MUSEUM OF THE BANK OF GREECE

Exhibition Catalogue

πληρωμές payments

Ένας οδικός χάρτης
A road map

BANK OF GREECE
EUROSYSTEM

CENTRE FOR CULTURE
RESEARCH AND DOCUMENTATION

πληρωμές
payments

Ένας οδικός χάρτης
A road map

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Centre for Culture, Research
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Tel. 210 320 3562

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BANK OF GREECE
EUROSYSTEM

Contributors

Exhibition curators:
Yorgos Korfiatis
Manos Kordakis

Authoring:
Yorgos Korfiatis
Elias Grivas
Sotiria Donti
Katerina Ioannou-Siouta
Iraklis Papageorgiou
Stelios Chrisomallis

General coordination:
Nikos Dougekos

Editing, proofreading
and English translation:
Yorgo Seferlis
Christina Linardaki
Eftychia Panayiotou

Graphic design:
Nikos Dougekos
Efi Panagiotidi

Photographs:
Museum and Collections Section

Production:
Bank of Greece Printing Works /
Commercial and Value Document
Printing Section

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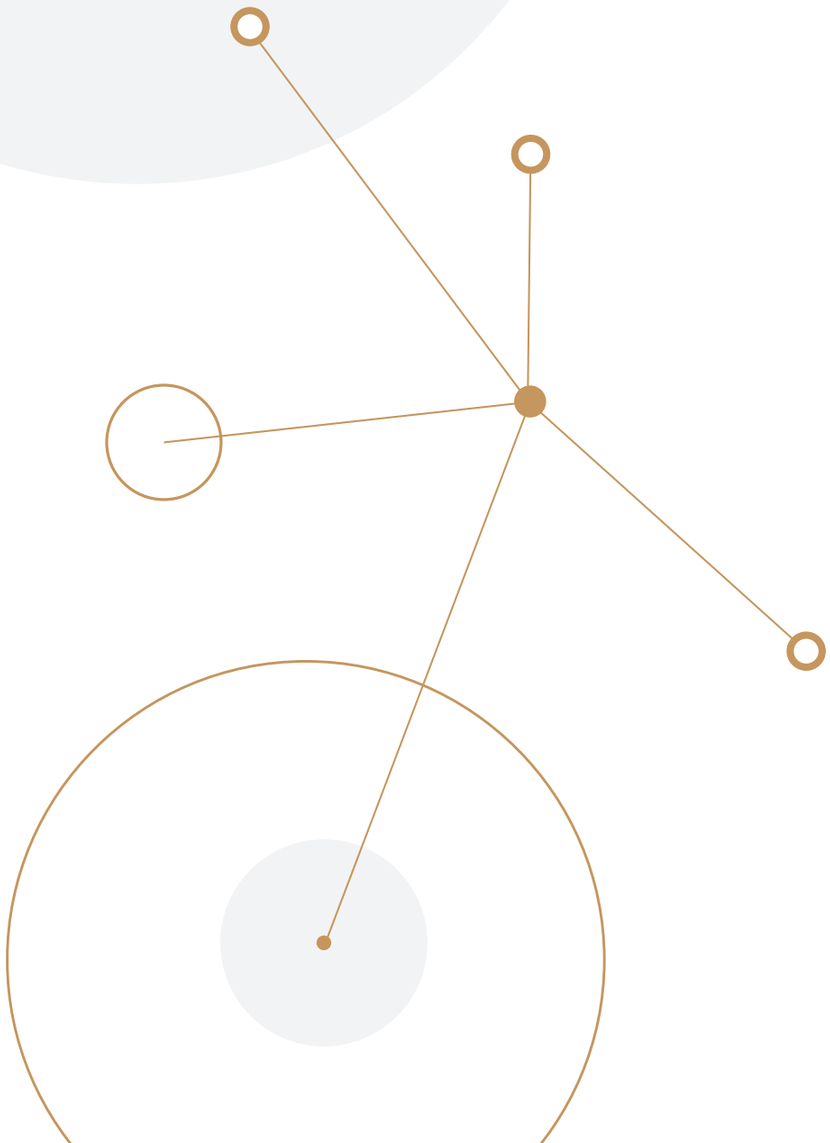

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Foreword

The Bank of Greece has always sought to encourage and promote financial innovation, while at the same time exploring the risks and the perceived opportunities and ensuring a proper balance. Along these lines, and given the array of technological breakthroughs already introduced into the financial sector as well, the new temporary exhibition held at the Museum of the Bank is dedicated to electronic retail payments.

The exhibition looks at payments through the lens of our country's central bank. In other words, in addition to presenting the means of payment currently available, it sheds light on the mechanisms and systems that operate behind our payments, and also underscores the vital contribution of the Bank of Greece to the reliability of the whole process.

It is an interactive display that incorporates, among other things, a specifically designed smartphone application – the first of its kind ever developed by the Bank. Visitors can thus have a highly enjoyable experience, and get more actively and personally involved while being informed on the unseen routes that payments follow along their way to completion.

This exposition of novel payment methods runs parallel to the collection of more traditional means of payment (banknotes, coins, and other historical types of money) on permanent display at the Museum's standard exhibition. Complementing each other, these two presentations team up to put the accent on the present and herald – to the extent possible in a rapidly changing environment – an extremely interesting future where technology meets economics and banking.

Yannis Stournaras
Governor

A brave new world

Lately, the use of technology has revolutionised work, daily routines, and life in general. In large part, all of us nowadays communicate over the Internet, keep track of our daily matters on a mobile device, call a taxi using an application, and carry out money transactions online.

Against this background, the new temporary exhibition held at the Museum of the Bank of Greece, organised in cooperation with the Bank's Payment and Settlement Systems Department, is dedicated to e-payments, i.e. the modern ways in which people can pay for goods and services and thus meet their needs and wishes. Moreover, the demand for instant, cost-free, safe and easy payments points to the direction in which everyone is moving, including Payment Services Providers, giant corporations or start-up companies, card schemes, merchants and consumers alike.

And so, as technological advances increasingly change the way we transact, our Museum's new temporary exhibition could not but address all interested parties on the same wavelength. Both the exhibits and the multitude of accompanying visual and educational material approach the visitors in a way that invites and entices interaction, learning through play, and active participation.

In more detail, visitors will find an interactive roadmap of payments, since any payment is merely an itinerary that starts with the payer and ends with the payee; they will watch educational videos; play a video game; and follow the "shining" route of a card payment authorisation. All relevant installations have been made possible thanks to the valuable contribution of the Bank's Technical and Administrative Support Department.

In addition, with the help of the Bank's Information Systems Department, we have created the Bank's first ever smartphone application, which simulates a digital wallet, as well as an entertaining multiple choice quiz, by which visitors can learn to make payments in the best possible way.

On the other hand, we do not overlook cash, the traditional means of payment that will continue to exist, regardless of technological breakthroughs. Alongside this new temporary exhibition stands our Museum's permanent display, featuring banknotes and coins that represent not only a means of exchange, but also evidence of our economic history.

Inspired precisely by this dialogue between the emerging new and the long-established traditional, we have produced the first collectible medal of our Museum, for which the Bank's Printing Works Department has quite successfully experimented with a pioneering minting method that allows, from a different viewing angle, the appearance of an additional image. Indeed, a collector's item, a medal of three facets and two sides: one celebrating the impressive and the modern, and the other the time-honoured and the traditional.

Manos Kordakis
Head of the Museum
and Collections Section

The invisible side of payments

We live in an era where the widespread use of digital technology radically reshapes the way we share and exchange information, the way we engage in transactions, and the way we perceive payments. Nowadays, cutting-edge technologies like Augmented Reality (AR) and Distributed Ledger Technology (DLT) are also applied in the field of payments, an area of the economy increasingly characterised by the adoption of innovative modern-day solutions that gradually replace the existing traditional ways of transaction execution.

Admittedly, the majority of people already using up-to-date means of payment lack the required level of technical expertise that would allow them to take full advantage of the existing potential, and thereby to facilitate their everyday economic and social activity. Most users follow linear behavioural patterns, and tend to select payment methods based mainly on specific features of the available means of payment, overlooking the vast range of possibilities actually offered. To identify the root cause of this phenomenon, one should focus not so much on people's unfamiliarity with modern technological solutions and/or the constantly increasing speed of information dissemination, but rather on repetitive behavioural patterns as a result of habit. This last observation forms the **basis of the wager placed by the new temporary exhibition** held at the Museum of the Bank of Greece: **to proportionately increase the number of informed means-of-payment users after their visit**.

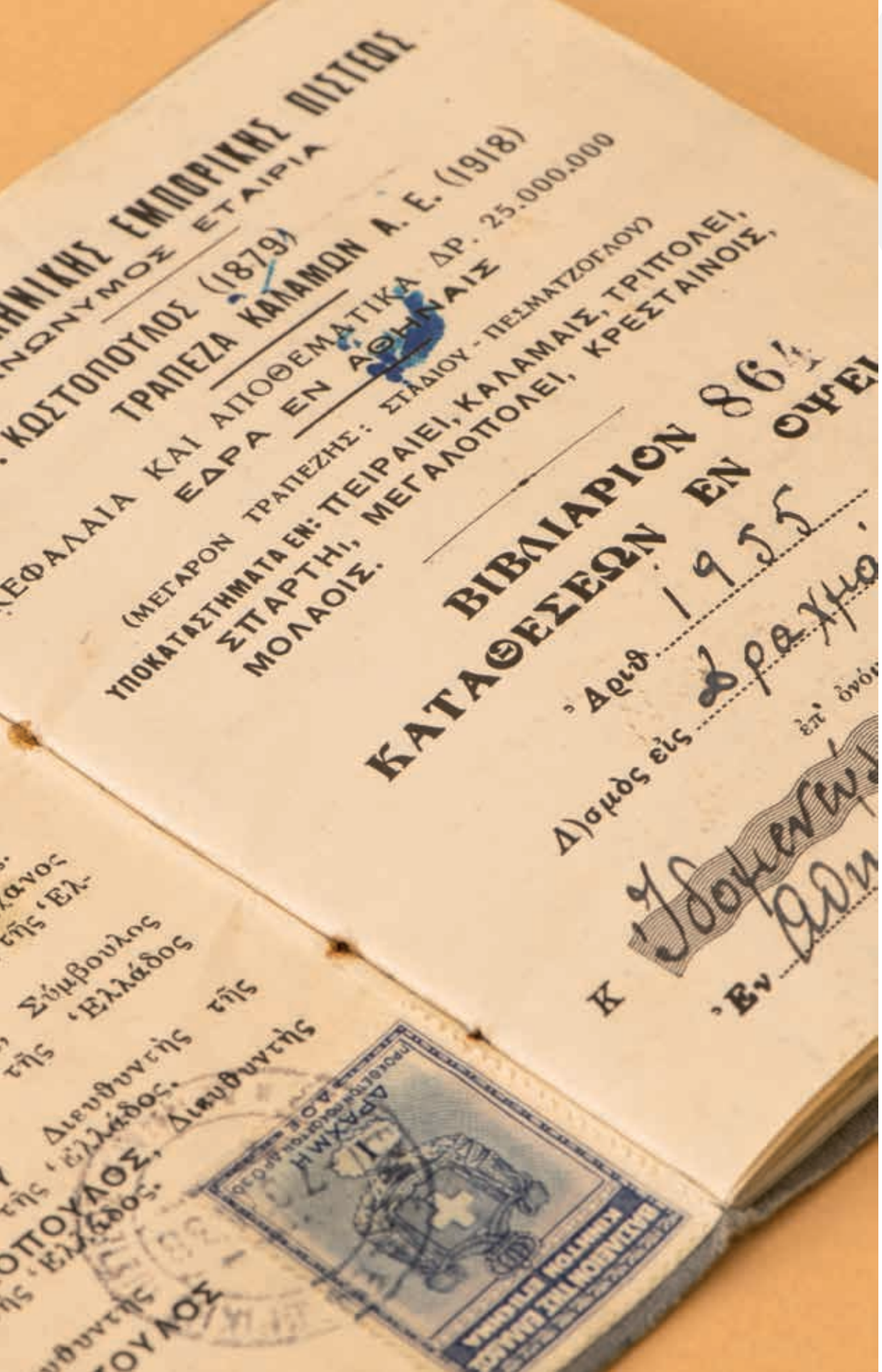
In this conceptual context, the exhibition attempts to shed light on the past, capture the present and outline the future of retail e-payments, through the lens of the Bank of Greece, an institution that stands as a pillar of stability for the financial system and ensures smooth operation of the retail payments market in Greece. This new temporary exhibition aspires to broaden the users' knowledge base and help them frame a more inclusive picture of the available payment solutions, in hope that their visit may become a driver of practical improvement in their everyday lives.

Focusing on four **means** of cashless payments (i.e. **credit transfer**, **card**, **cheque**, and **direct debit**), the exhibition explains the key notions associated with their respective structures and functions. Additionally, it presents in a simple but explanatory way the mechanisms that operate behind payments, while at the same time highlights and underscores the pivotal role of the Bank of Greece in the whole process.

In simple terms, this exhibition is a comprehensive abecedary of **e-payments**, a roadmap **leading to a better understanding** of our payments! Through a specially designed smartphone application and a fun interactive game, visitors will have the opportunity to carry out virtual payments, become part of the narrative, and put to practice what they learn – or already have known – about the modern means of payment.

But let's take things from the start. To be able to initiate a payment (and thus meet our age-old human need to transact), we have to hold an account with a payment service provider or, in proper regulatory terminology, a **payment account**…

Yorgos Korfiatis
Head of the Fund Transfers and
Infrastructure Study Section



PAYMENT ACCOUNT

The notion of the payment account is closely related to the people's need to transact.

Since ancient times, humans have always engaged in trade and in the sale and purchase of goods. At first, this activity took place only at local level, at the town's market or the village's main square. But the development of shipping and the discovery of new lands led to the expansion of commercial relations beyond these narrow geographical boundaries. This had an impact on the until then traditional ways of payment, which were typically carried out using precious metals or coins, given that (due to volume or weight constraints) their transportation was becoming increasingly cumbersome, creating at the same time security concerns.

The **invention** of the payment account was an **innovation** that helped solve these problems. Merchants could now easily travel along great distances to buy (or sell) goods, using special documents, which enabled their bank to charge their account with the money sum of any transaction and deliver the equivalent to the beneficiary ("payee"). Therefore, the birth of the **payment account** has been a result of the development of trade in an internationalised environment.

USES OF A PAYMENT ACCOUNT

Currently, a payment account allows its holder to actively participate in economic life and carry out quite an extensive range of transactions, once unfeasible for the majority of ordinary people. The flexibility of today's payment services market allows for various different types of payment accounts to be offered, tailor-made to the needs of any individual. So, one comes across several such account types (savings, checking, investment, payroll, etc.) held with **credit institutions** (banks), as well as **electronic money** payment accounts, held with **electronic money institutions**.

Chairman of Pisteos Bank, Yiannis Costopoulos, accesses an ATM with a Cashcard, the first cash card issued in Greece in 1981.
Photograph extract 1985, Alpha Bank Historical Archives

An account owner has access to a multitude of actions that instantly make his/her everyday financial and social activity easier; exchanges of the sort include cash deposits or withdrawals, credit transfers, payments by card, or direct debits.

The payment account has evolved through a series of innovations. At first, all transactions and account entries were registered in *printed* form. But the progress of technology has led to the adoption of large IT systems which now store the accounts' activity and balances electronically.

A major breakthrough has been the invention of the **Automated Teller Machine (ATM)**, back in 1967, by the Barclays bank of London. At the time, the machine operated with paper punch-cards instead of plastic ones and dispensed only 10-pound notes.

In Greece, the first ATMs were installed in the early 1980s. Their introduction revolutionised the existing transacting behaviours, as for the first time clients could have round-the-clock access to their account, free from the restrictions imposed by the banking hours. Later on, the ATMs evolved so as to offer a plethora of other transactions (such as cash and/or cheque deposits, credit transfers, payments of invoices and utility bills or other types of debts).

WHAT LIES AHEAD REGARDING THE USE OF PAYMENT ACCOUNTS?

In our time, the galloping pace of technological progress along with digitalisation have brought about sweeping changes in the form and operation of accounts.

The adoption of the relevant EU legislation by domestic **Payment Services Providers (PSPs)** and the resulting introduction of the **International Bank Account Number (IBAN)** have put an end to the diversity of the various existing account structures and the resulting difficulties regarding the execution and processing of everyday transactions.

Today, accounts are kept in electronic form, and the end consumer can make purchases of goods and services, as well as initiate credit transfers, via one **uniform account**.

Payment Services Providers

PSPs

are, inter alia, credit institutions, electronic money institutions and payments institutions

IBAN

The IBAN in Greece
consists of 27 alphanumeric characters
and has the following structure:

GR 11 PSP 1234 0000001234567890

Country code
(two capital letters)

Check digits
(2-digit number)

PSP code
(3-digit number)

Branch code
(4-digit number)

Customer's bank account number
(16-digit number – when the account number comprises less than 16 digits, it is completed with zeros at its beginning)

Yet, we also live in a period marked by an increased demand for instant transactions. The **speed** at which electronic devices process and execute our commands emerges as a major requirement of our daily lives! In this modern reality, the key driver of developments in the field of payment services provision is the **minimisation of the time and effort** needed to safely complete everyday transactions.

The above traits, i.e. the speed and ease of payments, are already present in the Greek market in the shape of **electronic wallets**, which store value in the form of e-money and can be used for the purchase of goods, the payment of bills, or even the transfer of credit to other payment accounts. In effect, digital wallets are e-money payment accounts, which by now have evolved so much that they can hardly be distinguished from traditional payment accounts held with credit institutions.

However, the **traditional payment account holders** are also the object of the Eurosystem's efforts, as testified by the development of **innovative payment services**, which aim at providing fast and safe means of payment to people and businesses. In a similar vein, the Eurosystem promotes instant payment systems, where the payee receives the payment amount in only a few seconds. Thus, payment account holders are able to instantly carry out retail purchases as easily as they would have done using a card or an e-wallet. This trend is expected to further develop in the near future with the interconnection of ever more PSPs to these systems.

Instant payments lay a suitable foundation for the progress of innovative payment solutions in Europe. Nevertheless, they are not the only initiative of the sort. The new EU Directive on payments (**PSD2**) offers to "new players" the opportunity to provide innovative payment services in the EU payments market. The Directive compels traditional actors to share with new market players, also called "third party providers", only the absolutely necessary data for the provision of said services following their customers' consent. The new providers, authorised by their respective central banks, will offer payment initiation and account information services to the consumers with a higher degree of safety and efficiency.

At the same time, both the Eurosystem and the Bank of Greece explore new ways in order to adapt the Distributed Ledger Technology (DLT), and more precisely the use of "smart contracts", to the infrastructure of the financial sector. This technology is a powerful tool with a wide variety of applications in many different areas of the existing financial system, such as payment account activity registration and management.

In parallel, the Eurosystem monitors closely and analyses carefully the impact of a potential introduction of a Central Bank Digital Currency (**CBDC**), not only on the financial system but on the economy in general. In such an event, the wider public would be able to hold accounts in digital central bank money.

It is obvious that we experience a period of ground-breaking developments and intense debates regarding the nature and function of our payment accounts.

Central Bank Digital Currency (CBDC) and Distributed Ledger Technology (DLT)

CBDC is a category of e-money which (just like the coins and bank-notes in circulation) constitutes a claim **against the central bank**, but (unlike the above) is **digital**.

Currently, central banks already use a form of CBDC, the so-called "minimum reserves" of the credit institutions (i.e. deposits held with the central bank). Nevertheless, cash (in the form of coins and bank-notes) is the only means of payment that allows users to transact in **central bank money**. If the latter wanted to digitise their cash, they would have to hold CBDC, something unfeasible today. In the future, however, the introduction of a CBDC could prove to be a most promising digital alternative to cash, mainly as regards **guaranteeing the safety and efficiency** of retail payments.

The **Bank of Greece** studies and analyses developments in the field of innovations, with a focus on technological safety, effectiveness, neutrality and freedom of choice for payment means users, thereby achieving the efficiency of transactions, as well as the provision of a level playing field to market participants. In addition, it actively participates in the relevant research efforts of the Eurosystem, having presented a comprehensive theoretical proposal for a CBDC based on DLT – **A Real-Time (Instant) Payment System for a CBDC on a DLT platform**. In parallel, it cooperates with other National Central Banks for the creation of a DLT network that, among other things, simulates retail and large value payment systems and controls the safety and the flow of transactions. The Bank of Greece thus acquires the appropriate knowhow, always staying **at the core of developments**.

The adoption of a public-held CBDC is a complex project, subject to a considerable degree of uncertainty. Its evaluation, as well as the application of DLT, call for a very **careful cost/benefit analysis** of both their incentives and possible effects, with respect to monetary policy and financial stability. In any case, the future of payments is bound to be based on similar cutting-edge technologies that will revolutionise the way we carry out our everyday transactions.

CREDIT TRANSFER

HISTORICAL BACKGROUND

In Europe, from antiquity through to the Renaissance, transactions were carried out in metal coins (as paper money first appeared in China in the 11th century and in the West in the 17th century). Commercial exchanges using **bank accounts** started being carried out only gradually by the 14th century. Initially, both counterparts (buyer and seller) had to be present at the bank for the respective entries to be made to their accounts. Later on, transfers of money were carried out by a simple written order on behalf of the buyer to debit his/her bank account.

The birth of both the payment account and the credit transfer method was a result of the development of trade and the need to execute exchanges with safety, speed and effectiveness.

WHAT IS A CREDIT TRANSFER?

Credit transfer refers to a payment service whereby the payer orders a PSP (with which he/she holds a payment account) to transfer a certain amount of money from his/her own account to the account of the payee. It may relate to a payment for goods or services, or to a remittance (like the allowance parents give to their children, or the foreign currency immigrants send to their families). In general, credit transfers are essential to the operation of a dynamic and sound economic system.

CREDIT TRANSFERS: FROM SIMPLE TO COMPLEX

Credit transfers operate at various levels. The simplest case involves transfers between two accounts held with *the same PSP*, i.e. either between two accounts of the same customer (e.g. from a savings to a loan account), or between the accounts of two different natural or legal persons. All such transfers are cleared and settled internally, within the PSP's own accounting system.

At a second level, we encounter credit transfers in euro between *two different domestic PSPs*. To be completed, such transactions require the "mediation" of a clearing system (e.g. DIAS SA with respect to retail payments in Greece).

A third level relates to cross-border credit transfers between *two PSPs that are located within the European Economic Area (EEA)*. Completion of such payments requires the intervention of a pan-European clearing mechanism (like the privately owned EBA STEP2).

At both the second and third levels, credit transfers comply with the specifications of the **Single European Payments Area (SEPA)**, while settlement of final positions among all ancillary euro payment systems is carried out at the EU-wide system TARGET2.

The final level includes payments *in any tradable currency and any location where* credit transfer services are offered. The execution of such payments involves a slightly more complex process, during which third parties (called "correspondent" banking institutions) mediate so as to transfer funds on behalf of the payer. Through this, credit transfers between counterparts that hold payment accounts in different currencies and are located in different geographical areas are feasible.

HOW IS A CREDIT TRANSFER INITIATED?

A credit transfer order may be given at the Point of Interaction (POI), either by **physical presence** of the payer, or **remotely**. In the first case, the common practice has been to fill in the relevant form at a **bank branch** and receive the corresponding receipt. More recently, credit transfers have also been initiated via an **ATM**.

However, the majority of transfers today are **remotely initiated**. This can be done either over the phone (**phone banking**) or electronically (**online**), in which case the payer can choose between using the website of his/her PSP or an **e-banking** application on a smart phone (**mobile app**). In order to make a purchase of goods or services, consumers can initiate a credit transfer from the website of the payee (enterprise or merchant). The latter may possibly redirect them to an intermediary provider (e.g. "MyBank"), which in turn will reroute them to their own e-banking environment. In all above-mentioned cases, the payer enters his/her credentials (username and password or PIN) in order to access the respective online environment. From there, one can carry out the payment by transferring the amount to the account of the payee and receive an electronic receipt.

Alternatively, one can use the services of a *Payment Initiation Service Provider*. The latter are **online applications** linked to a user's payment account, allowing him/her to transact as he/she wishes. Access and use are similar to **e-banking applications**.

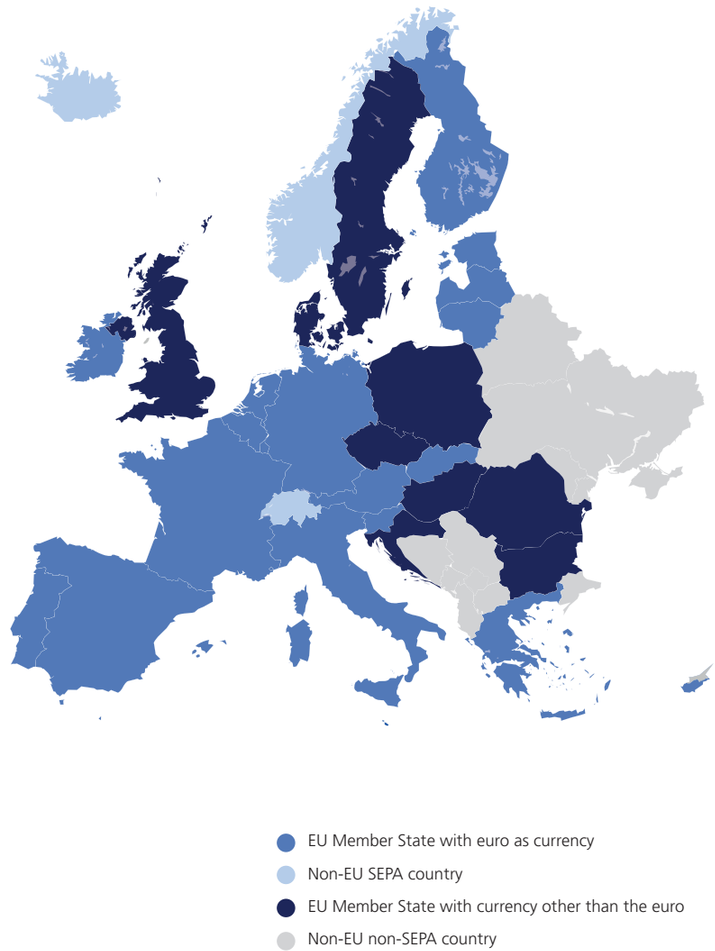
Finally, there are also **contactless applications** which use **Augmented Reality (AR)** technology and **QR code** scanning, which involves "reading" a two-dimensional (matrix) barcode that codifies and stores information. With a simple reading of the code by a special device or a mobile phone, all the data necessary for the transaction (amount, IBAN of the payer and/or the payee, etc.) are instantly made available to the user, who can then proceed directly to the payment.

SEPA
Single European Payments Area

Payments in *cash* are carried out in the single European currency and with the same ease in any euro area country. However, the successful introduction of the euro as a single currency demanded that both private citizens and enterprises be able to make *cashless* payments within the euro area with similar ease and security. Therefore, a solution allowing for sending and receiving payments across the EU *through one account* and *using one set of instruments* had to be developed. In such a way, all international and domestic transactions may be executed with the *same ease, efficiency and safety*. This was what sparked the idea for the creation of a **Single Euro Payments Area (SEPA)**.

In simple words, SEPA is the **area** where consumers, enterprises and public bodies are able to initiate and receive cashless *domestic and cross-border e-payments in euro*, with speed, safety and efficiency, and with the same basic characteristics, rights and obligations.

Geographically, SEPA today covers **36 European countries** (the 28 EU Member States, plus Andorra, Iceland, Lichtenstein, Monaco, Norway, San Marino, Switzerland and the Vatican City State).



A key feature of SEPA is that it allows participants to use just **one payment account** and a **single set of payment instruments**, or schemes. Moreover, SEPA requires the use of international standards (IBAN, XML) in order to fully achieve straight-through processing (STP), that is without the need for manual intervention.

The SEPA payment schemes:

- SEPA Credit Transfer (SCT)
- SEPA Instant Credit Transfer (SCT^{inst})
- SEPA Core Direct Debit (SDD)
- SEPA Business to Business Direct Debit (SEPA B2B Direct Debit)

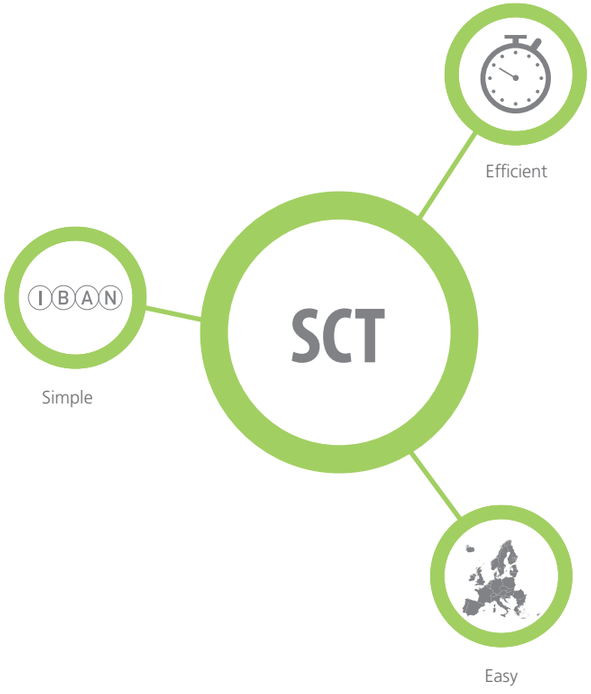
Each defines a **specific set of rules and procedures** for the completion of a cashless payment in euro.

SEPA is the area in which we make and accept e-payments in euro using one payment account

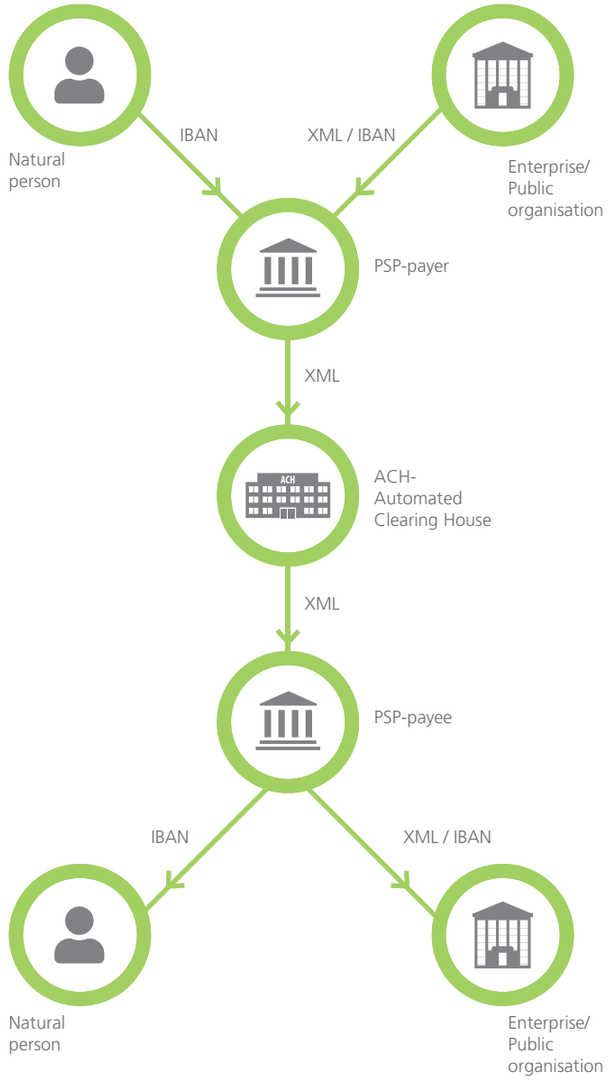
SCT
SEPA Credit Transfer

In the **SCT** scheme:

- identification of the payment accounts is carried out through the IBAN
- the maximum settlement time does not exceed one working day
- the total amount of the order is transferred in full without any deductions.



Example of a SCT payment



SDD
SEPA Direct Debit

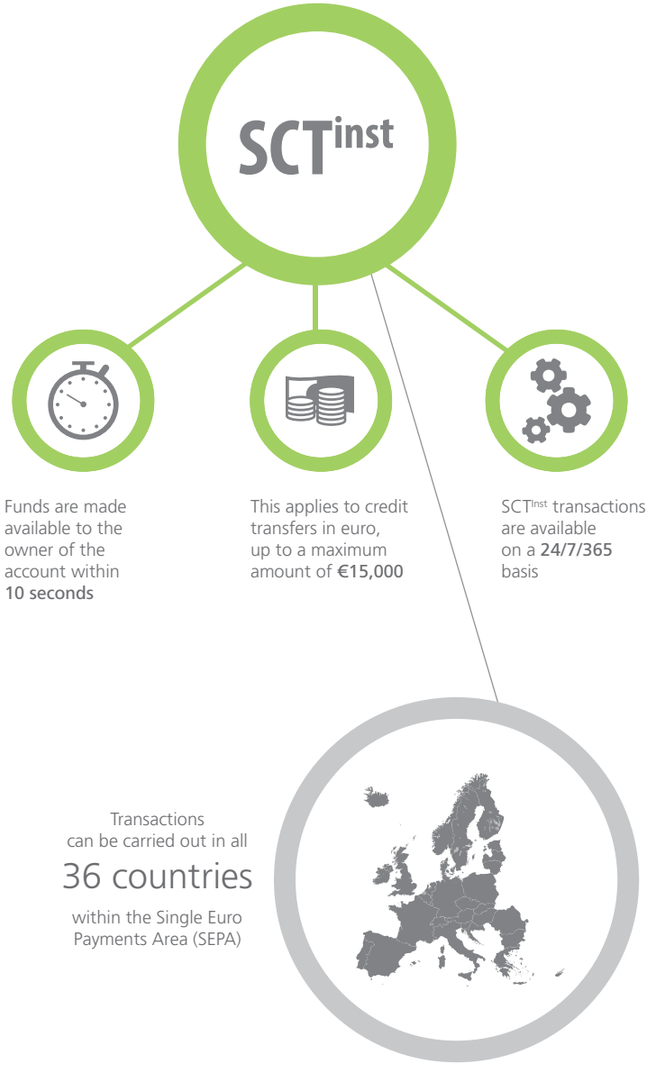
Respectively, the **SDD** scheme:

- identifies the payment accounts through the IBAN
- ensures refunding (within 8 weeks from the date of debiting the account) for authorised payments, and a right to claim a refund (within 13 months) for unauthorised payments
- the total amount of the order is transferred in full without any deductions
- the payer and the payee pay only the fees charged by their respective PSPs.

SCT^{inst}
SEPA Instant Credit Transfer

However, the most modern way to carry out retail credit transfers is the **SCT^{inst}** scheme. Its services are both instant and available round-the-clock, with key advantages that:

- the payer is notified within 10 seconds that the payee has been definitely credited or that the order has been rejected
- the maximum amount allowed per transaction is €15,000
- the service operates 24/7/365
- the total amount of the transaction is transferred in full without any deductions.



CARD PAYMENT

HISTORICAL BACKGROUND

The story of cards begins in the USA in the 19th century. The first ones to appear were special-purpose **charge cards**, issued by merchants or stores and usable for purchases *only on the premises of their issuer*. By the end of each month, the user had to pay up all of his/her debt to the merchant, but at the same time was rewarded for using the card with the provision of in-store credit and other privileges.

The first ever **bank card for payments** was issued in 1946 by Flatbush National Bank of Brooklyn in New York and was named "Charg-It". It was exclusively addressed to customers of the bank, which acted as mediator between the merchant and the consumer.

In 1950, **Diners Club** became the first truly widespread payment card. Its invention is linked to an unexpected incident: its founder, businessman Frank McNamara, once found himself in the awkward position of being unable to pay the bill at a restaurant during a business dinner, as he had forgotten his wallet. He then decided to create a card that would allow its holder to pay for his/her meal without having to carry around cash. He initially offered the Diners card (under contract with 27 restaurants of New York) to 200 of his friends and acquaintances. The card was such a success that within a year it already had 42,000 subscribers, while by the early 1960s their number had surpassed 1 million.

Roughly the same period saw the issuance of another card by **American Express**. The latter's origin was quite different, as this company already had an extensive experience in cargo transportation and was a pioneer in money transfers. It had also introduced some other important innovations, like money orders (1882) and traveler's checks (1891). In 1959, American Express launched in the market the first ever card in **plastic form**.

As a result of the widespread use of this first generation of cards, the banks started issuing cards that provided to their holder the availability of **credit**. A key feature of these cards was that their balance did not necessarily have to be paid in full by the end of each month, but could be carried forward as a *future claim with the corresponding interest*. In 1966, BankAmericard (later known as **VISA**) became the first general-purpose and nation-wide credit card scheme. The same year also saw the creation of **Mastercard**, as a by-product of a banking union in California. By then, the modern phenomenon of extensively using credit cards for payments had been a fact of everyday life.

19th century: special-purpose charge cards

1946 **Charg-It**
the first ever bank card for payments

1950 **Diners Club**
the first payment card of truly widespread use

1959 **American Express**
the first ever card in plastic form

1882: money orders
1891: traveler's checks

1966 **BankAmericard** (later known as **VISA**)
the first general-purpose and nation-wide credit card scheme BankAmericard

MasterCard
by-product of a banking union in California

TYPES OF PAYMENT CARDS

Payment cards are among the most widely used means of retail payments. Based on the volume and the total value of transactions facilitated daily, cards represent the second most popular means of payment, next to cash.

The commonest types used today include:

Credit cards
They enable purchases and cash withdrawals up to a credit limit. The amount of credit used can be paid in full or in part within a predetermined period (usually a month), after which the remaining balance becomes interest-bearing.

Debit cards
They allow users to carry out purchases, cash withdrawals and credit transfers through an ATM by simultaneously debiting their payment account.

Delayed debit cards
They facilitate exchanges up to a predetermined limit. The balance of all these transactions has to be paid up at the end of a pre-agreed period (usually a month).

Prepaid cards
They allow exchanges up to a specific limit that the users have paid in advance ("charging" the card), and are used exactly like debit cards, but without simultaneously debiting any payment account.

CARD PAYMENT

A card can be used for the purchase of goods and services, as well as for paying up debts (e.g. utility bills, obligations to public organisations, etc.), at physical or electronic stores (e-shops).

HOW IS A CARD PAYMENT INITIATED?

Payment initiation by card can be done at the **Point of Interaction** (**POI**), either by **physical presence** of the cardholder at the store, or **remotely**, e.g. online.

In physical stores, it is carried out at a **Point of Sale** (**POS**) **terminal**, either by *inserting* the card, or *contactlessly*.

In the former case, the card is inserted to the POS terminal of the enterprise, while the payment is initiated with the typing-in of the amount by the merchant and of a unique code, the **Personal Identification Number** (**PIN**), by the user.

At the same time, for even greater ease and speed, cutting-edge IT breakthroughs, such as the **Near Field Communication** (**NFC**) facility, also allow for a **contactless** reading of the card, at close proximity to the terminal for security reasons. Contactless reading is feasible even when the card is simulated on the screen of a smart phone, thanks to the technologically advanced Secure Element (SE) and Host Card Emulation (HCE) solutions. As a rule, today for amounts up to €25 the user is not required to key in his/her PIN.

When a purchase is carried out **online**, the user enters the environment wherein he/she will initiate the transaction, i.e. the website of the payee (merchant, public organisation, etc.) or of some third party offering an e-commerce platform. Then, he/she selects the card as means of payment and is transferred to the respective e-payment environment, where he/she introduces the card details (number, holder's name, expiry date) and confirms them in one or more possible ways (CCV, SMS verification, etc.). Alternatively, the user enters the environment of a third provider (e.g. PayPal), which keeps the card details stored and forwards them to the card's issuer for approval. In both cases, at this stage the payment amount has already been debited to the account of the card user, but has not yet been credited to the one of the merchant.

WHICH ARE THE PARTIES INVOLVED?

Aspect invisible to the user

A card-based payment transaction, in addition to the payer (cardholder) and the payee (merchant or enterprise), involves a number of other intermediaries. The main parties that offer such services are the **card issuers and acquirers**, the **card schemes** (i.e. uniform sets of rules, practices and standards for the execution of card-based operations), and the **card transaction processors**:

CARD ISSUERS AND ACQUIRERS
are the PSPs authorised by the Bank of Greece

CARD TRANSACTION PROCESSORS
intermediate so as to verify the authenticity of the card's details and forward the transaction data to card schemes.

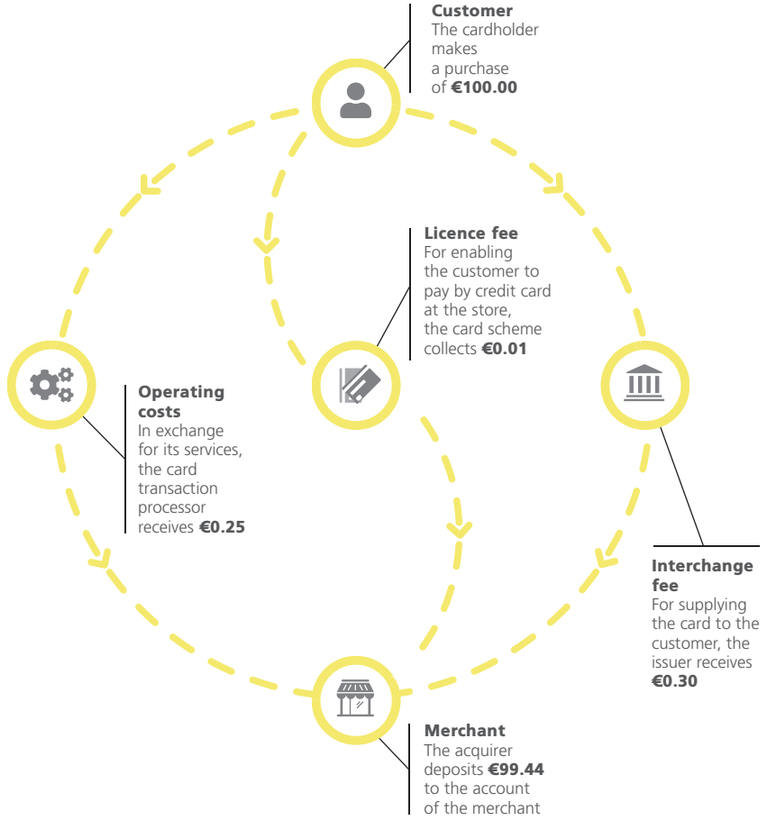
CARD SCHEMES
are the *international card network associations* with a specific brand. Globally, most recognisable are **Visa**, **MasterCard**, **American Express**, **Diners** and **UnionPay**. National schemes may operate in some countries (e.g. France, Spain, China). Nevertheless, there isn't any Greek or pan-European card scheme. The typical operation model of a card scheme involves *4 parties* (*user*, *payee*, *issuer and acquirer*), but when the latter two are the same, the scheme becomes *3-party*.

Which are the charges on cards?

The operation of the card schemes involves certain **charges**, which mainly include:

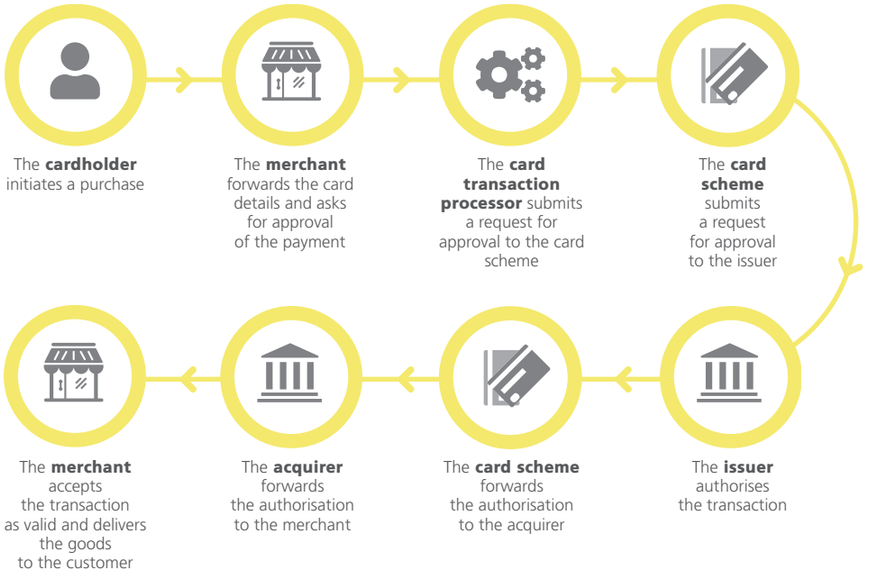
- the *licence fee for the use of the trademark* by the acquirer
- the *cost of forwarding the transaction data* to the card schemes, either by the acquirer itself or through card transaction processors
- the *cost of services* charged to the merchant and the cardholder (e.g. for invoicing, analytic transaction statements, fraudulent transaction prevention, provisions for losses from fraudulent transactions, etc.). The merchants, in turn, usually incorporate this cost to the final prices of goods and services
- the *interchange fees* charged to the acquirer by the issuer for each card-based payment operation. Regulation 2015/751/EU sets upper limits depending on the value of each transaction: a maximum interchange fee of 0.2% for debit cards and of 0.3% for credit cards.

For **example**, when a customer pays **€100.00** by credit card at a store, the merchant collects **€99.44** and the card transaction processor **€0.25**. Consequently, the acquirer pays **€0.30** to the issuer, while the remaining **€0.01** covers the licence fee of the card scheme, as well as various operating costs.



HOW IS A CARD PAYMENT CARRIED OUT?

The execution of a card-based transaction includes a series of successive procedures (**authorisation**, **clearing** and **settlement**), and is completed with the final transfer of the amount in question from the account of the cardholder, held with the issuer, to that of the beneficiary of the payment (payee), held with the acquirer. Specifically, a 4-party scheme card transaction includes the following stages:



AUTHORISATION OF THE TRANSACTION

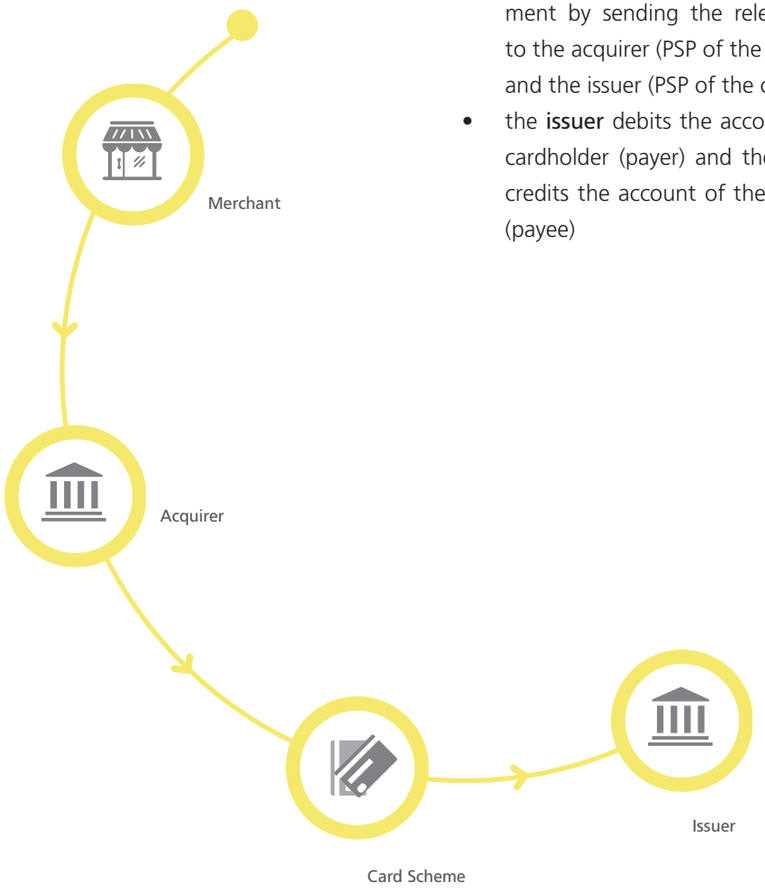
approval within seconds

- the **cardholder** (**customer**) uses the card to pay the payee (merchant)
- the **merchant**, via the terminal (e.g. POS at the POI if by physical presence, or online if remotely), asks for approval of the transaction
- the **card transaction processor** forwards the card details and the transaction data to the card scheme
- the **scheme** forwards them to the **issuer** (**PSP** of the cardholder) for confirmation (e.g. verifying that the liquidity or credit required for the transaction is available in the cardholder's account, and/or confirming the legality of the transaction)
- the **scheme** transmits the issuer's approval (or rejection) of the transaction to the acquirer (PSP of the merchant)
- the **acquirer** transmits the relevant confirmation to the merchant for the completion of the transaction and the delivery (or dispatch) of the purchased good or service to the customer.

CLEARING AND SETTLEMENT OF A PAYMENT

usually on the same day

- the **merchant** sends electronically the transaction data to his/her PSP (acquirer)
- the **acquirer** transmits them to the card scheme
- the **card scheme** facilitates the payment by sending the relevant data to the acquirer (PSP of the merchant) and the issuer (PSP of the customer)
- the **issuer** debits the account of the cardholder (payer) and the **acquirer** credits the account of the merchant (payee)



THE FUTURE OF CARD PAYMENTS

The main reason behind the widespread use of cards is the **convenience** and **simplicity** that they offer to the consumer (e.g. the "single click" payment experience). Meanwhile, thanks to some very recent technological breakthroughs (e.g. the introduction of a "one-time password"), **sensitive data** on payments no longer need to be stored on the device used, or shared with the merchant.

Thus, the adoption of innovations constantly improves **safety** in card payments. The latter is based on three main elements: (i) an **object** the user possesses, such as the body of the card or his/her mobile phone; (ii) some **information** he/she only knows, such as the PIN; and (iii) a unique personal **identification mark**, such as his/her biometrics (e.g. fingerprint, retinal or iris pattern, etc.).

Clear-cut examples of advanced innovative technology are **mobile wallets** and **wearable devices**.

The former are *safe-keeping sites* that hold any information necessary to identify the user and initiate the payment's approval procedure. Mobile wallets may store more than one cards, either through simulation or an application that stores all the data required for a payment.

The latter refer to *smart portable devices* (e.g. watches, bracelets, rings, etc.), equipped with a special tiny "microcard" or an application that stores the card details. It should be noted that, unlike cards in physical form, all these innovative technologies are energy-consuming.

THE CATALYST ROLE OF THE EUROSYSTEM IN CARD PAYMENTS

One of the main responsibilities of the Eurosystem is to promote **harmonised, efficient and safe** payment methods, which contribute to **financial stability**. The National Central Banks of the EU countries are working together to build a suitable framework (technical standards, directives, regulations, etc.) that will facilitate and promote innovation in card-based payments **at a pan-European level**.

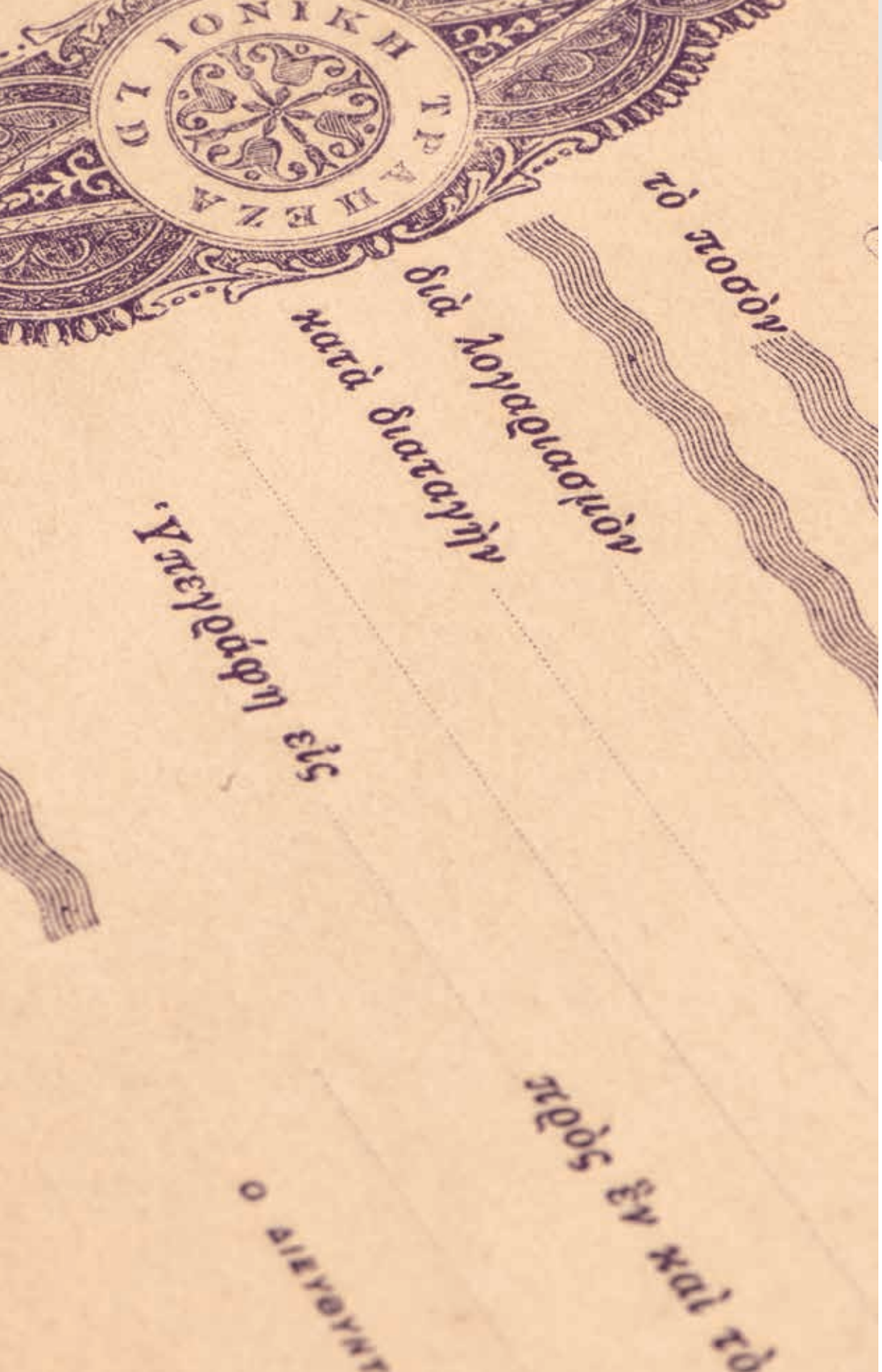
The aim is to always provide a safe, suitable, consistent, effective and reliable payment experience, characterised mainly by:

- **ease** of initiation of the transaction and **identification** of the payee for payments initiated by the payer
- **certainty about the finality** of the payment, with safety for the payee or the merchant
- **wide accessibility**.

The Eurosystem envisages an **integrated** market for card-based retail payments

similar to the one already achieved for credit transfers and direct debits. Unlike the last two, payments by card within the EU are marked by lack of harmonisation in terms of operation rules, market practices and technical standards. Thus, the Eurosystem's policy is oriented towards creating a **SEPA for cards**, where payments in euro will be characterised by the use of "**every card in every terminal"**.

In this direction, the Eurosystem has decided to implement a series of actions. At a first level, it is deemed important to develop systems that support interconnection and **interoperability** among the diverse fragmented national card schemes existing today across the Member States. Thus, European consumers will no longer depend exclusively on the existing international card schemes for making their payments, while significant advantages will also emerge in the fields of competition, cost-saving, efficiency and legislation. Ideally, the adoption of a single European card brand, which will promote the ability to use the national schemes at EU level, will greatly assist in disseminating the use of these cards. At a second level, the Eurosystem encourages the adoption of innovative technologies that will increase both the number of options available to card users and the safety of transactions. Finally, a new regulatory framework is adopted, comprising two main texts: the revised Directive on payment services (known as **PSD2**) and **Regulation 2015/751/EU** that sets limits to interchange fees for card-based payment transactions within the EU.



CHEQUES

HISTORICAL BACKGROUND

The forerunners of this particular means of payment can be traced back to antiquity, but the origins of the cheque in its present form lie in the Middle Ages, around the 13th and 14th century. Then, in order to transact efficiently, the rulers of the Italian city-states used to draw up relevant written instructions, or orders, addressed to their treasurers.

However, the modern-day **cheque** took its definitive legal form in the 17th or 18th century, initially in the Netherlands and mainly (later on) in England. There, the bankers of the time were accepting for safekeeping the coins and other precious metals of their merchant customers. The latter could use all or part of their deposit by drawing up *written orders* (called **cash notes** initially and cheques later on), whereby they were instructing the banker to pay to the indicated amount to the beneficiary.

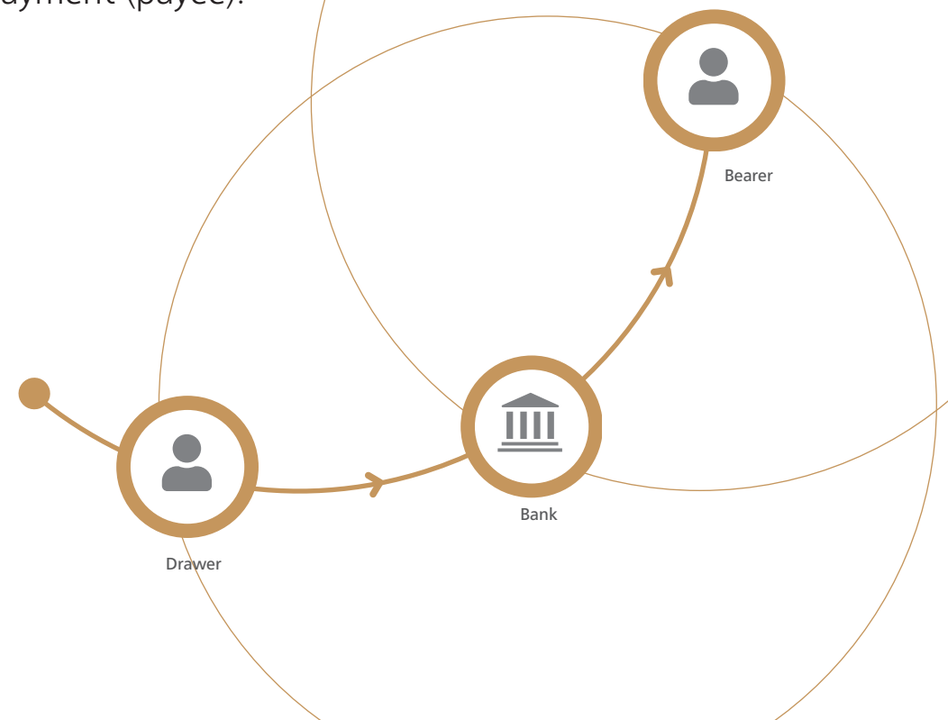
Soon afterwards, to further facilitate their customers, bankers started to provide them with a ready-made **book** of standardised cheques. This English practice was quickly imitated in the countries of continental Europe as well. The use of the cheque as a payment instrument was widely disseminated **worldwide**, since it served international trade, as well as all domestic and cross-border exchanges, alleviating the burden of transporting large amounts in cash.

LEGAL FRAMEWORK

The internationalisation of the use of cheques led to a need to integrate the law governing them. The Geneva Conference held under the aegis of the League of Nations in 1931 produced a single international agreement on cheques, which Greece has ratified and transposed to its national legal system by **Law 5960/1933 "on cheques"**, still applicable today.

WHAT IS A CHEQUE? WHICH ARE THE PARTIES INVOLVED?

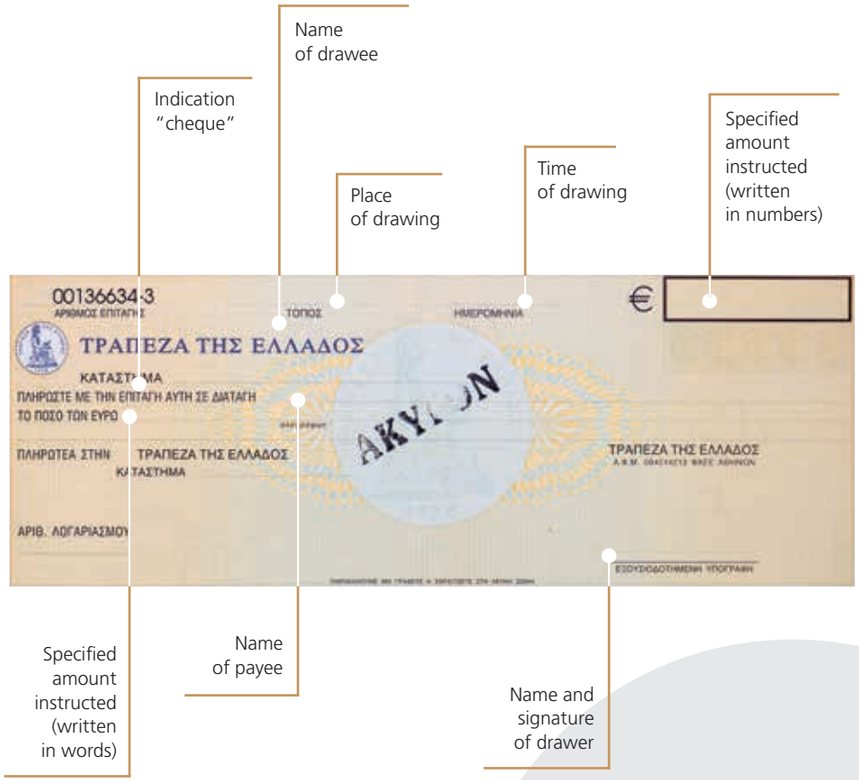
According to the Greek Law, the cheque is categorised under *negotiable instruments* (i.e. written documents that incorporate a right, the exercise of which presupposes possession of the specific document). The **drawer**, i.e. the natural or legal person that draws the cheque, orders the **bank** (or some other institution) with which he/she holds an account to pay the indicated amount to the **bearer** of the cheque, i.e. the beneficiary of the payment (payee).



WHAT DOES A CHEQUE LOOK LIKE?

A cheque typically features:

- the indication “cheque”
- the time and place of its drawing
- the name and the signature of its drawer
- a specified amount instructed
- the name of the payee
- the name of the drawee, i.e. the bank (or other institution) where the cheque is drawn.



USE OF THE CHEQUE

Cheques offer great **advantages** compared to cash, particularly when it comes to **large value** payments.

According to common practice, a cheque is physically passed on like cash (hand to hand) between the counterparts of a transaction. Thus, the original beneficiary can hand it over to a new bearer, who in turn may collect the payment by signing his/her name on the back of the cheque (practice of **endorsement**).

TYPES OF CHEQUES

Cheques are divided into private and bank ones (aka bank drafts). The drawer of the former has to hold an account with a bank, while the issuer of the latter is not required to have an account and may acquire a cheque by paying cash at any bank. The key difference is that the drawer of **bank drafts** is the paying institution (drawee) itself, whereas the drawer of **private cheques** is a customer of the bank.

Post-dating a private cheque, i.e. indicating on it a date of drawing posterior to the current one, is **allowed** by law and constitutes a common trading practice of the domestic commercial sector, as it facilitates the execution of a payment at a future time. A post-dated cheque represents a type of *credit* provided by its bearer to its drawer.

PAYMENT OF A CHEQUE

By its nature, a cheque is payable "at sight", i.e. the bearer must present it to a bank (within eight working days from the date of drawing) in order to get paid. Bearer is the person entitled to collect the payment when he/she submits the cheque to a bank. The latter is obliged to inspect and verify that the cheque is properly completed and therefore valid, as well as that the instructed amount is indeed available in the drawer's account (if possible).

CHEQUE CLEARING SYSTEMS

Clearing refers to a process whereby a cheque is transferred from the credit institution A, where it was submitted for payment, to the credit institution B, on which it had been drawn, and is accompanied by the payment of the indicated amount by B to A.

The bank then collects the cheque and, if it also keeps the drawer's account, pays the bearer in cash or credits his/her account (when he/she too is a customer of the bank). In that case, the payment involves only **three parties**: the **drawer** of the cheque, the **bearer**, and the **bank** with which both of them hold accounts.

When the drawer's bank and the bank at which the cheque is presented for collection are different, payment of the cheque to the bearer is carried out through a clearing house (or office). Here, the payment involves **five parties**: the **drawer**, the **bearer**, the **drawer's bank**, the **payee's bank** (where the cheque is presented), and the **clearing house**.

The clearing house operates as a *collection centre* of the cheques circulating daily among banks. It takes up the clearing of the cheques submitted to it by its members, thus reducing the need for cash. In Greece, two cheque clearing systems are in operation today: the **Athens Clearing Office** (**ACO**) and the **Interbank Electronic Cheque Clearing System (IECCS)** operated by DIAS SA. Cash settlement of the clearing positions of these two systems is carried out daily in **TARGET2**, the Eurosystem's system for large value payments.

The clearing of all *paper* cheques drawn on *domestic* credit institutions is carried out at the ACO. Law 5960/1933 had provided for the establishment of clearing houses upon issuance of a relevant Presidential Decree, which however was never drafted. As a consequence, the domestic credit institutions went ahead independently and created a number of local cheque clearing offices (in Athens, Piraeus and Thessaloniki), by concluding bilateral agreements; later on, the branches of all foreign credit institutions operating in Greece also entered these agreements.

Today, the bulk of cheques is cleared through IECCS, while the role of ACO has been diminished.

ACO comprises a central clearing office located at the headquarters of the **Bank of Greece** in Athens, and several regional clearing offices that operate in branches and agencies of the Bank of Greece throughout the country. It handles the clearing of bank drafts and private cheques denominated in euro (or foreign currencies) presented for collection to credit institutions operating in Greece. Settlement of the net positions after the clearing of domestic cheques in euro is carried out on the same day in the TARGET2 system. The settlement of the cheques denominated in foreign currencies is carried out by physical transportation of the bodies (or copies thereof) of the cheques.

DIRECT DEBIT

HISTORICAL BACKGROUND

When a debt is settled either by credit transfer or a card, the payment is initiated by the debtor, who often has to waste time and effort in order to carry out the transaction (frequently one has to visit a bank branch or wait at a cashier's desk line). However, most payments relate to our daily routine, and many involve *recurring billing*.

In our modern societies there is a self-evident need to have *standing expenses* for housing, water supply, energy, communication, transport, insurance, taxation, etc., which are **periodic and mandatory in nature**. Therefore, automatic payment of such expenses improves the quality of the individual's everyday life.

This is how Alastair Hanton, an executive of the Unilever company in Great Britain, must have thought, around the 1960s, when, facing a problem with the collection of debt from ice-cream resellers, resolvedly posed to the conservative bankers of the time the following "infuriating" question:

Why don't we ask the resellers' permission to directly debit their accounts with any amount?

After considerable persuasion efforts, four years later he managed to have the payments model of *Recurring Direct Debits* accepted. A little sooner, Germany had already seen the establishment of the so-called *GIRO* accounts, which offered a similar possibility. However, the English model was the most extensively copied one. In Greece, direct debits first appeared in the early 1990s. They were used for the automatic payment of the bills of utility enterprises and organisations, provided that both the consumer and the public organisation in question held accounts with the same bank.

WHAT IS A DIRECT DEBIT?

A direct debit is a means of payment that **assigns** to the payee the right to receive amounts of money directly from the payment account of the payer (debtor). It usually relates to payments between natural persons and public entities (Person to Business – **P2B**) or between enterprises (Business to Business – **B2B**). Its key element is that **the payment order is initiated by the payee** (beneficiary of the payment) instead of the debtor. The payee is the one to determine the date and the amount of the payment. The payment is usually recurrent (e.g. monthly), while *the amount is not fixed*.

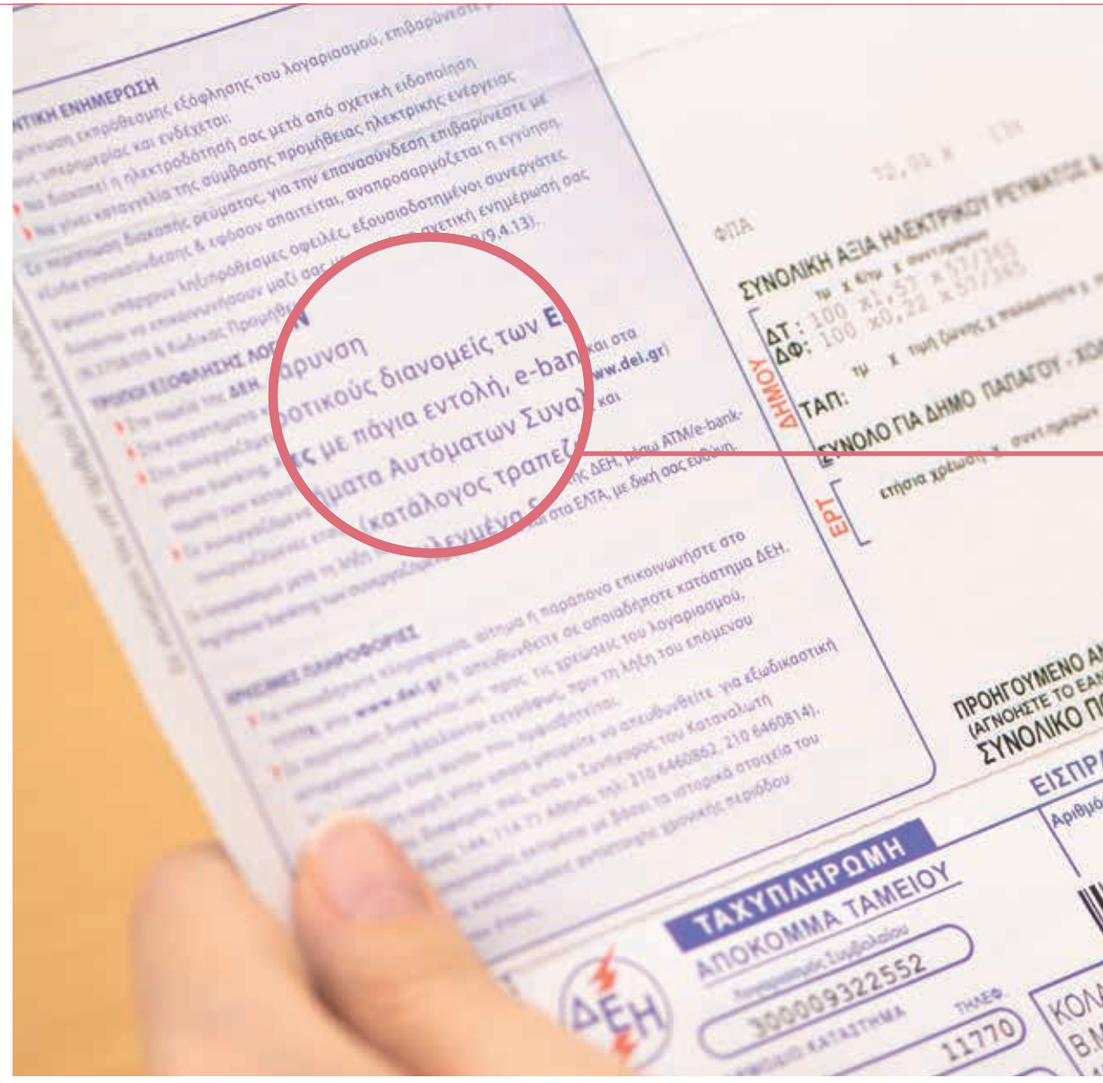
Direct debit is a payment service offered by the PSPs with a view to facilitating particularly those retail payments that are periodic in nature (e.g. payments to energy or water supply organisations, telephone companies, insurance firms, etc.).

Regarding the beneficiary, the collection of funds through direct debit allows for better **revenue control**, easier **liquidity management** and overall **cost reduction**. The latter relates to all costly procedures concerning reminders of due payment and/or claims of uncollected amounts.

At the same time, the debtor pays his/her obligations automatically, thus **saving time and effort**. All payment deadlines are met on time, thus avoiding the imposition of any additional charges. However, given that the date and the amount of each payment are determined by the payee, the payer has to **maintain sufficient funds** in his/her account, in order to promptly execute the payment.

Respectively, the beneficiary is required to notify the debtor regarding the date and the amount of the payment a **sufficient period of time** prior to its due date.

Payments made by direct debit are **guaranteed**. Should an incorrect payment be carried out, it can be recalled and the funds returned to the account of the payer within ten working days. By contrast, payments initiated by the customer/debtor (e.g. credit transfers) are *irreversible* and the procedure for any reimbursement is much more time-consuming.



USE OF THE DIRECT DEBIT SERVICE

Despite the obvious benefits emerging from its use, this means of payment apparently has no particular appeal to Greek consumers. According to relevant data of the Bank of Greece, these last few years only **three** transactions per resident are recorded on average each year in our country, while respectively, over the same period the EU as a whole has annually averaged around **50** transactions per resident.

For decades, the payments culture in Greece has been dominated by the use of cash. The recent economic crisis, along with legislative interventions aiming at limiting cash transactions have led to a **spectacular increase of e-payments**. However, this increase is not reflected in the use of direct debits, where the total number of transactions per resident in Greece has remained practically unchanged.

PROCEDURES AND INFRASTRUCTURE

The execution of a direct debit payment presupposes the **consent of the payer**, who has signed a relevant mandate, either directly with the beneficiary organisation or with one's PSP. This mandate can also be submitted online.

At regular intervals, the beneficiary organisation sends a file of **appropriate technical requirements** containing all the payment-related information ito **DIAS SA** for clearing. The latter, in compliance with the SEPA specifications, and in direct interconnection with the EU-wide payment systems EBA/STEP2 and Equens Worldline, receives similar files from all the participating entities and proceeds to their clearing.

Clearing is carried out at PSP level and refers to the establishment of a net final interbank position of each PSP versus every other PSP. The next step involves the **settlement** of said positions in the TARGET2 system.

PAYMENT SYSTEMS, CLEARING AND SETTLEMENT OF PAYMENTS

During cash transactions, the monetary value is transferred **directly** from the payer to the payee, without the intervention of an intermediary. By contrast, in e-payments, when the payer and the payee are not customers of the same PSP, there are certain infrastructures that **mediate** to facilitate the transaction.

EXAMPLE OF CLEARING AND SETTLEMENT OF PAYMENTS

In card payments, the card scheme (VISA, MasterCard, etc.) acts as **intermediary** between the PSPs of the payer and the payee. In payments by credit transfer or direct debit, when the PSPs of the payer and the payee are different, a **payment system** intervenes in order to transfer the funds from the payer's PSP to the payee's PSP. This infrastructure remains invisible to both the payer and the payee, no matter if a payment is submitted both for clearing and settlement, or only for the latter.

A customer of PSP A pays by credit transfer **€100** for the purchase of a product from a department store, which holds an account with PSP B. An enterprise holding an account with PSP B pays by credit transfer an invoice of **€70**, issued by one of its suppliers, who holds an account with PSP A. Clearing of the above payments means calculating the **net position** of one PSP against the other, which results in a debt of PSP A to PSP B amounting to **€30** (€100-€70).

The above debt will cease to exist when the payment system (where both PSPs participate) transfers the amount of €30 from the account, held by PSP A with the central bank, to the respective account held by PSP B. Therefore, the term "settlement" refers to the **transfer of central bank money in book-entry form** from one member of the payment system to another, as a result of the clearing (or of a single payment). The amounts of net positiions that have been calculated are then sent to the TARGET2 payment system.

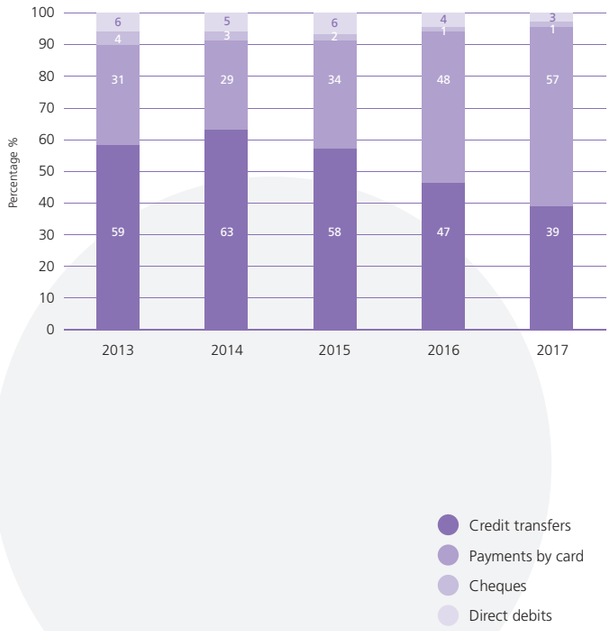
RETAIL PAYMENTS

Depending on their origin, payments between PSPs are categorised as **small value** (or retail) payments or as **large value** payments. In essence, the former relate to payments initiated by customers of the PSPs, while the latter to payments by the PSPs themselves for their own benefit, such as transfers of funds associated with their participation in interbank markets (interbank lending, purchase and sale of foreign exchange, etc.).

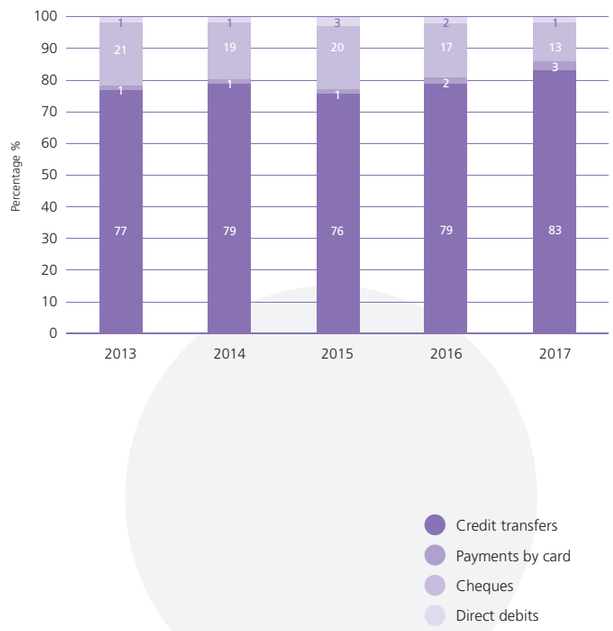
Retail payments are characterised by their overall large number and the small value of individual transactions. As a rule, they are forwarded to a retail payment system, where they are submitted for clearing and netting (based on a 2-party or multi-party model). This process creates **net debit and credit positions** between the PSPs that are members of the system. These positions are finally settled in the TARGET2 payment system.

CHARTS

Percentage use of payment means based on the volume of payments

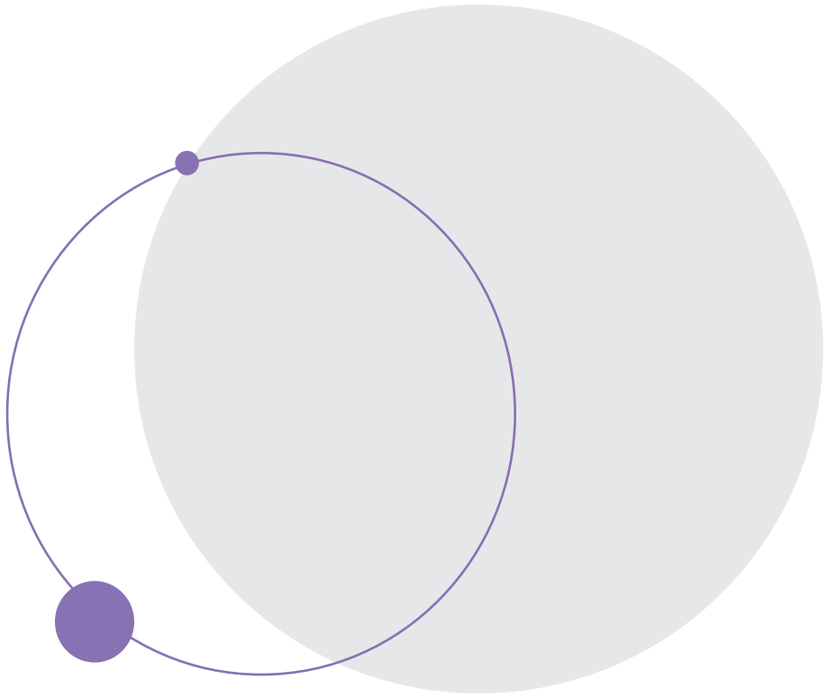


Percentage use of payment means based on the value of payments



THE DOMESTIC RETAIL PAYMENT SYSTEM: DIAS SA

The establishment of **DIAS SA** coincides with the completion of the computerisation of the Greek banking sector in the late 1980s. DIAS SA is a joint-stock company, having as shareholders the domestic **credit institutions and the Bank of Greece**.



DIAS SA's scope is to provide payment services to its members, with a focus on **clearing services**. One of its main innovations has been that it introduced to the market the possibility of cash withdrawals from the ATMs of any bank, irrespective of the credit institution with which the client held an account. This service has been warmly welcomed in Greece, and in particular in remote areas, such as small islands, where at times banks have no physical presence or there is only one ATM available to serve all permanent residents and visitors.

Today, DIAS SA has developed many state-of-the-art services that cover the entire spectrum of e-payments and are offered as much to government and public organisations as to private sector enterprises, with a main view to **interoperability**, **accessibility** and **modernisation** of payments. Under the supervision of the Bank of Greece, the DIAS system provides to its members the following services:

- **DIAS Credit Transfer**
- **IRIS** (for instant credit transfers)
- **DIAS Direct Debit**
- **DIAS Cheque**
- **DIAS ATM Switching** (for cash withdrawals)
- **DIAS POS** (for card payments).

TARGET2

TARGET2 is the *Real-Time Gross Settlement (RTGS) system* developed, owned and operated by the Eurosystem in order to carry out **irrevocable settlement of euro payments in central bank money**. It is used by all central and commercial banks of the EU for their transactions associated with the monetary policy operations of the European Central Bank (ECB), interbank and retail payments.

TARGET was launched in 1999, a few days after the introduction of the euro, and comprised the national payment settlement systems of the EU Member States participating in Economic and Monetary Union (EMU). Currently, the **TARGET2** system, which replaced TARGET in 2008, provides harmonised services under a **single technical platform** and has operated smoothly for more than a decade, offering safety and efficiency with respect to payments.

The objectives of the TARGET2 system are to:

- *implement the monetary policy decisions* of the Eurosystem and contribute to the smooth operation of the euro money market
- *minimise the systemic risk in payments markets*, e.g. due to a member's insolvency
- *ensure efficient settlement* of cross-border payments.

Fulfilling the above goals, TARGET2 guarantees safe and efficient execution of payments in Europe, and contributes to the **stability of the euro**.

During the 10-year period of TARGET2 operation, owing to technological developments, regulatory requirements and changes in consumer behaviour, the way payments are carried out has significantly changed, to meet the new needs of the market.

The Eurosystem has started working on the replacement of TARGET2 by a new real-time gross settlement (RTGS) system and on the optimisation of liquidity management for all its services. Starting in November 2021, the new **TARGET** facility, **T2**, will be offering improved up-to-day services, as well as the ability to execute payments in currencies other than the euro, if a central bank so wishes.

TIPS
(TARGET Instant Payment Settlement)

target services | TIPS

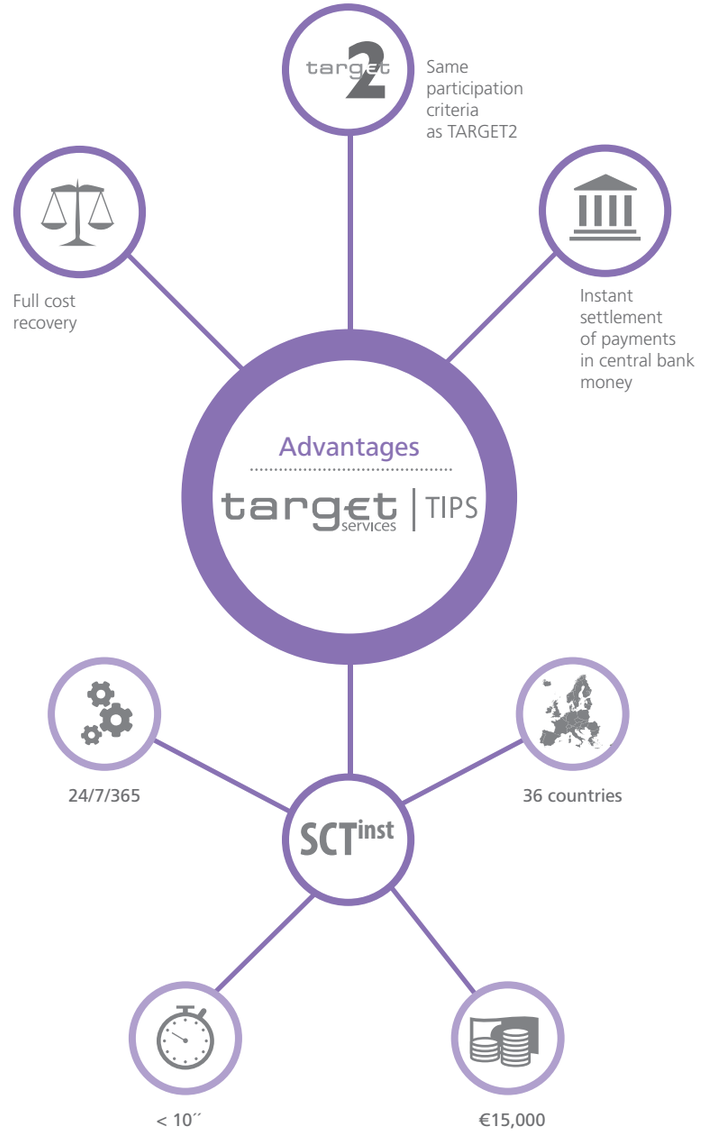
In November 2018, the Eurosystem launched the **TIPS** service to ensure that the increasing demand for instant payments will be met at EU level and to prevent the prevalence of national solutions that may lead to a fragmentation of payment services in Europe. The TIPS may achieve pan-European reachability, thanks to its following two features: first, that it is based on the SCT^{inst} scheme, and, second, that it has been developed as an extension of the TARGET2 system which already boasts an extensive network of participants.

This new market infrastructure service allows PSPs to offer their customers fund transfer services in *real time* and *around the clock, any given day*. This means that, thanks to TIPS, both individuals and enterprises can execute payments within a few seconds, regardless of the working hours of PSPs. Therefore, the Eurosystem, by offering instant payments settlement, has expanded the portfolio of TARGET services, promoting the smooth and efficient operation of the payment systems. For the time being, TIPS only settles payments in euro, but, if needed, it can support settlement in other currencies as well.

TIPS has been modelled on a modern payment system architecture which combines the advantages of a retail payments netting system with those of a large value payment RTGS system. As a result, it is able to instantly settle a large volume of payments, at relatively low cost. In addition, it complies with the strict supervision requirements of the Eurosystem, as well as with the CPMI-IOSCO guidance regarding the resilience of cyberspace for financial market infrastructures. Thus, it can meet the settlement specifications of a pan-European instant payment solution – as defined by the European Payment Council (EPC) – and offers 100% safety against settlement risk, since **transactions are carried out in central bank money**.

The TIPS is:

- **resilient:** it is a strong and robust market infrastructure, managed by the Eurosystem
- **efficient:** it provides instant settlement in central bank money, which increases safety and minimises credit risk, while its simplified transaction processing instantly connects the PSP-sender with the PSP-receiver
- **fast:** participants in TIPS can process transactions within just a few seconds, in accordance with the SCT^{inst} scheme, which sets 10 seconds as a criterion for the completion of an "instant" payment
- **wide-reaching:** it is an extension of TARGET2, which has a network of more than 1,700 participants that may open an account, while other interested parties can also connect under different participation roles
- **cheap:** its pricing policy is based on the principles of equality and non-discrimination. There are no entry or account maintenance fees, while incoming payments and notifications are free of charge as well. The fee charged per instant payment transaction stands at €0.002 for the first two years of TIPS operation
- **integrated:** there are considerable advantages for its participants, mainly regarding liquidity management, as the balances of TIPS accounts are added in the calculation of the minimum reserves.



THE ROLE OF THE CENTRAL BANK IN RETAIL PAYMENTS

THE ECB AND RETAIL PAYMENTS

In line with the Treaty on the Functioning of the EU and Protocol no. 4 of the Statute of the European System of Central Banks and the ECB, safe and efficient financial market infrastructures are necessary for the reliable transfer of funds and securities, the smooth implementation of monetary policy and financial stability. The Eurosystem provides financial market infrastructures for payment and securities settlement and engages in discussions with market participants in order to facilitate the further integration of financial markets in Europe (responsible for this task in Greece is "AMI-Pay GR-NSG").

THE BANK OF GREECE AND RETAIL PAYMENTS

In recent years, the euro retail payments market has been offering a constantly increasing number of innovative solutions for carrying out transactions. This development is expected to further accelerate in the coming years, due both to socio-economic changes associated with the impact of digitalisation and the PSD2 Directive, which now allows the entry of non-traditional PSPs in the retail payments market.

Innovation in retail payments and financial technology (FinTech) have also affected the operation of payment systems. In order to promote the latter's smooth and efficient operation, the ECB and the Eurosystem members constantly study and analyse developments in the field of payments and contribute to the preparation of a **harmonised regulatory framework** aimed at preventing market fragmentation and ensuring **a level playing field across the EU** for payment service users and PSPs.

The **Bank of Greece** recognises that innovative payment solutions are a key factor in achieving a **single and competitive** market for retail payments in euro. Its goal is to adopt and implement solutions that constitute **neither an entry barrier**

A main responsibility of the ECB is to **formulate and implement the single monetary policy** in the euro area, with a view to maintaining the stability of prices. In parallel, the ECB and the National Central Banks, that make up the Eurosystem, aim at a **stable, sound and efficient financial system**, where citizens and enterprises will be transacting **safely and without barriers**. These tasks could not be met in the absence of appropriate payment system infrastructures. Thus, the Eurosystem has created and operates the TARGET2 system, the key advantage of which, as we have already discussed, is that settlement of payments is carried out in central bank money.

The establishment of the **SEPA** was the first major step towards the creation of a harmonised retail payments market in the EU. Moreover, the promotion of innovative payment solutions and the deregulation of the payment services market through the implementation of the new EU Directive on payment services in the internal market (**PSD2**) have definitively altered the landscape of payment services provision in Europe.

At the same time, the Eurosystem, within the framework of its mandate for promoting safe and efficient payments in the EU, has launched a new service that ensures instant settlement of retail payments in euro, regardless of the working hours of PSPs and payment systems in general. The TARGET Instant Payment Settlement (**TIPS**) service enables the PSPs that participate in the TARGET2 to offer **instant credit transfer** services to their customers.

In addition, the Eurosystem takes part in the efforts to develop a harmonised way of data sharing and exchange among the various existing technological payment solutions for smart phones (e.g. matching of the payer's and payee's phone number with their IBAN).

nor a fragmentation factor in the payment services market, nor a threat to the **safety** and **integrity** of payment systems.

In line with its Statute, and as an integral part of the Eurosystem, the Bank of Greece has a large number of responsibilities associated with retail payments. Therefore, expanding its role, the Bank of Greece:

- **issues** euro banknotes and is *responsible for the circulation and handling* of euro banknotes and coins in Greece
- **supervises** the *PSPs*, as well as certain other categories of *financial sector* enterprises of the Greek economy, aiming at the transparency of transactions and the stability and smooth operation of the financial system
- **oversees** the *payment systems and instruments*, with a view to ensuring their soundness, reliability and efficiency
- **is responsible** for the smooth operation and *management* of the Greek component of the large value payment system TARGET2, and manages the operation of the TARGET, TIPS and T2S services
- **promotes** and coordinates policies relating to cyber-security and the resilience of the financial system (in any event, the chief responsibility for meeting the necessary requirements and for securely carrying out transactions rests with individual credit institutions and PSPs)
- **promotes** arrangements for the maintenance of financial stability and effective management of financial crises
- **supports** research (e.g. by publishing *reports* and carrying out studies in the context of monitoring and analysing monetary policy), innovation (e.g. creation of the FinTech innovation hub), and technology (e.g. by actively participating in the relevant research efforts of the Eurosystem on DLT), in order to enhance the payment systems' safety, effectiveness and efficiency
- **acts** as *treasurer and fiscal agent* of the Greek State,
- **promotes** *Eurosystem's retail payment policies*
- **collects**, compiles and publishes a broad spectrum of *statistical data* related to retail payments in Greece
- **acts** as a catalyst and guarantor of *safe*, *efficient* and smooth payments market operation, while ***maintaining*** *level playing field conditions among the PSPs*.

Overall, the Bank of Greece stands as a pillar of **stability** for the financial system and with its actions, within the framework of its responsibilities, ensures the **smooth operation** of the Greek retail payments market.