

# Use of cash: are we close to a cashless society?

Axerve analysis of the  
use of cash worldwide  
from 2016 to 2020

Axerve • Whitepaper

# Agenda

<b>Introduction</b>	<b>3</b>
<b>Scenario data: payments and use of cash worldwide</b>	<b>3</b>
<b>Two sides of Europe: North and South, not just geographically</b>	<b>6</b>
Will Northern Europe soon be cashless?	7
Cash in central Europe: Germany surprises	8
In Southern Europe cash is still king	9
<b>Relationship between digital and cash throughout the world</b>	<b>10</b>
<b>Limits on cash payments in Europe</b>	<b>11</b>
Twenty years of regulation of cash in Italy	12
<b>Costs of cash and benefits of its global reduction</b>	<b>13</b>
Growth of global economic activity	13
Reduction in crime	14
Less health risks and more health protection	16
Time saving for consumers and merchants	16
<b>Payments in Italy: cash and alternative instruments compared</b>	<b>17</b>
<b>Reasons for using cash</b>	<b>20</b>
<b>Cashin: the solution for digitalising cash</b>	<b>22</b>
Advantages and services included in Cashin	23
Technical features of smart safes	25
The payment and crediting process	25
<b>Axerve: at the forefront in collection management and simplification</b>	<b>26</b>

# Introduction

If we were to pinpoint a historical period to associate with the one identified by payments, it would probably be the Renaissance. In fact, in a context of major technological, economic, social and political changes, payments are subject to radical transformations concerning all their aspects, with repercussions on the evolution of society.

New payment methods like [digital wallets](#) or on-line payment solutions dedicated to B2B, the arrival on the market of new players – Google, Amazon, Facebook and Apple above all – and the most

recent regulatory updates, the [Payments Services Directive 2 \(PSD2\)](#) in particular, are transforming the ecosystem of payments like never before in their thousand year history.

In this context, characterised by technological innovations centred around digitalisation and simplification of payments, cash continues to have an important role. Despite the regulatory path being tread by the institutional bodies also being geared towards reducing its use, cash today remains the preferred instrument by consumers all over the world.

## Scenario data: payments and use of cash worldwide

4GS, international leader in integrated security, surveyed the use of cash in 47 countries worldwide in its **World Cash Report 2018**<sup>1</sup>. We have used this as a starting point for a close examination of cash and its use in finalising payments in all areas of the globe.

### Africa

In the African continent, **cash in circulation (CIC)** has grown by **39.8% on average in the 2011-2016 period**, excluding South Africa, which has bucked the trend, witnessing a decline in the use of cash during the same period. Another indicator comes from the increase in the average value of the amounts withdrawn from ATMs which concerned all countries, excluding Mozambique, reaching peaks of above 40% in the six year being examined.

### Asia

Also in Asia, the figures (CIC in local currency) show **growth in all countries, with an increase of 45.6% in the last five years** considered by the research, an average of 9.1% per year. With the exception of India, Saudi Arabia and South Korea, the average value of ATM withdrawals has also risen in Asia, albeit with a decelerating trend.

### North America

North America is no exception: also in this case **cash in circulation has increased, with an average of 6.13% in 2016 to be precise**, compared to the global average of 9.6%. In particular, the United States has registered a constant growth trend in CIC, with respect to other countries and Canada which, on the contrary, has seen a deceleration. The average withdrawal value has instead increased in

<sup>1</sup> - World Cash Report 2018 | 4GS

all countries on the American sub-continent. According to the data from the Federal Reserve of San Francisco<sup>2</sup>, the volume of **US dollars in circulation worldwide increased by 87% in the decade 2007-2017**, despite digital payments also having grown during the same period.

*"Reports of the death of cash have been greatly exaggerated. In most countries, demand for notes and coins is strong and shows no signs of slowing down."*<sup>3</sup>

John Williams - President of the Federal Reserve of San Francisco (until June 2018), current president of the Federal Reserve of New York

### South America

It is the region of the world with the greatest growth in CIC: **+61.9% in all countries examined**.

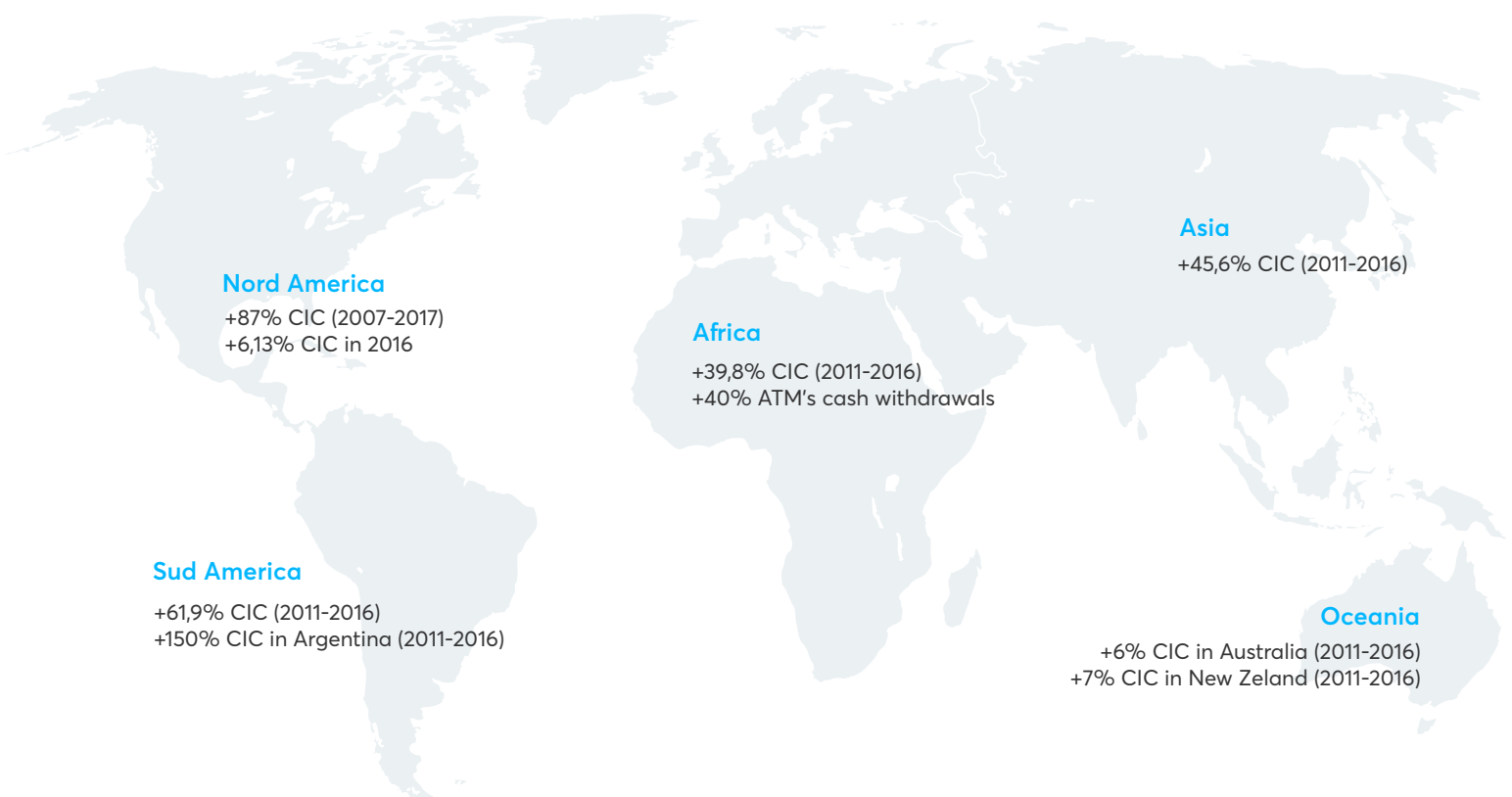
Argentina has even witnessed treble-digit growth,

with an increase of 150% in the reference period and is top of the rankings in terms of the average value of ATM withdrawals, surpassing just over 40%. The rest of the countries exhibited a trend in line with the other continents.

### Oceania

Also in **Australia** and **New Zealand**, the need for cash has grown, with average YoY **growth of 6% and 7% respectively**. The value of ATM withdrawals throughout Oceania has, however, seen a slow but constant decrease, in favour of electronic payment instruments, a sign that cash is mostly a form of saving.

A study published in 2017<sup>4</sup> relating to the habits of the Australian consumer, in effect, shows a growing propensity of the population to use alternative payment solutions, which has immediately translated to a reduction in cash for these purposes.



2 - Reports of the Death of Cash are Greatly Exaggerated | Federal Reserve Bank of San Francisco

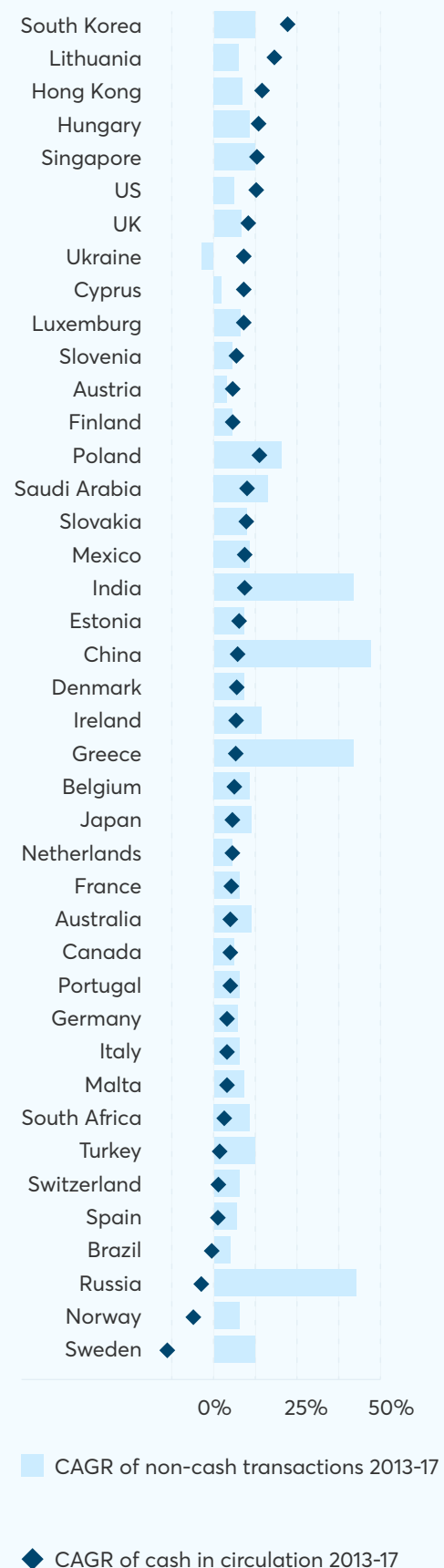
3 - Cash is still king in the digital era | CNN BUSINESS

4 - How Australians Pay: Evidence from the 2016 Consumer Payments Survey | Mary-Alice Doyle, Chay Fisher, Ed Tellez and Anirudh Yadav

According to the **World Payment Report (WPR) 2019 by Capgemini<sup>5</sup>**, despite the share of cash payments seeing a slowdown in its rapid rise throughout most of the world, **cash in circulation has increased over the last five years** (CIC globally rose **from 4% to 7%** annually in the last five years). More than 30% of the countries considered in the report recorded a greater increase in cash in circulation than the volumes of transactions with other payment instruments. Again Capgemini compared the growth in CIC and transactions with other instruments in the 2013-2017 period.

It is interesting to note that in countries like the United States, South Korea, Singapore, the United Kingdom and Finland, cash in circulation has increased, despite these nations having an extremely high ratio of alternative payments per inhabitant and sharing a strong digital propensity that, as we'll also see in this document, often plays a central role in the adoption of digital payment systems.

**Growth of cash in circulation vs non-cash transactions, by country | 2013 - 2017**



# Two sides of Europe: North and South, not just geographically

In 2018, cash accounted for 79% of transactions and 54% of the total value of payments in Europe<sup>5</sup>.

Cash in circulation increased by an average of 39.5% in the 2011-2016 period (7.9% YoY), with the exception of Sweden, which recorded a decrease of 34.9% in the use of cash in the same period.

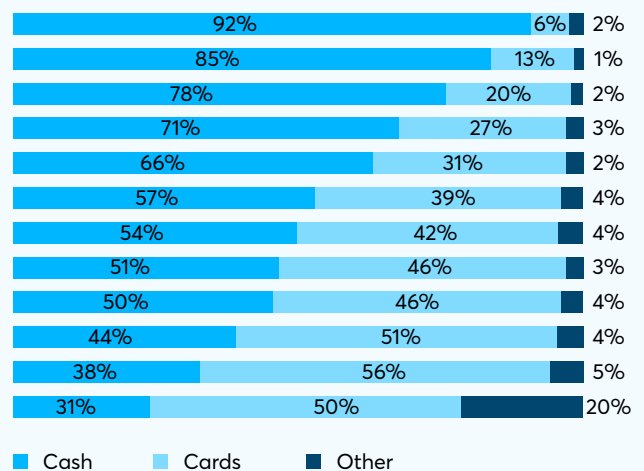
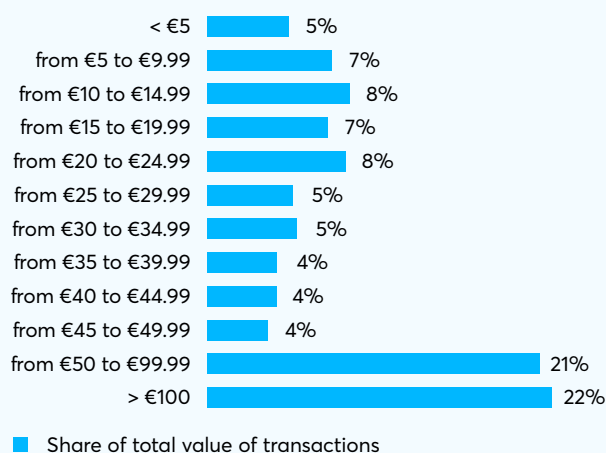
According to ECB figures<sup>6</sup> relating to the 2008-2017 period, **European citizens continue to prefer cash** to other instruments for all payments of under € 40 and cash also continues to play a central role in larger payments: **more than 30% of payments exceeding € 100** are still made in cash.

*"But the euro is one thing we all have in common. It serves as the most tangible symbol of European integration, a process which has brought peace, freedom and prosperity to our continent."*

Christine Lagarde - Presidente della Banca Centrale Europea

Again according to the ECB research "Trends and developments in the use of euro cash over the

**Use of payment instruments at POS, by value range**  
(value of transactions, shares)



Sources: ECB, Deutsche Bundesbank and De Nederlandsche Bank. Note: This survey was conducted in 2016.

past ten years”<sup>6</sup>, roughly **half of European citizens** (49% of those surveyed in the 17 countries involved) **choose the payment instrument based on the amount** (the propensity to use cash decreases as the amount rises), **23% said they always pay in cash** while **27% prefer cards**.

*“Even in this digital age, cash remains essential in our economy. A survey on cash use, carried out on behalf of the ECB, shows that over three-quarters of all payments at points-of-sale in the euro area are made in cash. In terms of transaction values, that’s slightly more than half.”*

Mario Draghi - President of the BCE

Aggregating those surveyed by origin, it emerges that over 50% of Estonian and Finnish citizens pay

by card, regardless of the amount, Cyprus, Malta, Greece, Italy and Austria are countries in which less than 20% of transactions are completed using this instrument.

The map below compares the ratio on the total number of transactions, the indicator of the propensity to use this form of payment, and the weight on the total value of cash payments which underline the predisposition or not of the citizens of the individual countries to use cash also for transactions involving higher amounts.

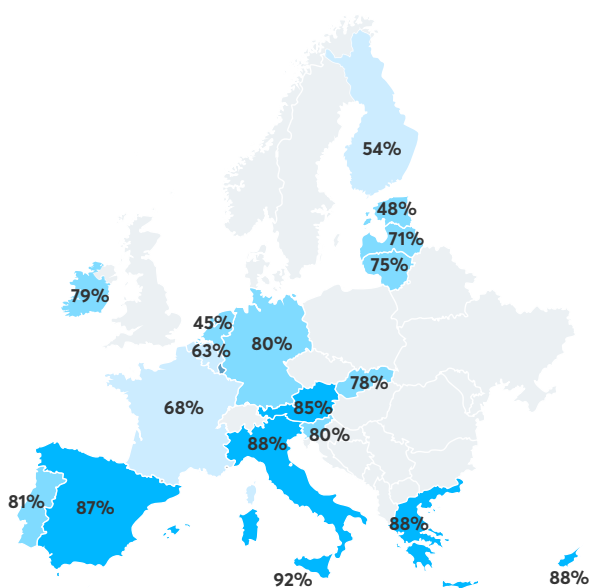
## Will Northern Europe soon be cashless?

Countries in Northern Europe have been investing for many years in achieving a cashless society, with Sweden leading the way which, together with the rest of the Nordic countries, aims to completely eliminate cash.

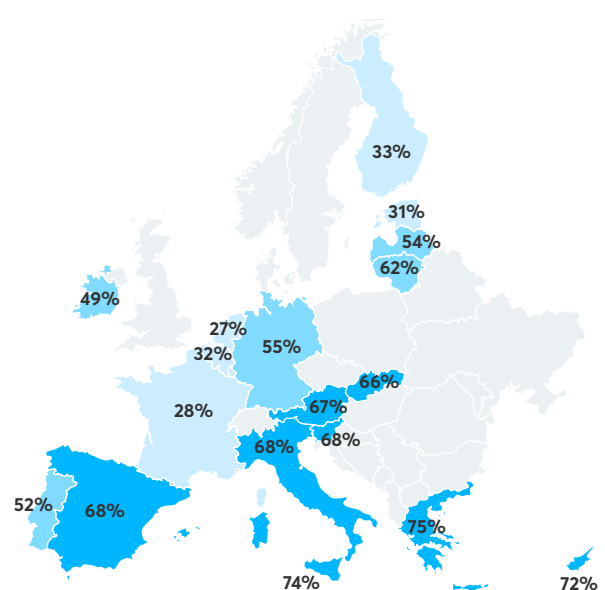
However, despite the majority of the Swedish population looking kindly on the advent of a society devoted to digital payments, doubts

### Shares of cash transactions per country at points of sale

Number of transactions



Value of transactions



Source: ECB, Deutsche Bundesbank and De Nederlandsche Bank.

have arisen recently that it is moving too quickly in this direction. Said **Central Bank of Sweden has underlined the importance of the freedom of choice also regarding payments**<sup>7</sup>, including because it is demanded on several fronts. The official response from the Government came in November 2019<sup>8</sup> with an ad hoc law which requires the six most important banks in Sweden to guarantee services related to the use of cash, such as the availability of ATMs and the possibility of making cash payments and withdrawals also in the years to come.

The decision to undertake guarantee measures is also in response to recommendations from the categories less suited to using alternative payment systems, such as the Swedish National Pensioners' Organisation<sup>7</sup> and in line with the data objectively identified<sup>9</sup> such as difficulties in accessing alternative payments for those living in the more rural areas of the country and low-income families or for the most vulnerable groups in society like refugees; in the research, cash is also considered a form of security for protecting victims of domestic abuse for whom control of home banking has been taken away.

A survey in 2018<sup>10</sup> also highlighted that **seven out of ten Swedish citizens want to have the choice of payment instrument, including cash**. Therefore, although Sweden has become aware of a change that is too sudden, according to the WPR 2019 by Capgemini, in the Scandinavian country, payments in cash fell by 12.4% between 2013 and 2017, while those using alternative instruments rose by 11%, a sign, nonetheless, of a change of direction.

It is also a common trend in other Baltic Countries: **in Finland**, less than two out of ten people still use cash to pay, 17.6% according to Bank of Finland figures.

*"The vision of the Bank of Finland is that even if there is also ample freedom on the agreements concerning the payment instruments used, the goods and services necessary to meet people's daily needs must also be supplied with payment in cash. People are fully aware that cash will continue to be available and used in the near future even if its use is constantly falling".*

Päivi Heikkinen - Head of Payments Department of the Bank of Finland<sup>11</sup>

**In Norway**, in ten years, the use of cash for payments **has fallen from 24% in 2007 to 11% in 2017-2018**: also this case, the country is heading towards a cashless society but keeping cash alive is a burning issue<sup>12 13</sup> and Norwegians must be careful too, especially in relation to the possibility for all individual citizens to choose their preferred payment method.

Ultimately, in a sizeable part of Northern Europe, the adoption of digital payment systems has been promoted for many years now with success, but attention is being focussed on the need not to eliminate it completely, both for meeting the needs of the population less predisposed or suited to using alternative instruments and to guarantee the right to choose for the entire population.

## Cash in central Europe: Germany surprises

If we connect the adoption of digital and technological innovation with the use of electronic

7 - Sweden's Cashless Experiment: Is It Too Much Too Fast?

8 - Secure access to cash - Report from the Riksbank Committee | Sveriges Riksbank

9 - Access to Cash Report – Final Report March 2019 | Access to Cash

10 - The Swedes rebelling against a cashless society | BBC News

11 - So Finland has (almost) forgotten about cash. "No cash" stores on the rise

12 - Taking a closer look at Norway's payment landscape | European Payments Council

13 - How important is it for a nation to have a payment system?



payment systems, Germany should be one of the European nations with the lowest use of cash, at least for payments.

This is not the case in reality: according to ECB figures<sup>14</sup>, **in 2016, 80% of the volume of transactions in Germany were in cash, accounting for 54% of the value of all payments.**

According to a Deutsche Bundesbank report<sup>15</sup>, in 2017, a German citizen normally carried €107 on them, more than three times that of a French or Portuguese citizen, according to the European Central Bank<sup>14</sup>.

**Austria's numbers are similar to the German ones (85% and 67% respectively) while in France the figures are closer to the European average: in the transalpine country, cash payments account for 79% of the total volume and 54% of the value, respectively.**

**Also in Switzerland, cash represents the most widely used means of payment by households<sup>16</sup>.** In Switzerland, **70% of payments** are settled in cash, while in terms of value, they account for 45% of total spending, a sign that cash is still highly valued for micro-payments.

## In Southern Europe cash is still king

When we're talking payments, the situation in **Southern Europe** is the exact opposite of that in northern European countries: **cash is still largely the preferred instrument<sup>6</sup>.** Malta is at the top of the rankings of countries that overlook the Mediterranean, with **92% of transactions in cash** (74% of the value), followed by Greece and Cyprus, both at 88% (75% and 72% of the value), Spain with 87% (68% of the value), **Italy with 86%** (58% of the value) and Portugal at 81% (52% of the value).

The figures on the value of cash payments also highlight the preferences for the use of electronic payments. For example, Italy and Portugal prefer

cash for smaller payments, diverging from the higher figures of Malta and Greece.

All southern countries, nonetheless, share the same propensity to use cash and a sea change in some countries, including by the institutions, seems some way off.

Indeed, at the end of 2019, the Maltese Government announced that it planned to put a limit of € 10.000 on cash transactions, a proposal already put forward in 2015, but as of today, the precise boundaries of the initiative are still unknown. According to a survey conducted by the Central Bank of Malta<sup>17</sup>, only 1.5% of those surveyed do not use cash to pay.

Greece is no exception. Despite the Greeks still being among the populations that use banknotes and coins the most, over the last six years, **Greece** has attempted to contribute to the shift to e-payments<sup>18</sup> by offering incentives to use them, incorporating tax exemptions and loyalty programmes. Another deterrent on the use of cash is **the minimum limit of € 500 for payments in cash, reduced to € 300 at the end of 2019.**

The Spanish Government is investing in the promotion of electronic payments - for example, by reducing the limit on payments in cash or increasing the amount of **contactless payments with no need for PIN insertion from € 20 to € 50** - but the population still uses primarily cash. Despite the pandemic having contributed to the use of cards, up by 7,69%, 71% of respondents to a survey in 2019<sup>19</sup> believe that sacrifices will need to be made regarding privacy for a cashless society and 50% said they paid in cash to avoid leaving a trace of what was purchased.

14 - The use of cash by households in the euro area | European Central Bank

15 - Zahlungsverhalten in Deutschland 2017 | Deutsche Bundesbank

16 - 2017 Survey on means of payment | Swiss National Bank

17 - Analysis of the Payment Habits in Malta | Central Bank of Malta

18 - Greece's steady progress towards a cashless society | Vasilis Panagiotidis, Head of Payment Systems, Hellenic Bank Association

19 - Marqeta Consumer Behavior Survey | Marqeta

# Relationship between digital and cash throughout the world

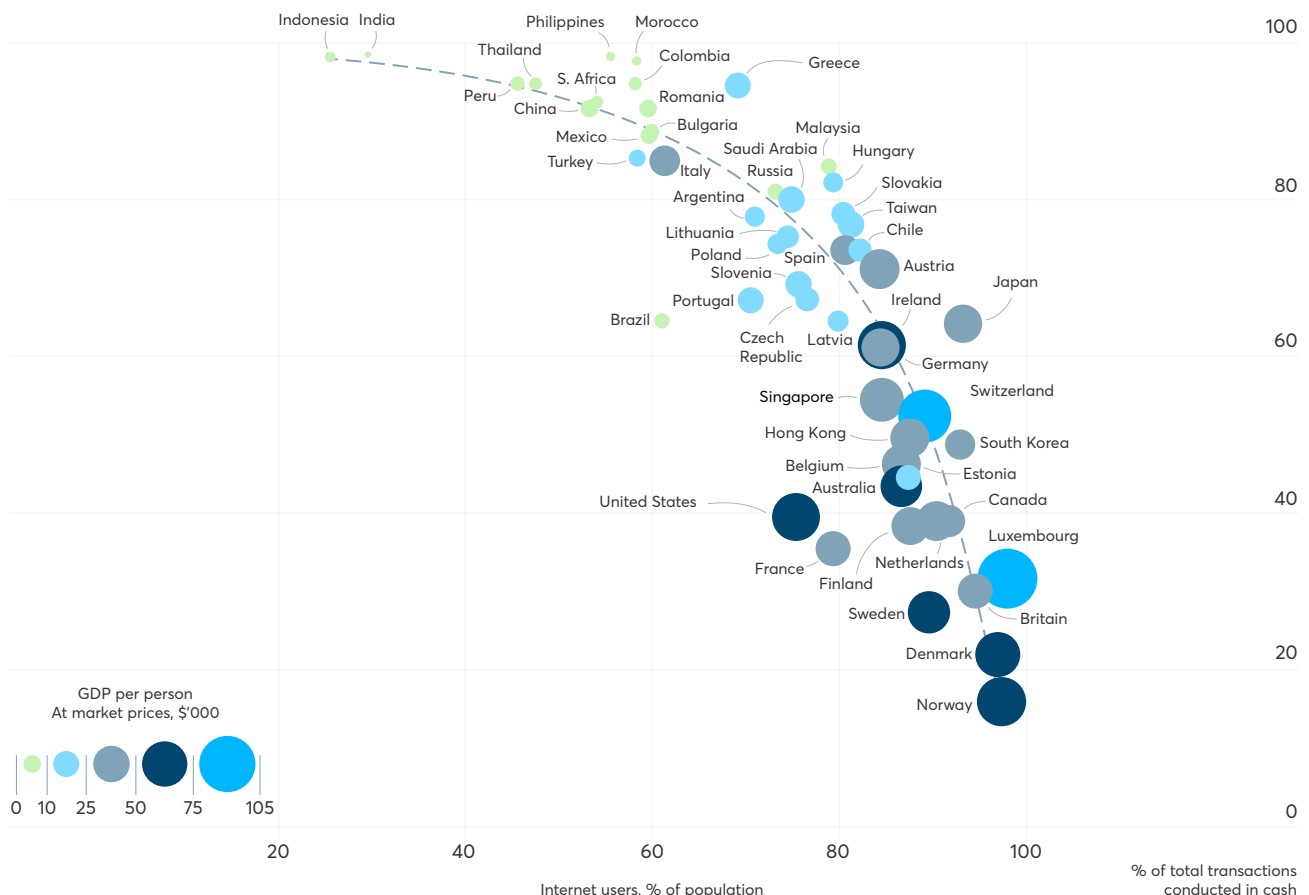
The advent of digital has revolutionised many areas of our society, from the economy to relationships, from the world of information to that of communication. Payments are no exception which, particularly in the last few years, are experiencing revolutionary changes, accelerated by the international Fintech ecosystem, whose origins can indeed be traced back to the fusion between digital and the world of finance. The weekly political-economic newspaper, The Economist<sup>20</sup> has linked the use of cash with the penetration of the internet and per capita GDP (Gross Domestic Product) worldwide. Northern Europe, the United States, Australia and South Korea represent the

areas of the globe in which a high number of web users corresponds to a lower number of payments in cash and a more substantial GDP per person.

In order to best understand whether there is actually a **relationship between cash and going digital in Europe**, we can compare the DESI (Digital Economy and Society Index)<sup>21</sup>, the European index that groups together a series of relevant indicators to keep track of the digital evolution in the individual member States and the economic data reported up to now.

**Northern Europe occupies the top positions of the DESI** and the ranking mirrors what we have seen in

Cash use v internet penetration | 2016



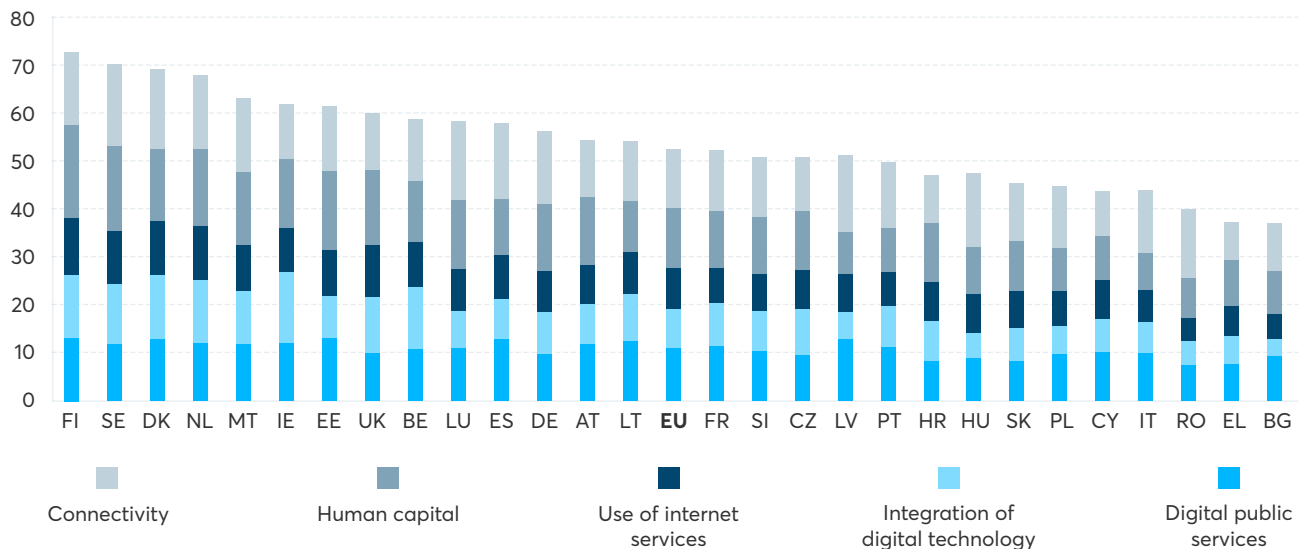
20 - Cash use v internet penetration, 2016 | The Economist

21 - The Digital Economy and Society Index | European Commission

the previous paragraphs, and although the order does not perfectly overlap, the correspondence between the most digital states and the countries with the lowest use of cash is clear.

A look at the **Mediterranean area** of our continent, the most fond of using cash, **shows that only**

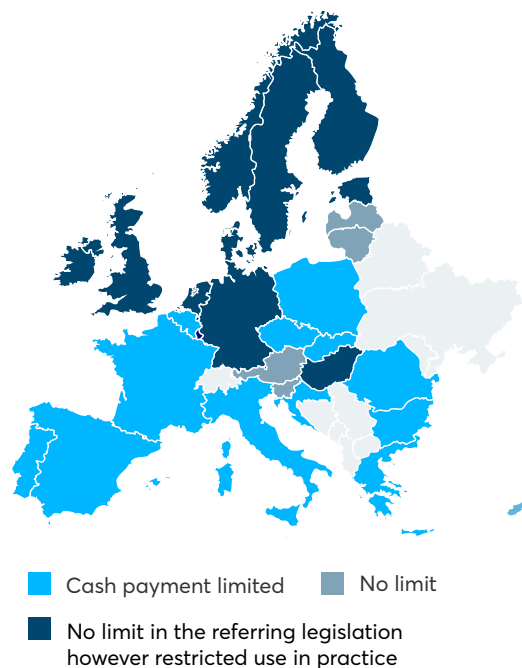
**Malta and Spain are "more digitalised" than the European average.** The rest of the countries in Southern Europe, as with a sizeable chunk of Eastern Europe, are instead in the second half of the graph that identifies the countries with a bigger digital divide.



## Limits on cash payments in Europe

The European community presents an extremely varied situation in terms of limits on payments in cash. There are countries like Germany, Ireland and Malta that have not imposed a maximum limit, and others that have placed limits, from a minimum of € 1.000, like Portugal, or € 1.500 in the case of Greece.

Limiting the use of banknotes and coins is a tool used particularly in countries in Southern Europe. Used to combat evasion and underground economies, the limit on cash, however, has some aspects that are not appreciated by European research report by the ECB<sup>22</sup> indeed on the limits on the use of cash, highlighted that these generally are considered overly restrictive by European citizens.



Source: European Consumer Centre France

All things considered, we have outlined previously how the most forward-thinking countries from the point of view of adoption of electronic payment systems are also those most sensitive to the freedom of choice; in the map of the graph on cash limits, note how the Nordics do not impose limits on cash.

## Twenty years of regulation of cash in Italy

From 1991, the year in which the Government in office issued the first Decree Law for the purpose of identifying a limit on payments in cash - 20.000.000 Italian Lira to be precise - in order to combat tax evasion, many of the subsequent Governments have revisited the issue, revising the amounts subject to sanctions upwards or downwards.

**CASH LIMITS IN ITALY\***

Year	Legislation	Euro
1991	D.L. n. 143/1991	10.329**
2002	D.M. 17/10/2002	12.500
2007	D.L. n. 231/2007	5.000
2008	D.L. n. 112/2008	12.500
2010	D.L. n. 78/2010	5.000
2011	D.L. n.138/2011	2.500
2011	D.L. n. 201/2011	1.000
2016	Legge n. 208/2015	3.000
2020	D.L. n. 124/2019	2.000
2022	D.L. n. 124/2019	1.000

\* Amounts equal to or greater than those in the table can only be transferred using traceable instruments (credit transfers, payment cards)

\*\* Corresponding to 20,000,000 Italian Lira

Despite the initiatives and the increasingly more stringent regulations, **the value of cash in circulation in Italy has increased by approximately 63% from 2008 to the end of 2019, reaching € 208,4 billion**. Although the growth has slowed by almost 3% compared to 2018 (we went from +4% to +1.3%), in relation to GDP, the increase has been constant in last two years (11.8% of GDP)<sup>23</sup>.

Alongside limits on the use of cash, Government initiatives have been implemented over the years to encourage the use of electronic payments.

**The most recent** and probably most substantial actions are connected with the 2020 Finance Bill, whose initiatives are still in progress or will be implemented in 2020 and until 2022:

- **Tax Credit** of 30% of the costs related to electronic payments (already set forth in art. 22 of D . L (Decree Law) 124/2019)
- **Reduction of the limit on payments in cash** from € 3.000 to € 2.000 in July 2020 and to € 1.000 effective from 1 January 2022
- **Cashback and Super-cashback** of 10% for consumers on purchases made using electronic instruments with a bonus of up to € 3.000, excluding on-line purchases
- **"Lotteria degli scontrini" (Receipts Lottery) prize competition** with up to € 5 million up for grabs for purchasers and € 1 million for merchants, in the case of electronic payments

Legislative framework and Government incentives are elements that help to encourage the use of alternative payments with the objective of reducing underground economies, criminality benefits from this form of payment, and cutting the costs - economic and other costs - of cash that, as we'll see in the next chapter, are perhaps its real Achilles heel.

# Costs of cash and benefits of its global reduction

The reasons for migrating to alternative electronic payment systems are not only those proposed by the central governments, as in the case of Italy, but concern economic and social aspects that involve the whole planet as an ecosystem. A recent Mastercard<sup>24</sup> white paper presents some interesting data on the direct and indirect costs of cash worldwide:

- The cost per year of keeping cash in circulation in the United States is 200 billion dollars
- 72 million hours spent per year in New Delhi in tracking cash
- Small companies in Mexico are the victims of cash-related fraud twice as much as large companies
- Large-scale use of cash worldwide accounts for between roughly 3.2% and 4.8% of global GDP

Visa, in its Cashless Cities report<sup>25</sup>, identified five types of costs of cash:

## Transport, security and bank charges

Costs that vary depending on the city considered but that fluctuate **between 2% and 3%**. These are augmented by credit times (accounting date and value date) which may vary from one to three days.

## Handling, counting and processing costs

Companies spend, on average, approximately **68 hours per week in managing cash**, but there are cities like Bangkok and Tokyo where this figure exceeds 86 hours.

## Robberies, shortages and counterfeiting

These **cause 4% of monthly profits from sales to be lost**. Also in this case, the data can vary by several

percent points: we are talking about roughly 1% for cities like Chicago and even 9% in the case of Lagos.

## Expenses for payments to suppliers

Companies can manage at the same time more multiple digital payments than cash payments. In fact, the analysis showed that, **in 88 monthly hours, just 45% of cash payments are managed** compared to 55% of electronic payments.

## Opportunity cost of cash

Increasingly more consumers do not carry large sums of money on them. The value can vary depending on the city, but on average, **consumers abandon at least one payment per month** (roughly 73 dollars) at points-of-sale that only accept cash **due to a shortage of money**.

Set against the costs, there are many advantages of a significant reduction in cash, not just economic benefits, but social and health ones too.

## Growth of global economic activity

In order to understand the economic benefits cash can bring, we need to ask ourselves what the positive repercussions are on the global economy linked to the adoption of electronic payments that represent an alternative to cash.

The company that conducts financial research and analysis on the activities of commercial and state-run enterprises Moody's<sup>26</sup> responded to this question in 2016, publishing the results of a research that considered the macroeconomic data for the 2011-2015 period for 70 countries worldwide.

24 - Cashing Out: Economic Growth through Payment Digitisation | Mastercard

25 - Cashless Cities – Realising the Benefits of Digital Payments | Roubini ThoughtLab and VISA

26 - The Impact of Electronic Payments on Economic Growth | Moody's Analytics

According to an estimate of the rating company, **the rise in the use of credit cards has helped increase consumption by as much as 296 billion dollars**, equal to +0.10% of global GDP.

A hypothetical increase of 1% per year in the use of payment cards in the countries involved in the research could boost the consumption of goods and services by approximately 104 billion dollars or a growth of 0.04% in GDP, maintaining the other factors unchanged that could influence the macroeconomic data taken under review.

**The study "Cashless Cities – Realising the Benefits of Digital Payments"** published at the end of 2017 by Visa<sup>25</sup> examined one hundred cities worldwide covering into eighty countries, dividing them by the adoption of and inclination towards digital payments. In order to fully grasp the significance of the research, it is considered that more than **80% of global economic activity takes place in cities**, a figure expected to grow over time.

The cities involved in the research were divided into five categories based on the level of digitalisation in relation to the use of payment instruments: Cash Centric, Digitally Transitioning, Digitally Maturing, Digitally Advanced, Digital Leader.

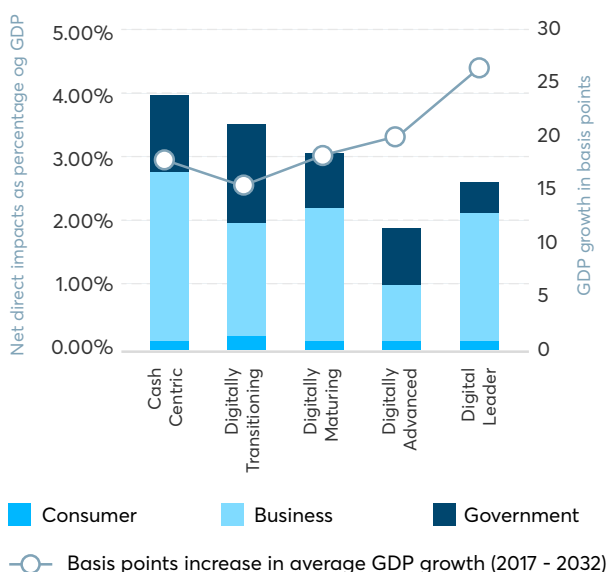
**Estimating an increase in the adoption of digital payments, the cities involved in the research could achieve net economic benefits of 470 billion dollars per year** that would regard society as a whole: 312 billion would go to companies, 130 billion would impact the accounts of the public administration and consumers would directly benefit to the tune of 28 billion. And not just this, the research also estimated economic growth in the 2017-2032 period:

- GDP growth +19 basis points per year
- 5.000.000 jobs
- productivity +0,14% (CAGR)
- wages +0,16% (CAGR)

The cities involved in the study also included Rome, which could stand to see an immediate impact of net benefits of over five billion dollars and more than 3% of GDP. In the long-term, 2017-2032, the impacts would be:

- GDP growth +9.2 basis points per year
- more than 36,000 jobs
- productivity +0.02% (CAGR)
- wages +0.03% (CAGR)

Graph of average net benefits



## Reduction in crime

A Deutsche Bank research report published in 2016<sup>27</sup> analyses the links between cash and crime in depth. The document highlights that crime and cash are not necessarily related: countries like Germany and Austria, for example, despite still being tied to cash have, nonetheless, relatively small underground economies, when compared to those of other European countries in which the correlation is, by contrast, more pronounced.

On the other hand, **the abolition or marked decline in banknotes** would increase the costs of payments connected to illegal activities which would therefore lead to a reduction of roughly **2-3% in underground economies**.

Again, the research by the German bank, in any case, focuses attention on the fact that less cash

27 - Cash, freedom and crime. Use and impact of cash in a world going digital | Deutsche Bank

does not always equate to less crime.

The report takes into consideration the case of Sweden where, despite the increase in electronic payments being consistent with a reduction in robberies of banks and security vans and counterfeiting, an increase in reports of money laundering has also been verified.

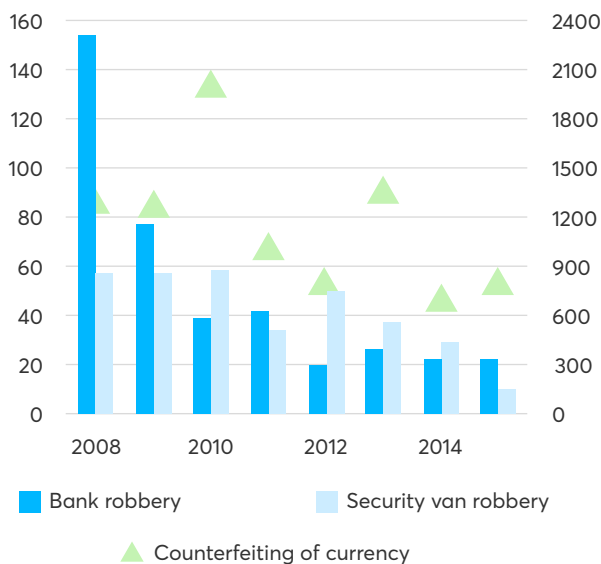
The reasons postulated by the Bank are that, with the decrease in transactions, attention on the issue increases and, consequently, also reports which could, nonetheless, be underestimated, considering

that today only banking institutions and payment service providers now have structured reporting processes.

In analysing crime in the major cities, Visa<sup>25</sup> has pinpointed some interesting figures. In countries like Italy, at an intermediate stage of "digital maturity" defined in the report, **the adoption of alternative payment instruments to cash could lead to a 70% reduction in cash-related crime** which would benefit the entire retail sector but also the safety of cities.

#### Sweden: Less cash - less cash crime

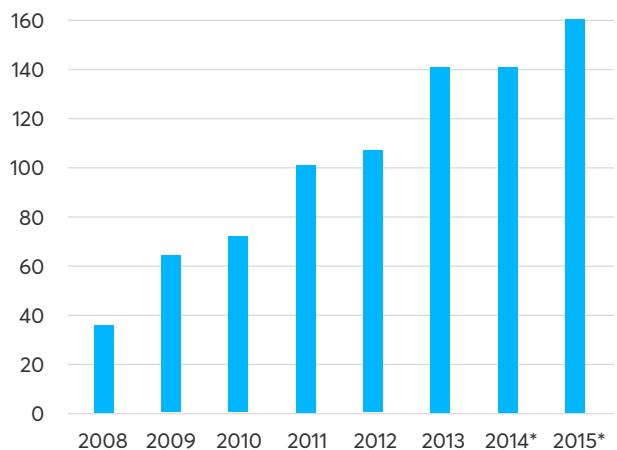
Number of reported offences per year



Source: Swedish Ministry of Justice, Deutsche Bank Research

#### Sweden: Less cash - more money laundering?

Number of reported offences per year



\*In mid-2014, the legal provisions regarding money laundering were changed.

	Current annual average number of cash-related crimes	Average expected decrease in number of cash-related crimes (%)	Value of potential average annual decrease in cash crime (in \$ millions)
Cash Centric	216,451	52%	71
Digitally Transitioning	165,325	74%	110
Digitally Mature	92,035	70%	78
Digitally Advanced	63,313	78%	242
Digital Leader	62,564	88%	296
Average (100 cities)	133,289	69%	134

Source: Cashless Cities – Realizing the Benefits of Digital Payments | Roubini ThoughtLab e VISA

## Less health risks and more health protection

An article published on the American Society for Microbiology<sup>28</sup>, showed how **ATM keypads can be a haven for microbes and potential pathogens** (Toxoplasmosis and Trichomoniasis). For some time, it has been demonstrated that banknotes are a hotbed for viruses: independent research by Oxford<sup>29</sup> University revealed that European banknotes contain an average of 26.000 bacteria and the cleanest banknotes, which, for a number of pathogenic organisms are sufficient for passing on infection.

Another research<sup>30</sup>, this time conducted in the United States on 1 dollar bills, showed that **banknotes contain elements that are harmful for health**. The study showed the presence, for example, of bacteria resistant to antibiotics like *Staphylococcus aureus*, that can cause potentially lethal blood infections, or *Escherichia coli*, that can lead to death.

Recent studies on the transmissibility of viruses and bacteria in support of the fight against Coronavirus should not be overlooked. Recently, the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) conducted a study<sup>31</sup> on the presence of viruses on banknotes and coins and their ability to transmit them. The research showed that **5 and 50 cent coins and 1 Euro coins have an antimicrobial property with respect to banknotes** (5 Euro notes were tested). The materials and composition make the difference with respect to paper money. Coins are at least 75% copper, to which they primarily owe their properties, while paper money, made with cotton fibre, has demonstrated a greater persistence of bacteria, with concentrations almost unchanged even twenty-four hours after the experiments. In all cases, however, even after one day, the bacteria had not totally disappeared, not even from the coins with a greater concentration of copper.

## Time saving for consumers and merchants

Money has a cost, not just in direct economic terms, but has implications for other aspects of our lives. Roubini ThoughtLab<sup>25</sup> estimated the time needed for each one of us to complete transactions involving cash and cheques:

- **6.4 hours per year needed for 3-4 monthly visits to an ATM** to make a withdrawal (roughly 8 minutes per visit).
- **3.3 hours per year** for each visit (typically one per month) **to a cheque cashing business** (roughly 16.5 minutes per visit).
- **7.3 hours per year for two monthly visits** to a bank branch (around 18 minutes per visit).
- **12 hours per year** for various types of **cash payments**.
- **3 hours per year to fill in cheques** and manage the related activities (roughly 15 minutes per month).

If we consider the hours spent on these actions as a whole and we quantify their costs, for example, think of the hourly cost of an employee or transport costs, just to cite two examples, we can easily identify how much they contribute to a company's budget, not to mention the fact that the time saved could be dedicated to sales and, therefore, also generating new revenues.

28 - Microbial Community Patterns Associated with Automated Teller Machine Keypads in New York City

29 - How Clean is Your Cash? Europeans Rank Cash as Dirtiest Everyday Item | Mastercard

30 - Dirty Money Project | New York University

31 - Study shows European coins have antimicrobial activity in contrast to banknotes | ESCMID



# Payments in Italy: cash and alternative instruments compared

The survey conducted by the Bank of Italy on the social cost of payment instruments in Italy<sup>32</sup>, published in March 2020, gives us a full overview of the costs of cash. **The average unit costs show a lower cost of cash (€ 0,35) with respect to that of debit cards (€ 0,60) and credit cards (€ 1,58) which remains, however the most costly payment instrument** in relation to the value of transactions.

The cheque is confirmed as the most costly instrument at €3.80 for each transaction due to high management costs and for the investments that the banking system has made to make their exchange more efficient, but cash involves the highest cost per inhabitant, at as much as € 122,53 per year (€ 133 in 2009), compared to € 18,09 of

debit cards in second position, with a reduction of roughly 9% compared to 2009.

As reported in the Bank of Italy document, **the total annual cost of cash is more than € 7 billion** (€ 7,44 billion), with € 3.8 billion of these costs borne by merchants. In fact, merchants incur over 50% of the cash management costs, and roughly 55% of the entire payments system in Italy<sup>32</sup>.

The costs of the offering of payment services **generate a saving in resources of roughly 500 million**, due to the replacement of cash and, more generally speaking, the improvements in efficiency achieved in company processes and distribution channels.

**The social costs (or total net costs) of payment instruments**

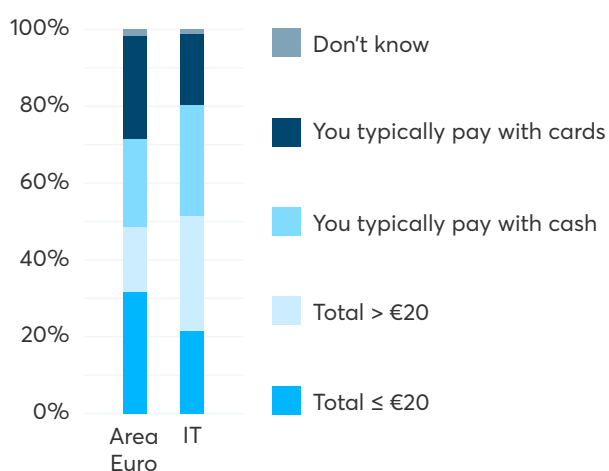
	Cash	Debit cards	Credit cards	Cheques	Credit transfers	Direct debits	Total instruments
€ per transaction	€ 0,35	€ 0,59	€ 1,10	€ 3,80	€ 1,63	€ 0,49	-
percentage of the amount	1,84%	0,95%	1,97%	0,15%	0,04%	0,10%	1,67%
€ per inhabitant	€ 122,53	€ 18,09	€ 12,93	€ 11,66	€ 17,55	€ 6,39	€ 189,16
in percentage of GDP	0,44%	0,06%	0,05%	0,04%	0,08%	0,02%	0,71%
total billion Euro	€ 7,44	€ 1,08	€ 0,85	€ 0,71	€ 1,41	€ 0,39	€ 11,88
no. transactions (units)	21.053	1.836	776	186	865	791	25.507
<b>Total net cost 2009</b>							
€ per transaction	€ 0,33	€ 0,74	€ 1,91	€ 3,54	€ 2,27	€ 0,94	-
percentage of the amount	2,00%	1,07%	1,95%	0,16%	0,02%	0,20%	1,87%
€ per inhabitant	€ 133,00	€ 11,00	€ 18,00	€ 17,00	€ 20,36	€ 9,00	€ 208,36
in percentage of GDP	0,50%	0,04%	0,07%	0,06%	0,10%	0,03%	0,81%
total billion Euro	€ 7,86	€ 0,60	€ 1,09	€ 1,01	€ 1,50	€ 0,54	€ 12,59
no. transactions (units)	23.812	812	569	285	658	576	26.712

Source: Bank of Italy, survey on the cost of payment services, 2016 and 2009 figures

In 2018, in Italy, almost **nine out of ten transactions were conducted in cash**. Yet, according to a survey by Mastercard in June 2020<sup>33</sup>, **25% of Italians say they are willing to abandon it**.

According to a Mastercard survey, during the emergency period, in particular, digital payments were strategic for 70% of Italians as they are considered quicker, reducing the time spent paying in cash, and more hygienic than cash for 81.2% of those surveyed, even though banknotes and coins are still considered easier to use and cost-free. The surveys conducted by the European Union and published in the "ECB Economic Bulletin, Issue 6/2018"<sup>34</sup> show Italians' inclination to pay predominantly in cash (29% compared to a European average of 14%), while **just 18% prefer payment cards**, unlike the European average which is some way off in percentage terms, sitting at 57%.

**Cash transaction amounts divided by classes of amount | 2016**



Source: ECB

The data of the Assofin Observatory corroborated the ECBS's research<sup>34</sup>, according to which, at the **end of 2018, there were 15 million credit cards and 56.3 million debit cards** in circulation, actually classifying our country in 24th place out of 28 European countries, despite the increase in volumes compared to 2017 (+4.7%) lower annual transaction value (€ 1.418 compared to € 1.501 in 2017) indicator

of an increasingly greater propensity to use these instruments also for small payments.

In addition, as outlined in the 2019 Annual Report of the UIF<sup>35</sup> – Italian Financial Information Unit - published in July 2020, highly significant data were also recorded in relation to anti-money laundering. The reports of suspicious transactions monitored by the Financial Information Unit were augmented in September 2019 by objective communications on cash transactions, including split transactions, involving amounts of equal to or greater than € 10.000 per month.

The volume of data acquired is striking: on average, **4.2 million transactions per month, a total of € 22.5 billion in payments and withdrawals and more than one million entities involved**. Data that require control and constant analyses, whose costs augment those already highlighted. The digital payments status is also subject to constant monitoring by the Innovative Payments Observatory of the Milan Polytechnic which, in its 2020 edition, whose research will be concluded in March 2021, monitors the progress of digital payments in Italy.

According to the data presented last April by the Observatory<sup>36</sup>, **card payments per capita rose by 17%, up from 71 in 2018 to 83 at the end of 2019**. The average amount per transaction decreased, amounting to € 53.7 and the average amount falling by 3 compared to the previous year. Transactions using contactless cards rose in particular: +55% compared to 2018 and closed 2019 with a total of €63 billion generated by roughly 1.5 billion transactions (an increase of 67% compared to 2018) for an average receipt of € 42. Again as regards contactless payments, transactions by smartphone also registered double-digit growth, reaching € 1.24 billion, growing by 29% and wearable payments are becoming more frequent, i.e. payments via smartwatch and wearable

33 - Paying digital, living digital: evolution of the life style of Italians before and after Covid-19 | Mastercard

34 - Credit cards: +5% in 2018 but we occupy one of the last few positions in Europe | Il Sole 24 Ore

35 - 2019 Annual Report | Italian Financial Information Unit

36 - Innovative Payments: collaborare paga (Innovative Payments: collaboration pays off) | Innovative Payments Observatory of the PoliMi

accessories in general, which recorded a total of € 70 million in value in 2019.

The most frequent purchases outside of points-of-sale are:

- Telephone top-ups €590 million
- Mobility - €325 million
- Bills - €205 million

The number of POS terminals in Italy has reached 2,170,000 units, with 4% growth over the previous year, 90% of which are enabled for contactless payments. Of these:

- 15,000 Smart POS - More than 1.1 billion transactions, annual average transaction value of €70,000
- 280,000 Mobile POS - More than 2.2 billion transactions, annual average transaction value of € 8.000

The analyses of the Milan Polytechnic, therefore, **show constant growth in the adoption of digital payment systems** by merchants and an increasingly more marked inclination of consumers to frequently use electronic payments.

#### Digital payments in Italy in 2019 in billions of euros and%

Ecommerce, pc and tablet | +15%

18,3

Mobile Commerce | +33%

12

Contactless Payments | +56%

63

Innovative Payments | +109%

3,1

#### Mobile payment in store in billions of euros

2016

7

2017

70

2018

530

2019

1.830

#### Innovative payments outside the store in millions of euros and %

TPL > 43 mln

129

Parking > 115 mln

95

Taxi > 57 mln

48

Sharing > 105 mln

17

Source: Osservatorio innovative Payments, Politecnico di Milano

# Reasons for using cash

In view of the benefits of a cashless society and the costs highlighted in the previous paragraphs, why then - even today - do the vast majority of transactions throughout the world continue to be carried out in cash? The reasons are diverse and can vary from region to region.

The first reason is probably the most predictable: in many developing countries, cash is still the only genuine alternative solution to barter. According to the latest Global Findex database<sup>37</sup> available, published in 2017, **in many developing countries, but not only these, in Asia, Africa and Latin America, the adult population that receives payments for micro or small company activities, uses primarily cash**, with extremes like Ethiopia where other forms are practically non-existent.

A sizeable portion of the adult population of emerging countries still do not bank and **most international remittances** - money sent from people who have emigrated to their families who have remained at home - **are managed in cash**. We are talking about transfers of money totalling **529 billion dollars in 2018**<sup>38</sup>.

If we turn our attention to the most developed and

digitalised economies, the incentives increase and can also vary from country to country, based on cultural reasons, habits and the offer of physical touch points for withdrawals. The most common reasons identified include:

## Low interest rates

In the Western world, especially in Europe, **the reference rates have been close to zero** or actually negative for some time.

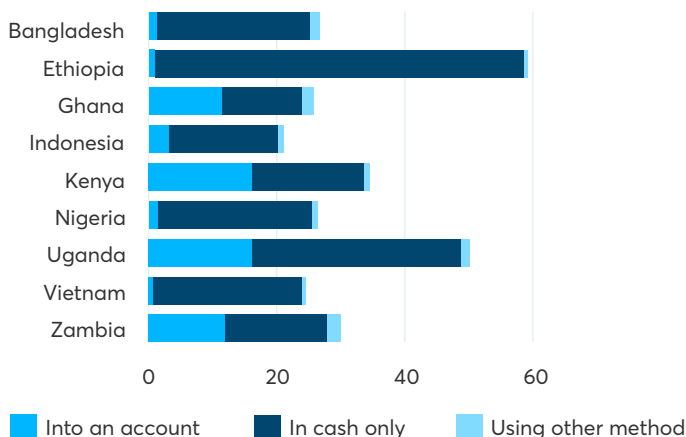
This means, among other things, that any cash paid into a current account would not be remunerated, unlike other periods in history.

Therefore, whoever has cash available may be less interested in using the banking system, preferring **alternatives that offer immediate availability of "liquid funds", like keeping it at home or in safety deposit boxes**, which nonetheless have a cost but ensure the anonymity of the contents.

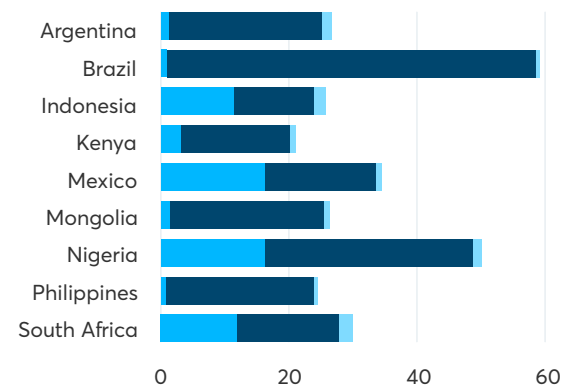
## Increasingly greater availability of ATMs

There has been a general increase in ATMs (called "Bancomat" in Italy) worldwide, especially in emerging countries. Although, on the one hand, this trend should reduce the number of people who don't have a current account due to withdrawal problems, on the other a more extensive availability

Adults receiving payments for agricultural products, 2016 (%)



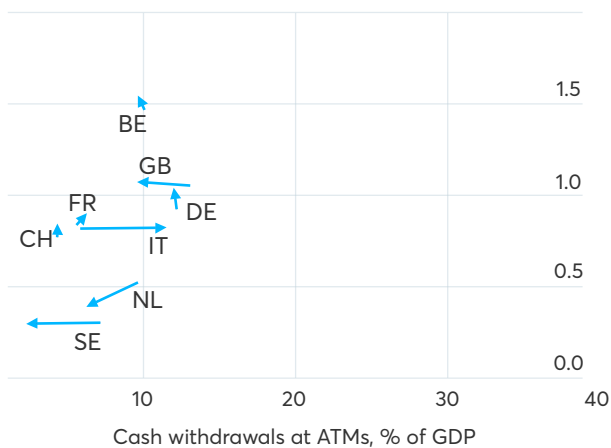
Adults receiving self-employment payments, 2016 (%)



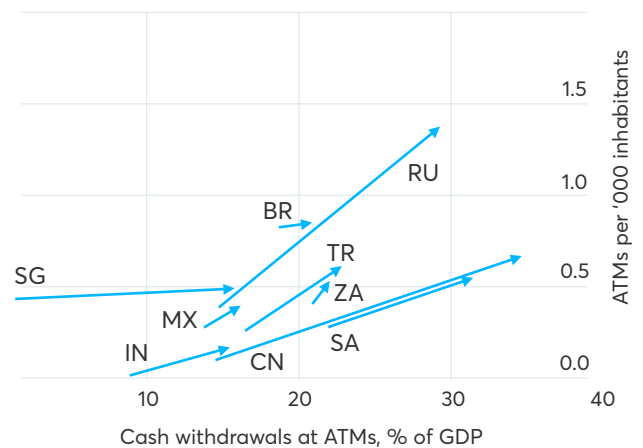
<sup>37</sup> - Global Findex database 2017 | Global Findex

<sup>38</sup> - Remittances Data | KNOMAD

ATM density in advanced economies



ATM density in emerging countries



Source: Report "Payments are a-changin' but cash still rules", Bank for International Settlements

of withdrawal points facilitates payments in cash, since it is becoming even easier to take out cash.

### Greater control of spending

We'll begin by saying that in many cases it is a falsely held belief. It is objective that electronic payment instruments offer the chance to obtain an accurate update of spending, often in real time too. It is true instead that **in some cultures, the use of digital instruments** - like home banking apps - **is still not widespread** - and it is likewise true that, for many people changing habits is extremely difficult and, despite the benefits, they prefer more traditional instruments. The possibility of touching coins and banknotes in your wallet with your hands definitely gives a tangible sense of the spending, given that its volume decreases, but banking apps and detailed digital reminders are more accurate and, increasingly more, offer family budgeting features.

### Cultural legacy and generational need

Closely related to control of spending: the choice of cash is often just habit, as it is something that has always worked and is reassuring at the same time. Although it is understandable **that the older population may have problems in using technologically advanced instruments** like digital wallets [with respect to the younger generations](#),

**credit cards are now also part of their daily life**, thanks to the fact that no specific knowledge is required, aside from remembering the PIN - and not even that is required for contactless payments of under €25.

### Universal payment instrument

Cash is always accepted. There are sectors and categories still reluctant to use alternative payments to cash, in Italy as abroad. **Ease of use and no cost for use** (apparent as a matter of fact, as we have seen this previously) make it an easy-to-use instrument for anyone. Alternative instruments are still considered difficult to use by some people (for categories of less digitalised people), costly and generally less accessible (think of both POS and payment platforms for merchants and credit and debit cards for consumers) to those who do not have dealings with banks.

# Cashin: the solution for digitalising cash

There is no shortage of initiatives to reduce cash, as we have seen, and they are helping to reach the pre-established objectives of governments and large companies, the chief promoters of the move to digital solutions, especially in the more digitalised economies, even if more slowly than hoped.

The countries that were the first to invest in the digitalisation of payments, however, are demonstrating that the complete disappearance of banknotes and coins will probably not take place within pre-set deadlines, mainly to ensure the freedom of choice for consumers, as also stated by the representatives of central banks, and because there are sections of the population that cannot or do not wish to give up this form of payment. Therefore, it becomes strategic to identify solutions that are able to reduce their impacts, on both the finances of companies and the customer journey of their clients, considering that today, in fact, cash is still the preferred form of payment throughout most of the world.

A major contribution to the creation of useful instruments for this purpose has come from technological innovation, which has made it possible to develop **hybrid, digital and "physical" platforms, able to manage the cash handling process at points-of-sale with uninterrupted processes** that require increasingly less intervention from the merchant that fully delegates cash management activities.

We are talking about the evolution of a series of services that have been in place for some time and that regard the entire chain concerned by cash management. We refer, more specifically, to smart safes or cashin machines, which are not

limited to containing the sums of money waiting to be withdrawn or the subsequent payment to the merchant's current account but, thanks to the integration of digital platforms, they can manage flows of money as far as crediting of the current account.

**Cashin machines are, to all intents and purposes, a new method of managing cash** and represent the most cutting edge solution on the market today. The service allows the merchant to manage and control cash completely securely through the installation of a smart safe linked to the service provider's systems which, thanks to an on-line dashboard, provides the ability to check all information relating to cash paid in real time.





The money stored in the safe relieves the point-of-sale manager from any responsibility for any risks connected with the handling of the sums paid in; in addition, the system automatically activates the request for the withdrawal of money to security vans, when the machine approaches the capacity limits in terms of the amount or number of banknotes paid in.

The most significant innovation, but not the only one, of these services is the possibility to ensure "turnkey" management of the entire process, which up until very recently, required the merchant to manage it by "compartments", by contacting the individual players involved (e.g. safe manufacturer, cash collection company, counting room, etc.)

## Advantages and services included in Cashin

The adoption of cash management services with smart safes, with respect to the solutions offered on an individual basis by companies operating in this domain, makes it possible to use a solution developed by a single entity, tailor-made to meet the client's needs.

The advantages may depend on the partner chosen and the personalisation of the service; for this reason, it is worthwhile looking at this in depth with the provider. However, we can identify the main ones:



### **Credit times**

Makes it possible to quickly receive crediting of the payments collected, reducing the times and costs related to payment operations at advanced ATMs, bank branches or via cash collection services.

### **Instant digitalisation**

Enables the dematerialisation of cash in real time at the time of payment, also reducing the potential risks tied to prolonged contact with banknotes.

### **Control of payments**

Through an on-line dashboard, users can monitor collections also for retail chains with several points-of-sale. The most advanced solutions offer a complete overview of all collection systems (e.g. credit cards, [digital wallets](#), alternative payments).

### **Reduction of risk**

Optimisation of the cash management process in a fully secure manner which reduces the risk of the theft of money, which is, nonetheless the responsibility of the service provider from the moment it is paid in.

### **Real time monitoring**

Monitor all collections of every point-of-sale in real time from a single dashboard. It is simple and immediate thanks to myStore.

Again depending on the service and partner chosen, services may be included in the offer or personalisable depending on the provider's business model. In this case too, we can identify some examples of them:

### **Accessibility from any device**

The software platform is often a genuine cash management tool, possibly cloud-based, through which the data relating to all transactions and events that have occurred are transmitted. Data can be accessed easily and securely, at any time, from any location, via any device.

### **Personalisation and integrability**

The Cashin modules are systems that can be used in any point-of-sale and with any already existing cash platform. In the most advanced configurations, credits can be carried out at any bank, without opening a specific current account.

### **Security and Reliability**

Cashin machines ensure the maximum security of the deposit, recognition of counterfeit notes and ease of use for the user. The machines and their contents are ensured by the provider.

### **Current account crediting in real time**

The banknotes placed in the smart safe can be credited in real time to the current accounts opened at partner banks or any bank within a maximum of two working days.



## Technical features of smart safes

There are various types of cashin machines on the market to meet the needs of both individual points-of-sale and the chains with several points-of-sale and more structured personalisation needs. **Safes are distinguished by: capacity, payment method, contents** (e.g. banknotes, coins, cheques), **the technology for "collection" of the amount paid in and with network connection systems** (e.g. wireless or via LAN cable).

- **Capacity:** indeed based on the fact that the volume of money can vary depending on the type of point-of-sale, the capacity may vary. Today, the most common machines can hold between 1,000 and 2,000 banknotes but there are bigger versions, ideal for large-scale distribution.
- **Payment methodology:** the payment of banknotes can be carried out with a single acceptor, similar to that of a standard ATM that is, or a feeder, which enables several banknotes to be inserted simultaneously; the machine will automatically pay in all of the paper money.
- **Type of contents:** depending on the requirements, smart safes can be installed that only accept banknotes or also coins and cheques. Naturally, depending on the type, not all services can be guaranteed, such as for example crediting in real time.
- **Connection systems:** the machines are connected to the systems of the service provider which processes the payment data and makes them available through the on-line dashboards also accessible by the merchant for real time checks. The connections are typically "physical", via LAN cable or wireless.

## The payment and crediting process

The functioning of this type of cash management services makes provision for linear processes that, however, require accurate coordination of all phases. Once the machine is installed in the point-of-sale, it can be configured to requirements, for example by creating profiles for payers and registering all machines, fundamental phases for ensuring an accurate picture of all machines, in the case of multiple stores. It is then possible to identify the capacity limits, also personalised per individual store, so that block emails do not arrive when the machine reaches its physical capacity.

When the set-up phases are complete, the machine is operational and ready for payments that can be made at any moment. Each payment generates a flow of information to the information systems of the service provider that enable the crediting to the current account including in real time, and the updating of the data displayed in the control dashboard.

**When the capacity limit set, which can always be varied depending on the requirements, is reached, the cash collection company is automatically involved**, which arranges for the collection from the Point-of-Sale. In order to ensure the maximum security, only the personnel responsible can tend to the machine, open it and collect the **sealed bag from the machine**.

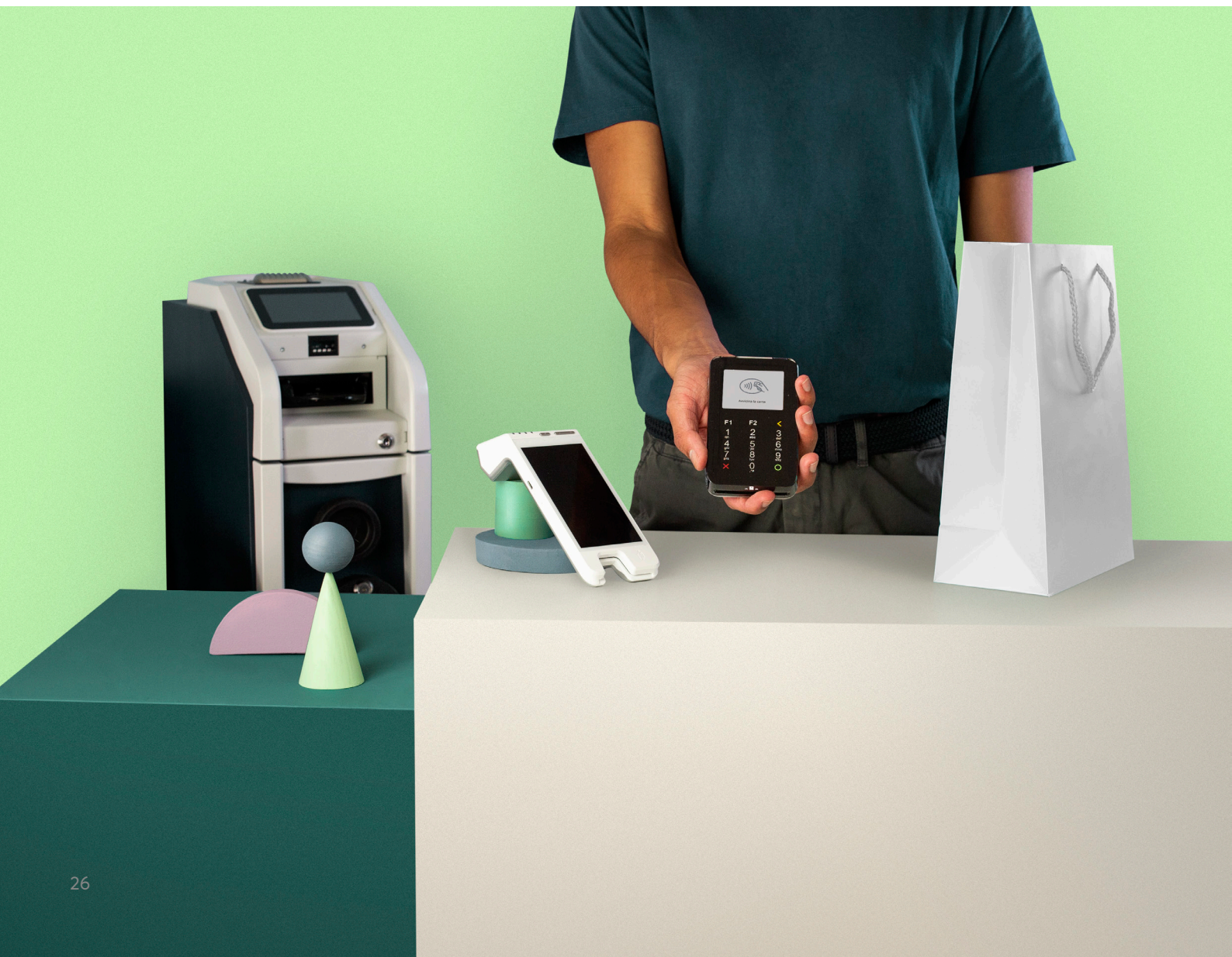
At this point, the process is activated for transportation to the counting room, which verifies the contents. Any discrepancies with the amount inside the safe are the responsibility of the provider and not the merchant who, as we have stated, can verify it in real time: point-of-sale, payer code, date and time, total and banknote denominations.

# Axerve: at the forefront in collection management and simplification

Axerve is the perfect partner for those looking for a unique and integrated solution for managing all collections, in any form and on all sale channels. Also for this reason, it has integrated cash digitalisation solutions, by innovating their processes and simplifying their control. Among the first companies to offer advanced solutions like those outlined above, it is now able

to meet the needs of merchants of all sizes and with needs that are also structured, typical of large retail chains.

Axerve's cashin offer sets it apart for its flexibility and security, offering the convenience of a single contact point and the peace of mind of not having to worry about anything, allowing its customers to concentrate solely on sales.



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