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Money in XXI century – will cash survive?

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Abstract

This article analyses the role of cash in the modern economy in the context of the rapid growth of cashless payments. It examines the nature and functions of cash, as well as the evolution of modern payment methods. Based on empirical data, the article demonstrates a clear trend away from cash, although the pace of these changes varies across countries. It is also emphasized that cash continues to serve important functions, including ensuring accessibility and independence from technology. The conclusions indicate that despite its declining importance, cash will not disappear entirely but will coexist with cashless payments.

Keywords: Money, cash, cashless payments, CBDC.

Introduction

Money has played a fundamental role in the development of economic systems throughout history. From barter systems to metal coins, paper banknotes, and finally digital transactions, the concept of money has constantly evolved alongside technological and social changes. Each stage of this evolution reflects broader transformations within societies, including the expansion of trade, globalization and the increasing complexity of financial systems. In the XXI century, rapid technological development and the digitalization of financial services have significantly transformed the way individuals and institutions conduct transactions. Electronic banking, mobile payments and online shopping have become common elements of everyday economic activity. As a result, traditional forms of money, particularly physical cash, are increasingly being supplemented and in some contexts replaced by digital alternatives. As digital payment systems continue to expand, an important question arises – will traditional cash survive in the era of digital payments? The growing popularity of cashless payments is closely linked to the expansion of e-commerce, improvements in financial infrastructure and the increasing integration of digital technologies into daily life. Consumers today can complete transactions almost instantly using smartphones, payments cards or online platforms. This convenience has encouraged governments and financial institutions in many countries to promote the development of cashless economies, emphasizing the benefits of efficiency, transparency and cost reduction in financial transactions.

Despite these developments, the potential disappearance of cash remains a highly debated topic among economists, policymakers and financial experts. While some argue that technological innovation will inevitably lead to a fully digital monetary system, others emphasize the continued relevance of cash in ensuring financial inclusion, protecting individual

privacy and maintaining the resilience of payment systems during crises or technological disruptions. The debate surrounding the future of cash therefore extends beyond purely technological considerations and touches upon broader economic, social, and political issues. Questions about access to financial services, the role of central banks, the protection of personal data and the stability of financial systems all play a significant role in discussions about the future of money.

1. Essence and functions of cash

Money constitutes one of the fundamental institutions of every modern economy, as it enables the efficient functioning of production, exchange and distribution processes. In economic theory, money is generally understood as a commonly accepted good that is used to make payments for goods and services and to settle financial obligations. According to David Begg, Stanley Fischer and Rudiger Dornbusch, money can be defined as a universally accepted commodity through which payments for delivered goods are made and liabilities are settled. This definition highlights the essential role of money as a medium that facilitates economic exchange and enables the functioning of market economies. In a broader sense, money serves as a tool that allows individuals and institutions to express and compare the economic value of goods and services. Without such a universal measure, economic actors would face significant difficulties in determining relative prices and conducting rational economic decisions. For this reason, money is widely regarded as one of the most important mechanisms supporting the organization and coordination of economic activity.

Despite its crucial role in economic systems, it is important to note that there is no single legal definition of money in many legal systems. This absence prevents the complex and evolving nature of money itself. Over time, money has undergone significant transformations, both in its physical form and in its economic functions. Historically, early economies relied primarily on barter exchange, where goods and services were traded directly for other goods and services. However, barter systems proved inefficient due to the necessity of a “double coincidence of wants,” meaning that both parties had to possess exactly what the other desired. The introduction of money solved this problem by providing a widely accepted intermediary that simplified trade and facilitated the development of markets. Throughout history, money has evolved through several stages. Early forms included commodity money, such as cattle, salt or precious metals. Later, monetary systems were based on metallic money, particularly coins made of gold or silver. Over time, these systems were gradually replaced by paper money issued by central authorities, which obtained its value from government regulation and public trust

rather than from the intrinsic value of the material itself. In modern economies, the development of financial systems has further expanded the concept of money to include bank deposits and electronic forms of money, which are widely used in modern transactions.

From an economic perspective, money can also be described as a liquid financial asset that does not generate direct income in its basic form. Liquidity refers to the ease with which an asset can be used to complete transactions without loss of value. Because money can be immediately used for payments, it is considered the most liquid asset within the financial system. This characteristic distinguishes money from other financial assets such as bonds, shares or real estate, which may require time or transaction costs to convert into a means of payment.

The importance of money within economic systems primarily results from the functions it performs in the economy. Economic literature commonly identifies several fundamental functions of money, each of which contributes to the efficient functioning of markets and economic activity.

The first and most essential function of money is its role as a medium of exchange. In this capacity, money is widely recognized and accepted in transactions between economic agents. Individuals exchange their labour, goods, or services for money, which can then be used to purchase other goods and services. As emphasized by Edwin Mansfield (2002), the function of money as a medium of exchange significantly simplifies the process of trade compared to barter transactions. In a barter economy, individuals must find trading partners whose needs and resources precisely match their own, which greatly limits the scale and efficiency of economic exchange. By contrast, money acts as an intermediary that eliminates these limitations and enables the development of complex market economies.

The second important function of money is its role as a unit of account, often referred to as a measure of value. In this function, money provides a common denominator in which the prices of goods and services can be expressed. This allows economic actors to compare the relative value of different products and make rational decisions regarding production, consumption and investment. According to Stanisław Owsiak (2015), the effectiveness of money as a measure of value depends largely on the stability of its purchasing power, which refers to the quantity of goods and services that can be obtained with a unit of money. Significant fluctuations in purchasing power, such as those caused by high inflation, can undermine the reliability of money as a unit of account.

The third key function of money is its role as a store of value, sometimes referred to as the function of hoarding or accumulation. This function allows individuals to transfer purchasing power from the present to the future. Economic agents can save money and use it later to purchase goods or services when needed. As noted by Mansfield (2002), individuals may hold money to conduct future transactions. However, the ability of money to function effectively as a store of value depends heavily on its stability over time. If money loses value rapidly due to inflation or economic instability, individuals may prefer to store wealth in alternative assets such as real estate, collectibles, or interest-bearing bank deposits.

Closely related to the functions described above is the role of money as a means of payment. In this function, money is used to settle obligations that are not directly connected with the immediate purchase of goods or services. Examples include the repayment of loans, the payment of taxes and the settlement of various financial liabilities such as insurance premiums or social security contributions. The means-of-payment function highlights the importance of money within broader financial relationships and institutional arrangements within the economy.

In addition to these domestic functions, money can also perform the role of an international means of payment. Certain currencies are widely accepted beyond the borders of the country in which they are issued and are commonly used in international trade, financial transactions and reserves held by central banks. Prominent examples include the United States dollar, the Euro, the British pound sterling and the Swiss franc. These currencies function as international settlement instruments due to the economic strength and stability of the countries or monetary unions that issue them.

For money to effectively fulfil its economic functions, it must possess several essential characteristics. First, it must be universally accepted and widely recognized within a given economic system. Without general acceptance, money would not be able to serve as an effective medium of exchange. Second, money should be portable and convenient, allowing individuals to easily carry and use it in everyday transactions. Third, it must be divisible into smaller units, enabling transactions of varying sizes to be conducted efficiently. Another crucial property is security against counterfeiting, as the credibility and stability of the monetary system depend on public trust in the authenticity of money. Finally, money should be durable, meaning it can withstand repeated use without significant deterioration.

In modern monetary systems, economists and central banks also distinguish between various monetary aggregates, which measure the total supply of money circulating within an economy. These aggregates differ primarily in terms of the liquidity of the financial assets they

include. Liquidity refers to the degree to which an asset can be quickly and easily used for payment without losing value.

The most basic measure is the M1 aggregate, which includes the most liquid forms of money. This category typically consists of physical cash, demand deposits that allow the issuance of checks and traveller's checks. Because these components can be used directly and immediately in transactions, they are considered highly liquid. A broader measure is the M2 aggregate, which includes all elements of M1 as well as additional financial assets with slightly lower liquidity. These typically include savings deposits, small time deposits, overnight repurchase agreements, shares in money market funds and short-term foreign currency deposits. Although these assets may require minimal procedures before being used for transactions, they still retain relatively high liquidity. The broadest commonly used measure is the M3 aggregate, which encompasses the components of both M1 and M2 along with larger and less liquid financial instruments. These may include large time deposits, longer-term repurchase agreements and long-term foreign currency deposits. Because these instruments cannot always be used immediately for transactions, they are considered less liquid than the assets included in M1 or M2. The distinction between these aggregates is important for economic analysis and monetary policy, as central banks monitor the growth of different measures of the money supply to assess economic conditions and maintain price stability.

In summary, money represents a fundamental economic institution that supports the functioning of modern market economies. Through its roles as a medium of exchange, a unit of account, a store of value, a means of payment and an international settlement instrument, money facilitates economic interaction and contributes to the efficient allocation of resources. Its effectiveness depends not only on its institutional design but also on the degree of trust and stability within the economic system in which it operates.

2. The development of cashless payments in the XXI century

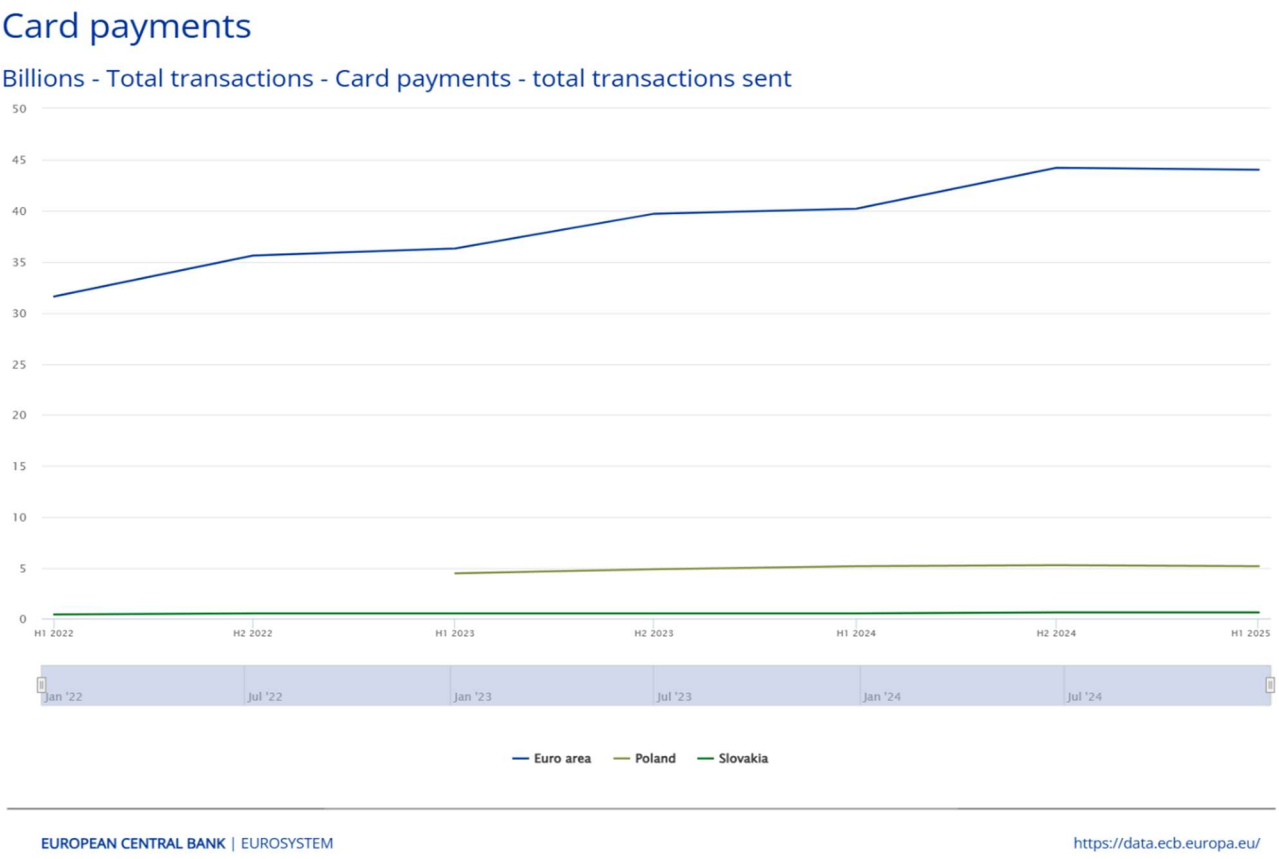
Cashless transactions refer to monetary settlements in which both parties (the debtor and the creditor) hold a bank account and no cash is used at any stage of the settlement. A payment transaction using an electronic money instrument is also considered a cashless transaction. There are many payment instruments and services related to cashless transactions available on the market. Paper-based instruments include wire transfer orders, standing orders and clearing checks. Card-based instruments include prepaid, debit, credit and charge cards. Non-cash electronic instruments, on the other hand, include electronic transfers and direct debits.

The use of cashless payments offers benefits on multiple fronts. For the government, it reduces the costs of issuing and handling cash and at the macroeconomic level, it has a positive impact on the economy. For banks, shifting from cash transactions to cashless payments reduces costs associated with cash handling such as securing cash registers, teller services, vaults, cash counting, packaging and transport, and also minimizes losses resulting from cash-related crimes. The primary potential benefits customers can gain from using cashless payment instruments are convenience and greater security. Customers can perform most banking operations and online payments remotely, at a convenient time and place. Cashless payments help reduce transaction costs, save time and increase the security of transactions.

The growth of cashless payments in the XXI century was made possible by several key factors. First and foremost, the rapid development of information and communication technologies should be noted. The widespread adoption of the internet and mobile devices, such as smartphones, has made it possible to use financial services anywhere and at any time. Online and mobile banking have become the norm and financial institutions have begun investing in modern customer service systems. The expansion of payment infrastructure was also a key factor. The increase in the number of payment terminals and the development of contactless technology, like NFC, significantly facilitated cashless transactions. At the same time, the growth of e-commerce created a demand for fast and secure online payment methods. Payment cards were one of the foundations for the development of cashless payments in the XXI century.

At the beginning of the century, debit and credit cards were already in use, but it was only in the following years that they saw widespread adoption. The increase in the number of cards issued and the expansion of the acceptance network made them the primary payment method in many countries. Figure 1 presents number of card payments in Eurozone, Poland and Slovakia in 2019-2025.

Figure 1. Number of card payments in 2022-2025



Source: European Central Bank Database

The eurozone recorded by far the highest volume of payment card transactions. During the period under review, the number of transactions rose from approximately 32 billion in the first half of 2022 to approximately 44 billion in the second half of 2024. In Poland, a clear increase in the number of transactions was observed: from approximately 4.5 billion in the first half of 2023 to over 5 billion in 2024–2025. Growth is stable, though less dynamic than in the eurozone. Slovakia had the lowest transaction volume, throughout the analysis period figures hovered below 1 billion transactions.

A break-through moment came with the introduction of contactless payment technology, which significantly sped up the transaction process. Thanks to this technology, users can make payments without having to enter a PIN for smaller amounts, which increases convenience and reduces checkout times at points of sale. Another important stage in the development of cashless payments was the widespread adoption of online payments. With the rapid growth of e-commerce, there appeared a need to implement fast and secure methods for conducting online transactions. Electronic payment systems enable the immediate transfer of funds between bank accounts, which significantly streamlines the purchasing process.

Advances in security technologies, such as data encryption and multi-factor authentication, have enhanced the security of online transactions and helped build user trust. As a result, online payments have become an integral part of today's digital economy. In the context of the future of payment systems, there is also increasing discussion of blockchain technology and cryptocurrencies, which may serve as an alternative to traditional forms of payment. At the same time, the concept of central bank digital currencies (CBDCs) is being developed, which could play a significant role in the further digitization of financial systems.

The growth of cashless payments brings many benefits. Among the most important are convenience, speed and ease of transaction. Electronic payments also enable better control over expenses and increase the transparency of economic transactions. At the same time, certain challenges also arise. These include the risk of cybercrime, the need to ensure an adequate level of personal data protectio and the problem of digital exclusion of certain segments of society. Older people or those living in less developed areas may have limited access to modern financial services.

The growth of cashless payments in the XXI century is one of the most significant trends in today's economy. Technological advancements, social changes and global events have contributed to the rapid rise in the importance of electronic payments. In the future, we can expect further digitization of payment systems and the emergence of new innovative solutions that will further enhance the convenience and security of transactions.

3. Why is cash still necessary?

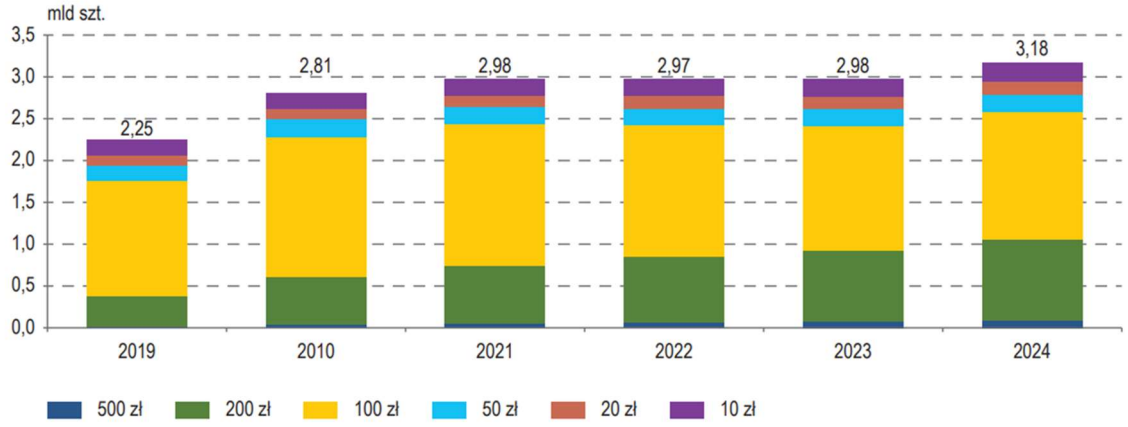
Despite the rapid development of modern financial technologies and the growing popularity of electronic payments, cash continues to play an important role in the economic system. While many countries are seeing a gradual increase in the number of cashless transactions, banknotes and coins remain an essential part of everyday economic life. Cash not only serves as a means of payment but also provides access to the financial system for the digitally excluded, guarantees transaction privacy and acts as a safety net in times of crisis. For these reasons, the complete elimination of cash in the coming years seems unlikely.

3.1. Universal availability

One of the most important reasons why cash remains necessary is its universal availability. Unlike electronic payments, using cash does not require a bank account, a payment card, or internet access. This means that anyone can use it, regardless of age, education level, or technological proficiency. Cash is therefore the most universal means of payment. This is

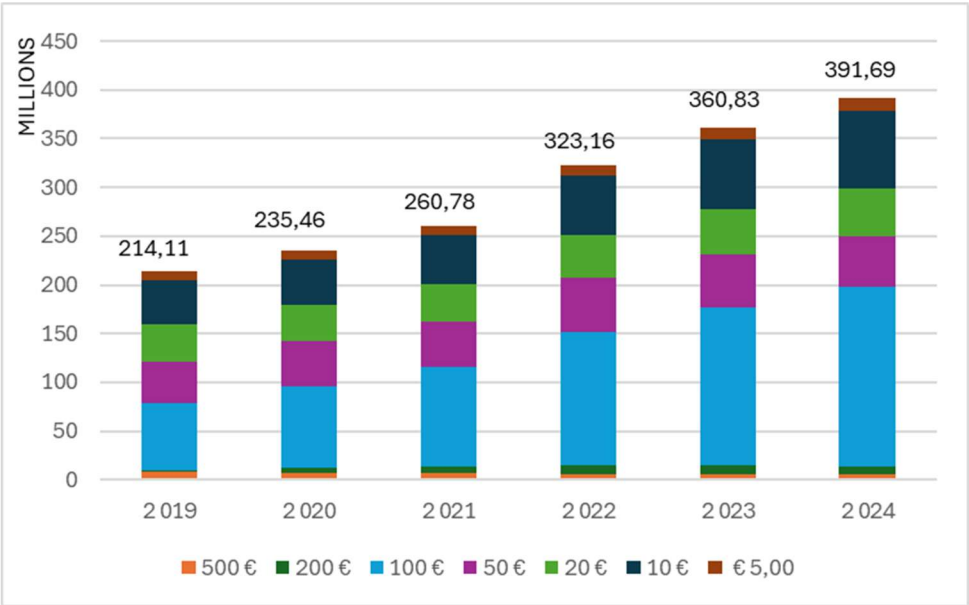
particularly important for older adults, who often do not use modern financial technologies or do not feel confident using banking apps or mobile payments. For many seniors, cash remains the simplest and most understandable way to make payments. People with lower incomes or those living in smaller towns may also have limited access to banking services, which is why the ability to use cash is very important to them. Figures 2 and 3 show the number of banknotes in circulation in Poland and Slovakia by denomination for the years 2019–2024.

Figure 2. Quantities of banknotes in circulation by denomination (in zł) from 2019 to 2024



Source: Raport prepared by the Issue and Treasury Department of the National Bank of Poland.

Figure 3. Quantities of euro banknotes in circulation in Slovakia



Source: own study based on data from European Central Bank, ECB Data Portal

The data indicate an overall increase in the number of banknotes in circulation. In Poland, the number rose from approximately 2.25 billion in 2019 to over 3.1 billion in 2024. The 100-złoty and 200-złoty denominations account for the largest share of the total number of

banknotes. Slovakia has also seen a marked increase in the number of banknotes in circulation, from approximately 214 million in 2019 to nearly 392 million in 2024. The €100 and €50 denominations account for the largest share, with the number of €100 banknotes growing particularly rapidly. An increase is also evident in the lower denominations (€10 and €20), while the number of €500 banknotes is gradually declining. The increase in the number of banknotes may indicate the continuing importance of cash in the payment system and its role as a store of value. This confirms that the public still prefers cash payments due to their simplicity and ease of use. In many European countries, cash still accounts for a significant portion of all retail transactions. This means that despite the development of financial technologies, cash remains an essential element of the payment system and enables all social groups to participate in economic life.

3.2. Independence from technology

Another significant advantage of cash is that it does not rely on technological infrastructure. Unlike cashless payments, which require functioning in IT systems, telecommunications networks and access to electricity, cash can be used without any electronic devices. This means that its use does not depend on the operation of payment terminals, banking systems, the internet, or mobile apps. As a result, it remains a means of payment that can function even in the event of technological disruptions. Cashless payments rely on a complex infrastructure comprising banks, payment card operators, clearing systems and telecommunications networks. For an electronic transaction to be completed, all these elements must function properly. A technical failure, a power outage, or internet connection issues can lead to a temporary suspension of the ability to make payments by card or using other electronic tools. In such situations, consumers and businesses may encounter difficulties in carrying out even basic transactions. In this context, cash serves an important safety net function within the payment system. Its physical form means it can be used regardless of the functioning of digital infrastructure. In the event of banking system failures or problems with payment networks, cash allows economic activity to continue and enables people to make everyday purchases. For this reason, it is sometimes viewed as a factor that increases the financial system’s resilience to various types of technological disruptions.

In recent years, there have been situations where failures of banking systems or payment operators prevented card payments in stores or cash withdrawals from ATMs. In such moments, cash often remained the only means of payment allowing transactions to be completed. This shows that despite the growing popularity of electronic payments, physical money continues to

play a significant role in ensuring the continuity of the payment system. For this reason, central banks and financial institutions emphasize the importance of maintaining access to cash in the economy. This is because cash can serve as an alternative means of payment in emergency situations, such as technological failures or disruptions in the financial infrastructure. In this context, cash can be viewed as an additional safeguard for the stability of the financial system and the continuity of transactions in the economy.

3.3. Transaction privacy

Another important aspect of using cash is the ability to maintain privacy when making transactions. With electronic payments, most financial transactions are recorded by banks and other institutions participating in the payment system. Every transaction made with a payment card, bank transfer, or via a mobile app leaves a digital record containing information such as the payment amount, the location of the transaction and the time it was executed. This data is then stored in the IT systems of financial institutions for a specified period and may be used for various purposes, such as financial settlements, customer behavior analysis, or combating financial fraud. Cash payments differ in this respect, as in most cases they do not require the registration of personal data or the use of IT systems. A transaction involving the transfer of physical cash between parties does not generate a digital trail that could be automatically collected and analyzed by financial institutions. This allows users to make payments more anonymously, which for many people is an important aspect of using money in everyday life.

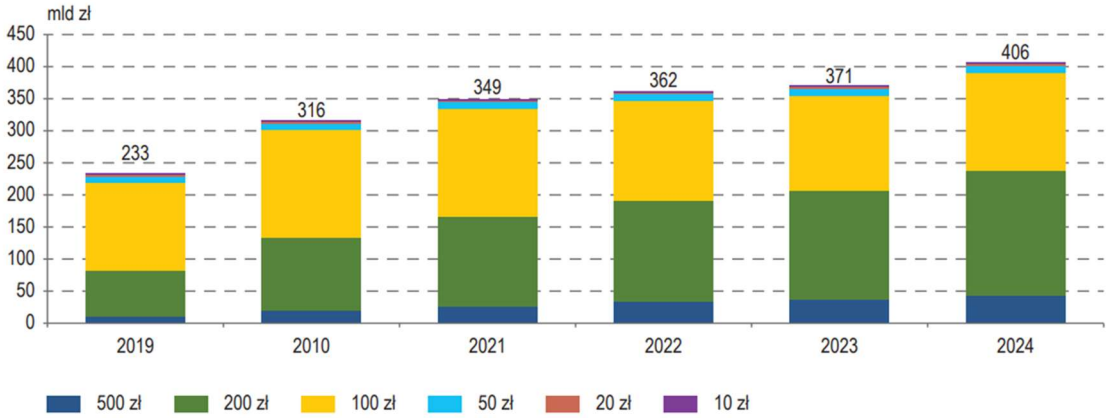
The importance of financial privacy is increasingly emphasized in the context of the ongoing digitization of financial services. With the growth of online banking, mobile payments and digital platforms, the volume of data regarding users' financial activities is growing. This information can provide a detailed picture of users' consumption behaviors, purchasing preferences, and lifestyles. Consequently, discussions are emerging regarding the range of financial data protection and the need to ensure an adequate level of privacy in payment systems. In this context, cash is often viewed as a means of payment that allows for greater control over one's own financial data. This is because using cash does not require transmitting information to intermediary institutions or creating digital transaction records. For this reason, some consumers still prefer to use cash, particularly for small purchases or transactions where privacy is important to them. At the same time, it should be emphasized that the anonymity of cash payments is one element of a broader debate regarding the balance between the convenience and efficiency of electronic payment systems and the protection of user privacy.

3.4. The importance of cash in times of crisis

Cash also plays a key role in times of crisis and during periods of heightened economic uncertainty. During times of financial, political, or social tension, many people choose to hold larger amounts of physical cash. This phenomenon results from the belief that cash is an immediately accessible means of payment that can be used regardless of the functioning of financial institutions or technological infrastructure. During times of crisis, households often increase their cash holdings as a form of financial security. Holding physical cash allows them to maintain financial liquidity even when access to banking services is limited, payment systems malfunction, or sudden changes occur in the economic environment. In economic literature, this phenomenon is sometimes referred to as an increase in demand for cash driven by uncertainty, which is characteristic of periods of economic instability. Such trends were visible, for example, during the COVID-19 pandemic, when many countries saw a significant increase in the amount of cash in circulation. Due to uncertainty surrounding the pandemic's progression, some members of the public chose to withdraw larger sums from their bank accounts and hold them in physical form. Similar reactions were also observed during periods of heightened geopolitical tensions in Europe, when interest in holding cash as a form of security against unforeseen events increased.

In Poland, data published by the National Bank of Poland indicate that there has been a marked increase in the value of banknotes in circulation in recent years. The data is presented in Figure 4. This trend was particularly evident during the early stages of the pandemic, when households increased the amount of cash they held. The value of cash in circulation rose from PLN 233 billion in 2019 to PLN 316 billion in 2020, and continued to grow in subsequent years, reaching PLN 406 billion in 2024. This confirms that the pandemic period marked a turning point, after which the upward trend was sustained. This increase is often interpreted as a sign of financial caution and the need to have readily available funds in conditions of heightened uncertainty.

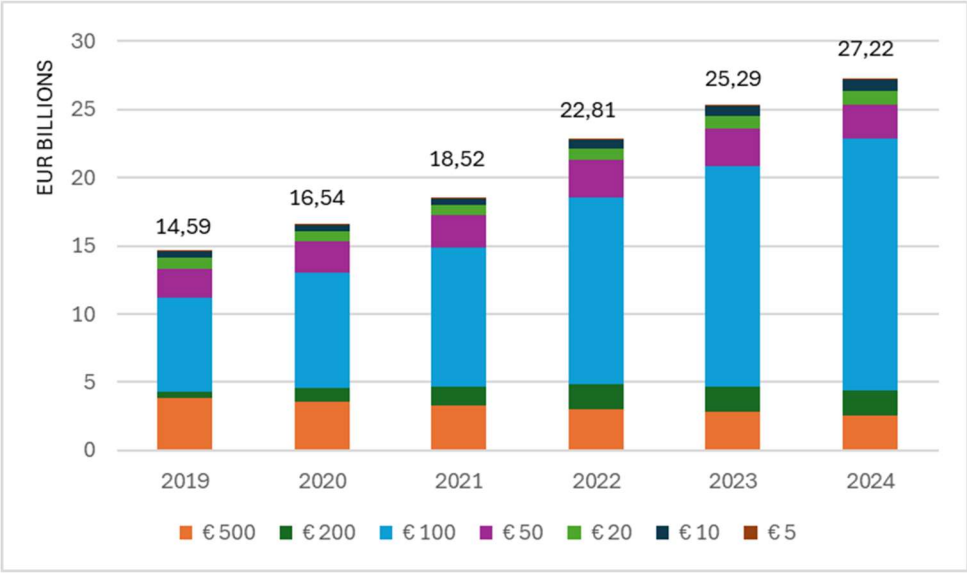
Figure 4. Value of banknotes in circulation by denomination (in zł) from 2019 to 2024



Source: Prepared by the Issue and Treasury Department of the National Bank of Poland.

Similar trends can also be observed in Slovakia. Data published by Národná banka Slovenska indicate increased interest in holding cash among households during periods of economic uncertainty. The data is presented in Figure 5. The total value of cash in circulation rose from €14.59 billion in 2019 to €16.54 billion in 2020 and continued to increase in subsequent years, reaching €27.22 billion in 2024. The observed increase reflects households' preference for financial security and the need for readily available funds amid ongoing economic uncertainty, despite the growing use of electronic payments.

Figure 5. Value of euro banknotes in circulation in Slovakia



Source: own study based on data from European Central Bank, ECB Data Portal

These examples show that cash serves not only as a means of payment in everyday transactions but also as a form of security in emergency situations. Its availability and independence from technological infrastructure mean that, during times of crisis, it becomes an

important element of financial stability for many people. As a result, despite the rapid development of modern payment methods, cash remains a vital component of the financial system and an important tool for ensuring the public's sense of economic security.

4. The future of money

Rapid technological progress means we are operating in an increasingly digitized environment. These changes also extend to the financial sector, particularly the payment services sector, as evidenced by the growth of cashless payment methods and the rapid rise in the prominence of cryptocurrencies. The growing share of cashless transactions has led many central banks around the world to explore the introduction of digital currency, which could enhance the efficiency of payment and settlement systems. However, it is important to remember that, in addition to potential benefits, digital money also entails significant risks stemming from its impact on current functioning systems.

CBDC, defined as a central bank obligation expressed in a valid unit of account, in digital form, is intended to serve as legal tender, taking the form of an electronic record, different from the money available to banks and other entities in accounts held with the central bank. The functioning of digital money will be distinguished from that of traditional money, including electronic money, by the central bank performing all settlements and programming its properties. Analyses and research by central banks and international financial institutions indicate that digital money issued by a central bank will circulate alongside cash. Several technical, organizational and legal options for its operation are currently being considered, but these solutions will need to equally consider economic, financial, and systemic conditions. It's worth noting that general-purpose CBDCs are a digital equivalent of national currency, intended for use by households and businesses. Unlike traditional currencies, they do not exist in cash (coins and banknotes), but only in digital form. CBDC is also completely different from instruments used for cashless transactions, such as money transfers or card payments, because it represents the equivalent of a direct claim on a central bank, rather than an obligation of a private financial institution.

The design of central bank digital money could take two forms, where CBDC could take the form of:

– electronic accounting entries in accounts held at the central bank for individuals and businesses,

– tokens - digital representations of value that can be stored on an electronic instrument issued by or on behalf of the central bank (on a prepaid card, SIM card, or in a phone app).

Under the first model, retail customers would be able to hold a central bank account, fully securing their funds because the central bank cannot fail. The bank would also offer additional tools or applications enabling the transfer of funds between CBDC accounts or their exchange for other forms of money, for example by transferring them to a commercial bank account. The second model represents a digital alternative to banknotes and coins. Tokens could be issued by a central bank and distributed by commercial banks. The fundamental difference between these solutions lies in their different verification methods during use: tokens require authentication, while accounts require verification of their owner's credentials. The basic features of CBDC, important from the point of view of the concept of its issuance, include availability, anonymity, funds transfer mechanism, interest rate, limits and restrictions on use or storage.

The role of the central bank and the scope of its data collection in the CBDC system remain important issues. Three alternative models are possible. In the direct model, the central bank is responsible for all financial transactions. It is an institution that monitors customers and processes transactions, provides retail services and executes retail payments. All funds are deposited directly with the central bank, drastically reducing the role of the banking sector. In the hybrid model, the system participants are commercial entities whose activities focus on processing retail transactions. The central bank is responsible for maintaining a register of all transactions and also maintains a backup technical infrastructure activated in case of a failure or other emergency situations. The intermediate model is like the hybrid model, with the difference that the central bank only keeps a register of large-value transactions. Regardless of the solutions adopted regarding the construction of digital money, it will be necessary to create a transparent legal framework for the introduction and operation of CBDC in individual countries where digital money will function.

Central bank digital money, as a new technical solution in the payment system, raises numerous, often unprecedented challenges from a legal, economic and social perspective. In addition to the existing functions of modern money, CBDC should meet socio-economic needs, be attractive to consumers and at the same time guarantee the stability of the banking system and payment systems. The introduction of digital money will undoubtedly change the way the banking sector operates, as CBDC will compete with the standard payment system. If consumers were to be able to transfer funds directly to the central bank, this could lead to intensive cash outflows from commercial banks, causing their elimination and deterioration of their financial condition, or even bankruptcy, which would limit the number of banks, changing the structure of the banking sector and the availability of credit. It is assumed that the

introduction of CBDC would not change the general principles of conducting monetary policy by the central bank, and the issuance of CBDC would rather mean the availability of a new form of central bank money, which, by increasing the share of non-anonymous and monitorable non-cash transactions in economic transactions, could contribute to reducing the scale of such negative phenomena as: conducting untaxed economic activity, corruption, money laundering or terrorism financing.

The programmability of digital money is seen as both an advantage and a potential threat, as it means that the issuer of the money (the central bank of a given country) can determine and limit how it will be spent and by when. State authorities will be able to influence the programming of digital money, for example by influencing the price of a loan intended for the purchase of a given good or service or even influencing the purpose of using digital money by programming the purchase of specific goods. In practice, this may result in more targeted spending of, for example, family benefits by the administrators of these benefits, but on the other hand, it raises accusations of limiting citizens' freedom of choice. The introduction of digital currency therefore poses a threat to traditional freedoms and rights, particularly the right to privacy, as the central bank, by maintaining transaction records, will have full access to information about citizens' financial transactions. For this reason, CBDC could become a tool used to monitor the economic activities of individual citizens as well as society. Furthermore, CBDCs make it possible to issue "designated" money that consumers (the holders) can spend only on specific goods and within a strictly defined time frame, which will force consumers to use the money in a strictly defined manner. This mechanism will make it easier for the central bank to control the velocity of money in the economy, but it will significantly reduce (restrict) consumers' freedom.

The introduction of a central bank's digital currency necessitates amendments to existing laws and the enactment of new ones. Under Polish law, this would require amendments to the relevant provisions of the Constitution and the following laws: the Act on the National Bank of Poland, the Banking Law, the Foreign Exchange Law, and the Payment Services Act. An important challenge will be ensuring the consistency of Polish legal frameworks regarding the regulatory framework for the digital euro. Ensuring cybersecurity for all users of CBDC-related infrastructure remains a separate issue. However, unlike the current cashless payment system, with the participation of commercial banks, in the digital money system with the central bank at the forefront as the main creator of solutions, the dominant role in ensuring the security of information technologies will be played by state institutions, which are generally responsible for the security of cyberspace.

The experience of the few countries in the world that have decided to implement digital money indicates that this process may take a different nature, both in terms of legal and technological solutions, which vary depending on the purpose for which it was implemented.

The first country to issue a CBDC is the Bahamas, where the digital Bahamian dollar has been officially recognized as legal tender since October 2020. The central bank is responsible for issuing the currency, while commercial financial institutions handle ongoing payment processing. Its creation utilized blockchain technology and token-based CBDC. The introduction of digital money was primarily aimed at counteracting exclusion due to access to financial services and increasing the efficiency of the payment system, which was partially achieved. In the case of the Bahamas, a very rapid CBDC implementation process was evident, accompanied by a lack of educational campaigns. The introduction of the digital currency involved minor changes to the legal system. Only the Act on the Central Bank was amended, which indicated that it has the exclusive right to issue money in the form of cash and money in electronic form. A regulation was also issued, which specified the general characteristics of CBDC, indicating, among other things, who can provide electronic wallets and the limits of amounts that can be handled by them. These minor changes can be considered insufficient in relation to the challenges posed by central bank digital currencies, taking into account that the aforementioned regulation, specifying the characteristics of the digital Bahamian dollar, came into force several months after its official implementation; such action should be considered unacceptable from the perspective of the principles of a democratic state of law and citizens' trust in state institutions.

Nigeria is the second country in the world and the first in Africa to introduce a central bank digital currency. In October 2021, eNaira was launched. Issued and regulated by the Central Bank of Nigeria, it has legal tender status and was intended to make it easier for residents to make payments, combat financial exclusion, reduce cash processing costs and improve tax collection. Nigeria's digital currency arrived at a critical time when Nigeria was grappling with a severe cash shortage. This was caused by the central bank's decision to replace older banknotes with larger denominations in the face of rising inflation, reducing the amount of cash in circulation from 3.2 trillion naira to just 1 trillion, leading to street protests. Citizens protested the lack of cash and demanded the reintroduction of paper money instead of adopting CBDC. Despite the enormous difficulties in accessing cash, CBDC was largely ignored by Nigerians, who instead turned their attention to cryptocurrencies.

Jamaica is also a pioneer in the introduction of CBDCs, having introduced digital currency (Jamaica Digital Exchange, or Jam-Dex) since July 2022. Unlike the Bahamas, the introduction

of CBDCs was preceded by a broad campaign by the government and central bank, as well as a pilot program encouraging Jamaicans to use Jam-Dex. The first 100,000 Jamaican citizens who opened digital wallets after April 1, 2022, received a 2,500 JD (approximately $16.40) government incentive payment. Three months later, it was revealed that this limit had been met. Jamaica Digital Exchange was designed to meet user needs, such as ATM currency conversions and fee-free transactions, aimed at attracting those who have not previously had access to traditional banking services due to high transaction fees and stringent account opening requirements. To implement digital currency, the Jamaican Parliament amended the Bank of Jamaica Act to include a digital form of the Jamaican dollar. Parliament also passed the necessary prohibitions against counterfeiting the new form of currency.

In the case of the People's Republic of China, work on creating its own digital money (e-CNY) began in 2014 and two years later a pilot project began in several Chinese cities. So far, the Chinese government hasn't announced the nationwide rollout of digital currency, but the process of widespread adoption is underway. One way to encourage the use of the digital yuan was a lottery, in which Beijing residents could register via two banking apps and thus participate in a drawing for one of 200,000 prizes: a free 200 e-CNY (approximately €28), which they could then spend only in select stores. The project allowed for the testing of the digital currency among a larger group of users, thus distributing 40 million e-CNY. Similar lotteries were also organized in other cities in China. The use of e-CNY was also actively encouraged during the 2022 Beijing Winter Olympics, the Summer Universiade in Chengdu, and the Asian Games in Hangzhou. Studies of digital wallet usage indicate that many have been created but are not used to transact or hold e-CNY. This data proves that although many people tried digital cash and opened virtual accounts, they eventually abandoned this type of payment after a short time. The primary reasons cited for this are the security and anonymity of transactions.

The future of money will become increasingly digital, and CBDCs could become a key element, increasing the efficiency and accessibility of payments. At the same time, future money will entail a greater role for central banks and their influence on the economy and citizens' financial behavior. This could improve monetary policy, but it also risks restricting privacy and the freedom to dispose of funds. The development of CBDCs could also change the structure of the banking sector. Ultimately, the shape of future money will depend on striking a balance between innovation, financial system stability, and the protection of citizens' rights and trust.

Conclusions

The conducted analysis leads to the conclusion that money remains a fundamental component of modern economic systems, undergoing continuous evolution driven not only by technological progress but also by social and institutional transformations. The changing forms of money reflect both consumer preferences and the increasing complexity of global financial systems. At the same time, it is emphasized that the future of money will be largely shaped by digital innovations, particularly the development of central bank digital currencies (CBDCs). These instruments have the potential to enhance the efficiency and accessibility of payment systems, while also strengthening the role of central banks within the economy. However, their implementation is associated with significant challenges, including risks related to user privacy and cybersecurity.

Overall, it can be stated that the future monetary system will most likely be based on the coexistence of cash and its digital counterparts, rather than the complete elimination of either form. Maintaining a balance between innovation and financial stability will be of crucial importance. Therefore, policymakers and financial institutions should ensure that the development of new payment technologies does not undermine financial inclusion, individual freedoms, or the resilience of the financial system. Ultimately, the further evolution of money will depend on maintaining public trust while effectively leveraging opportunities and mitigating risks associated with ongoing digitalization.

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