LUISS

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Payment Instruments in the Covid Era: Long Term Trends and Effects of the Pandemic in Consumers' Habits.

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CONTENTS

EXECUTIVE SUMMARY

The objective of this paper is to analyse the impact of Covid-19 on the various means of payments, as well as the change in consumers' habits. I have tried to give a temporal context to the above information by describing the pre-existing long-term trends. Having a solid understanding of how habits have been impacted by external shocks and having a view of where we are heading, it is fundamental not to be found unprepared for the changes as they represents a source of infinite possibilities.

What is essential to understand is that Covid-19 accelerated trends that had already started. For example, the increased use of electronic payments was the result of an expansion of the e-commerce world, the development of information and communication technologies and innovations in online banking. In this context contactless cards and mobile applications have continuously developed. All these modern technologies have slowly modified consumer spending habits, and the limitations imposed by the pandemic certainly facilitated this change. Covid-19 has been, in fact, an unprecedented shock that really influenced every aspect of our lives. The analysis has been conducted by comparing the change in the use of payment methods and consumers' habits in four markets: Canada, the EU, the UK and the US.

Research in different countries highlights similar trends, including a general decrease in consumption as observed on the US graph (p. 23), a transition from the use of cash towards digital payments and a reduction in the volume of ATM withdrawals. This decrease can be seen on the UK second graph of page 33 and on the Sweden's second graph of page 40. In addition, it is interesting to observe that some countries, like Sweden, are incredibly ahead of the curve regarding cashless. In this scenario, the notes in circulation have increased dramatically, this is, in fact, clearly shown by the graph focused on Canada (p. 18), the second graph on page 25 for the United States, and on the first graph on page 33 for the UK.

The main finding of this work shows how in all the countries analysed there has been a significant increase in the use of cash alternative methods of payments (i.e., digital instruments). This can be seen as a general trend in Europe and Canada on the graphs on pages 15 and 17 respectively, and also on the cash - credit ratio graph about the US (p. 23). The decrease in the cash-card ratio is evident also on the graph regarding Italy (p. 29), together with its increase in contactless transactions on page 28. While in the U.K, the decrease in the use of cash is clearly analysed on the graph on page 31. Lastly, the change in payment methods distribution in Sweden is presented in the graphs on pages 38 and 39, which show how cash alternatives have gained popularity over the years. All these findings are supported by the survey I conducted in Italy. The research summarized by the graphs on pages 42, 43, and 44 illustrate how the pandemic has drastically changed consumer habits concerning payment methods. In particular, initially consumer choices were most dependent on the degree of the restrictions imposed by Covid. The decrease in the use of cash and the increase in digital alternatives have become more and more independent, thus highlighting how the changes of the consumer spending habits will last and very likely will not be modified again.

This paper is divided into three chapters. The first introduces the role of cash in society, depicting its functions, advantages and disadvantages, and an explanation of the various digital means of payments. The sequence in which the rest of the paper is arranged sees first the core analysis (Chapter 2), in which a comparative analysis of means of payments and consumer habits in the four different markets above-mentioned is carried out. It follows with an analytical and descriptive framework of the Italian situation through the use of a survey that has reported 391 respondents (Chapter 3). The survey has been conducted efficiently as it realistically represents the Italian population, with an ideal random sample composed of a sufficient percentage of respondents being male and female, of different ages and doing a wide variety of jobs.

The third chapter turned out to be fundamental in backing up all the previous analysis, as all the conclusions were in line with what has been found in the other countries. In order to analyse the data and create the graphs I have used mathematical frameworks of changes in historical series, simple index numbers, moving base index numbers, and fixed base index numbers.

Chapter 1

1   Introduction

1.1   Role of cash in society

"Money has no smell, yet it has a color". This is what John Searle and Maurizio Ferraris, two contemporary philosophers, say to discuss the nature of money. This statement means that money does not depend on its colour and shape, because its physical aspect is in constant evolution. As a matter of fact, money was originally a precious metal and now it is paper. Its value comes from people's attribution.

Banknotes have always played a fundamental role in society due to their four main functions, indeed "money is what money does". The four functions of money are: unit of account, means of payment, medium of exchange and store of value. Money as a unit of account keeps track of debts, prices and general purchasing power. Money as a means of payment is what we use in our everyday life to carry out transactions. For this reason, a value is placed on almost everything. An authority is needed to set what can be used to legally pay off debts. It is important for the State to define what can be used as a legal tender: money as a means of payment can be defined as a legal tender. That is something that is offered and legally cancels the obligation. So, whoever has the power in a community to define what is used as a unit of account and means of payment has the power to regulate debts, credits and relationships. In other words, it has the power to establish who wins and who loses in that community. There are several kinds of payment options (means of payment) that are recognized as legal tenders and as such can be used in everyday transactions: cash, checks, debit cards, credit cards, mobile payments, electronic bank transfers. These different kinds of payment are used for different purposes, for example cash is mainly used by households for everyday transactions, while electronic payments are used for online purchases.

The definition of medium of exchange leads us directly to the market: money as a medium of exchange is considered as an object universally accepted in return of something else. This is based on the certainty that the same object can be used in future to buy other goods. Using money as a medium of exchange is a decentralized exchange that takes place between people that do not know and trust each other. This is because if people perfectly knew each other, barter would be perfect. A fundamental feature in transactions is that both sides in the exchange believe they will benefit from it. On the other hand, an exchange of goods for goods is quite complicated because it requires double coincidence of wants, endowments and same timing. This kind of process is way too costly in an anonymous and decentralized exchange system.

Money must have some specific characteristics when defined as a medium of exchange:

1. Standardization: we need a government that takes care of it
2. Must be generally accepted

3. Must be divisible to allow change
4. Must be easy to carry and protect, to have low carrying costs
5. Must not deteriorate too easily

Money as a store of value has the main objective to store purchasing power over time (money= frozen desires). There are many ways in which value can be stored over time, however money is the most liquid option. Our future discussion will highlight the importance of money as a store of value.

1.2   Introduction to digital payments

For the purpose of our further analysis, it is now useful to analyse the main digital payment options. There are credit cards like Visa and Mastercard, where the intermediary anticipates the value of the purchase with a subsequent automatic refund. Then there are prepaid cards, generally used by those who do not have a bank account. Another very common option are the debit cards, where transactions are immediately charged on the bank account. They are also used for ATM's withdrawals and may require some commission fees. Lastly, there are mobile payments, that work through contactless technology, virtual accounts like PayPal and electronic transfers.

The choice of which means of payment is best to use depends on general living conditions, consumer's preferences and the condition of the payment industry. There are however some pros and cons that can be identified for the various payment options.

- Cash
    - Pros: There are no transaction fees, it is very common and easy to use.
    - Cons: May be risky to keep a lot of money in the form of cash, it is usually only used for small-medium purchases, it does not yield interest and is negatively impacted by inflation.
- Checks
    - Pros: May increase consumption because they are usually used for bigger purchases. Do not have fees and allow not to keep big storage of cash.
    - Cons: There are some transaction costs in the form of the time needed for the bank to process the check. Since the solvency of the check issuer is not guaranteed, there is the risk that the check is not covered by enough money.

- Debit, Credit and Prepaid Cards
    - Pros: Allow people to safely conduct bigger purchases, to carry out transactions fast and with low carrying costs. They allow not to worry about fake cash or insolvent checks, and they facilitate foreigners in their transactions.
    - Cons: There are transaction fees and there is a waiting time for the transaction to occur.

- Mobile Payments:
    - Same benefits of the Debit and Credit cards and in addition it is possible to use own's mobile payment system.

- Electronic Bank Transfer
    - Pros: Allows to handle large payments without fees. Convenient for transactions between businesses.
    - Cons: Not very common and people are not so used to it.

1.3   Introduction to comparative analysis

We will analyse how with a change of living, economic and general conditions caused by Covid-19, the usage of means of payment and consumers' habits have varied. This pandemic has completely revolutionized the way we perceive technology. It is now obvious that meetings are held on a video call and more people are using e-commerce and the web for booking services, while this was very hard to conceive before this situation occurred.

The same trend is observable when referring to means of payment. As a matter of fact, because of the virus, the use of cash is in constant decline, both to avoid the manual exchange of banknotes and because most of the shopping is done at home on e-commerce. With the increase of the use of digital payments, cash has become more expensive to handle. The former, in fact, can take advantage of economies of scale, and the latter cannot.

Another important factor that needs to be considered is that during the pandemic households decreased consumption in general and had consequently less need of cash. It is interesting how the amount of cash in circulation increased - due to precautionary reasons - as citizens may decide to hold cash in uncertain times. Therefore, transactions that involve cash have considerably decreased, both owing to fewer consumption possibilities and to the perceived danger of virus transmission.

But can Coronavirus survive on banknotes?

Several experiments have been conducted in which a big dosage of Coronavirus was applied to a banknote. It is very unlikely to have such a big quantity on a banknote, however the experiment was useful to see how long it took the virus to disappear and to compare banknotes to other surfaces. So, as a comparison the experiment analysed other common everyday surfaces. The results have shown that the virus remains strong on banknotes for about one hour. After 6 hours the virus on banknotes has dropped to 5% of the initial amount on both banknotes and other materials. After 24 hours the presence decreased to 1% on all materials. Coronavirus is by far more likely to infect people if it passes from one to another in a direct way, for example by inhaling droplets. The fear of contagion through banknotes should not be one of the main contagion vehicles to worry about. However, people's perception about handling cash is facilitating the adoption of contactless payment methods.

The transition towards cash alternatives is not so straightforward. Obviously, there are many advantages in not having cash. First of all, people in illegal activities only use cash to carry on their transactions. Cash could be replicated, stolen, damaged and lost. Moreover, it is costly for the bank to issue low value coins, because the cost of production could be more than the actual face value of the coin, but they are still needed for change.

On the other hand, we still have reasons to keep using cash. To start with, domestic cash holdings are a source of revenues, as the central bank is the only institution issuing the legal tender "cash". This profit, called seigniorage, eventually goes to the government. (The benefits of cash, Ch. 4, M. Krueger, F. Seitz). At the basis of this process lies the fact that the face value of money and the cost to produce it are different, so cost of production is actually less than the actual exchange value. Such difference is called seigniorage. In addition, cash is anonymous and thanks to its ease of use does not need electricity or any technological device. For elderly people too, it is very hard to think of other forms of payment. It must be said that cash has some fundamental features: it is the most widely used, fastest and cheapest instrument for retail payments, it allows to monitor how much is actually spent, and it is both a payment instrument and a store of value.

As a matter of fact, as we will later discuss, the demand for cash and currency in circulation is as high as ever. Cash has been in circulation for hundreds of years, and has proved to be an efficient payment instrument; for this reason, careful consideration is required when thinking to abandon it. To this day, it is still difficult to find an electronic payment instrument that offers the same benefits, that can be used without further involvement of service providers, that does not require payer and payee to be online, that can be used for both small and big payments, and with a payment that is definitive with no possibility of complains. Even in a situation in which electronic payments could be interrupted because of technical problems or strikes, cash would be essential to continue payments. In such a situation cash would be used as a means of payment, medium of exchange and store of value of last resort.

Even if there are numerous advantages in keeping cash, as we will see, governments in some countries still try to enact measures to limit its use and promote digital payments. This is brought to the extreme in Sweden where the whole country is practically cashless, but it can be observed to some extent in Italy, too. In the past few months, the Government has been trying to promote digital payments through the use of the Cashback initiative, by which the consumers get reimbursed for part of their purchases.

Moreover, it has been analysed how the use of digital payments is strongly impacted by the affinity of the user with technology and its propensity to risk. As a matter of fact, technological savvy people and those ready to face risk are keener to use cash alternatives. This also means that people who regularly use cash are more risk averse and more reluctant to use electronic devices in general.

2 Comparative Analysis of Consumer Spending Habits

2.1 Europe

In analysing the results from the 2016 ECB survey (SUCH) and the 2019 ECB survey (SPACE), we see that consumers' preferences are slowly shifting towards cashless options, though cash still plays an important role. During this time interval the share of cash use for day-to-day transactions in the total number of payments has declined from 79% to 73%. The pandemic has accelerated this trend: according to July 2020 survey, 40% of the respondents replied they have used less cash compared to the beginning of the pandemic, and 90% (46% certainly and 41% probably) declared they will continue even after the pandemic. This has been possible thanks to technological innovations that have increased the ease with which people can carry on cashless transactions, a perfect example are contactless payments that are used in one over three card transactions.

There are other important behavioural changes, for example, in the last three years, there has been a decrease in cash accessibility from 94% to 89%. Equally interesting is to highlight that in some EU countries cash is no longer universally accepted. In addition, it can be noticed how in the last year there has been an important increase in online transactions, representing about one-third of overall transactions, while purchases at the point of sale have shifted towards contactless transactions. Besides, spending decreased by 50%, with offline transactions decreasing by 60%, while online transactions by 20%.

The pandemic has profoundly modified the overall attitude of both consumers and businesses. People prefer options of trading that do not require contact at the point of sale. For this reason, many businesses are adapting to customers' needs and are seeing in this situation a potential opportunity. For example, many banks and shops are promoting contactless payments by raising the contactless pay limit up to 50 €, representing approximately 15% more transactions that could be performed contactless. Data show that contactless payments have increased by 4% in March 2020, and by more than 20% in April 2020 on top of the organic annual growth of 3.8%. It is expected that by the end of 2021, contactless transactions will be 27% of all POS transactions. At the end of 2020 this value was 8%.

Before the pandemic, cash transactions in Europe constituted almost half of the total payments, but this is changing: it is decreasing by 2.3% in France and 6.2% in Germany and in the UK each year. It is expected that contactless transactions will be 27% of the total Point of Sale transactions.

"The Lockdown significantly accelerated the shift from POS to E/M-Commerce payment reaching up to 36% of all transactions in March 2020 in several countries"

Domestic offline vs. online transactions
Domestic transactions in value, average 2019 vs. April 2020
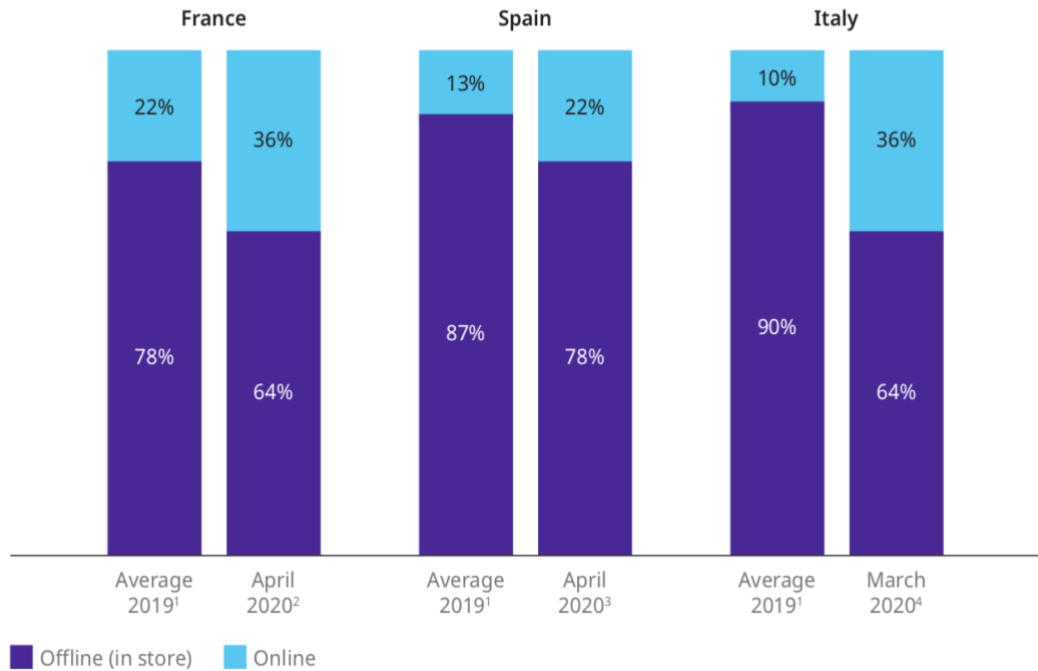
Source: Covid 19 and European Retail Payments- Oliver Wyman

The Importance of having the option to pay with cash, by country in 2019
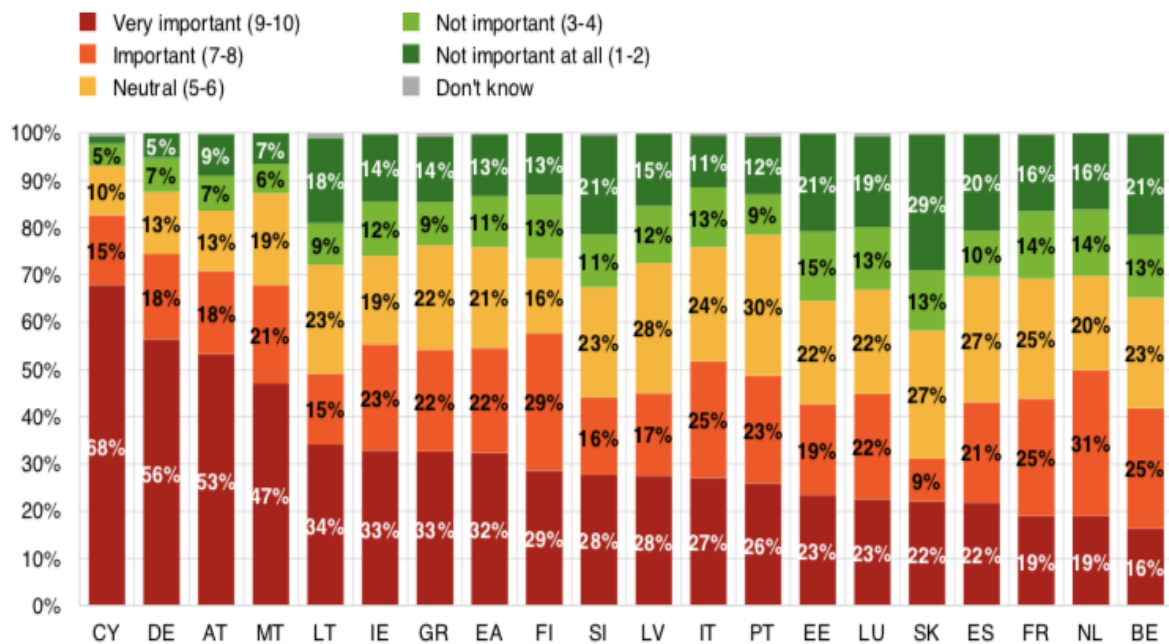
Source: ECB

"It is interesting how this same question has been answered differently during the pandemic, in fact "Although the combined level of these two categories was still almost the same as in 2019 (52%), during the pandemic there was a shift of respondents from "very important" (scores 9-10) to "important" (scores 7-8). Thus, the share of respondents considering a cash payment option important increased from 22% in SPACE to 29% in the 2020 IMPACT survey, while the share considering the cash payment option very important declined from 32% in SPACE to 23% in the IMPACT survey." (ECB)

As a general trend we can see that holding cash is still considered important for most countries in the Eurozone. The countries that mostly differ, and do not consider holding cash so important are Estonia, Belgium and Slovakia: countries whose Governments have pushed very hard in the direction of a cashless society, with the implementation of specific policies.

*Number and value of POS and P2P payments in the euro area in 2019*

	Number of transactions (in billions)	Value of transactions (in €billions)
All payment instruments	160	4,082
POS	151	3,686
P2P	9	397
Cash	116	1,971
POS	109	1,722
P2P	8	249
Cards	38	1,667
POS	38	1,633
P2P	0.5	34
Others	5	445
POS	4	331
P2P	1	114

Source: ECB

"Cash remained the means of payment the most used for paying at the POS and for making P2P payments in the euro area in 2019, both in terms of number and value. At the same time, the share of cash in overall turnover decreased by 6 percentage points compared with the SUCH results." (ECB)

It is important to make a distinction between volume and value of transactions, in fact, as we can see that even if 73% of transactions are carried out using cash, this accounts for only 48% of the total value. This can also be seen if we take into account that when the value of transactions increases, cards are used more and more, while the use of cash diminishes.

Number of transactions per value range and payment instrument
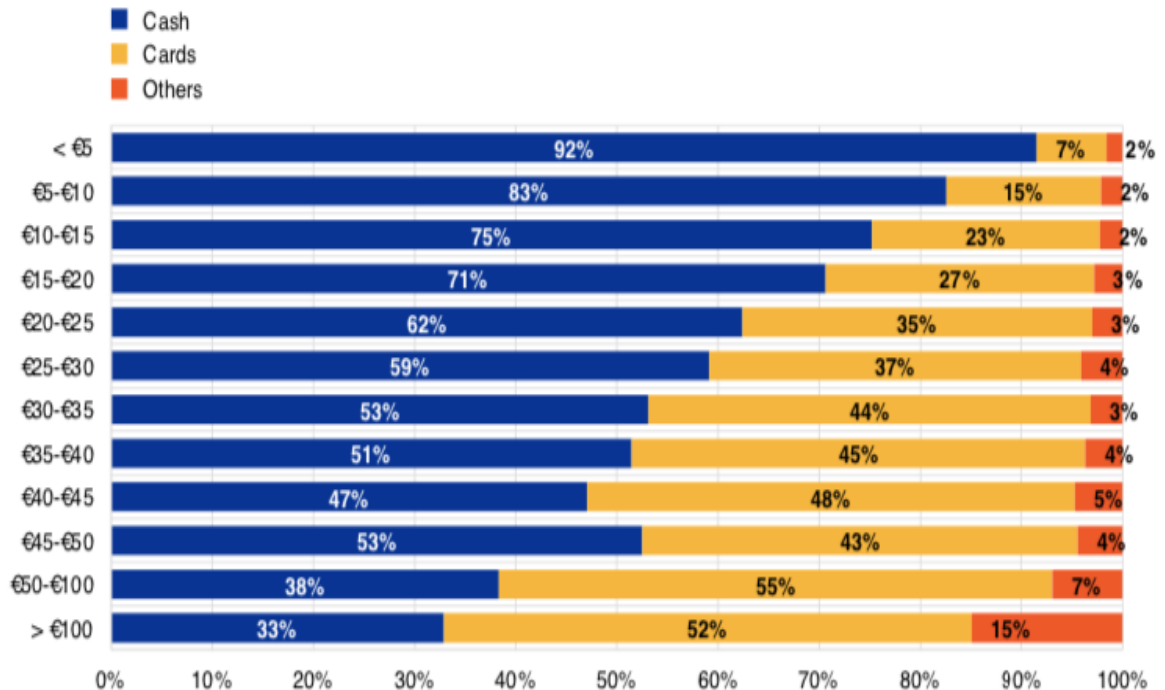
Source: ECB

This graph shows a clear relationship between the method of payment used and the value of the transaction. For small purchases the majority of consumers tend to use cash, but as the value exceeds 40 euros the majority now shifts from cash to cards.

13

Difference in cash transactions between SUCH (2016) and SPACE (2019

(percentage points)

- ■ Number of transactions
- ■ Value of transactions
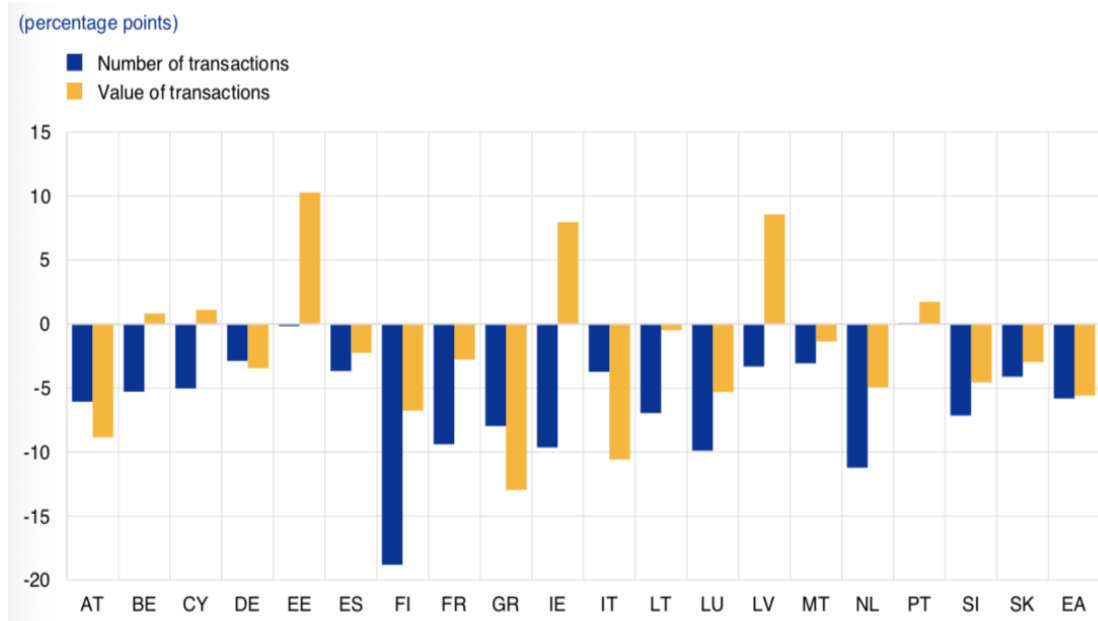
Source: ECB

"As shown in the chart, compared with the SUCH study conducted in 2016, in terms of the number, the cash usage for making POS and P2P payments decreased the most in Finland19 (-19 percentage points (p.p.)), followed by the Netherlands20 (-11 p.p.), Ireland and Luxembourg (-10 p.p.), France (-9 p.p.) and Greece (-8 p.p.). In terms of the value of transactions, the biggest drops in cash usage for making POS and P2P payments were in Greece (-13 p.p.), Italy (-11 p.p.), Austria (-9 p.p.) and Finland (-7 p.p.). The relative share of cash payments in overall turnover increased notably in Estonia (+10 p.p.), Latvia (+9 p.p.) and Ireland (+8 p.p.)" (ECB)

It is obvious that card payments have increased due to the introduction of new technologies like contactless. All these new inventions have facilitated the introduction of these new methods in everyday life. In fact, with contactless it is possible to pay with a debit card, credit card, or electronic device.
It is now interesting to understand how payment habits have been modified with the pandemic, and analysing the results of respondents in the Euro area we get:

*Use of Payment methods during the pandemic*
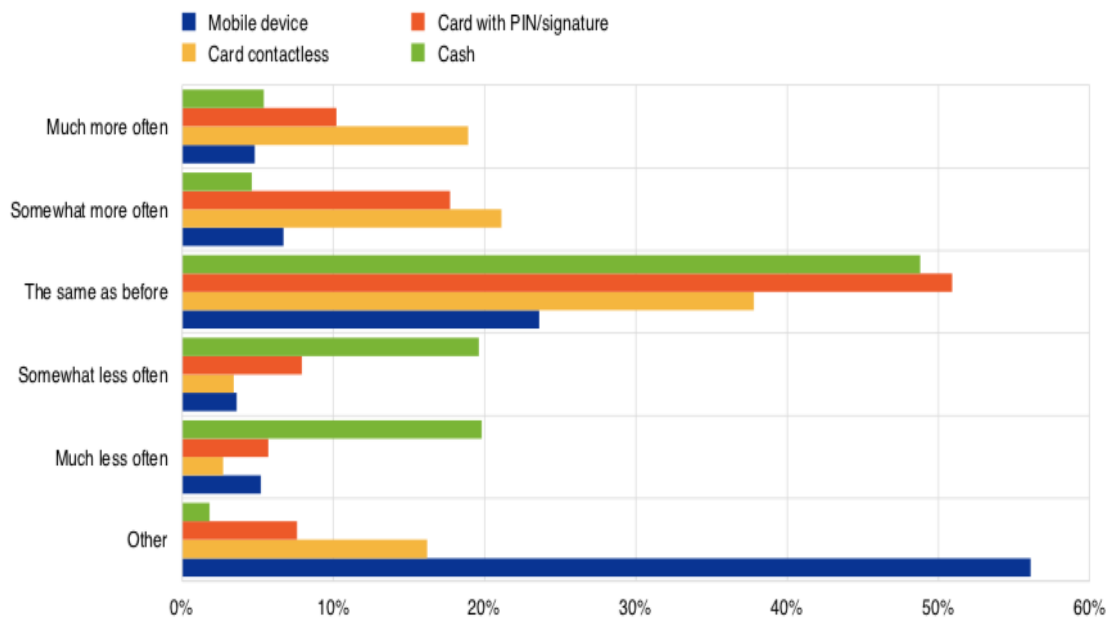
Source: ECB

This chart highlights how the main payment method that has been used more often is "Card Contactless" supporting our previous findings of contactless developments and diffusion. In addition, the two questions regarding the method that has been used less often and much less have both shown as a result cash being the option that most respondents chose. This development of the contactless has been consistent and observable in most countries of the European Union, in particular in terms of number of transactions more than value.

Card Payments (Number of transactions) in 2019

Source: ECB

15
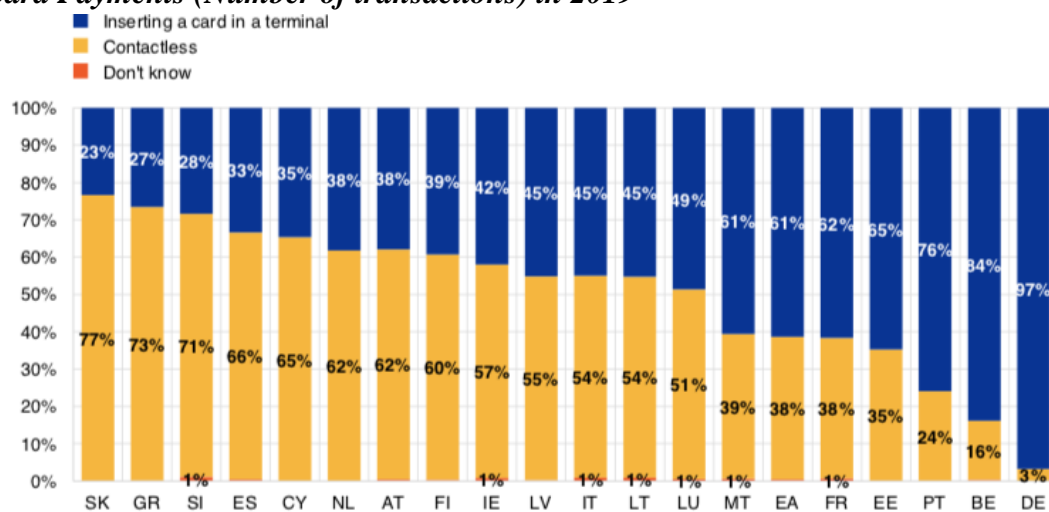
*Card Payments (Value of Transactions) in 2019*
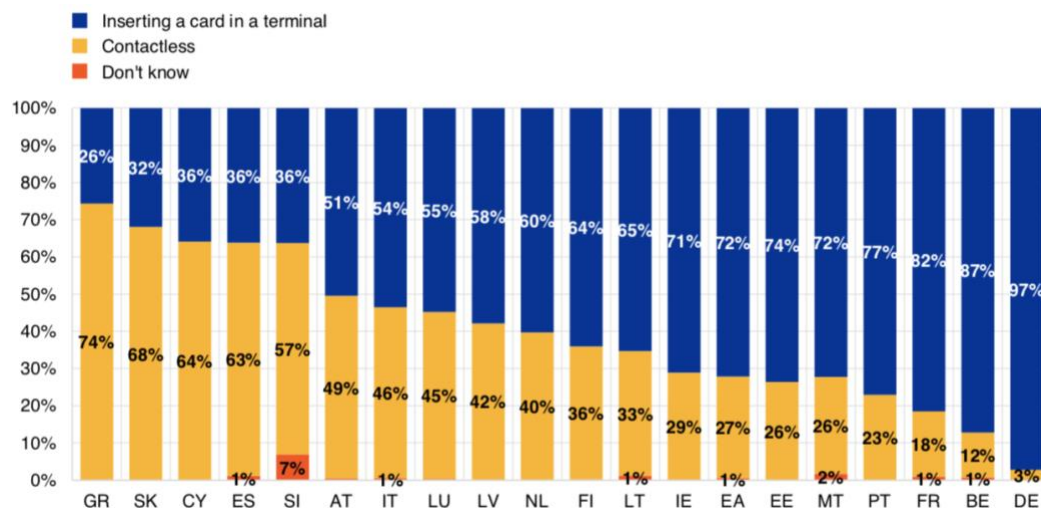
Source: ECB

"Great variation exists at the country level: in Ireland, Belgium and Spain, more than half of the respondents said that they were paying less with cash since the pandemic, whereas in Estonia, Latvia and Malta less than 25% said the same. Finally, payments with a mobile device (e.g., a phone or a smart watch) did not show a breakthrough, because over half (53%) of the respondents said that they did not have such a payment instrument." (ECB).

Another significant trend that developed is that during this period of lockdown ATM withdrawals have dropped by more than half, and this coincides with the fact that consumers who usually make more than half of their purchases online have increased by a range of 25% to 80% since March. Now that the general landscape of the European Union has been described, it is interesting to understand the reasons behind all these changes in consumer spending habits.

Main reasons for changing payment behaviour during the pandemic
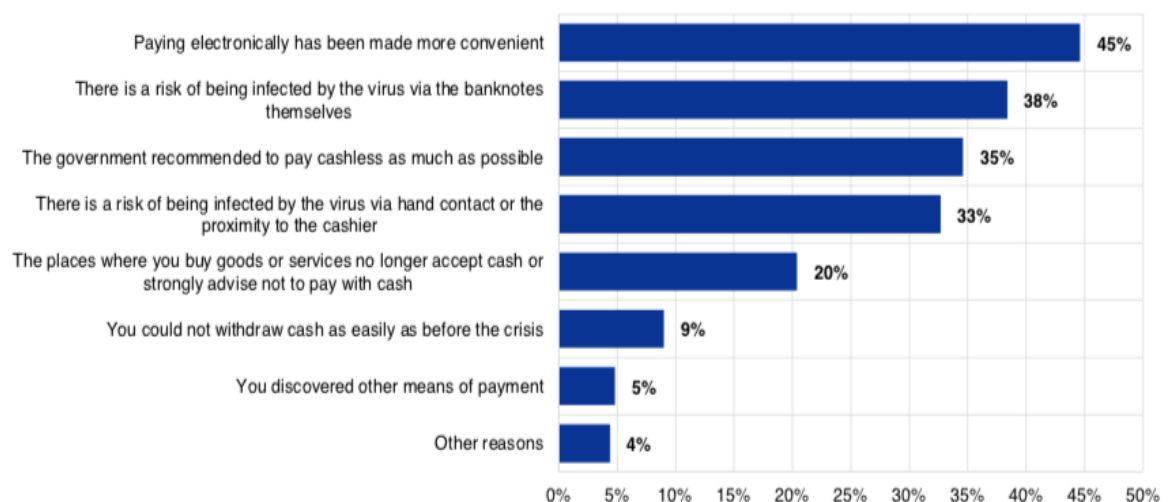

Source: ECB

From the results it can be observed that the main reason for which consumers have changed their payment behaviour is due to increased convenience of electronic alternatives. Covid-19 has represented a real shock that will deeply modify our habits, in looking at perspectives for spending behaviour after the pandemic: 46% of the respondents stated that they will certainly pay less with cash.

2.2 Canada

Already in 2019 Canada was strongly moving towards contactless payments: compared to 2018, they grew 15% in volume and 20% in value. Cash has been in constant decline, covering only 18.4% of all the volume of transactions.

Payment methods distribution
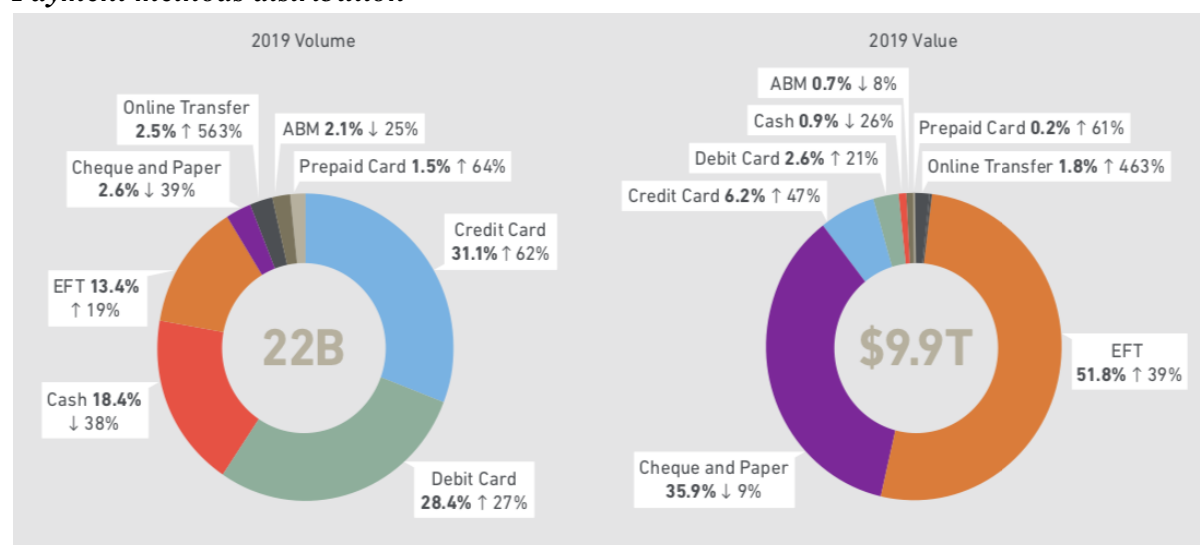

Source: Payments Canada

Owing to Covid, Canadians reduced the level of transactions overall: 60% of the population spent less than pre-Covid times. More specifically, consumers increased the use of electronic payments, e-commerce and contactless payments and considerably reduced proportionally the use of cash. This trend towards a digital-first mindset is further backed up by the following data: 42% of Canadians say they don't feel comfortable anymore in handling cash, 57% state to be using cash less and 32% state to be using credit cards more, 25% using e-transfers more and 21% using debit cards more.

To better understand how Covid impacted the means of payment of Canadians, the Bank of Canada has conducted several surveys from April 3, 2020, to April 22, 2020. Results show that 36% of Canadians reported using cash during that period, compared to 52% using debit and 62% using credit cards. It is also important to note that generally speaking there have not been any major difficulties in accessing cash during the pandemic, just 7% faced problems. Only 12% of Canadians reported seeing

a sign indicating that cash was not accepted. This is different compared to 96% of small-medium stores that accepted cash in 2019. Indeed, 64% of Canadians are using ATMs less. The mean value of cash withdrawal from an automated banking machine was $195 compared with the mean value of $140 in 2017, while the median amount of cash held by Canadians was $85 compared to $70 in 2019.

We can observe that there is an increase in the circulation bank notes in during March and April of 2020 as well. Particularly high was the demand for $20 and $50 notes. This demand was significantly higher than for the same months of the previous year.
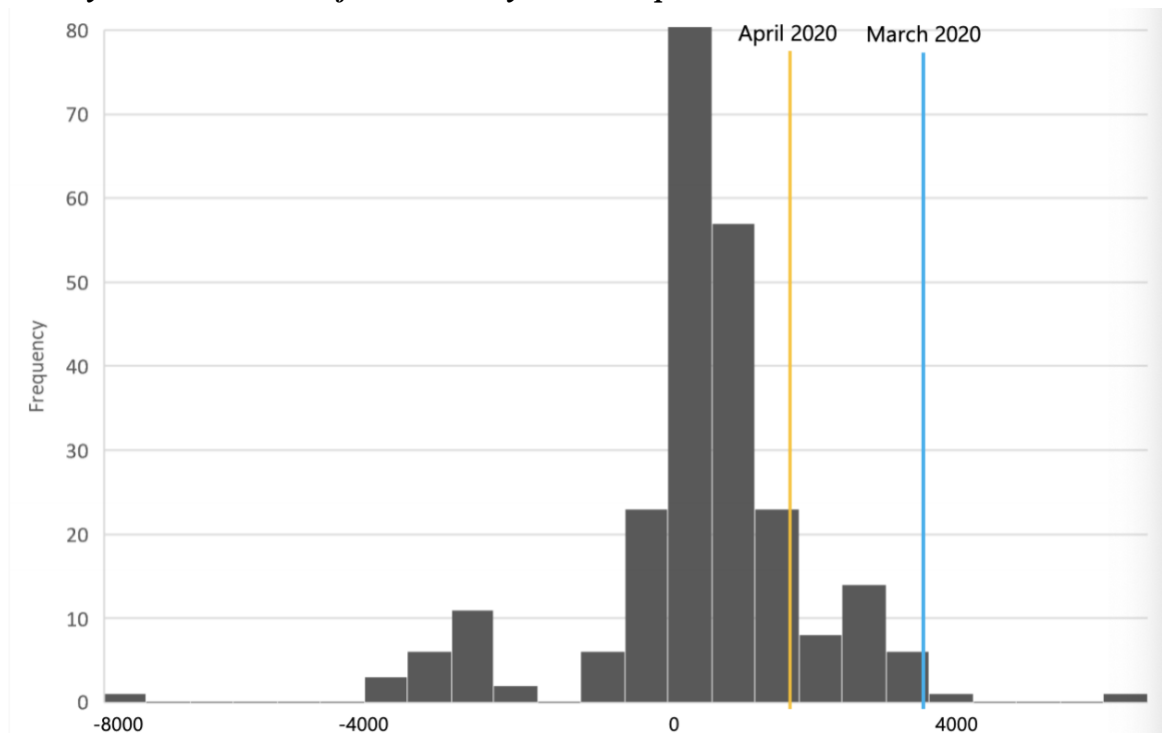
Notes in circulation by year
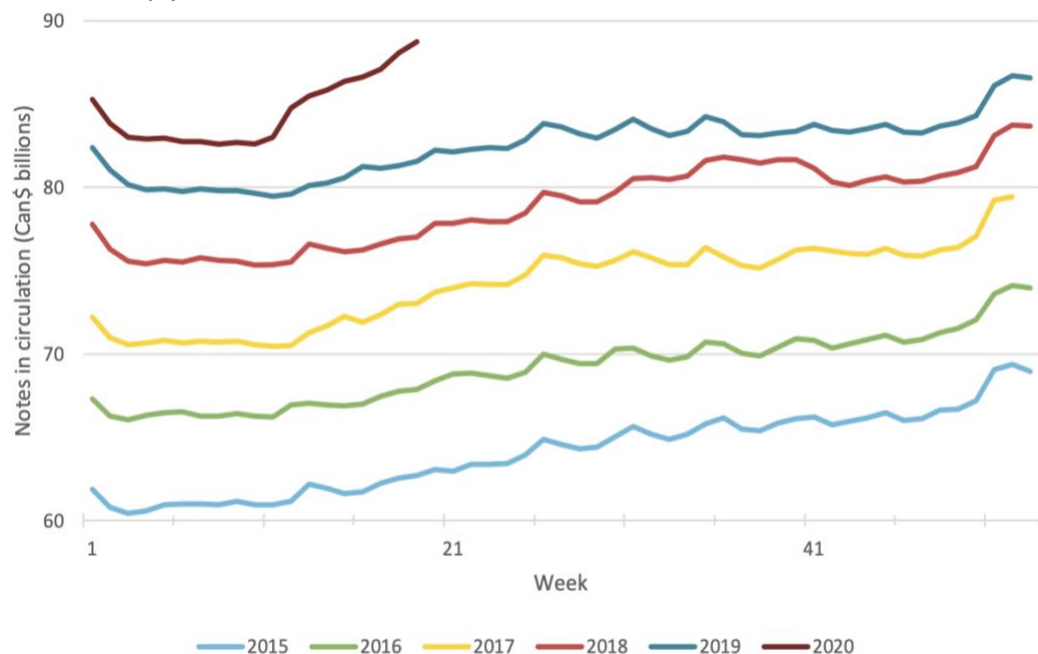
Source: Bank of Canada

We can see how the cash circulation in the first two months of 2020 increased much more than in the previous years.

Monthly Net Withdrawals from January 1998 to April 2020
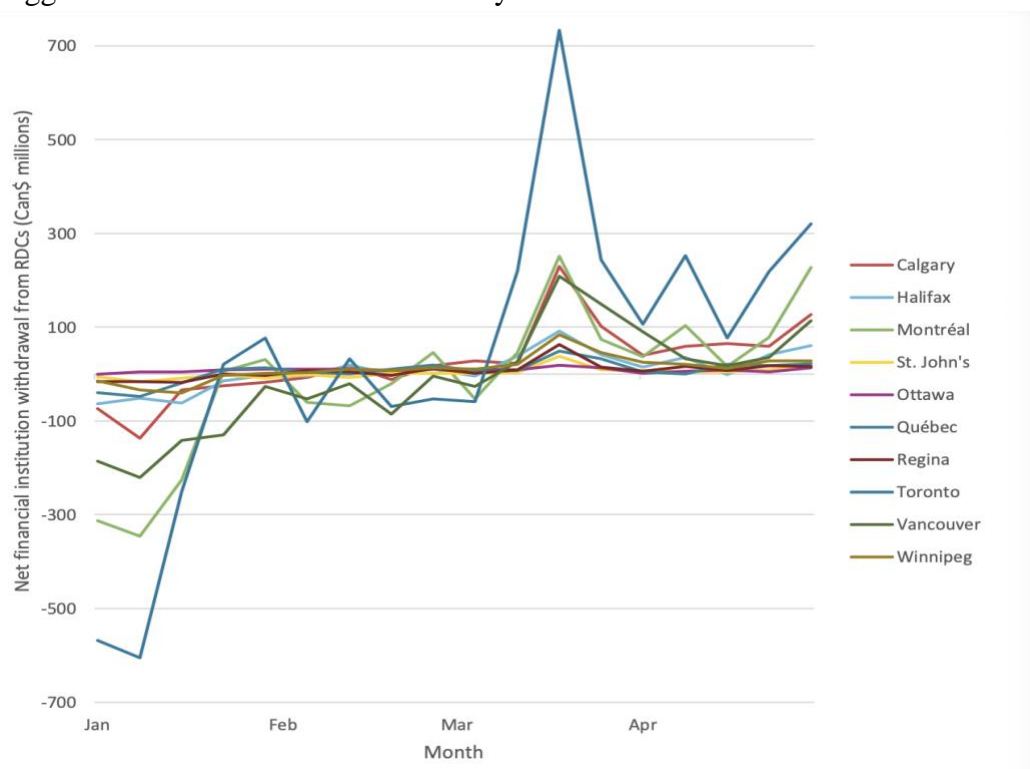

Source: Bank of Canada

The notes withdrawal in March and April represents the largest increase in NIC (notes in circulation) since 1998. However, since the dollar value has increased, it is normal that the extreme values have increased. For this reason, it is useful to observe the weekly percentage changes in NIC. We can, in fact, see that the changes in the value of the NIC in the months of March and April 2020 are larger compared to this same value in the previous months. Through this research, it can be confirmed that changes in the value of NIC between March and April 2020 are very large compared to the same data in the previous years. This trend is shared by the whole country, but it is particularly evident in the most important economic and populated cities like Toronto and Montreal.

Week-over-week percentage change in notes circulation since 2015
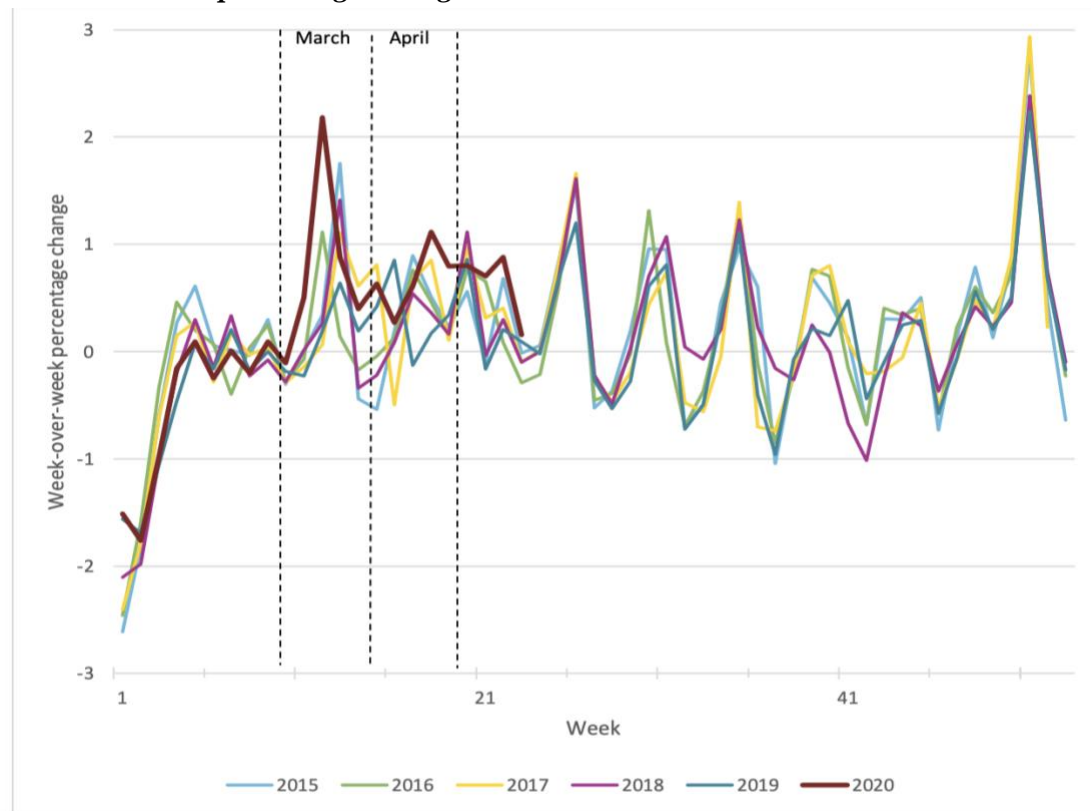
Source: Bank of Canada

It is however important to highlight that this increase in NIC is primarily focused in the biggest economic centres of the country.

Source: Bank of Canada

Fortunately, the Bank of Canada was ready for this situation: at the beginning of March 2020 the bank had increased its own supply of banknotes so as to be sure to be able to meet population needs. Before this increase in supply, the bank had filled 60% of the bank notes distribution system capacity. After the increase, 90% was filled, and by late April it reached 70%. This reduction of the bank's noted inventory is coherent with the large increase in the value of NIC in those two months.

This increase in NIC was mainly due to three reasons:

-Financial institutions were worried about potential problems in cash transportation services, so to avoid the risk of finding themselves without cash to handout, they increased their banknotes inventory.

-There had been a decrease in cash deposits from retailers to financial institutions, so the latter had to withdraw cash from the bank of Canada to withstand that shortage.

- Also, households demanded more cash as a precautionary motive.

The increase in the notes in circulation can also be seen in the increase in cash holdings from 2019 to 2020.

Canadians' cash on hand and other cash holdings

	Cash on hand		Other cash holdings	
	2019 CAS	2020 CAS	2019 CAS	2020 CAS
Median	$70	$85	$185	$225
Mean	$136	$158	$460	$523
	Proportion holding zero cash			
Share (%)	20	28	71	82

Note: The Cash Alternative Survey (CAS) contains "cash on hand" and "other cash holdings" measured in Canadian dollars. The mean estimates were winsorized at the 99th percentile in 2019 and 2020.

Source: Bank of Canada

This perfectly represents what previously stated, households are keeping more cash for precautionary reasons. At the same time this graph also highlights another very common trend, which is the movement towards cash alternatives, it can, in fact, be seen how the proportion holding zero cash increased from one year to the other.

It is clear that Covid 19 has changed the consumers' behaviour in the present, but let's see what the thoughts about the future are. Right now, 74% of Canadians have no plans to go cashless. This shows a change in attitude compared to 82% of Canadians that did not plan to go cashless in 2019. This is consistent with another study that shows an increase from 10% of the population that went cashless in 2019, compared to 19% that went cashless in 2020.

2.3 United States

In the United States too, Covid has increased the speed of some trends that had already started. Firstly, as already seen in other countries, there has been a significant increase in the notes in circulation, reaching the highest value ever touched. As a matter of fact, the currency in circulation increased more than 5% between the first two quarters of 2020. This period has been characterized by lower consumer spending in all business sectors. More specifically the use of digital payments has increased, while transactions at the point of sales decreased. Indeed, during the first months of the pandemic, it was clear how the virus was going to have a remarkable impact on consumer spending. Between the first two quarters of 2020 consumer spending declined by 9%. This situation has paved the way to large fintech's that saw an opportunity for digital payments-based business models. These trends will certainly continue in a post-Covid world, in which people will integrate the digital world more and more. This trend is supported by a Mastercard survey reporting that 51% of American consumers surveyed are using some kind of contactless payment. One of the main reasons for a change of behaviour regarding cash, are transaction costs, for example, taking time to go to the ATMs. According to the Argente's and Alvarez's "Cash-Management in Times of Covid-19", "A 10% increase in the total Covid-19 confirmed cases or deaths in their country increases the transaction costs of using cash by 0.2%" Consequently, the use of digital and contactless payments increased incredibly.

The US economy has reacted in a very efficient way: all the payment methods that reflected these characteristics have been promoted, like the issuance of contactless payments, promotion of digital payments and POS devices with contactless functionalities. Walmart is an example of this, with the introduction of QR code-based wallets. To better understand the impact on consumer spending choices, it is useful to analyse a summary of the descriptive statistics of the variables of interest in 2020 in the US.

	(1) Mean	(2) Std. Dev.	(3) Pct. 25	(4) Median	(5) Pct. 75
ATM Transactions	8.64	10.75	1.51	4.73	11.94
ATM Disbursements	1252.66	1485.06	232.92	713.08	1747.41
ATM Disbursements per Transaction	149.97	26.30	136.50	147.08	159.53
Cash Share (Expenditures)	0.13	0.04	0.11	0.13	0.15
Cash Share (Transactions)	0.03	0.01	0.03	0.03	0.04
Total Expenditures	9311.48	10460.00	1859.56	5732.00	13260.34
Total Transactions	249.28	278.01	50.46	155.48	352.65
Total Expenditures per Transaction	37.78	6.40	34.58	36.84	39.41
New COVID-19 Cases (Biweek)	64.25	300.27	1.71	6.69	27.72
New COVID-19 Deaths (Biweek)	2.57	13.92	0.00	0.08	0.69

Source: Cash-Management in Times of Covid-19, D. Argente, F. Alvarez

All these, except the last two rows regarding Covid cases and deaths are daily averages taken after 21 January 2020.

Cash Share (Expenditures) represent all the expenditures that have been carried out with cash over total expenditures and is 0.13. While Cash Share Transactions represent total ATM transactions over total transactions and is 0.03. This shows how the size transactions that do not include ATM disbursements are small.

It is possible to observe that the distribution of the transaction is right skewed, since an average country in the study has 8.64 ATM transactions per day, while the median country has only 4.73.

Let's now analyse in detail how the Pandemic has altered consumer's habits regarding the use of cash.

Transaction Expenditures, Cash-Credit and Covid-19 Index

(a) Total Expenditures   (b) Cash-Credit
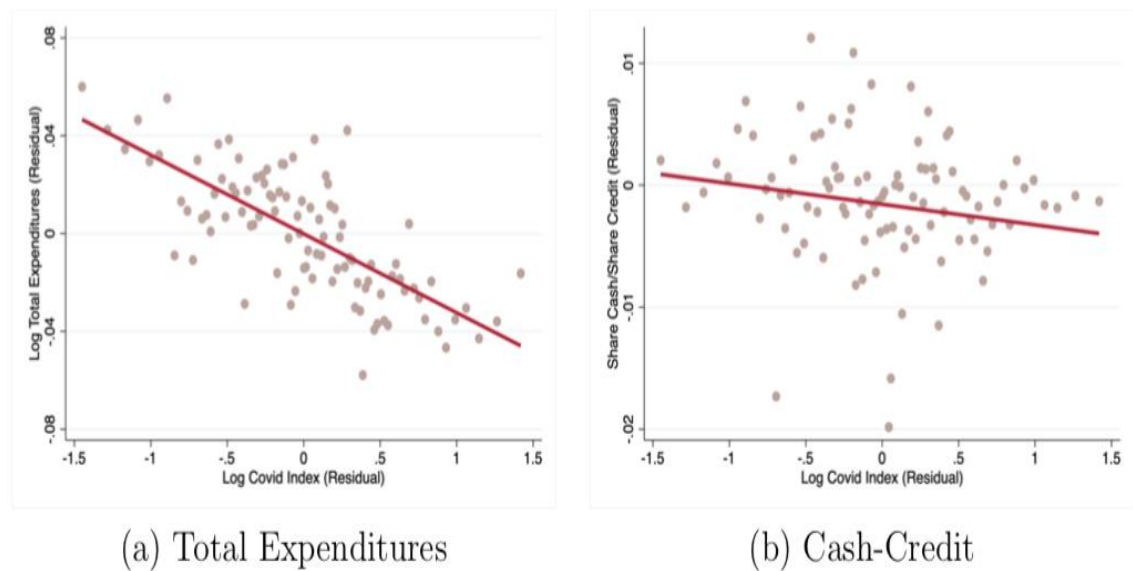
Source: Cash-Management in Times of Covid-19, D. Argente, F. Alvarez

These graphs show that as pandemic worsens, total expenditures decrease. The fact that cash is being substituted by other methods of payment can be seen by graph B in which as the intensity of the virus increases, the use of cash decreases while the use of cards increases.

Also, as previously stated, interesting to analyse are transaction costs, showing that as the pandemic continues it becomes gradually more expensive to withdraw cash.
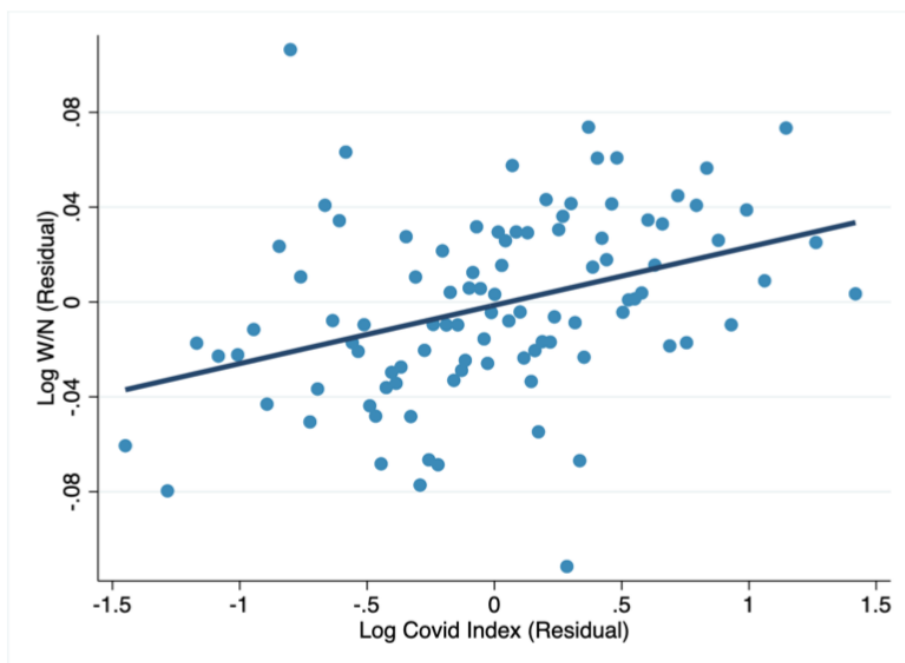
Source: Cash-Management in Times of Covid-19, D. Argente, F. Alvarez

"Note: The figure shows the relationship between the transaction cost of adjusting the stock of cash (W/N) and the COVID Index. Both variables are plotted after controlling for county and time effects. The transaction cost is approximated using the ratio of the daily average size of withdrawals and the daily average of total ATM transactions for each county at the bi-weekly level. COVID Index$_{it}$ = (Cases$_{it}$)1/2(Deaths$_{it}$)1/2, where Cases$_{it}$ are the total confirmed cases in the county over the last 14 days and Deaths$_{it}$ are the total confirmed deaths over the last 14 days in county i and period t."

In summary, we see how consumers are using less cash both because of a general decrease in consumption but more interestingly because they are switching to digital methods of payment.
In a landscape of such changes, households end up being worse off, having to go more often to the ATM due to the cost of inflation and having to pay a higher cost per single transaction. We must also take into consideration that switching to other methods of payment also has a cost since cash is not perfectly substitutable with digital methods.

Net spending of US consumers
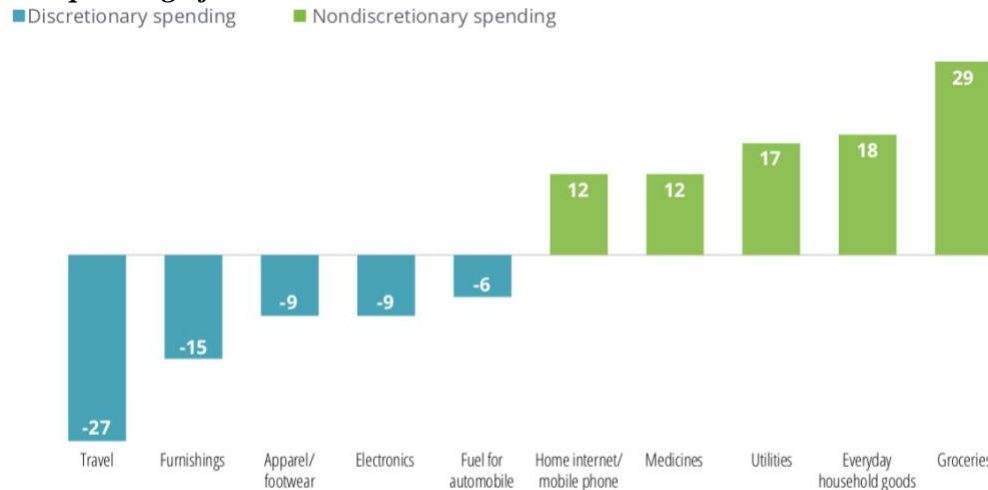
Source: Deloitte

Consumer Spending already in the first months of the pandemic has decreased by 40%, and we can clearly see the sectors that mostly got impacted by the pandemic. In such a period, it would have been fundamental to invest as much as possible in contactless payments terminals and to create traffic net partnerships between Pos providers and online merchants. As we stated, currency in circulation experienced a significant growth in the first months of the year, indeed according to the CPO, already at the beginning of March, when the first stay at home orders were issued the Federal Reserve issued 130 billions of currency into circulation.

Yearly Cumulative Growth of Currency in Circulation (CIC)
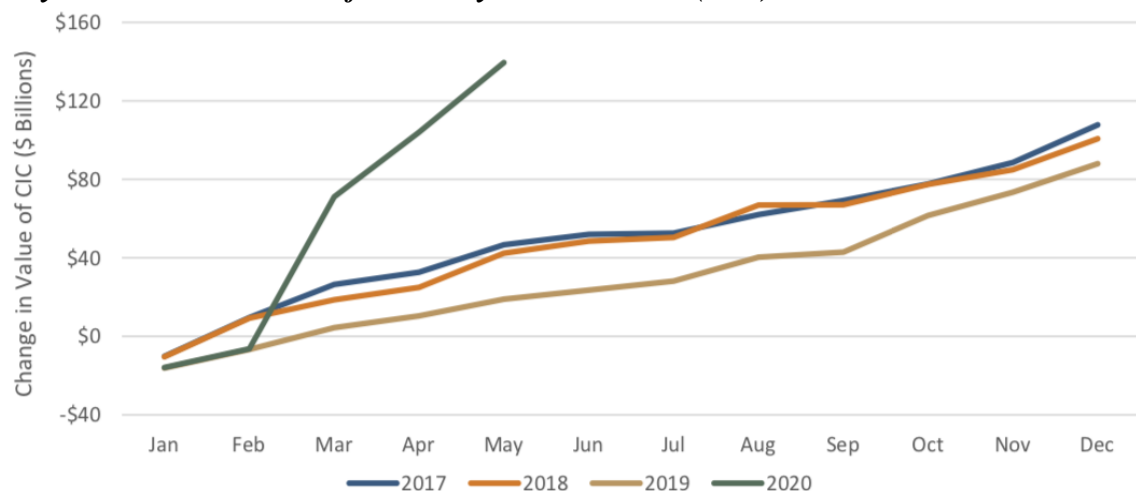
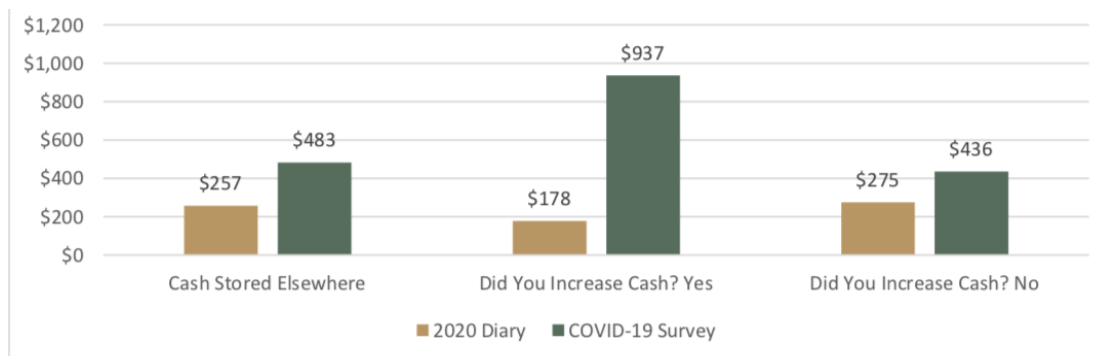*Source: Cash Product Office Federal Reserve system*

This phenomenon of an increase in the notes in circulation is strictly linked with an increase of consumer cash holdings. Two thirds of the respondents in fact stated they have not made any in person payments since March 10, proof of how people are not spending their extra cash holdings. As a matter of fact, from 2019 to 2020 we can see how the cash on person increased from 69 dollars to 81.

Cash held in pocket purse or Wallet
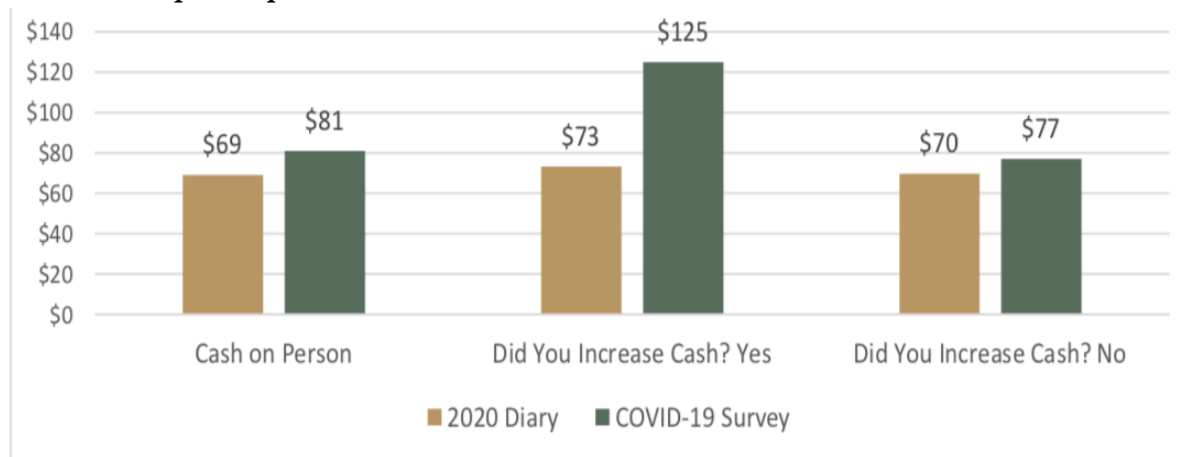
Source: Cash Product Office Federal Reserve system

Cash stored elsewhere

Source: Cash Product Office Federal Reserve system

It is also important to see how the value of cash stores elsewhere compared to the pre pandemic period increased for all the respondents' groups, it can, in fact, be seen how in average "cash stored elsewhere" nearly doubled going from 257 dollars to 483. It is clear how the use of cash has been changing because of covid, people are holding it more but not spending it, as a proof of cash being kept for precautionary reasons and as a contingency payment method. Meaning that its transactional use has decreased while its role as a store of value has increased.

2.4   Focus on selected European countries

2.4.1   Italy

The pandemic has severely impacted consumer spending habits in Italy, especially if we consider that this was one of the first countries to be exposed to Covid restrictions. The negative consequences were perceived immediately and were reflected in all aspects of everyday life. According to Istat, consumer spending on final goods decreased by 10,9% in 2020. The year, according to Nexi's 2020 Financial Statement statistics, began really positively in terms of total volume of transactions, with an increase of 13% and 5% in number and value respectively. Ever since the end of March the number of transactions decreased by 50%, thus depicting a general decrease in consumer spending. As time passed, the restrictions have loosened up and this has been reflected in the number of transactions that in the first week of August increased by 6%. At the end of 2020, the imposed Covid restrictions caused by the "second wave" had an immediate impact on the transaction volume. Indeed, its number decreased considerably in particular in the tourism, restaurants and entertainment sectors. On the other hand, consumption of everyday needs seems to be moving to the opposite direction as restrictions increase their demand increases too.

ISTAT data show that the decrease in consumer spending has been accompanied by an increase in propensity to save up to 15,8%. This increase in savings resulted from the uncertainty of that period and of the future, and to fewer occasions available to spend money as a consequence of the lockdown: in 2019 the propensity to save was almost half, 8,2%. The buying power, too, which is disposable income expressed in real terms, decreased by 2,6% in 2020, stopping a positive increasing trend that had started in 2014.

Years 2000-2020, percentage values, percentage changes"
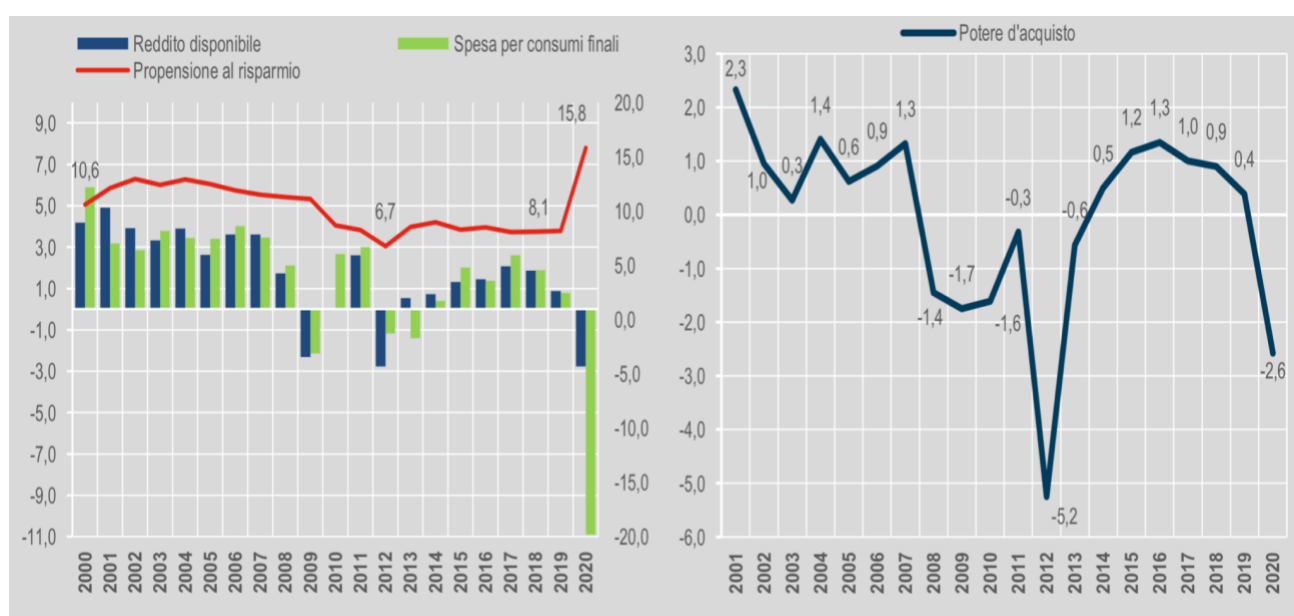

Source: Istat

In the chart on the left the blue represents disposable income, the red propensity to save and the green final consumption expenditure. In the chart on the right the blue line represents buying power. In this landscape characterized by a clear trend of decreasing consumption, the use of contactless payment has increased: 37% of the total transactions carried out in 2020 are with a card. The value itself has considerably increased: in the first semester the value of contactless payments has reached 31.4 billion euros, that is +15% compared to the first semester of 2019. This movement towards cash alternatives had already started before Covid-19 thanks to both technological development and to an increase in efficiency and safety of these kinds of payments.
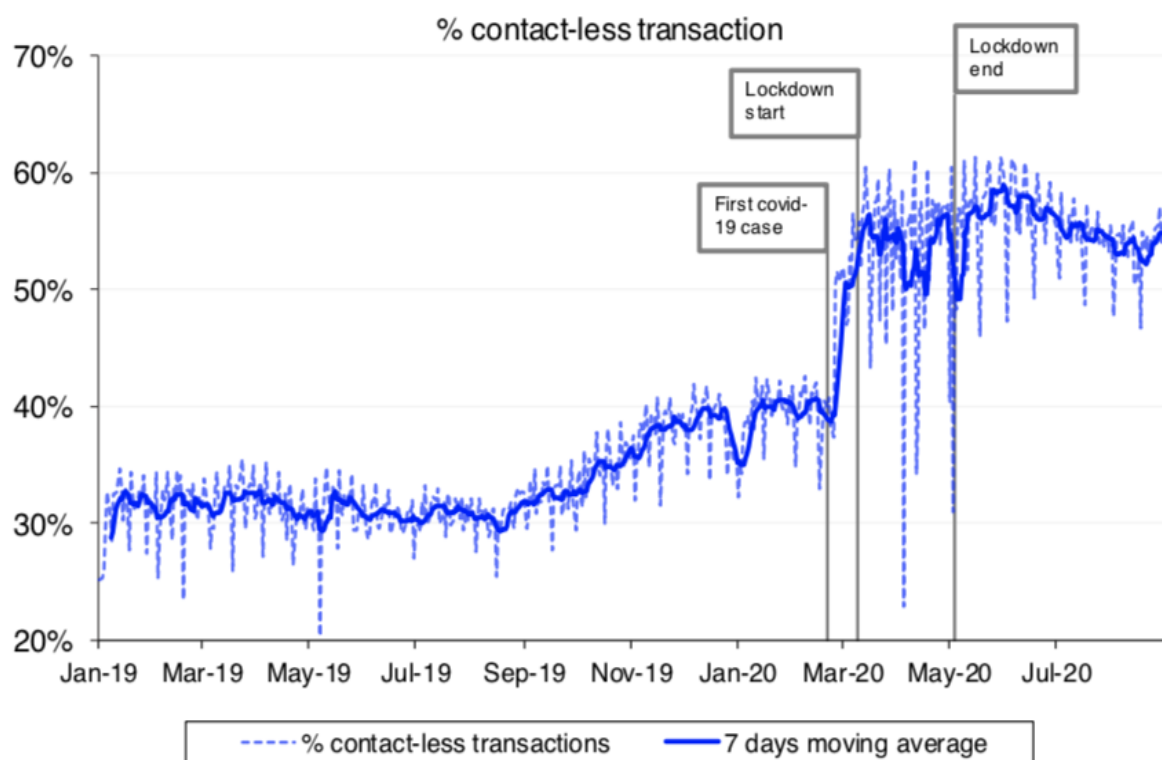
Source: "A Game Changer in Payment Habits, Evidence from Daily Data during a Pandemic, G. Ardizzi, A. Nobili, G. Rocco"

In the latest edition of the "Osservatorio of Innovative Payments" released by the School of Management of Politecnico di Milano we can analyse more deeply this information. In the first 6 months of 2020, digital payments decrease at a much lower rate compared to general consumption. It can be observed that the former has shown a decrease of 6.3%, while the latter is characterized by a decrease that ranges between 10.4% in Q1 and 29.7% in Q2. This phenomenon is also clear by observing in Ardizzi's paper "A Game Changer in Payment Habits", as, with the outgoing of the virus the Cash/Card ratio decreased in both value and volume. This is significant as it highlights

that in a context in which general consumption is overall decreasing, consumers are facing a transition towards digital methods of payment.
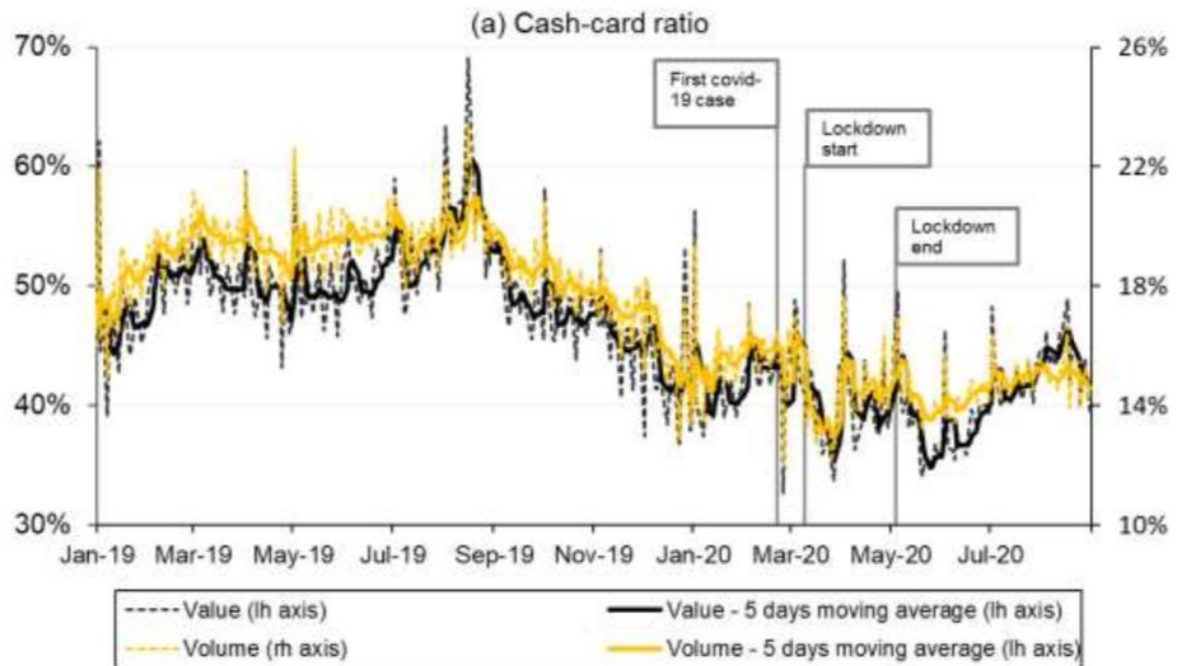
(a) Cash-card ratio

Source: "A Game Changer in Payment Habits, Evidence from Daily Data during a Pandemic, G. Ardizzi, A. Nobili, G. Rocco"

According to Nexi, one of the most important digital payment providers in Italy, over the years alternative methods to cash have been in constant development. In 2019 contactless payments increased by 56% in value and 67% in volume of transactions. While in-shop mobile payments increased 244% reaching a value of 1.8 billions. What has really changed is the use of smartphones to carry out in-store transactions and the use of contactless payments. We can compare these two 2020 data with 2019 and see that in the first semester the use of smartphone has increased by 80% and the value of contactless payments by the end of the year will reach around 76 billion euros compared to the 63 billion euros of 2019.

Covid is profoundly changing customers' habits, both owing to a general decrease in consumption and even more to the fear of contracting the virus. People try to avoid contact as much as possible and this includes touching cash and the POS machine for the pin code. Since January 2020, 760 million contactless transactions have been registered, 17% more than in 2019. It is also interesting to see how the use of ATMs has changed, both in terms of number of transactions (-23%) and volume of transactions (-15%). Nexi estimated that already in the first five months of 2020, the volumes of POS transactions decreased by 3.9% compared to the first five months of the previous year.

It must also be analysed how the lifestyle we are obliged to adopt has a profound impact on the kind of transaction done. Credit cards, which are used a lot for big purchases, also in the tourism and business travel sectors, have been hit very badly,

experiencing a decrease of 18.8% from 2019 to 2020, reaching 33.1 billion euros in value. Debit cards have been impacted less severely, positioning themselves as the favourite method of payments in store, decreasing by only 4.2% compared to 2019. What is interesting is that the use of prepaid cards has increased by 13.3% compared to 2019, due to the fruition of Citizenship Income. Generally, however, the use of cards has decreased by 6.3% compared to 2019. In particular, also the average receipt decreased by 4.4% in 2020 at 52 euros, this is mainly the result of the decrease of large online expenses like air tickets. For what regards e-commerce, card transactions over the total have increased from 25% before lockdown to 40% in April 2020.

Starting in 2020, both private and public initiatives that incentivized the use of digital payments have been very important. For example, providers such as Nexi worked hard in the first months of the pandemic to help businesses in the transaction towards the digital world. It launched the Pay-by-link service, useful for those who do not have an ecommerce platform yet and the "Nexi Welcome" which is a mobile POS with no fee.

In the latest release of the Recovery Plan, 4.75 billions have been destined to the promotion of digital payments, with the Cashback program as the most important initiative: the refund by the Government of 10% of the consumers' expenditures is financed by 1.75 billions in 2021 and 3 billions in 2022. Consumers that are registered with the Government app "IO" and make in-store purchases with a bank card have access to an automatic partial refund. Nexi had an important role in this process, facilitating the participation of the program to all its customers by granting access also through its app, furtherly increasing advantages. Indeed, for all the users that subscribed through Nexi Pay, all the purchases made with smartphones in addition to the ones with cards were immediately counted. On the day of the "IO" app launch the system received 7.6 million downloads, as a demonstration of the success of the initiative. In December 2020 5.79 million Italians participated in the program via the IO App, and another 9.5 millions via other registered cards, for 49.6 million transactions. The Cashback has been an important initiative that boosted sales for all kinds of shops, including local small craftsmen's shops that really have faced and are facing difficult times. It is also part of a long-term strategy of reducing cash payments to decrease tax evasion in the country, with legal limitations imposed on payments in cash - it is now 2.000 euro, and it will be further decreased to 1.000 euro in 2022 - and legally mandatory requirement to have a POS for all retailers. With the Cashback, the Government hopes to get an extra fiscal revenue of 4.5 billions until 2025, thanks to the combined effect of an incentive to spend and minor tax evasion.

Another important related Government programme is the Receipt Lottery, a system that rewards customers that shop in brick-and-mortar stores using digital means of payments. For every euro up to 1000, the customer receives a virtual lottery ticket, connected to the purchases. In order to access the lottery, the personal code of the customer must be shown to the merchant when doing the purchase. The lottery has started in February 2020, and already in March the tickets have been 22.3 millions, with an increase of 33.6% vs the previous month.

2.4.2   UK

According to the Bank of England, a decreasing trend of banknotes use started over a decade ago. In 2009 58% of all payments were done with cash, moving to 2014 in which 48% were done in cash and finally to 2019 in which this percentage decreased to 23%.

Forecast of UK Finance show that this trend will continue until reaching the level of only 9% of all transactions carried out using cash in 2028. However, Covid 19 and all that followed could further increase this trend, reducing even more the share of cash used. This goes hand in hand with an increase in contactless payments. In the UK, thanks to a constant increase in card acceptance, and rollout of contactless cards, consumers are getting more and more familiar with these technologies. Data support this trend: in 2015 only 3% of transactions were carried out using contactless cards, moving to 15% in 2017 and 21% in 2019. At the end of 2019 there were 132 million contactless cards, and from 2020 every bank issued payment terminal will be able to accept contactless payments.

*Payment volumes (millions 2009 to 2019)*
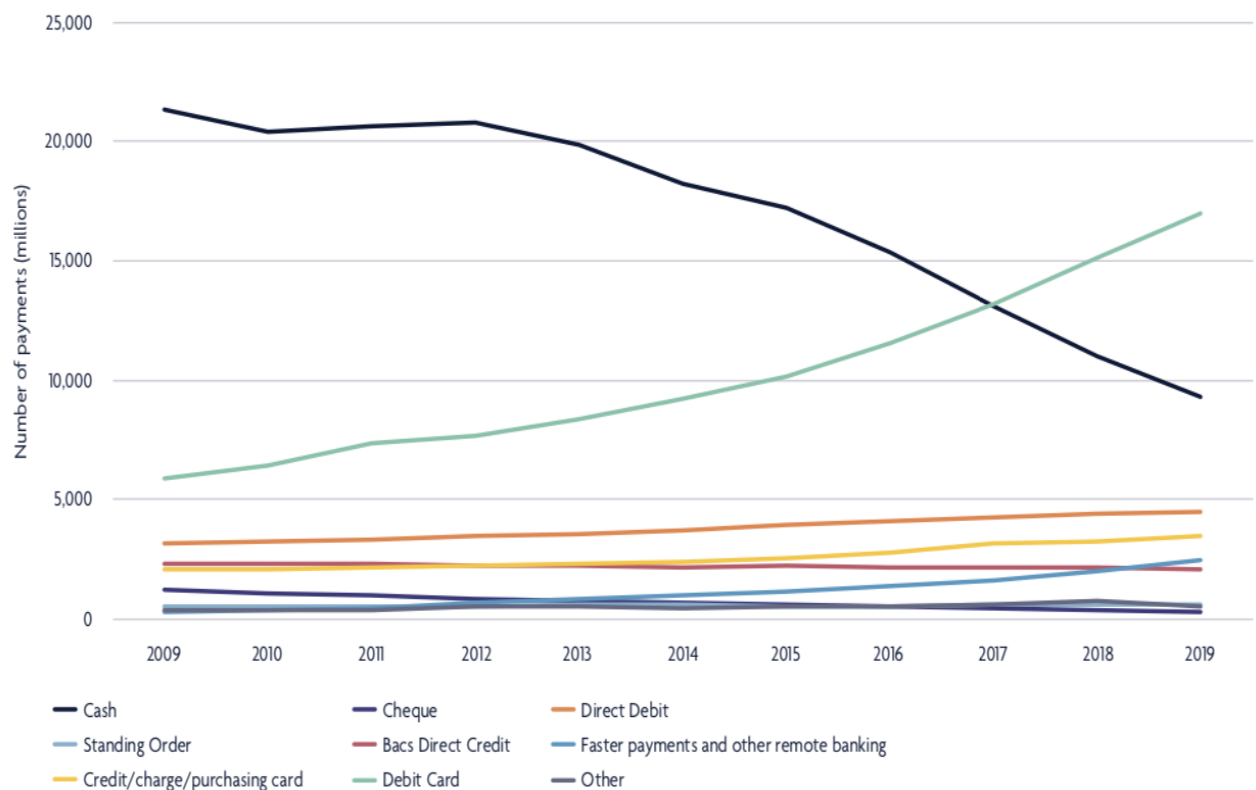
Source: Bank of England

At the same time, however, there has been a continuous increasing demand for banknotes: between 2005 and 2017 the amount of circulating banknotes doubled. This phenomenon has been called the "paradox of banknotes". This paradox could be due to cash being used for different reasons, so shifting its main function from being a medium
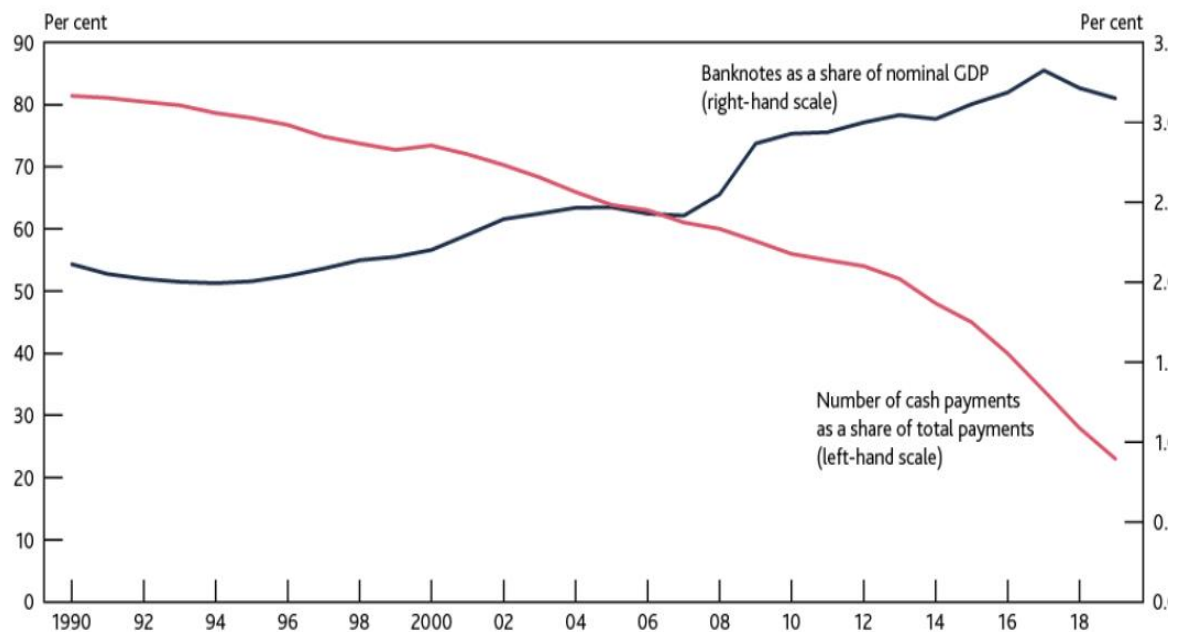
of exchange to a store of value. During the pandemic there has been a substantial increase in cash demand for various reasons. To start with, people are holding more money for contingency reasons, not ignoring the fact that due the numerous restrictions the possibilities of using cash are very limited. Equally interesting is how banks have increased cash holdings so as to be ready to accommodate potential spikes in its demand. Much less is being used in transactions reflecting both a decrease in consumer spending in general, and most importantly a shift towards digital payments. In fact, in 2019 only 23% of all payments were made using cash, compared to 60% of the previous decade. The fact that more and more people are choosing to keep money as a store of value could depend also on some macroeconomic features like low interest rates, so a low opportunity cost of not keeping money in the bank and low inflation.

Cash use has declined, but the demand for banknotes has increased
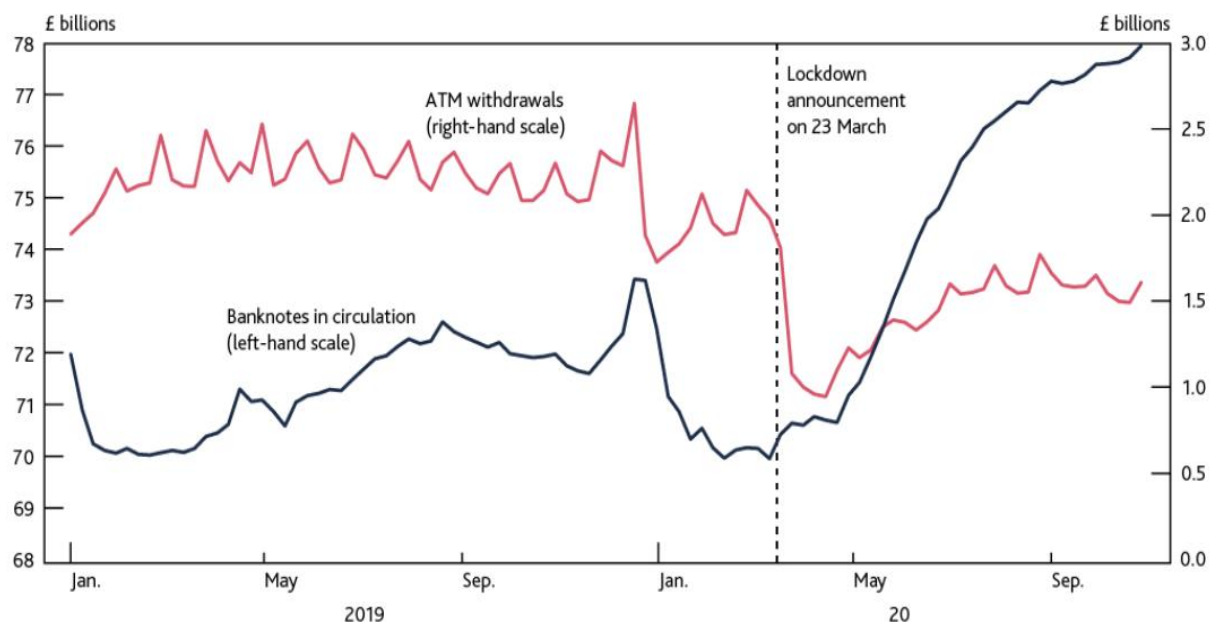
*Source: Bank of England and LINK ATM Network*

Cash Payments have declined, but the value of banknotes in circulation has risen

Per cent (left-hand scale) / Per cent (right-hand scale)

Banknotes as a share of nominal GDP (right-hand scale)

Number of cash payments as a share of total payments (left-hand scale)

Source: Bank of England statistics and UK Finance- UK Payment Statistics

  Covid and the lockdowns accelerated this trend even more. Data show that in March 2020 the volume and the value of cash withdrawn from ATMs were 60% lower than in March 2019 because of a possible lockdown. This was still quite accurate in October where these variables were still 40% lower than in the previous year.
London, the city most visited by tourist, has been the most severely impacted from this point of view. Tourist hot points have most severely suffered this reduction in ATM use. Between April and September withdrawals decreased by up to 81%.

ATM withdrawals have fallen sharply

Weekly withdrawals, £ billions

2018   2017   2019   2020
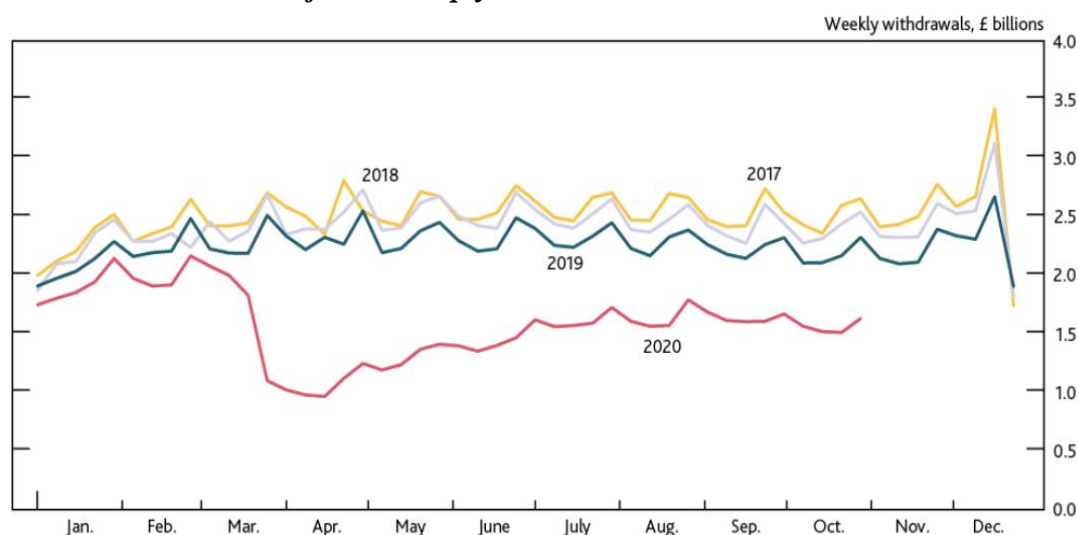
Source: LINK ATM network

The trend of the banknote paradox also continued to be valid in Covid times. When the first lockdown was announced, there was an increased demand for banknotes. In periods of uncertainty, it is shown that households prefer to hold cash.

The value of banknotes in circulation has increased since March
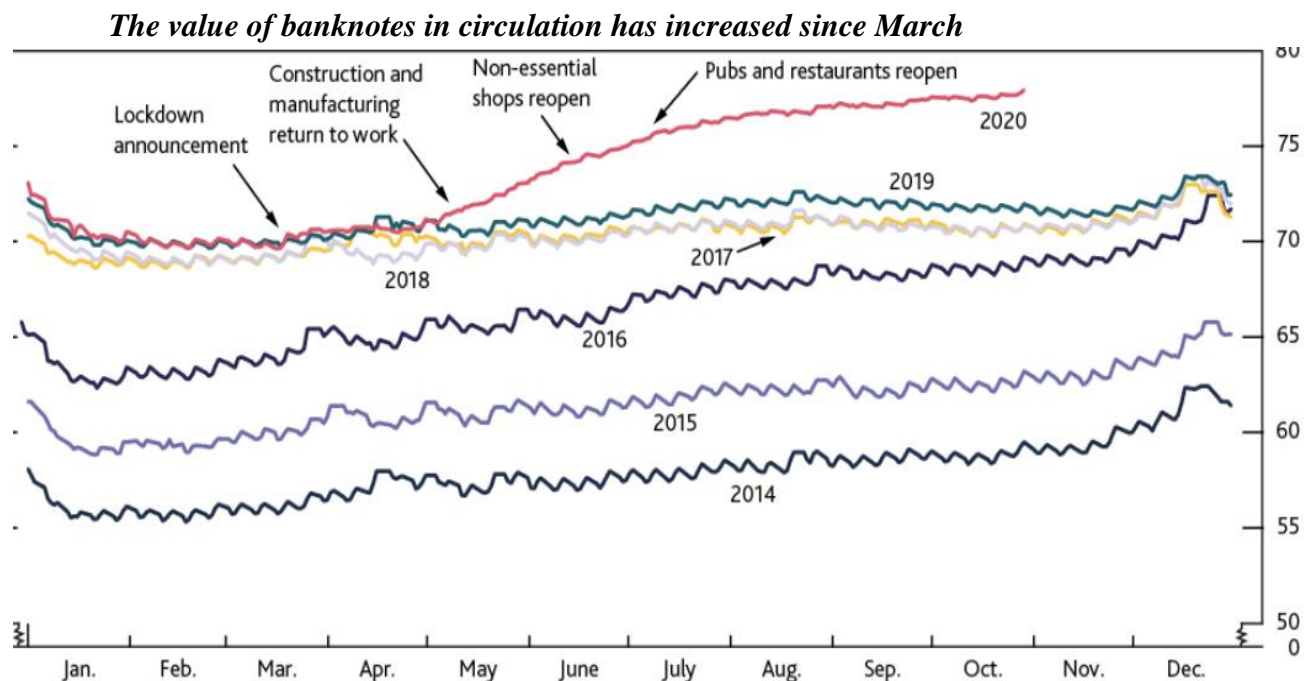
Source: Bank of England

An important factor is that there has been a fall in consumption altogether, as households had fewer occasions to spend since shops were closed during lockdowns. This can also be observed from the data that Visa provided: expenditure with debit and credit cards also decreased by 30% in April. In addition, also contactless card volume and value of transactions fell by 40%. From April to June both ATM use and electronic payments started to recover; this recovery stopped in June for the former but continued for the latter.

Covid has also caused an important increase in online shopping. In September 2019, it accounted for 19% of retail spending, against 28% in September 2020 with a peak in June of 33%. However, Covid also modified purchasing experience in physical shops. Many stores are not willing to accept cash anymore and there is a general trend of using contactless payments to avoid any possibility of virus transmission. This trend has led people to getting used to not dealing with cash. As a matter of fact, 44% of the respondents declared they could go for more than one month without using cash, against 32% in the pre-Covid period.

2.4.3   Sweden

Sweden is a very peculiar country, because in the last ten years cash has been decreasing at a faster rate than in any other country, since the Swedish government has enacted many measures decreasing the attractiveness of cash. An example was the introduction of Swish, a mobile payment system which turned out to be a very

convenient alternative to cash. Sweden can be in fact considered a cashless society. According to Statista, in 2018 it was among the countries that conducted the highest number of cashless payment transactions. These trends can also be noticed in everyday life, in effect, many businesses like restaurants do not accept cash and many bank offices and people do not use nor hold cash.

What is so atypical in the Swedish case, is that usually with an increase in GDP the volume of banknotes increases while with an increase in interest rates it decreases. In the last ten years, Sweden has exercised both an increase in GDP and a decrease in interest rates, but still has been able to decrease the volumes of cash. However, what has really made the difference has been combining measures enacted to make digital payments more convenient and cash more complicated to handle: "measures against tax evasion and the banknote and coin changeover" (Riksbank). This is because cash does not leave any trace and, therefore, it is used to avoid taxation. In 2010 a cash register was introduced, which forced the business that accepts cash to have an approved cash register and print the receipt at every transaction. This is one of the measures enacted to reduce tax evasion and the demand of cash.

On the other hand, Riksbank, the Swedish national bank, during the period from 2012 to 2017, carried on coins and notes changeover. "This measure increased costs of handling cash, because when enacted old banknotes become invalid and must be given to banks as a buffer." (Riksbank). It has in fact been observed over the years how during changeover periods cash in circulation drops significantly. These are all situations in which holding and using cash becomes more and more complicated, and this is what leads people to getting used to using digital payments.

Another aspect that really distinguishes Sweden from other European countries is the safety of using cards in the country. Even though the use of digital payments is constantly increasing, the number of card frauds is among the lowest in all the continent.

Number of card frauds
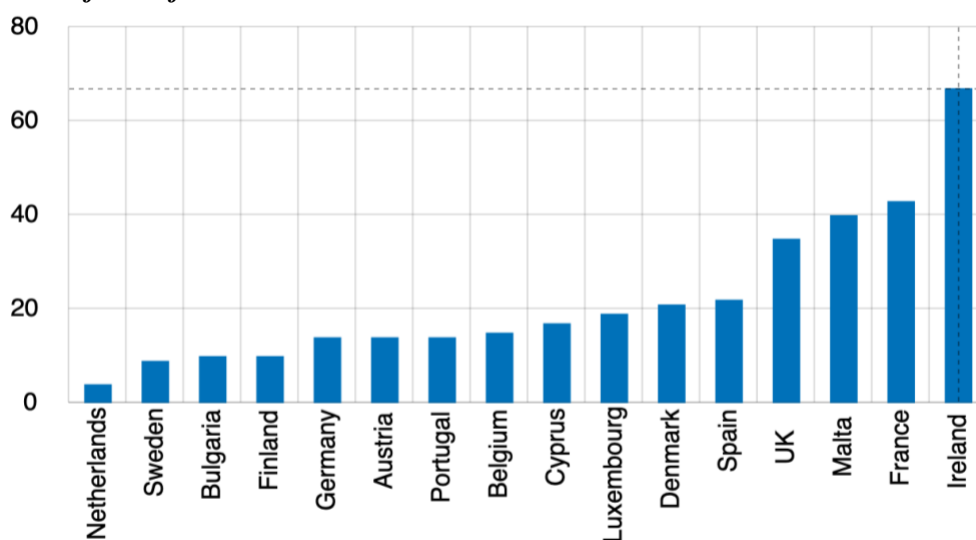
Source: Riksbank 2019

As in other countries, also in Sweden 2020 was characterized by some clear trends. Owing to the numerous restrictions, in particular in the first months, consumption decreased, together with the number of transactions. On the other hand, contactless transactions have increased incredibly: 60% of card payments are contactless, compared to 40% in January, also because of the modification of the max payment limits from 200 kronor to 400 kronor. In this landscape, E-commerce and more generally digital and mobile payments have gained more and more popularity. Among the most used instruments there are Swish, Google, Apple pay and also cryptocurrencies.
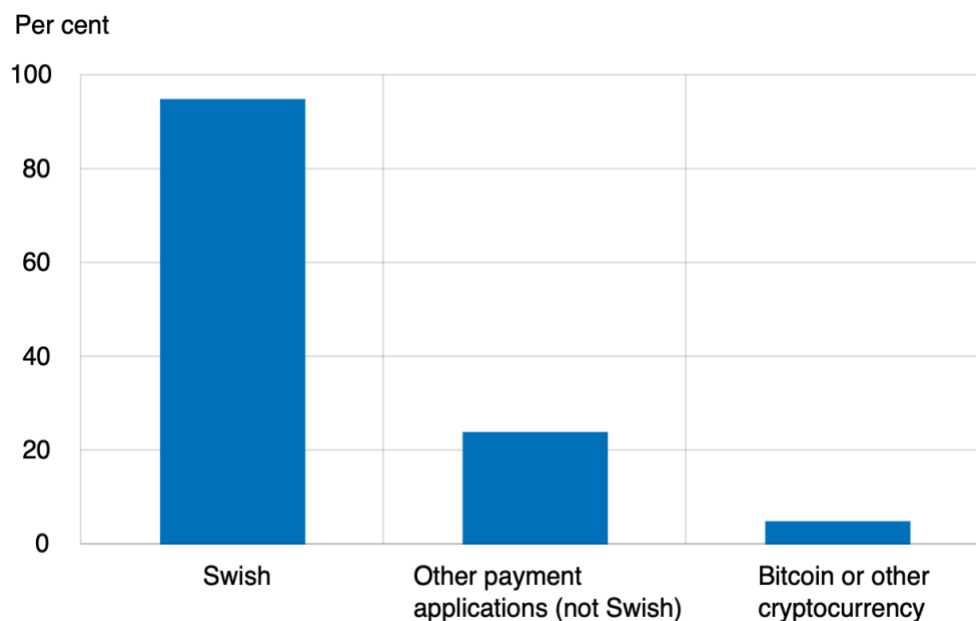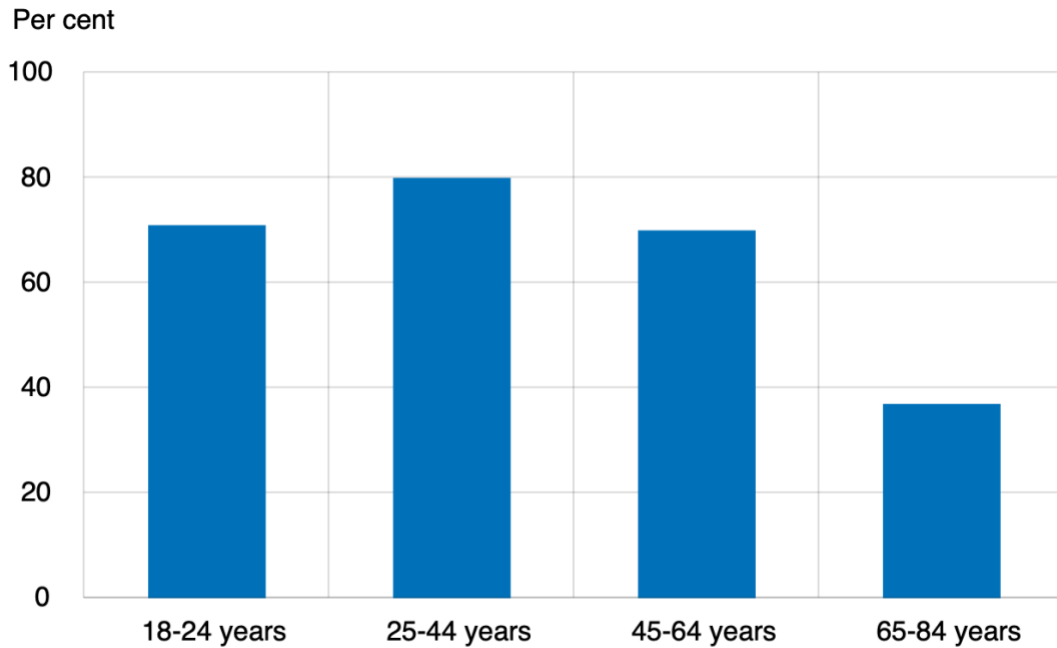

Source: Riksbank

This graph shows how the percentage of 18-24 year olds is spread among those using digital instruments. The fact that 5% of young Swedish owns some kind of cryptocurrency highlights how Sweden's mentality is directed towards a cashless society.

How the use of electronic Commerce is increasing over the years can be confirmed by the Riksbank's survey, that stated that in "2020, 66% of respondents state that they have purchased goods and services on the Internet in the last 30 days. In 2018, the corresponding figure was 56%. It is most common in the age group 25-44, where 80% state that they have bought something over the Internet in the last 30 days. But it is becoming increasingly common in other age groups too."

Percentage of people that have shopped online in the last 30 days

Per cent

Source: Riksbank

It is also fundamental to notice how the use of cash decreased during the pandemic. In the last year consumer's habits have completely changed, the occasions in which cash could have been used were limited. In addition, cash in Sweden was primarily used by elderly people which is the category of the population that needed to be more careful and hence stay more at home.

*Percentage of people paying in cash for their last purchase*

Per cent
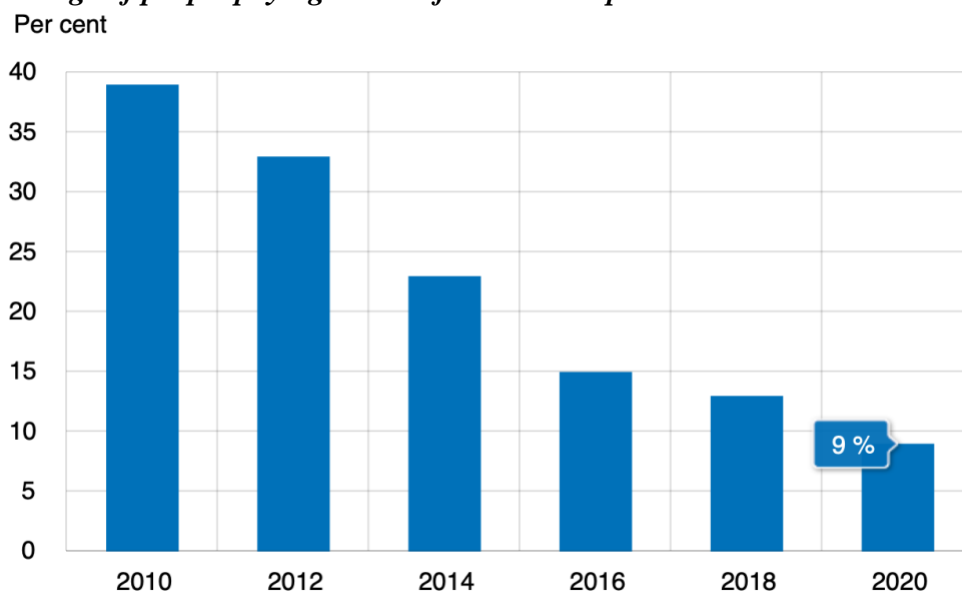
From 2010 to 2020 the use of cash declined by 30%, nowadays cash is mainly used by elderly people and for small purchases. Another important aspect of Riksbanks' survey was related to the use of cash in the previous month: in 2020, 50% of the respondents declared to have used cash in the last month, compared with 61% in 2018. "Credit cards are now also more common than cash" (Riksbank), it has been observed that debit cards are now the most used type of payment in physical shops, no matter the size of the transaction. This is very significant, since usually cash is the preferred method of payment when handling small payments.
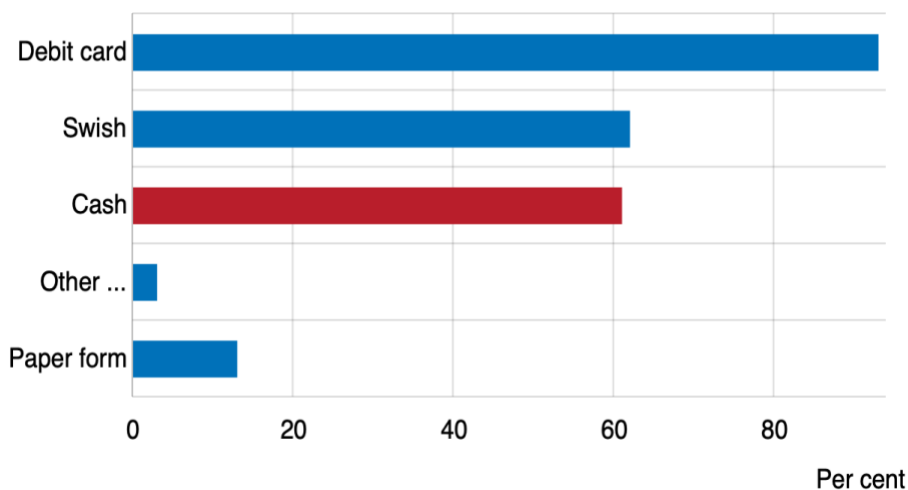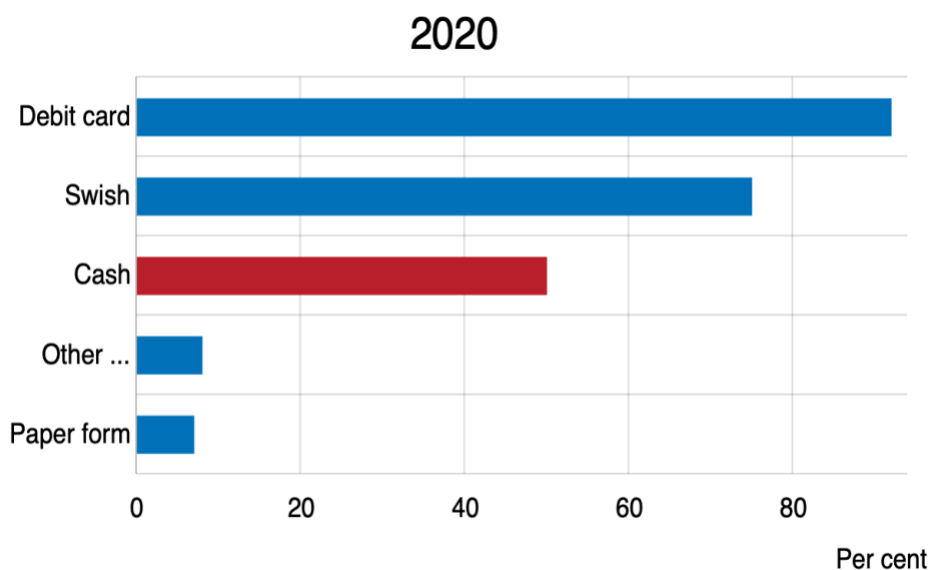
Means of Payment used in the last 30 days
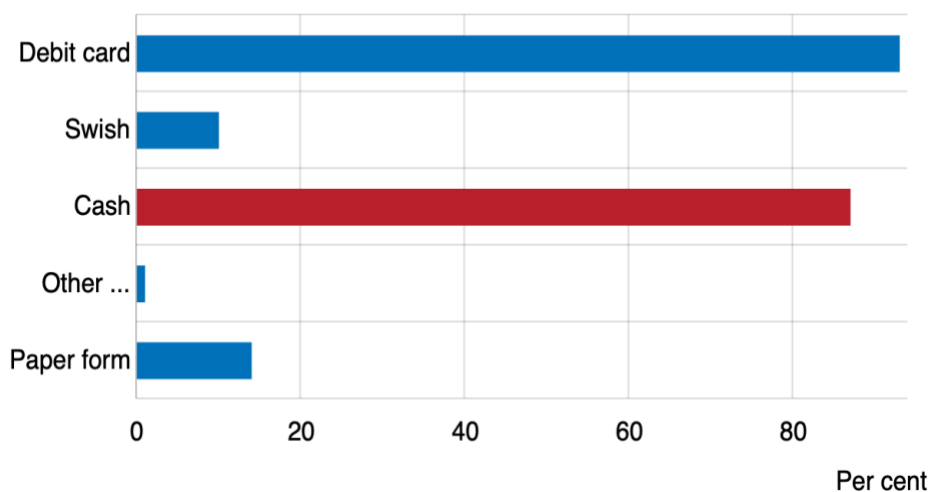
Means of Payment used in the last 30 days

Means of Payment used in the last 30 days

2020

It is clear how the decrease of the use of cash is a trend that started many years ago, but the pandemic increased its speed, it can in fact be noticed that in 2020 Swish was used much more than cash.

It is interesting to notice how the decrease in the use of cash is evident for all value of transactions with cash, in fact the yellow bar, that corresponds to 2020 shows always the smallest percentage.

Cash usage in Sweden from 2010 to 2020, by payment size
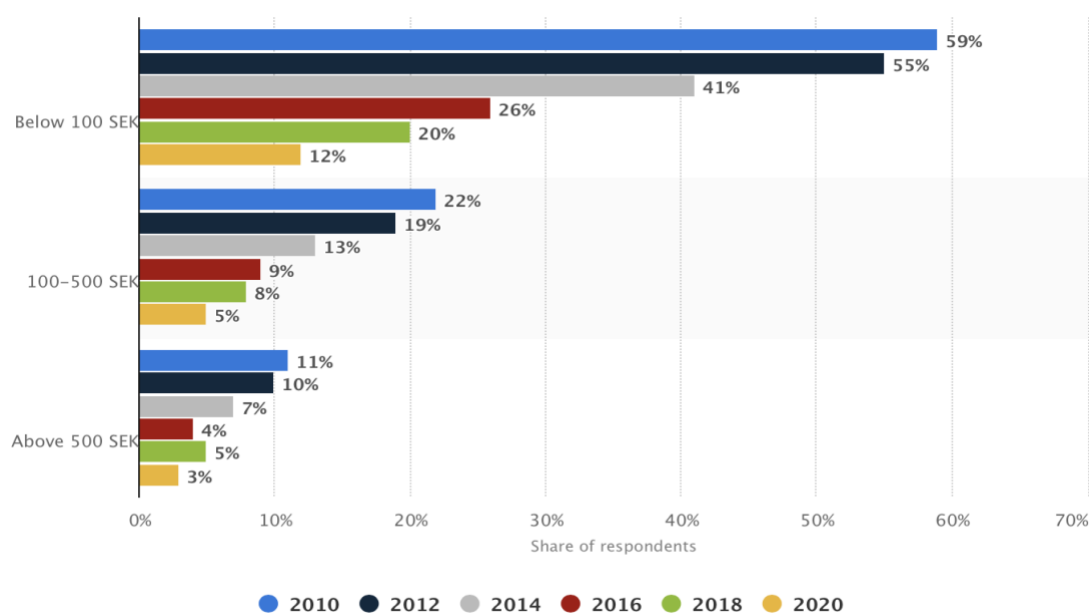
While as we said the use of credit cards, and even more debit cards, increased significantly over time.

Number of Payment card transactions in Sweden from 2013 to 2019, by type of card
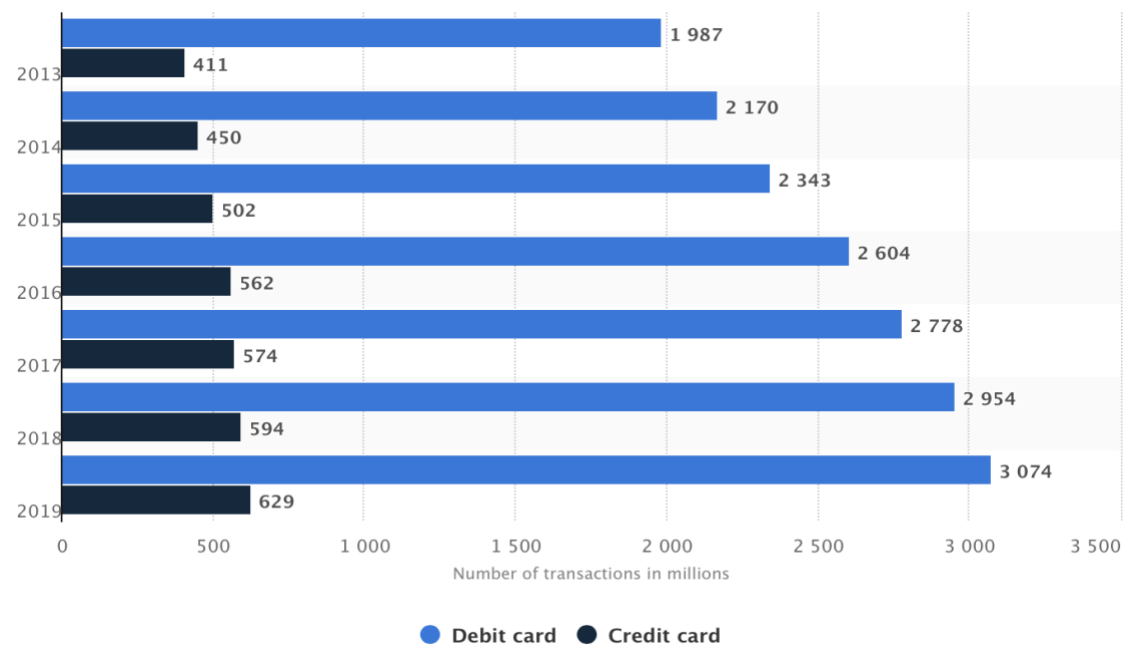
Source: Statista 2021

In addition, according to Statista, already in 2018 "more than 40% of Swedes withdrew cash from ATMs less than once a month. Only 6% withdrew cash once or a few times a week". While in 2020 the use of ATMs furtherly decreased.

Data on ATM withdrawals

Statista 2021

3   Case Study: Italy

3.1   Methodological approach: Survey on the consumers' spending habits before and in Covid-19 times

In order to verify in concrete, the previous analyses, I have also conducted an online survey on a specific case.

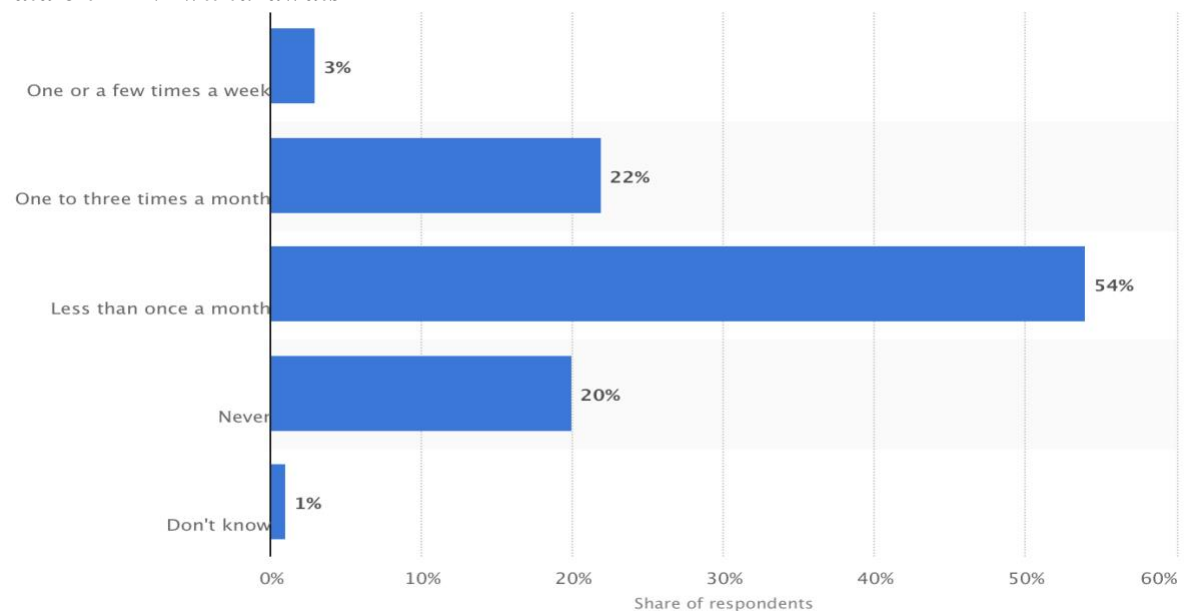The objective is to analyse whether all the trends regarding consumer spending habits that have been observed until now in the various countries also occur when taking into consideration a smaller sample.

The examined case concerns Italy, with a questionnaire involving a cross-section of 391 respondents ranging from 15 to 71+ years, 54% being male and 45% female.

The respondents are a valid representation for Italy, since I have carefully organized it so as to randomly reach all different kinds of people. The results in fact show how all ages have been targeted: 36,2% of the respondents are between 15 and 25 years, 12.5% between 26 and 35, 13.8% range between 36 and 50, moving to 27% between 51 and 70 years and lastly 10.5% of the respondents being over 71 years.

In addition, this sample of respondents also come from different job environments: 33.9% are students, 28.3% employees, 20.7% freelancers and lastly 17.1% are retirees.

The final objective of this analysis is to understand how cash and digital instruments use has varied with Covid. It is however fundamental to take into consideration an underlying truth, that with the pandemic overall consumptions have decreased. This has been shown in the analysis of all the countries above and it is also backed up by the survey, where 66.8% of the respondents have confirmed that their overall consumption has decreased. Considering this general decrease in consumer spending, it is however interesting to analyse how the use of cash and digital instruments have relatively changed.

3.2   Results of the survey and main takeaways

We will now see how consumer spending habits have changed, taking into consideration 5 points in time: pre-covid, first severe lockdown, summer, Christmas, and present day. We will also see it from three different points of views: cash usage in absolute terms, consumer spending habits compared to pre-covid, and consumer spending habits compared to the previous period.

The first graph shows cash usage in absolute terms,

$$\text{Total Probability} = \sum_{i=0}^{4} P_i * C_i$$

where:
- - P_i is the percentage of respondents belonging to each group C
- - C_0 refers to people using 100% cash
- - C_1 refers to people using 75% cash
- - C_2 refers to people using 50% cash
- - C_3 refers to people using 25% cash
- - C_4 refers to people using 0% cash

Consumer cash usage
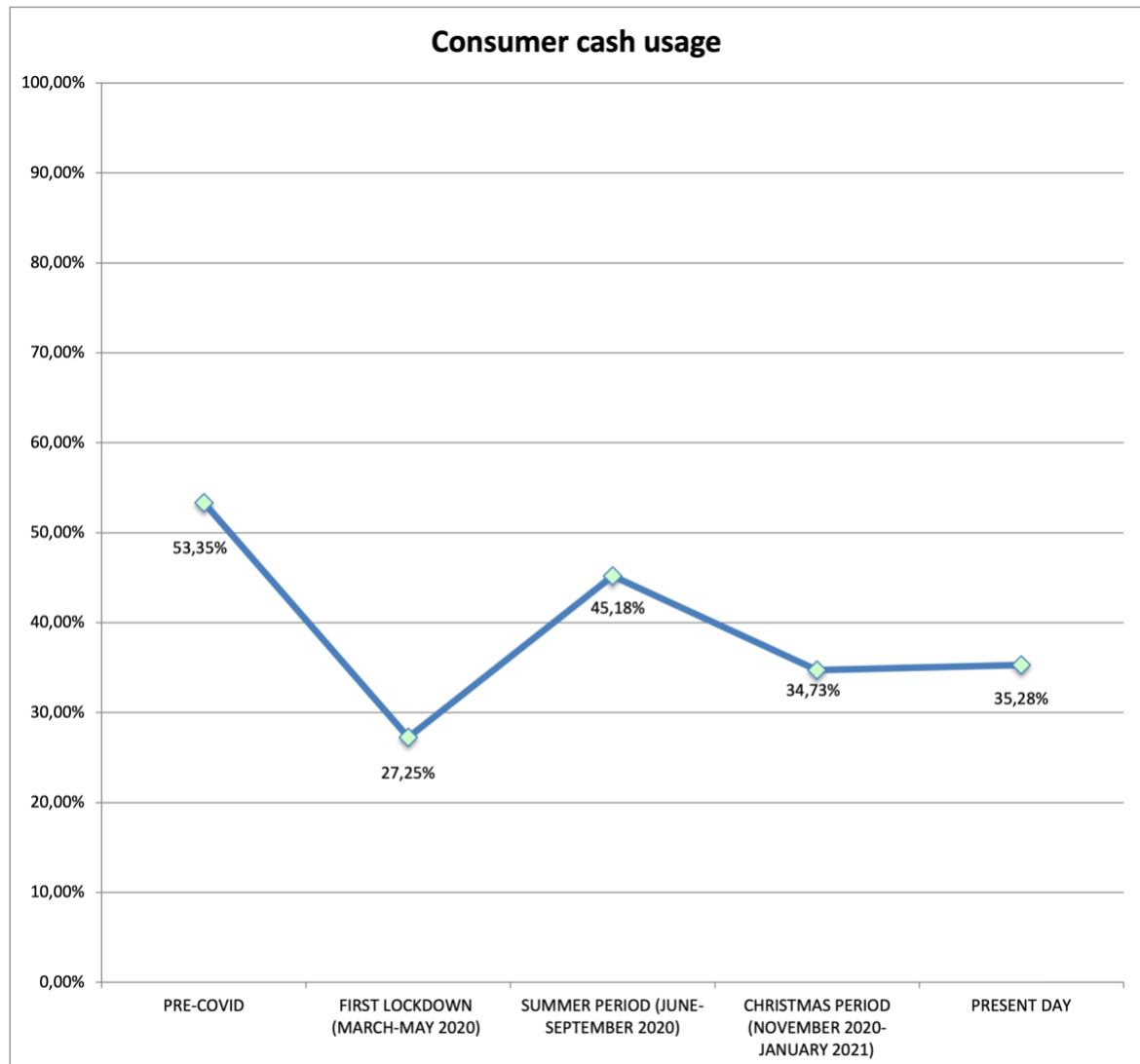
It is clear how the pandemic and all the restrictions are having an impact on consumer spending habits. Before the pandemic, respondents used cash for 53.35% of their transactions, and we can see how in the subsequent months this value has been subject to extreme changes. In particular during the first lockdown where restrictions were very severe, cash usage dropped to 27.25% highlighting how people were moving towards digital alternatives. In Italy, during the summer, thanks to a decrease of Covid cases there weren't many restrictions, and this can be seen by the fact that respondents

increased their usage of cash to 45.18%. It is however interesting to see how in the last six months this value dropped again and is now stable at around 35%, showing how this change in habits is slowly becoming a permanent characteristic in everyday life.

It is now interesting to see how consumer spending habits are varying compared to period 0 which in this case is set to be as the pre-covid period. The systematic observation of a phenomenon over time makes it possible to construct a time series, which is a sequence of observations y_1, y_2, y_t of a phenomenon Y observed at T times. When interested in measuring the amount of change in a time series, one can make ratios between two or more values in the series. The results are called simple index numbers. These can be constructed in two different ways, fixed base or mobile base. By definition, a set of fixed base indices expresses the intensity or frequency of a phenomenon in each time period as a share of the intensity or frequency of a reference period called base.

Therefore, the fixed number index is found by:

$$I_{t,0} = \frac{Pt}{Po} \quad t=,1,2,3,4 \text{ with zero being the pre covid period}$$

Consumer spending habits compared to pre-covid period

43
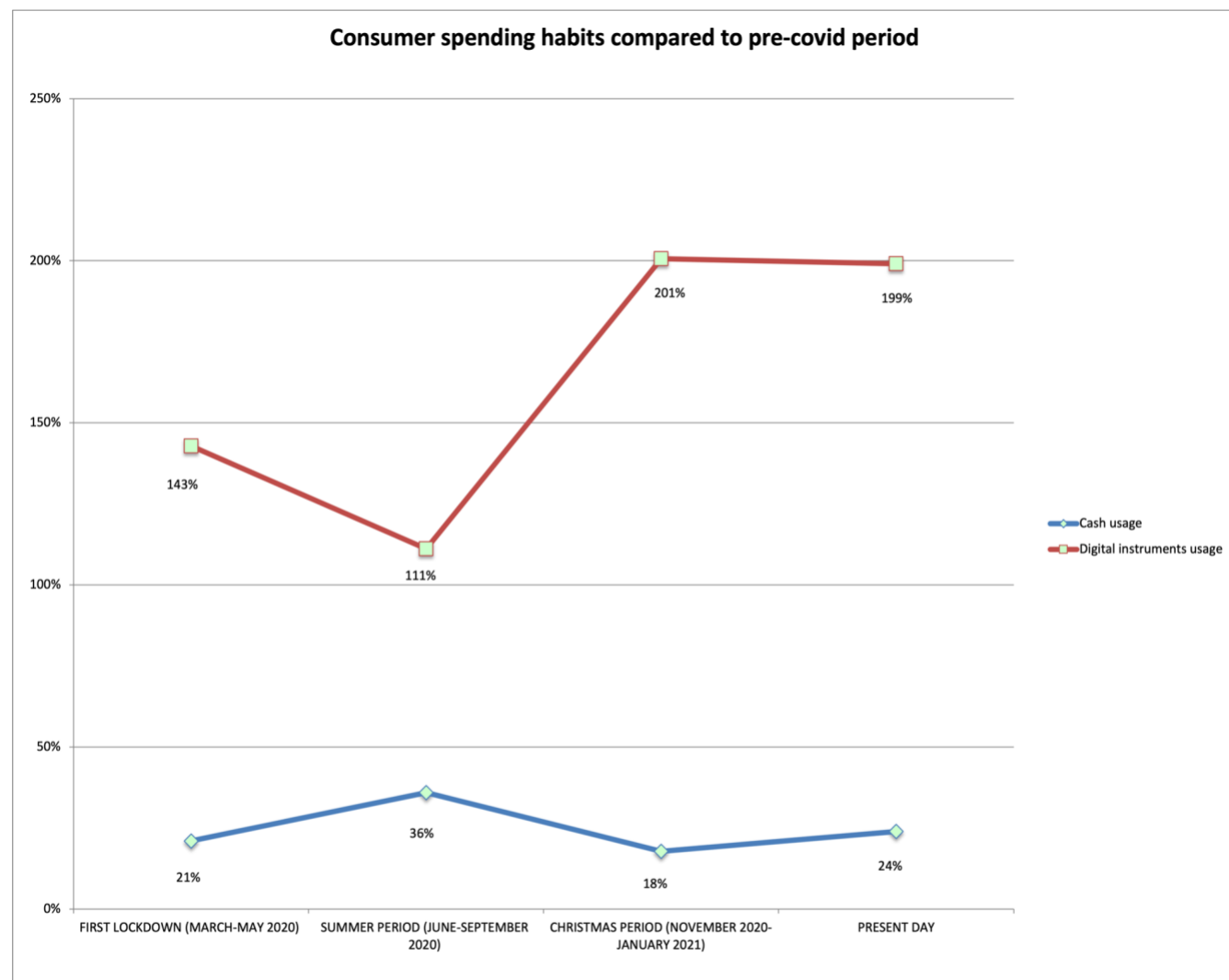
This graph makes it clear how even if the use of cash is partly dependent on the degree of restrictions imposed due to Covid, it has overall decreased considerably compared to the pre-Covid period. In fact, if before covid the people that used cash were 10, in the following months they ranged between 2 (first lockdown) and 3.6 (summer period). On the other hand, digital payments obviously experienced the opposite trend. Even if during summer there was just a slight increase, we can see how their use has doubled and it is constant at those values.

As we said there is a second approach, which is the moving index base, which expresses the intensity or frequency of a phenomenon in each time period as a ratio of the intensity or frequency in the immediately preceding time period.

Therefore, the moving number index is found by

$$I_{t,t-1} = \frac{Pt}{Pt-1} \; t=,1,2,3,4 \text{ with zero being the pre covid period}$$
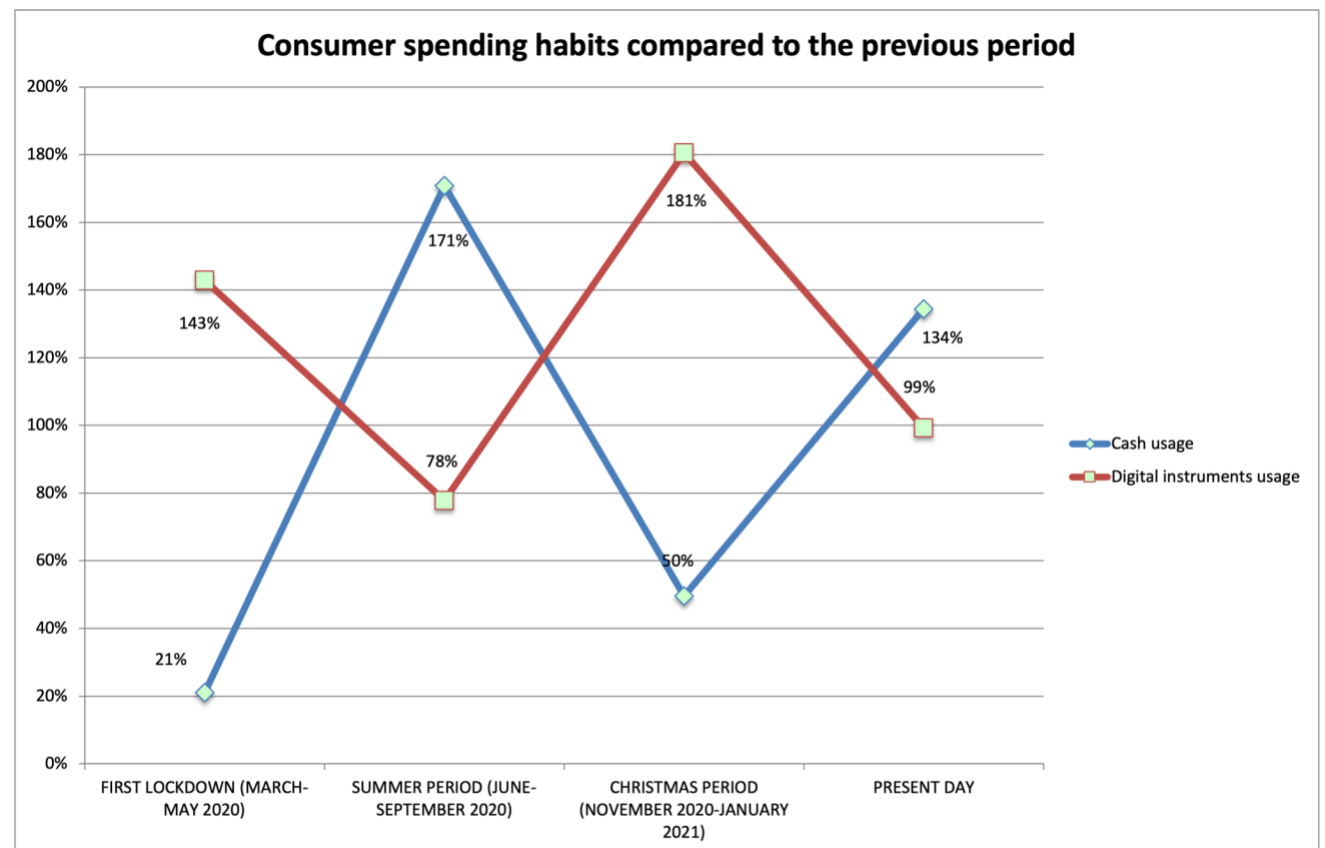
This third graph, in a very different way from the previous ones, really highlights to what degree cash and its alternatives are used over time. Every percentage in the graph represents the use of cash in one case and digital instruments in the other, compared to the previous period. In the first periods we can see how these values, that are experiencing a very big variation, show how the consumers' choice on what payment methods to use really depends on the level of limitation imposed by covid. During the first Lockdown, for example, the people using digital instruments increased

by 1.43 times compared to the pre-Covid period, which is the immediate previous point in time. While the use of cash by 0.79 times.

On the other hand, we can see how the last values at present day, being close to 100%, represent little change compared to the Christmas period and highlight how over time consumer habits are being deeply modified and do not depend so severely anymore on the Covid restrictions.

The three previous graphs, even if in different ways, show the same result: Covid and its restrictions are profoundly shifting consumers towards digital payments, and the survey recognized three main reasons for this trend. Indeed, 38.8% of the respondents stated that their decrease in cash usage was due to the higher ease in using digital payments, this value is extremely close to the percentage previously found in the European Union analysis. 18% declared to have used less cash following the increased use of e-commerce. The third most significant reason is the Cashback program: 14% of the respondents saw in the Cashback a valid reason for diminishing banknotes use and increasing the use of its alternatives.

The survey turned out to be fundamental also to confirm other trends that have been observed in all the analysed countries. ATMs usage decreased considerably during the pandemic: as a matter of fact, 65.3% of the respondents declared that their ATMs frequency withdrawal decreased compared to the pre-Covid period.

It is also worthwhile noticing how the notes in circulation augmented, as 42% of the respondents declared that cash reserves for precautionary reasons increased. These two data together are very significant: because of the uncertainty of being able to use ATMs and considering some kind of health emergency that could unexpectedly occur, people prefer to hold cash. At the same time, the use of digital payments, which followed government measures like the Cashback, has been rediscovered by the population and has gradually become more and more popular; thus leading to a gradual shift towards cash alternatives and a permanent change in consumer spending habits. This is perfectly coherent with the result that has been observed in the survey, where 52.6% of the respondents stated that their use of cash at the end of the pandemic will decrease compared to the pre-Covid period. This could also be seen in the first graph "Consumer cash usage" where in the last two periods the use of cash was less dependent on the level of restrictions, but instead showed how consumers are getting used to cash alternatives and are choosing them as their main means of payments.

Conclusion

The comparative analysis and the case study have made clear how the pandemic caused substitutions effect in consumer's payment options. In fact, the transitionary trend towards digital instruments had already started in the years before the pandemic thanks to the numerous innovations in the field. However, the limitations imposed by Covid-19 deeply modified everyone's lifestyle, implying that also the occasions in which transactions occur have completely changed. This landscape has pushed consumers away from using cash and led them towards its alternatives. For example, the numerous lockdowns that prohibited people from going out, forced consumers to increase the use of e-commerce. A fundamental role of contactless payments has been to allow consumers to carry out in-store purchases with no contact and handling of any cash. The impact on consumers was not only limited to this shift in payment options but also regards consumers spending habits in general. First of all, general consumption decreased, and this has been clear in the analysis of all the countries taken into consideration. This highlights that inside this general decrease in consumption, consumers partly abandoned cash, transitioning towards digital methods of payment. This period of pandemic has forced people to favour the use of digital instruments over cash, but at the same time it has been made clear the extent to which people are dependent on cash, which is the reason why reaching a cashless society is still far from happening.

The analysis has also highlighted how banknotes during this period were kept and used for a different purpose. The fact that the notes in circulation increased considerably in a context in which the use of cash was dropping, is a sign of how households were keeping more amounts of cash for precautionary reasons. This is proof of the important function of cash as a store of value and not only as a means of payment. Also significant is how the volume of ATMs withdrawals decreased, but increased in value, reflecting the changed households' habits regarding their use of money. Interestingly, the research analysis conducted with the Italian sample has supported the data found for all the examined countries. Important to consider how initially consumer spending habits were highly influenced by limitations imposed by Covid, but with time the degree of dependence decreased, as a sign of habits having permanently changed. Very recent findings from May Nexi's report highlight how the use of digital payments in Italy is constantly increasing. In a general landscape, in which the volume of transactions highly depends on pandemic restrictions, Italian cards registered a 21% increase in usage compared to 2019. Nexi's data also show that, starting from the middle of April, transaction volume slowly started to increase again. The week from May 4 to 10 has been characterized by a double-digit growth on basic consumption and discretionary consumption and showed signs of recovery for high impact spending like in restaurants. Hopefully, these are the first signs of the economic recovery in Italy.

Covid-19 caused devastating consequences all around the world, it has accelerated tremendously the speed of long run trends. The changes that initially appeared to be extremely dependent on the imposed limitations now seem to persist even with the removal of lockdown measures. This applies for the choice of payments:

as the survey highlighted, 52.6% of the respondents declare that their use of cash after the pandemic will decrease compared to the pre-pandemic period. People have done a great job adapting to such a difficult situation; thanks to the technological and mindset evolutions we have been able to have continuity in our daily activities, carrying on transactions from home, for example, at a greater ease than before. The pandemic has been a real game changer, leaving us very differently from how it found us in the first place.

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