THE ISSUANCE OF BANKNOTES,
ACCOUNTING REFLECTION AND
SIGNIFICANCE

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XVII MEETING ON ACCOUNTING AND BUDGETARY ASPECTS OF
CENTRAL BANKING

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• Why banknotes are accepted in payment for goods and services
• Volume of banknotes in circulation

• The reflection of banknotes in the balance sheet and its significance for a central bank

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Eurosistem

VOLUME OF BANKNOTES IN CIRCULATION

Banknotes in circulation
VOLUME OF BANKNOTES IN CIRCULATION

Eurosistema
United States

Value of Currency in Circulation*
(Billions of dollars, as of December 31 of each year)

*Includes Federal Reserve notes, U.S. notes, and currency no longer issued, but does not include denominations larger than the $100 denomination.

Source: Federal Reserve USA
VOLUME OF BANKNOTES IN CIRCULATION

Japan

Source: Bank of Japan
England

(*) Closing date: 28.02.2020

Source: Bank of England
VOLUME OF BANKNOTES IN CIRCULATION

Norway

Source: National Bank of Norway
Sweden

Resource: Sweden`s Central Bank
VOLUME OF BANKNOTES IN CIRCULATION

Mexico

Resource: Bank of Mexico
Colombia

Resource: Central Bank of Colombia
VOLUME OF BANKNOTES IN CIRCULATION

Chile

Resource: Central Bank of Chile
VOLUME OF BANKNOTES IN CIRCULATION

Brasil

Resource: Central Bank of Brasil
Argentina

Resource: Central Bank of the Republic of Argentina
VOLUME OF BANKNOTES IN CIRCULATION

Percentage change 2007-2018

- Sweden: -50%
- Norway: -50%
- Japan: 0%
- Eurosystem: 50%
- England: 75%
- Switzerland: 100%
- USA: 125%
- Brasil: 150%
- Colombia: 175%
- Chile: 200%
- Mexico: 250%
• In general, the volume of banknotes in circulation will depend on the public's demand for cash.

• The demand for cash will basically depend on:
  ✓ The economic activity
  ✓ The degree of use of banknotes as a means of payment by economic agents (compared to checks, credit cards, etc.)
  ✓ Acceptance of our banknotes in other countries as a form of savings
  ✓ Other factors, such as a high inflation rate, may affect the demand for banknotes.

• Non-demand factors also influence the volume of banknotes in circulation (e.g., the issuance of banknotes to monetize public debt).
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• Why banknotes are accepted in payment for goods and services
Banknotes in circulation represent a liability for the central banks that have the power to issue them.

This is a liability with no financial cost and no maturity date:

- What is the economic nature of a no-cost liability that does not have to be repaid?

- What do we do when a series of banknotes loses its legal tender (become invalid) or we introduce a new currency?

Non-returned bills are recorded as Profits.
Non-returned banknotes are recorded as Profits.
Banknotes held in the vaults are not reflected in the balance sheet of central banks.

Some central banks reflect them on the asset side at cost, as inventories.

In general, banknotes held in the vaults are recorded in the accounts for the purpose of controlling stocks and receipts and issues.
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COST OF LIABILITY “BANKNOTES IN CIRCULATION”

• Liability with no financial cost
• Total cost = production cost + handling cost

Annual production cost

\[
\frac{365}{\text{average life}} \times \text{unit production cost} \times \text{average number of banknotes in circulation}
\]

EXAMPLE

Average life of 1 banknote of 100 c.u. = 2 years (730 days)
Production cost of 1,000 banknotes = 10 c.u.
Assuming average number banknotes in circulation = 10,000

Annual production cost = \(\frac{365}{730} \times 10/1,000 \times 10,000 = 0.5 \times 0.01 \times 10,000 = 50\) um

Handling cost

Unit handling cost \(\times\) number of returns in a year \(\times\) average number of banknotes in circulation
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Banknotes in circulation (on the liability side) finance earning assets that typically generate interest income.

Income earned on assets financed by the liability “Banknotes in circulation" is called seigniorage income.

Net seigniorage income is calculated by deducting manufacturing and handling costs.

They are not specifically accounted for, nor is it usually possible to make a precise calculation of their amount, since the assets financed are not known exactly (except for the Bank of England or the European Central Bank).
Seigniorage income usually represents an important part of the profit of issuing central banks (guarantee of future profits).

Normally, the counterpart assets of the banknotes in circulation are not identified, so the calculation of seigniorage income cannot be done accurately.
SEIGNIORAGE INCOME

- Profit according to nominal

<table>
<thead>
<tr>
<th></th>
<th>500</th>
<th>100</th>
<th>20</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Annual seigniorage income (3%) (for 1.000 banknotes)</td>
<td>15,000</td>
<td>3,000</td>
<td>600</td>
<td>150</td>
</tr>
<tr>
<td>b) Average life (years)</td>
<td>12</td>
<td>5,5</td>
<td>1,5</td>
<td>1,3</td>
</tr>
<tr>
<td>c) Unit manufacturing cost (estimated)</td>
<td>70</td>
<td>70</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>d) Annual cost ( \frac{c}{b} )</td>
<td>5,8</td>
<td>12,7</td>
<td>43,3</td>
<td>46,2</td>
</tr>
<tr>
<td>e) Annual profit for 1.000 banknotes in circulation (1) ( (a - d) )</td>
<td>14,994,2</td>
<td>2,987,3</td>
<td>556,7</td>
<td>103,8</td>
</tr>
</tbody>
</table>

(1) It does not include handling costs, which are also higher for lower denomination banknotes, since they have a greater number of returns.
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The € banknotes are not distinguished according to the Eurosystem National Central Bank (NCB) that issued them (basic principle of € issuance).

A € banknote issued by an NCB can be exchanged (redeemed) by any other NCB in the Eurosystem.

It is therefore a shared liability among all Eurosystem NCBs.

⚠️ What can happen if we share a liability among several issuers?

Some NCBs may end up "paying" the debt of other NCBs.
(e.g., due to the migration of banknotes for tourism)

Adjustment of banknotes according to the participation key of each NCB in the Eurosystem
TOTAL € BANKNOTES IN CIRCULATION

ECB

8% (1)

92%

REST OF NCBs

NCB 1

K 1

NCB 2

K 2

NCB n

(1) Result of distributing the total issuance among the 13 central banks initially belonging to the Eurosystem, including the ECB.

Capital key = 50% country’s population/Eurosystem population + 50% country’s GDP/Eurosystem GDP

Banknote allocation key = 92% x Eurosystem key

Keys as at 1 January 2021:

<table>
<thead>
<tr>
<th>Country</th>
<th>Eurosystem key (%)</th>
<th>Banknote allocation key (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>3,64324</td>
<td>3,3520</td>
</tr>
<tr>
<td>Germany</td>
<td>26,36145</td>
<td>24,2525</td>
</tr>
<tr>
<td>Estonia</td>
<td>0,28170</td>
<td>0,2590</td>
</tr>
<tr>
<td>Ireland</td>
<td>1,69338</td>
<td>1,5580</td>
</tr>
<tr>
<td>Greece</td>
<td>2,47355</td>
<td>2,2755</td>
</tr>
<tr>
<td>Spain</td>
<td>11,92459</td>
<td>10,9705</td>
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<tr>
<td>France</td>
<td>20,42430</td>
<td>18,7905</td>
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<tr>
<td>Italy</td>
<td>16,98849</td>
<td>15,6295</td>
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<tr>
<td>Cyprus</td>
<td>0,21518</td>
<td>0,1980</td>
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<td>Latvia</td>
<td>0,38965</td>
<td>0,3585</td>
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<tr>
<td>Lithuania</td>
<td>0,57876</td>
<td>0,5325</td>
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<tr>
<td>Luxembourg</td>
<td>0,32940</td>
<td>0,3030</td>
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<tr>
<td>Malta</td>
<td>0,10488</td>
<td>0,0965</td>
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<tr>
<td>Netherlands</td>
<td>5,86042</td>
<td>5,3915</td>
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<td>Austria</td>
<td>2,92689</td>
<td>2,6925</td>
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<td>Portugal</td>
<td>2,34051</td>
<td>2,1535</td>
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<td>Slovenia</td>
<td>0,48150</td>
<td>0,4430</td>
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<td>Slovak Republic</td>
<td>1,14523</td>
<td>1,05350</td>
</tr>
<tr>
<td>Finland</td>
<td>1,83687</td>
<td>1,69000</td>
</tr>
<tr>
<td>ECB</td>
<td></td>
<td>8,0000</td>
</tr>
<tr>
<td>Eurosystem</td>
<td>100,00000</td>
<td>100,00000</td>
</tr>
</tbody>
</table>
The difference between:

- **€ banknotes in accordance with banknote allocation key**
- **€ banknotes put into circulation**

**Intra-Eurosystem claim/liability related to the allocation € banknotes**

- They are the counterpart of the changes in the banknote figures.
- They are remunerated at the interest rate on Eurosystem credit operations with financial institutions.

Important consequences for both the balance sheet and the profit and loss account.
Banknotes in circulation \(\leq\) Banknotes according to banknote allocation key (adjusted banknotes)

**ASSETS**

Intra-Eurosysterm claims related to the allocation of € banknotes \((147.394 m.)\)

Claim remunerated at the rate of the main refinancing operations

**LIABILITIES**

Banknotes in circulation \((9.979 m.)\)

Adjusted Banknotes \((157.373 m.)\)

BdE figures as at 31.12.2020
Evolution of banknotes put into circulation by the **Banco de España** and banknotes according to the banknotes allocation key

### Banknotes put into circulation

- **Red** line represents banknotes put into circulation by the **Banco de España**.
- **Gray** line represents banknotes in circulation according to **Banco de España**’s banknote allocation key (Eurosystem key - 8% allocated to the ECB).

### Key Figures

- **157,394 million €** (as of 01/07/2020)
- **9,979 million €** (as of 01/01/2002)
- **170,000** in the scale range

**Timeline:**

- 01/01/2002 to 01/01/2020

**Legend:**

- Banknotes put into circulation by the **Banco de España**
- € Banknotes in circulation according to **Banco de España**’s banknote allocation key (Eurosystem key - 8% allocated to the ECB)
Evolution of banknotes put into circulation by the Deutsche Bundesbank and banknotes according to the banknotes allocation key.

473.098 millions €
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• Why banknotes are accepted in payment for goods and services
Functions money should fulfill:
- Medium of exchange in transactions
- Unit of value of goods and services
- Form of saving

Characteristic:
- It must be commonly accepted and build trust
- Easily transportable
- Divisible
- Non-perishable and unalterable in time
- Difficult to counterfeit
What does the credibility of money (banknotes in particular) depend on?

The banknotes issued were backed by the gold reserves held by the Central Bank.
What does the credibility of money (banknotes in particular) depend on?

The reliability of the public debt will depend on the government's ability to keep the public deficit under control, within acceptable limits.
WHY BANKNOTES ARE ACCEPTED IN PAYMENT FOR GOODS AND SERVICES

Future situation

ASSETS
- Lending to credit institutions
- Private securities
- Public debt other countries
- State's own public debt

LIABILITIES
- Banknotes
- Digital currency of central banks

Replacing physical money with book-entry accounts
The credibility of money depends on that the person who receives it as a means of payment thinks:

- That it will also be accepted by others in the future
- That its value will be maintained over time

Requirements:

- Amount of money in circulation is controlled
- Reliable registration system

The credibility of the money in circulation does not depend on what its counterpart is on the central bank's balance sheet, but on the public's confidence that the issuer will keep the quantity of money in circulation under control.
Yap Islands Stone Money

- Carved limestones
- Very scarce commodity
- No physical transfer necessary
- Registration system ("book entries")
Bitcoins

- Virtual currency
- Not backed by any government or central bank
- Not shown on the liabilities side of the balance sheet of any entity
- Transactions recorded on blockchains, on a large number of computers across the network

In principle, bitcoins meet the requirements of a reliable currency:
- Number of bitcoins limited and controlled by the system
- Reliable registration system that guarantees the veracity of the transactions registered.
THANK YOU FOR YOUR ATTENTION

Javier Pacios Rodríguez