

**TRAINER'S GUIDE** 

to the euro banknotes and coins



www.euro.ecb.int



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# **INTRODUCTION**



The euro is the single currency for a large group of countries in the European Union, known as the euro area. Over 300 million people in the euro area use euro banknotes and coins for their cash payments. Moreover, between 10% and 20% of euro banknotes in circulation, in terms of value, are used

outside the euro area. Inevitably, the currency's importance and high international profile make it attractive for counterfeiters. Although this threat has been contained, with high-tech security features making euro banknotes secure and easy to distinguish from counterfeits, vigilance is necessary. To discourage counterfeiting, professional cash handlers in banks, retail companies, restaurants and in other businesses where large amounts of cash are handled have to be familiar with euro banknotes and coins.

This guide has been written for the trainers of those cash handlers. It provides essential information on the design and security features of euro banknotes and coins. The accompanying CD-ROM contains a PowerPoint presentation which can be tailored to the needs of the audience as well as an interactive presentation of the security features of the banknotes. Both applications can be used in training sessions or uploaded to your company's intranet.

This guide also covers the quality checks that cash handlers should carry out on euro banknotes before putting them back into circulation. Low-quality banknotes, e.g. those which are dirty, should be deposited with a local bank, or directly with the national central bank, rather than re-circulated; the security features of clean banknotes are easier to check. The guide also offers some useful tips on how to react to customers who pay with suspect banknotes.

The knowledge you convey as a trainer makes a valuable contribution to counterfeit deterrence and also helps to ensure that the euro remains a widely trusted currency.

Further information on the euro banknotes and coins can be obtained from the European Central Bank or from your national central bank. You can find contact details on pages 22 and 23 of this guide.









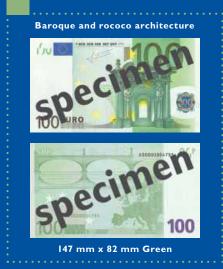
133 mm x 72 mm Blue

Renaissance architecture





140 mm x 77 mm Orange





Modern 20th century architecture



# **EURO BANKNOTES** General characteristics

# DESIGN

The seven euro banknotes are based on a common design theme – the "Ages and styles of Europe". The notes (and coins) are legal tender throughout the euro area.

On the front of the banknotes, windows and doorways symbolise the spirit of openness and cooperation in Europe. The 12 stars of the European Union represent the dynamism and harmony of contemporary Europe.

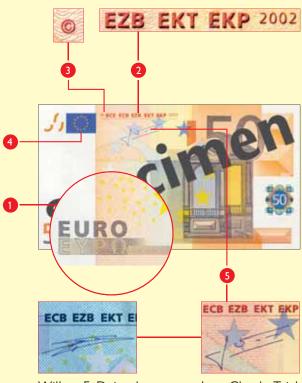
The back of each banknote features a bridge from one of the seven periods in Europe's architectural history. The bridge is a metaphor for the close cooperation and communication between the people of Europe and between Europe and the rest of the world.

# DETAILS

 The name of the currency written in both the Latin (EURO) and the Greek (EYPΩ) alphabets.

2 The initials of the European Central Bank, in the five linguistic variants – BCE, ECB, EZB, EKT, EKP – covering the 11 official languages of the European Union at the time when the euro banknotes were first introduced.

- 3 The symbol © indicating copyright protection.
- 4 The flag of the European Union.



Willem F. Duisenberg

Jean-Claude Trichet

5 The signature of the President of the European Central Bank. Euro banknotes bear the signature of Willem F. Duisenberg, the first President of the European Central Bank, or of Jean-Claude Trichet, who succeeded him on I November 2003. Banknotes with either signature are valid.

### **IDENTIFYING GENUINE BANKNOTES**

Printers and colour copiers can make good copies of all kinds of printed material. For this reason, a number of security features – described below – have been incorporated in the banknotes to safeguard them from counterfeiting. These features help you to identify a genuine banknote without too much effort. It is difficult to produce a counterfeit that imitates all these features in a convincing way.

Please note that if the banknotes are not treated properly some of their properties may deteriorate. For example, the paper of an accidentally washed banknote may glow under a UV lamp.

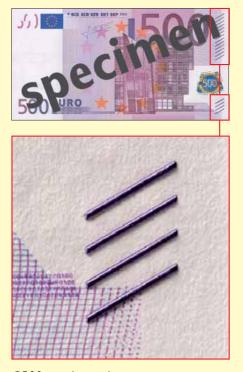
To check if the banknote is genuine, feel it, look at it and tilt it.

# SUITABLE FOR BLIND AND VISUALLY IMPAIRED PEOPLE

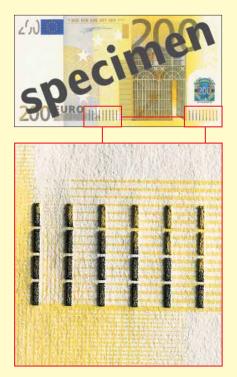
The European Blind Union was consulted on the design of the banknotes and consequently four features were incorporated into the banknotes to help the blind and visually impaired to distinguish between them. Each banknote denomination

- is of a different size the higher the denomination, the larger the banknote.
- has a dominant colour, with contrasting colours for "adjacent" banknotes (e.g. the €10 is red, the €20 is blue).
- shows large, bold value numerals.
- features raised print (also called intaglio printing), which makes the ink feel thicker in some parts.

The  $\in$ 200 and  $\in$ 500 banknotes include additional tactile marks near the edges.



€500 tactile marks



€200 tactile marks

# Key security features

- Raised printing (also called intaglio printing)
- Watermark
- Security thread
- See-through number (also called see-through register)
- Hologram stripe or hologram patch
- Glossy stripe and colour-changing number

Euro banknotes are produced using sophisticated printing technology. They include some high-tech security features. This makes them easy to distinguish from counterfeits. You don't need special equipment. In fact, all you have to do is feel, look at and tilt the banknotes.



**FEEL** the crisp and firm banknote **paper**. Feel the **raised print**: run your finger across the front of the banknote – or scratch it gently with your fingernail – and you will feel that the ink is thicker in some parts.



LOOK at the banknote and hold it against the light to see the watermark, the security thread and the see-through number. All three features can be seen from the front and back of a genuine banknote.



**TILT** the banknote to see the **hologram stripe or patch**, the **glossy stripe** (on the  $\in$ 5,  $\in$ 10 and  $\in$ 20 banknotes) and the **colour-changing number** (on the  $\in$ 50,  $\in$ 100,  $\in$ 200 and  $\in$ 500 banknotes).

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# EURO BANKNOTES

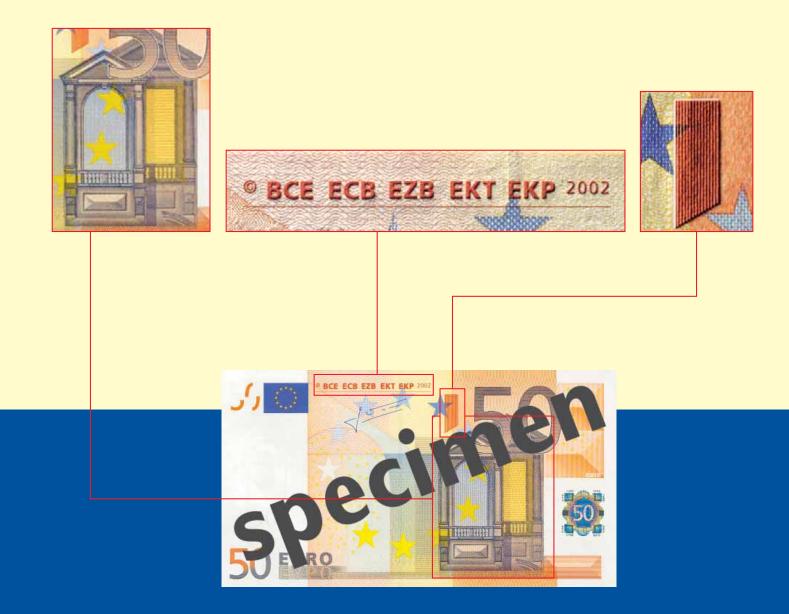
Key security features

# **BANKNOTE PAPER**

The banknote paper consists of pure cotton. A clean banknote should feel crisp and firm (not limp or waxy).

## **RAISED PRINT**

Intaglio or raised printing produces a tactile effect which is used in the main image and in some other parts on the front of the banknote. The  $\in$ 200 and  $\in$ 500 banknotes include additional tactile marks for the visually impaired which are positioned near the edges (see the pictures on page 6).



# WATERMARK

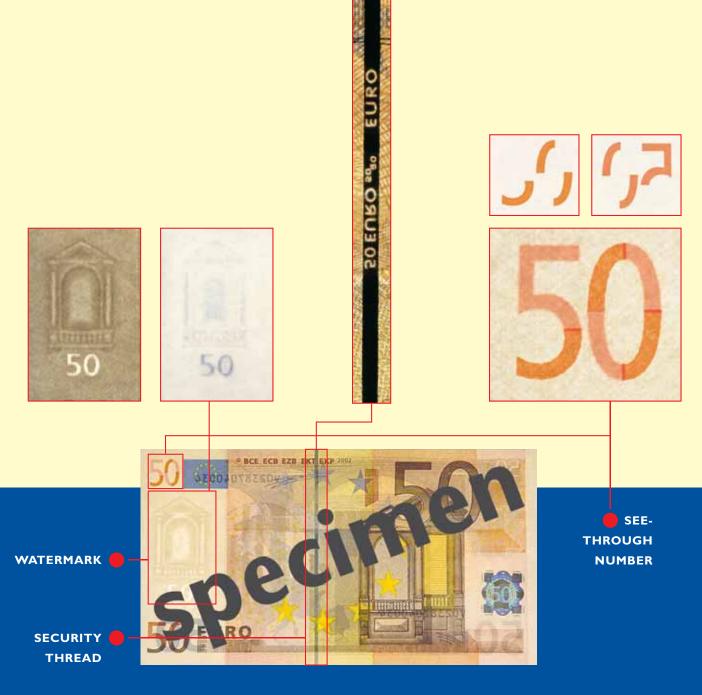
The watermark is produced by varying the thickness of the paper. It can be seen by holding the banknote against the light. The transitions between the light and dark parts of the image showing the main motif are smooth. Put the banknote on a dark surface and the light areas become darker. This effect is very easy to see in the value watermark.

# SECURITY THREAD

The security thread is embedded in the banknote paper. Hold the banknote against the light – the thread will appear as a dark stripe. The word "EURO" and the value can be seen in tiny letters on the stripe.

# SEE-THROUGH NUMBER

The marks printed in the top corner of the banknote, on both sides, combine perfectly to form the value numeral. You can see the complete number when holding the banknote against the light.



# **EURO BANKNOTES** Key security features

# HOLOGRAM STRIPE

Tilt the  $\in$ 5,  $\in$ 10 or  $\in$ 20 banknote – the hologram image will change between the value and the  $\in$ symbol on a rainbow-coloured background. At the edges, tiny letters show the value.

### HOLOGRAM PATCH

Tilt the  $\in$ 50,  $\in$ 100,  $\in$ 200 or  $\in$ 500 banknote – the hologram image will change between the value and a window or doorway. In the background, you can see rainbowcoloured concentric circles of tiny letters moving from the centre to the edges of the patch.



### PERFORATIONS

Hold the banknote against the light. In the hologram stripe or patch you will see perforations which form the € symbol. You can also see small numbers showing the value.

BCE ECB EZB EKT EKF







HOLOGRAM PATCH

HOLOGRAM STRIPE





# **GLOSSY STRIPE**

3963217

Tilt a  $\in$ 5,  $\in$ 10 or  $\in$ 20 banknote – a glossy or gold-coloured stripe will appear on the back of the banknote. It shows the value and the  $\in$  symbol.

# COLOUR-CHANGING NUMBER

Tilt a  $\in$ 50,  $\in$ 100,  $\in$ 200 or  $\in$ 500 banknote. On the back, the value numeral will change colour from purple to olive green or brown.







3963217

COLOUR-CHANGING NUMBER

GLOSSY STRIPE

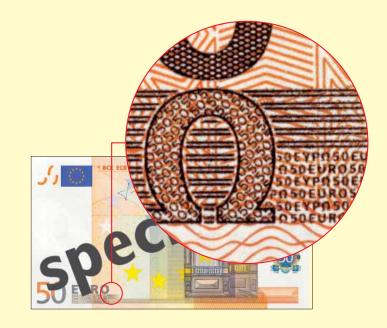
# **EURO BANKNOTES** Additional security features

You can check additional security features by using special equipment such as a magnifying glass or an ultraviolet lamp.

- Microprinting
- Ultraviolet (UV) properties (fibres and ink)

## MICROPRINTING

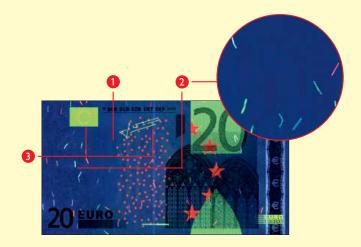
On some areas of the banknote you can see tiny writing. The 0.8 mm print can usually be read with the naked eye. The 0.2 mm microprint, however, simply appears as a thin line to the naked eye, but can be read with the aid of a magnifying glass. Even printing of this size is sharp, not blurred, on a genuine banknote.



## ULTRAVIOLET PROPERTIES (FIBRES AND INK)

Under ultraviolet light check the following characteristics:

- The paper itself does not glow,
  i.e. it emits no light and is "UV dull".
- 2 Fibres embedded in the paper appear, coloured red, blue and green.
- On the front, the flag of the European Union looks green and has orange stars. The signature of the ECB President turns green. The large stars and the small circles in the centre glow.
- On the back, the map, bridge and value numeral appear in yellow or green.





# IMAGES OF EURO BANKNOTES UNDER ULTRAVIOLET LIGHT



























# **EURO COINS** General characteristics and security features

Diameter: 25.75 mm

Colour: Outer part: Silver

Outer part: Copper-nickel

Three-layer inner part:

Inner part: Gold

Nickel-brass, nickel, nickel-brass

Edge: Edge lettering (this is

different for each country),

Weight: 8.50 g Shape: Round

Composition:

fine milled



# **50 CENT**

Diameter: 24.25 mm Weight: 7.80 g Shape: Round Colour: Gold Composition: Nordic gold Edge: Shaped edge with fine scallops

Diameter: 22.25 mm

Shape: Spanish flower shape

**Composition: Nordic gold** 

Weight: 5.74 g

Colour: Gold

Edge: Plain



# 5 CENT



# 2 CENT



### Diameter: 21.25 mm Weight: 3.92 g Shape: Round Colour: Copper Composition: Copper-covered steel Edge: Smooth

Diameter: 23.25 mm Weight: 7.50 g

Colour: Outer part: Gold

Outer part: Nickel-brass

Three-layer inner part:

Edge: Interrupted milled

Inner part: Silver

Copper-nickel, nickel, copper-nickel

Shape: Round

Composition:

Diameter: 18.75 mm Weight: 3.06 g Shape: Round Colour: Copper Composition: Copper-covered steel Edge: Smooth with a groove



# **20 CENT**



# **10 CENT**



Diameter: 19.75 mm Weight: 4.10 g Shape: Round Colour: Gold **Composition: Nordic gold** Edge: Shaped edge with fine scallops

# I CENT

. . . . . . . . .



Diameter: 16.25 mm Weight: 2.30 g Shape: Round Colour: Copper Composition: Copper-covered steel Edge: Smooth

# 14

There are eight coins: 1, 2, 5, 10, 20 and 50 cent,  $\in$ 1 and  $\in$ 2. They are all different in terms of size, weight, material, colour and thickness. Their edges differ from one denomination to the next. Each one can be easily distinguished, even by visually impaired people.

### **COMMON EUROPEAN SIDES**

The common European sides of the coins show tiny images of Europe alongside the 12 stars of the European Union.

As a result of the enlargement in 2004, the images of the European Union depicted on the 10, 20 and 50 cent coins and on the  $\in$ 1 and  $\in$ 2 coins have been modified to show a geographical representation of Europe.





The coins showing the 15-member EU also remain legal tender.





# NATIONAL SIDES

Each country has used a national symbol or image for the 'national' side of its euro coins. For further information, please visit the ECB website at <u>www.euro.ecb.int</u>. A small number of euro coins are also issued by Monaco, San Marino and the Vatican City. They are legal tender throughout the euro area, but are unlikely to circulate widely, as they become collectors' items. Despite their different national sides, all euro coins can be used anywhere in the euro area.

## SECURITY FEATURES

The  $\in I$  and  $\in 2$  coins include a number of security features, such as their combination of colours – silver and gold – as well as the lettering along the edge of the  $\in 2$  coin, which differs from country to country. In addition, the 'sandwich' composition of the  $\in I$  and  $\in 2$  coins and their unique magnetic properties make their use in vending machines more secure.

### **COMMEMORATIVE COINS**

Each country in the euro area as well as Monaco, San Marino and the Vatican City can issue a  $\in 2$ commemorative coin once a year. These coins have the same properties and the same common European side as normal  $\in 2$  coins. But on the national side they have a commemorative design.

They are legal tender throughout the euro area, i.e. they can be used – and must be accepted – just like any other euro coin.

### **COLLECTOR COINS**

Collector coins are not intended for circulation. They are only legal tender in the country of issue. Their images and face values differ from the ordinary coins and commemorative coins, both of which may be used for purchases. The characteristics of collector coins, such as their colour, diameter or weight, differ significantly from those of circulation coins.

# **SUSPECT AND DAMAGED BANKNOTES** Steps taken by the ECB and the national central banks

The euro is respected as a stable currency, not just in Europe but worldwide. As a result, it receives some unwelcome attention from counterfeiters. Although the security features of the euro make it among the best protected currencies in the world, a small number of counterfeits do get put into circulation.

The actual number of counterfeit banknotes withdrawn from circulation is published every six months on the ECB's website. It represents an extremely small proportion of the total number of genuine banknotes in circulation and is no cause for concern – you just need to be vigilant.

Counterfeit banknotes are sent to each country's National Analysis Centre. If the counterfeit is of a new kind, it is forwarded to the Counterfeit Analysis Centre at the ECB for detailed technical analysis and classification. The relevant technical and statistical data is held in a central database which is also managed by the ECB. Counterfeits of a familiar kind are kept at national level together with the relevant statistical data, which is placed in the central database.

The ECB has established a restricted-access website to assist in authenticating suspect banknotes. This "Euro Check Web Site" is targeted at law enforcement bodies, financial institutions and cash handling professionals. For more information see <u>https://ecws.ecb.int</u>.

Counterfeit coins are handled in much the same way. The Member States have set up a Europe-wide analysis centre for euro coins in France. The technical and statistical data on counterfeit coins is kept on the same central database as the data on counterfeit banknotes. The information on the database is shared with police forces involved in combating counterfeiting.





For more information on what to do in your country, please refer to your national central bank. You can find contact details on pages 22 and 23 of this guide.

# Professional cash handlers' re-circulation of banknotes

All organisations which handle cash professionally, such as banks, cash transportation companies and bureaux de change, are legally required\* to withdraw from circulation all euro banknotes and coins received by them which they know, or have reason to believe, are counterfeits. They must hand them over to the competent national authorities. If they do not, they can be fined.

Under the Banknote Recycling Framework<sup>\*\*</sup>, companies may only re-circulate euro banknotes if the notes have been checked in accordance with European standards. These checks play a useful role in removing counterfeits, suspect banknotes and worn or soiled banknotes that are unfit for circulation. This helps to ensure that counterfeits are quickly withdrawn and that banknotes in circulation are of good quality. If, exceptionally, organisations do not check banknotes using banknote handling machines, they are required to carry out manual authenticity and fitness checks before putting them back into circulation over the counter.

Some examples of banknotes which cannot be re-circulated are shown below. They must be sent to the national central bank.

### Soiling



Dirt across the entire banknote

### Stained



Stain covering an area of at least 3 mm<sup>2</sup>



Noticeable lack of ink on part or whole of the banknote, e.g. washed banknote

# Mutilated



At least one physical defect, e.g. tear at the edge, hole or missing parts, or a severely damaged security feature

Graffiti-stained



Banknote marked, e.g., with figures or letters

### Repaired



Parts of the same banknote joined together by tape or glue

\* under Council Regulation (EC) No 1338/2001 of 28 June 2001 laying down measures necessary for the protection of the euro against counterfeiting

\*\* For more information on the Banknote Recycling Framework which governs the re-circulation of banknotes, please see the Banknotes & Coins section at www.euro.ecb.int.

What to do if you receive a suspect banknote

Ideally, before this happens, you should ask your supervisor about the company's policy on suspect banknotes and how to deal with them. However, if you are handed a banknote and the paper feels different or the printed image looks wrong, what should you do? Some tips:

- Do not get into an argument with the customer;
- Tell him/her that you need to speak briefly to your supervisor or a security officer, but ensure that the customer can always see the banknote in order to avoid any complaints;
- Get your supervisor or the security officer to speak to the customer;
- Make a mental note of the customer's appearance;
- If at all possible, do not return the banknote to the customer;
- Try to stall him/her, but do not put yourself at risk;
- If the customer tries to leave the premises, despite being asked to wait for the police, do not prevent him/her from leaving. If he or she leaves by car, make a note of his/her number plate and the car;
- Contact the police;
- Hand over the suspect banknote without delay to your supervisor or security officer for forwarding to the police;
- Do not try to be a hero make sure you are safe at all times.

If you suspect a banknote to be counterfeit, do not conclude the transaction with the customer; instead, you ought to keep the banknote and give the customer a receipt for it.

Since counterfeit banknotes are completely worthless, be vigilant.

It is a criminal offence to pass on a banknote which you believe or know is a counterfeit.





Euro area national central banks and many commercial banks will exchange mutilated or damaged euro banknotes if:

- more than 50% of the banknote is presented, and if
- 50% or less of the banknote is presented, provided it can be proved that the missing parts have been destroyed.

To have a mutilated or damaged banknote exchanged, the applicant must provide:

- proof of his/her identity (in case of any doubt about the applicant's legal title to the banknotes or the authenticity of the banknotes);
- a written explanation of the cause of the damage and the whereabouts of the missing parts of the banknote; and
- a written explanation of the type of stain, contamination or impregnation if ink-stained, contaminated or impregnated banknotes are presented.

A cash transportation company or a bank must also provide:

 a written statement describing the cause and kind of neutralisation where banknotes are submitted which have been dyed (with a red dye, for instance) by activated anti-theft devices.

For more information on what to do in your country, please refer to your national central bank. You can find contact details on pages 22 and 23 of this guide.

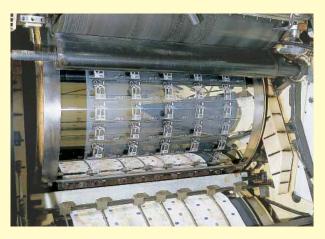
# **BANKNOTE PRINTING**

There are two types of banknote printing machinery: sheet and web machinery. Sheet presses are used by most of the printing works which produce euro banknotes. They are separate machines (see below), in contrast to web presses, which are fed with a continuous reel of paper and perform the different printing processes in one pass.



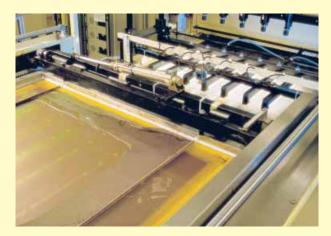
## OFFSET PRINTING

This process involves printing the offset designs on the front and back of the banknotes simultaneously. The printing plates transfer the ink to the paper via an intermediate offset cylinder. Offset printing involves a number of separate plates with different colours superimposed in close register to produce high-quality, clearly defined images. The background images on the front and all images on the back of the banknotes are printed in offset.



### INTAGLIO PRINTING

With intaglio printing, the ink is poured into grooves engraved on the plate. When the plate comes into contact with the paper, the ink is forcibly transferred onto the paper to produce raised print. Intaglio elements are printed on the front of the banknotes only. Raised print can only be found on the front, e.g. in the window or doorway.



### SILK-SCREEN PRINTING

On a silk-screen printing machine, the ink is passed through the open sections of a stencil. The glossy stripe and the colour-changing number are printed this way.



# FOIL APPLICATION

The hologram stripe or patch is hot-stamped onto the banknote paper.



# LETTERPRESS PRINTING

The banknote serial numbers are printed with the aid of numbering boxes.



# QUALITY CONTROL

Occasional flaws are bound to occur in any mass production process. The banknotes are examined for flaws before they are packed. In many printing works, in addition to manual or visual checks, automatic systems check all banknotes individually.

# **CONTACT DETAILS**

## **European Central Bank**

Kaiserstraße 29 60311 Frankfurt Germany Tel.: +49 69 1344 0 Fax: +49 69 1344 6000 info@ecb.int www.euro.ecb.int

# Nationale Bank van België/ Banque Nationale de Belgique

Berlaimontlaan/Boulevard de Berlaimont 14 1000 Brussel/Bruxelles België/Belgique Tel./Tél.: + 32 2 221 45 45 Fax: + 32 2 221 30 91 cashdepartment@nbb.be www.nbb.be

# Българска народна банка Bulgarian National Bank

I, Alexander Battenberg Square 1000 Sofia Bulgaria Tel.: +359 2 91459 Fax: +359 2 9802425 press\_office@bnbank.org www.bnb.bg

# Česká národní banka

Na Příkopě 28 I I 5 03 Praha I Česká republika Tel.: +420 800 I60 I70, +420 224 4I3 585 Fax: +420 224 4I2 I79 info@cnb.cz www.cnb.cz

# Danmarks Nationalbank

Havnegade 5 1093 København K Danmark Tlf.: +45 33 63 70 00 Fax: +45 33 63 71 03 info@nationalbanken.dk www.nationalbanken.dk

# Deutsche Bundesbank

Falschgeldstelle Hegelstraße 65 55122 Mainz Deutschland Tel.: + 49 6131 377 4488 Fax: + 49 6131 377 4499 nccde@bundesbank.de www.bundesbank.de

# Eesti Pank

Estonia pst 13 15095 Tallinn Eesti Tel.: +372 66 80 719 Fax: +372 66 80 954 euro@epbe.ee www.euro.eesti.ee

# Central Bank & Financial Services Authority of Ireland

PO Box No 61, Sandyford Dublin 16 Ireland Tel.: +353 1 2198818 Fax: +353 1 2956536 nccie@centralbank.ie www.centralbank.ie

# Τράπεζα της Ελλάδος Bank of Greece

Cash Department 341, Messogion Avenue 152 31 Halandri Greece Tel.: +30 210 670 9510 Fax: +30 210 670 9195 Dep.cash@bankofgreece.gr

# Banco de España

Departamento de Emisión y Caja Centro Nacional de Análisis Alcalá 48, 28014 Madrid España Tel.: +34 91 338 6332/6319 Fax: +34 91 338 6887 emisionycaja@bde.es www.bde.es

# Banque de France

31, rue Croix des Petits Champs 75001 Paris France Tél.: +33 1 42 92 42 92 Fax: +33 1 42 92 45 52 euro-formation@banque-france.fr www.banque-france.fr

# Banca d'Italia

via Nazionale, 91 00184 Roma Italia Tel. +39 06 4792 3782 Fax +39 06 4792 3896 nccit@bancaditalia.it www.bancaditalia.it

# Κεντρική Τράπεζα της Κύπρου Central Bank of Cyprus

80 Kennedy Avenue 1076 Nicosia Cyprus Tel.: +357 22 71 41 00 Fax: +357 22 37 81 53 cbcinfo@centralbank.gov.cy www.centralbank.gov.cy

# Latvijas Banka

K. Valdemāra ielā 2a Rīgā, LV-1050 Latvijā Tālr.: +371 670 22 300 Fakss: +371 670 22 420 info@bank.lv www.bank.lv







# Lietuvos bankas

Gedimino pr. 6 01103 Vilnius Lietuva Tel. +370 5 268 00 29 Faks. +370 5 268 81 24 info@lb.lt www.lb.lt

# Banque centrale du Luxembourg

2, boulevard Royal 2983 Luxembourg Luxembourg Tél.: +352 4774 I Fax: +352 4774 4910 info@bcl.lu www.bcl.lu

# Magyar Nemzeti Bank

1850 Budapest Szabadság tér 8-9. Magyarország Tel.: +36 1 428 2600 Fax: +36 1 428 2569 info@mnb.hu www.mnb.hu

# Bank Ċentrali ta' Malta/ Central Bank of Malta

Pjazza Kastilja, Valletta VLT 1060 Malta Tel.: +356 2550 0000 Fax: +356 2550 2500 CSU@centralbankmalta.com www.centralbankmalta.com

# **De Nederlandsche Bank**

Westeinde I Postbus 98 1000 AB Amsterdam Nederland Tel.: 0800-020 10 68 (gratis) Fax: +31 20 524 2500 info@dnb.nl www.dnb.nl

# Oesterreichische Nationalbank

Otto-Wagner-Platz 3 1090 Wien Österreich Tel.: +43 1 404 20 6666 Fax: +43 1 404 20 6698 bargeld@oenb.at www.oenb.at

# **Narodowy Bank Polski**

ul. Świętokrzyska 11/21 00-919 Warszawa Polska Tel.: +48 22 653 10 00 Fax: +48 22 620 85 18 nbp@nbp.pl www.nbp.pl

# Banco de Portugal

Departamento de Emissão e Tesouraria, Complexo do Carregado, Apartado 81 2584-908 Carregado Portugal Tel.: +351 263 856 514 Fax: +351 263 858 461 cncontrafaccoes@bportugal.pt www.bportugal.pt

# Banca Națională a României

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# Banka Slovenije

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