Romania	Visa,Master,Amex	International	General trade	1(online)~1.5(paper)	na
Lithuania	Visa	International	General trade	0.15~0.19%+€0.015	0.5~0.75%
	Master	International	General trade	0.1~0.13%+€0.05	0.14~0.18%+€0.05
Finland	International card	International	General trade	0.31~1.15%	0.9~1.125%
Latvia	Master,Visa	Domestic	General trade	0.5~0.6%	0.85~1%
UK	Master,Visa	Domestic	General trade	€ 0.107	0.90%
(source)	ECB(2011)				

- In Finland and Latvia, interchange fee rates were low.

In the EU, fees have been regulated since 2015. Not yet fully regulated in Japan

- Credit card interchange fee rates are regulated at no more than 0.3% and debit card payment fees rates at no more than　0.2% in the EU now.
- However, in Japan, the merchant discount fee rates, which includes interchange fee rates, are very high until now.　The merchant discount fees are paid by the merchant(shop) to the acquirer(credit card company), and the fees are subtracted　from purchase prices. The merchant discount rates of credit card are mainly in the 3% range.
- The merchant discount rate for PayPay(QR code payments) via smartphones is 1.6% and is rapidly gaining popularity in Japan.

The discount rates are mainly in the 3% range.



2.2 Introduction of a digital euro
Why CBDC is necessary?

- In an increasingly cashless society, central banks need to supply complementary means of payment to cash.
- Furthermore, ECB points to the emergence of crypto-assets and Covid-19, financial stability, the time constraints of the current payment system and the length of the payment chain as factors attracting attention to CBDCs.
- The use of cash is declining and there is a risk that foreign digital money could become dominant due to unforeseen circumstances.
- Bank of Japan completed the Proof of Concepts(PoCs) in March 2023. Following this, in April 2023, BOJ launched a pilot program.

ECB and a digital euro

- ECB launched the investigation phase of the digital euro project in October 2021.
- In Autumn 2023, Governing Council dicision to possibly realization phase

	Task schedule of digital euro		
Q4 2021	Jul-21		
	・Governing Council		
	decision to launch		
	investigation phase		
	・Project team		
	on-boarding		
	Governance set-up		
Q1 2022		Q1 2023	
	・Use case prioritisation		・Compensation model
	Report on focus groups		Access to ecosystem
	with citizens and merchant		Value added services
			Advanced functionalities
Q2 2022			Prototyping results
	・On line/off line availability		
	Data privacy level	Q2 2023	
	Transfer mechanism		・User requirements
Q3 2022			Preparation for possible project
	・Design options to moderate		realisation phase decision making
	take-up		
	・Distribution model	Q3 2023	Sep-23
Q4 2022			Governing Council
	Settlement model		decision to possibly launch
	Amount in circulation		realisation phase
	Role of intermediaries		
	Integration and form factor		
	Prototype development		
(source)	ECB(2022c)		

In Pilot Program, retail actual transactions are not assumed

From Proof of Concept to Pilot Program in Japan				
April 2021-March 2022		April 2022-March 2023		Start April 2023
Proof of Concept Phase 1	⇒	Proof of Concept Phase 2	⇒	Pilot Program
Develop an experimental environment for the CBDC system and conduct experiments on the basic functions of CBDC (issuance,distribution, and redemption		Implement additional functions of CBDC in the experimental environment developed in Phase 1 and test their feasibility		Test the technical feasibility noy fully coverd by the PoCs: utilize the skills and insight of private businesses in terms of technology and operation
(source) BOJ, February 17,2023				

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