

# Euro cash is as popular as ever

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**More than seven years have passed since the launch of euro banknotes and coins. Following the smooth cash changeover, the number of euro banknotes and coins in circulation has grown faster than foreseen, and demand for euro banknotes has also increased outside the euro area. At the same time, cooperation between euro area central banks in the field of cash management has increased and the efficiency gains of the single currency have been successfully exploited. A number of new challenges have also emerged.**

Euro banknotes and coins were issued on 1 January 2002, three years after adoption of the euro as a unit of exchange. For the general public, however, it was the changeover to euro cash that marked the introduction of the euro, as it was only then that the currency came into everyday use. This somewhat shorter time span nevertheless provides a good platform for evaluation of developments in the use of euro cash and euro cash management thinking, especially considering that preparations for the euro cash changeover had begun as early as 1992.

## **The major challenges for euro cash: production, logistics and communication**

The phased introduction of the euro was due partly to the time required for the production and distribution of euro banknotes and coins, but also to a need to build experience of the euro

as a unit of account before banknotes and coins were issued for use by all the more than 300 million people living in the euro area.

In 1992, the governors of EU central banks set up a Working Group on Printing and Issuing a European Banknote (Banknote Working Group) to address the technical and logistical issues of the production and issue of the single European banknote series. Each national central bank (NCB) was represented by two members, generally the chief cashier in charge of cash management at the NCB and the director of the printing works. The Bank of Finland joined the Banknote Working Group in July 1994, first as an observer after Finland had signed the EU Accession Treaty, and then as an ordinary member from the beginning of 1995. On the establishment of the European Central Bank (ECB) in June 1998, the Banknote Working Group became the Banknote Committee of the European System of Central Banks (ESCB).

The EU Economic and Finance Ministers entrusted the preparation of the single coin series to a working group composed of the mint directors of member states. Preparations and decisions for the launch of euro banknotes and coins thus followed the same pattern as that traditionally applied to national banknotes and coins in Finland: decisions on banknotes were taken by the Bank of Finland, while decisions on coins were taken by the Ministry of Finance.

From a Eurosystem perspective, there were three major challenges facing the euro cash changeover. Chronologically, the first of these was the industrial challenge, ie the production of more than 15 billion euro banknotes and 51 billion coins. The second was the logistical challenge of planning and implementing the cash changeover together with the banks, cash-in-transit companies, retailers and the vending and ATM industry, while the third was the communication challenge of familiarising each and every euro area resident and professional cash handler with the new payment instruments and the cash changeover process.

### **15 printing works to handle euro banknote production**

Each national central bank was responsible for procurement of the euro banknotes necessary for the cash changeover; in practice this means they decided where the notes were to be printed. As part of its euro launch risk management, the ECB established a Central Reserve Stock of euro banknotes, which represented around 10% of the banknote demand of the NCBs.

The production of banknotes to the same quality standards was a demanding task, given that the process involved 15 printing works, banknote paper from nine paper mills, and inks, security threads, holograms and other raw materials from some twenty different suppliers. It was imperative to ensure identical appearance and consistent performance in both sorting

and accepting machines throughout the euro area. Therefore, a common quality system was adopted by all the euro printing works.

Euro coins for the cash changeover were minted by 16 mints, and, to ensure uniform quality, the EU finance ministers, the mints and the ECB in June 1999 agreed on a detailed quality management system, with the ECB as an independent assessor of the quality.

With more than seven years of experience to draw on, we can say that the systems set up have performed excellently. Observations of non-acceptance of banknotes or coins by ATMs or slot machines, or any other disruptions, have been rare.

### **Europe's largest peace-time logistics operation**

The euro cash changeover has been characterised as Europe's largest ever logistics operation in peace time, and it required a number of exceptional measures. As early as 1999 it was decided that euro banknotes and coins could be supplied to credit institutions, cash-in-transit companies and retailers well ahead of the turn of 2001/2002. It was also decided that the public could start to exchange national cash for euro coins in the latter half of December 2001.

The transportation, handling and storage of massive amounts of cash, together with the short dual circulation period, required active frontloading. In this way, the cash

*The production of banknotes to uniform quality standards was a demanding task.*

could be made available to key target groups before the turn of the year, after which most of the capacity was released for the handling and transportation of the national cash that was withdrawn from circulation. Front-loading was a big success, considering that nearly 80% of the banknotes and more than 90% of the coins were distributed prior to 2002, thus paving the way for a smooth cash changeover.

Euro banknotes were made available to the general public from 1 January 2002, above all via ATMs. Roughly 80% of the ATMs were dispensing euros the very first day, while practically all the euro area ATMs had been converted to euro by 4 January 2002. The swift adaptation of the ATMs, made possible by several years of preparations by banks and ATM manufacturers, was of crucial importance to the smooth cash changeover. The technical specifications of euro banknotes were made available to ATM manufacturers as early as the summer of 1999, and the first opportunity for ATM testing with genuine euro banknotes was organised in spring 2000.

In addition to the ATMs, all machines accepting banknotes and coins in payment also had to be converted to euro. The conversion of about 10 million coin-operated vending machines, ticketing machines and other slot machines took longer to accomplish than the adaptation of more than 200,000 ATMs. Even so, by the end of January 2002 more

than 90% of slot machines had been converted to euro. With the cash changeover completed in other respects, random problems were still caused by some unconverted slot machines. In addition, the fast withdrawal of national coins gave rise to bottlenecks in cash handling organisations and took months to resolve in some countries.

### **200 million leaflets on the euro**

A broad range of communication channels were needed to disseminate information on the euro to more than 300 million people. The Eurosystem information campaign focused on the visual appearance and authentication features of euro banknotes and coins, and on the cash changeover. The campaign was designed as a complement to those run by national authorities and was organised through four different channels: a Partnership Programme involving more than 3,000 private and public sector organisations that passed the information on to their staff and customers, a press campaign, a mass media campaign and a website.

The mass media campaign was launched at the end of August 2001 with disclosure of the final visual appearance and authentication features of euro banknotes. This event was witnessed by more than 500 journalists and 60 TV crews and was accompanied by newspaper advertisements and TV spots. In addition, close to 200 million information

*The mass media campaign was launched at the end of August 2001.*

leaflets on the euro were distributed to households, in 34 languages. Other target groups of the mass media campaign included retail cashiers and bank tellers, the education system and the police. Special communication measures were introduced to reach those population groups who experienced greater difficulties in changing over to the new money. For example, a brochure in Braille was prepared in cooperation with the European Blind Union.

In advance, the introduction of euro banknotes and coins raised a variety of questions and doubts among the public. The cash change-over nevertheless went smoothly in all 12 euro area countries. According to the Eurobarometer survey conducted in January 2002, 88% of the public reported they had been sufficiently well informed of the cash changeover, while 81% responded that their personal experience of the cash changeover was positive.

### Euro banknotes in circulation continue to increase

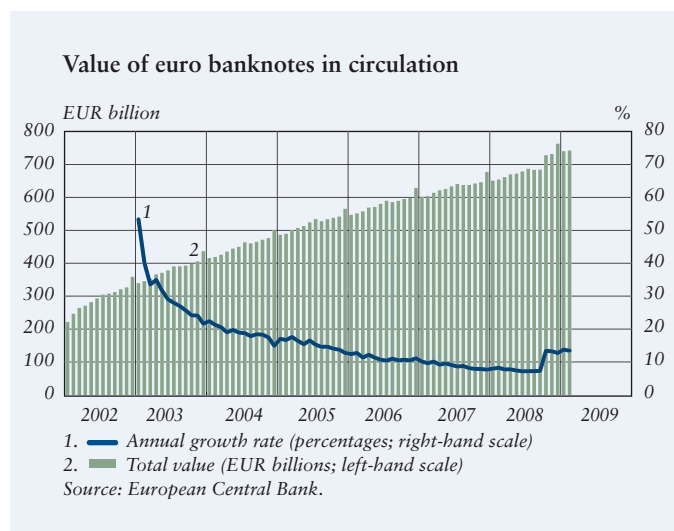
Demand for euro banknotes and coins has also been sustained since the launch, and volume growth has been stronger than could have been anticipated based on past developments in national currencies. The value of euro banknotes in circulation increased by more than 10% annually until the beginning of 2007. Thereafter, the increase gradually moderated to a little over 7%, only to

accelerate again in October 2008 to close to 13% in the wake of the financial market turmoil (Chart 1).

The strong expansion in the volume of euro banknotes in circulation has been related above all to the public's adjustment of the amounts of cash held to conditions of low inflation expectations and low interest rates. Demand has also been considerable among non-euro area residents, who are estimated to hold nearly 20% of euro banknotes. The confidence in the euro as a parallel currency is demonstrated by the fact that the strong increase in demand for euro banknotes during the financial market turmoil largely originated outside the euro area.

While the relative share of cash as a means of payment has dropped in favour of new means of payment, at the same time the use of cash as a store of wealth has increased. This

Chart 1.



trend is clearly discernible when comparing changes in the circulation of low denominations (EUR 5, EUR 10 and EUR 20 notes) with changes in the circulation of high denominations (EUR 50, EUR 100, EUR 200 and EUR 500 notes) (Chart 2). Although demand for low-value banknotes has also grown, the

increase in notes of high denomination has been much stronger. Consequently, the average value of a banknote in circulation has increased from EUR 43.7 at the end of 2002 to EUR 58.2 at the end of 2008.

The trend in the circulation of euro coins has diverged from that of euro banknotes, in that volume growth has exceeded value growth throughout. In other words demand has concentrated on low-value coins (1, 2 and 5 cents) (Chart 3). While banknotes of higher denomination are used as a store of wealth and are therefore taken out of active circulation, the smallest coins get lost in money boxes and jars and go out of active use. This means that euro coins of the smallest denominations must be continuously minted in large amounts by those euro area countries that, unlike Finland, do not apply the rounding rule for payments. The value of the average euro coin in circulation has dropped from 31 cents at the end of 2002 to 25 cents at the end of 2008, when 1, 2 and 5 cent coins accounted for nearly 59% of euro coins in circulation.

### Security features against counterfeits

Considering that the euro is the second most important currency in the world, it understandably attracts the interest of counterfeiters. Therefore, determined measures have been taken to prevent counterfeits and support law enforcement. In

Chart 2.

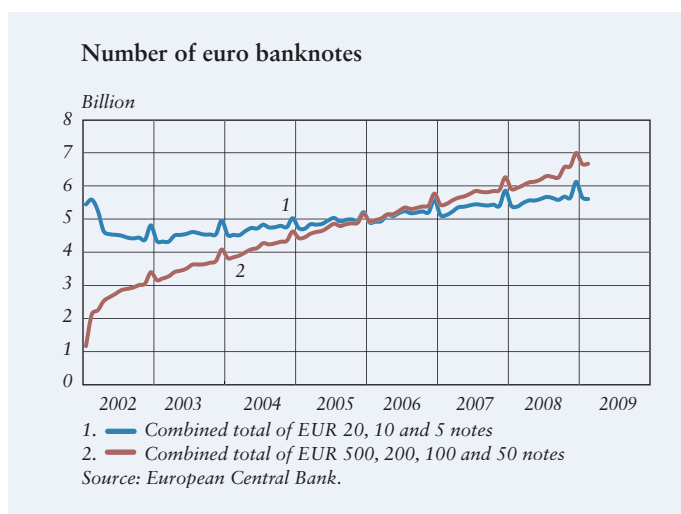
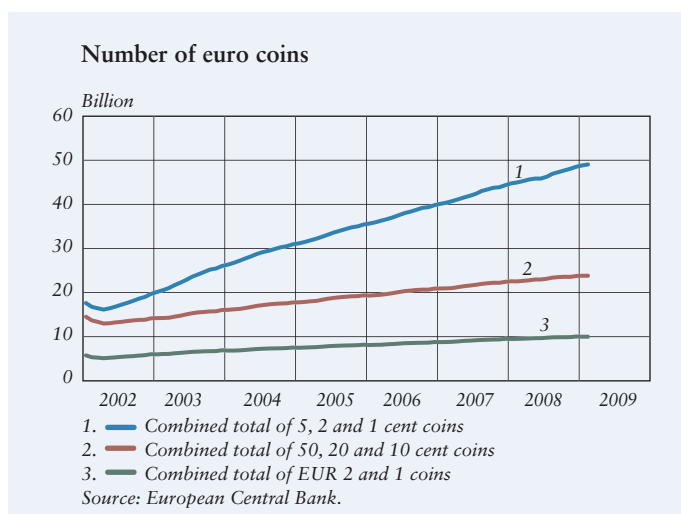


Chart 3.



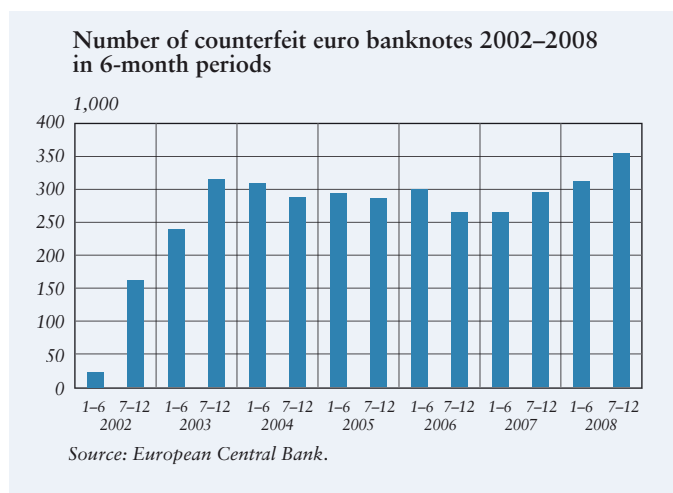
addition to the easily discernible security features of euro banknotes, the ECB has made available to EU central banks and the police a database with technical data on all counterfeit euro banknotes and coins and set up a Counterfeit Analysis Centre to analyse and classify all new counterfeit euro banknotes prior to their registration in the database.

In the database, the technical description of each new counterfeit class includes reproduction techniques, the way in which the different security features are imitated and pictures of the counterfeits. In addition to the ECB Counterfeit Analysis Centre, all EU member states have established their own national analysis centres for handling national counterfeits of banknotes and coins.

Public disclosure of the security features of the banknotes more than four months before issuance gave rise to horror scenarios arguing that euro counterfeits would emerge immediately upon the changeover. The amount of euro counterfeits nevertheless remained low during the first six months. After summer 2002 the situation began to change gradually, and in the course of 2003 more than 550,000 counterfeits were detected in circulation. After this, however, the number of counterfeits evened out and at times even declined, until it began to increase again in 2008 (Chart 4).

The number of counterfeits is still roughly the same as the number

Chart 4.



of national counterfeits reported in 2000 and 2001 by the countries having adopted the euro. To put these developments into perspective, they must be viewed against the considerable advances in reproduction technology facilitating the reproduction of banknotes and the increase in the number of euro banknotes in circulation by more than 50% over the same period.

### Cooperation boosts efficiency in cash management

Cash management thinking has shown an interesting development since 1992 when discussions on the production and launch of the single currency first began. In the initial phase, preparations naturally focused on the design of new banknotes and coins and on the creation of conditions for as smooth a cash changeover as possible. At that time, the general understanding was that a

*A single Eurosystem tender procedure for the procurement of banknotes will be introduced by the beginning of 2012.*

number of countries would introduce common banknotes and coins but national cash management practices would not be affected, as there were no changes envisioned in the operating environment and the role of the national central banks in the cash cycle.

Closer to the new millennium, when the production of euro banknotes and coins had already got off to a good start and many important decisions had been taken, for example on ATM testing and frontloading rules, the focus of preparations was increasingly shifting towards potential changes in the operating environment following the issue of the single currency. Such environmental changes were related on one hand to the central banks' own objectives, such as concentration on their core tasks, and, on the other hand, to the efficiency gains resulting from the single currency and the creation of a level playing field across the euro area.

Examples of these developments include the decision on the free-of-charge services and fee-based services of central banks and the guidelines on opening hours and debiting/crediting rules for cash services at NCB counters taken by the Governing Council of the ECB in 2001. In the same year, the Governing Council also decided that production of euro banknotes would be decentralised, in that each euro area NCB would, as a rule, be responsible for procurement

of only one or two denominations. This arrangement helps to ensure a supply of consistent quality banknotes by reducing the number of production sites, and it also enables the Eurosystem to benefit from economies of scale in banknote production. Furthermore, owing to the influence of banknote migration from country to country due to tourism and other activities, responsibility for banknote production was no longer assigned to the NCBs on the basis of their own needs but on the basis of each NCB's paid-up share in the capital of the ECB; this share is derived from the total GDP and population size of each euro area country.

Correspondingly, and following extensive preparations, in September 2004 the Governing Council decided to introduce a single Eurosystem tender procedure for the production of euro banknotes. This will be adopted at the beginning of 2012, at the latest, or earlier if at least half the central banks use the tender process for procurement of their banknotes and at least half the annual demand for euro banknotes is satisfied through tendering. The aim is to ensure transparency and the equal treatment of all the printing works participating in the public tender for euro banknotes.

National central banks with their own printing works or access to public-sector printing works have the right to opt out of the tender



procedure. They will continue to produce their share of euro banknotes in their own printing works.

A common stock management system for euro banknotes has also been created, with the aim of coordinating the logistical stocks of the NCBs at the Eurosystem level and using a Eurosystem strategic stock (ESS). The strategic stock will be used in such exceptional circumstances when there are insufficient logistical stocks in the Eurosystem to cover an unexpected increase in demand for euro banknotes or when there is a sudden interruption in the supply of euro banknotes. The importance of the strategic stock was pointedly illustrated by the sudden strong demand for euro banknotes of high denominations, particularly from non-euro area residents, during the financial market turmoil last autumn. This demand was successfully satisfied by flexibly resorting to the strategic stock.

Further improvements in the provision of equal and competitive conditions for cash management will of course be made in the future. However, the consideration of efficiency gains for all the stakeholders in the cash cycle has emerged as a new feature during the past few years. Accordingly, since July 2007 the euro area national central banks have provided cash supply services also to such credit institutions of other euro area countries for which it is logistically more advantageous to use the

services of a central bank across the border. Within the next few years, the central banks will no longer require that banknotes be faced and oriented in the withdrawal and lodgement of bundles. This will increase the efficiency of the various stages of the banknote handling process.

Efficiency gains have also been sought by improving the division of labour within the Eurosystem so that all NCBs do not necessarily have to provide the whole range of services, allowing efficiency to be increased through specialisation or pooling. Examples of this include the Cash Single Shared Platform contract signed by four central banks – including the Bank of Finland – and the joint tender process initiated by five central banks for the procurement of euro banknotes. In addition, some central banks have specialised in the testing of cash handling machines for the Eurosystem, as well as quality testing of euro banknotes based on samples from across the euro area. Likewise, one or other NCB has been entrusted with the development and maintenance of certain information systems for the cash management process.

### **New banknote series under preparation**

For 12 countries, the issue of euro banknotes and coins in 2002 marked the completion of the stage of European integration agreed on at Maastricht in 1991. The simultaneous exchange of banknotes and coins

*The efficiency of the cash management services of the NCBs has been improved through specialisation or pooling.*



in 12 countries was, as such, an enormous challenge, but, as evidenced by the examples discussed above, a number of new challenges have emerged along the way. Furthermore, the accession of 12 new countries to the European Union in the course of the present decade has already resulted in adoption of the euro by four new countries. Although the cash changeover of the new EU member states differs from the cash changeover in 2002, above all because euro banknotes and coins are already in existence, it nevertheless requires detailed planning and commitment by the banks, retailers, cash-in-transit companies, the ATM and vending industry and other interested parties from the very start.

The design, production and issuance of the current series of euro banknotes took ten years at the time. The Eurosystem therefore launched the planning of a new series of banknotes in good time a few years ago. The project will take many more years to complete, although some of the design stages will not need to be repeated, as the Governing Council has decided that the new banknote series will be based on the same theme of ages and styles and the same denomination structure as the present series. Over the years, the Eurosystem has devoted considerable resources to research and development, kept track of advances in reproduction technology and analysed potential counterfeit threats. The new series of

euro banknotes will seek to meet these challenges. The series will be issued in a few years time, one denomination at a time, so it will take several years to replace the whole series.

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