COMPARENCE EUR - USD BANKNOTES
Public's Appreciation and Knowledge

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ABSTRACT

In February of 2002 the US Treasury Department, the European Central Bank and the Dutch Central Bank conducted
studies on public awareness of banknotes. Each of the three studies had a different purpose/goal. The United States
evaluated public knowledge of the dollar in the US, the European Central Bank studied the effects of the Euro-note
public education campaign and the Dutch Central Bank compared the public perception of the new Euro-notes with
previous research performed on the NLG-notes. The set up of the US-study did take note of the Dutch-studies, for
example the sampling period was chosen also in February 2002 and the questions on appreciation were made
comparable. However, while the studies were implemented independently there are only some elements that are
common and can be compared and contrasted. This paper examines the results of the three different studies and
serves as a baseline analysis of multi-national public awareness of bank notes.

1. INTRODUCTION

February 2002 was a unique moment in the history of consumer research on banknotes. In this month three different
studies were conducted to evaluate public knowledge and awareness of banknotes:
1) US-dollar notes in the USA [5, 6],
2) Euro coins and banknotes in Europe by the European Central Bank (ECB) [4],
3) Euro banknotes in the Netherlands by Dutch Central Bank (DNB) [7].

![Figure 1.](image)
Left: Banknote USD 20, Series 1996 with large, off-centre presidential portrait.

The three banknote studies are similar in that they all examine the public's unaided knowledge of currency security
features, design elements, and public appreciation of the notes. Although the three studies were conducted in
February 2002 each of the three different surveys had their own focus:
- US Treasury: wanted to gain knowledge of the 1996-series. The US implemented a two-phased study consisting of
  a qualitative research phase based on interviews with focus groups [6], followed by a quantitative research phase, a
  national survey [5]. Reported here is the survey research. Survey consisted of members of target audiences such as
consumers, cash handlers, law enforcement officials and educators. The US Treasury had also special interest in the
detection of counterfeit.
- ECB: wanted to get feed back on the public Euro 2002 Information Campaign on the introduction of the euro
2002), to regularly assess the development of knowledge of the general public and professional cash handlers and the
aggregated campaign effects in order to enable the ECB to manage its communication about the euro banknotes and
coins. The research focus was put on the cash users' awareness of the euro denominations, appearance (e.g. coins
have a national back) and security features, and on the perception of the media tools.
- DNB: wanted to compare the public perception of the new euro -notes with the longitudinal research done for the
NLG-notes over the years 1981 - 1999. The focus was on two specific banknotes, the euro 5 and euro 50, and on
unaided knowledge of security features.

The intent of this report is to evaluate public knowledge, awareness and appreciation of US -dollar and euro
banknotes: (USD) x (EUR). Although the three methods differed in their purpose, it is possible to compare the US-
dollar and the euro. It is clear that the research methods are not mutually exclusive; depending on the information
required a standard consumer research survey could be designed. If longitudinal data are preferred the DNB-research
is a good example. If more detailed, in-depth information is necessary, the US-research is a good example. The
ECB-research had elements of both types of research.

2. RESEARCH VARIABLES

Figure 2 gives an overview of the different research variables that are characteristic for the three studies. This table
includes also - for reasons of comparison - the last Dutch guilder (NLG) study done in 1999.
The US-research concentrated on specific user groups, such as the general public, educators, law enforcement
officials and those in cash handling operations. The group of cash handlers was further stratified into bank tellers,

<table>
<thead>
<tr>
<th></th>
<th>USD</th>
<th>EUR in EU</th>
<th>EUR in NL</th>
<th>NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling period</td>
<td>February 2002</td>
<td>February 2002</td>
<td>February 2002</td>
<td>February 1999</td>
</tr>
<tr>
<td>Client, principal</td>
<td>US Treasury Bureau of E&amp;P</td>
<td>ECB</td>
<td>DNB</td>
<td>DNB</td>
</tr>
<tr>
<td>Consumer research company</td>
<td>Deloitte &amp; Touche, Denver and</td>
<td>The Research Business International, London</td>
<td>NIPO, Amsterdam</td>
<td>NIPO, Amsterdam</td>
</tr>
<tr>
<td>Interviews by</td>
<td>telephone</td>
<td>face-to-face</td>
<td>telephone</td>
<td>face-to-face</td>
</tr>
<tr>
<td>Total sample size</td>
<td>1,423</td>
<td>5,890</td>
<td>2,002</td>
<td>2,179</td>
</tr>
<tr>
<td>Sampling method/groups</td>
<td>stratified sample</td>
<td>stratified sample</td>
<td>general public</td>
<td>general public</td>
</tr>
<tr>
<td>Respondent profile</td>
<td>consumers 400</td>
<td>adults 3,414</td>
<td>adults only</td>
<td>adults only</td>
</tr>
<tr>
<td></td>
<td>cash handl. 622</td>
<td>small buss. 1,233</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>law enforc. 200</td>
<td>children 1,243</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>educators 201</td>
<td>divided over 12 countries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2.
Overview off the different research variables.

1) Cash handlers are divided in three subgroups: bank tellers (300), retail cashiers (300) and gaming industry (22).
2) For each of the 12 EU-countries the foreseen sampling size was adults (275), children (100) and small business (100).
3) At ECB-research adults are 16 years or older. At DNB-research adults are 18 years or older.
retail cashiers and gaming industry. In addition to the survey research [5] the US Treasury used focus groups to conduct qualitative research. The focus groups conducted in-depth interviews with target audience members and researched people’s behaviour and opinions [6].

The ECB-research was stratified into adults, small business people and children. The ECB-research was further stratified to the 12 participating countries.

The ECB was interested in children because they played an important role in the euro publicity campaign. At the ECB-research children are between 8-15 years (50 % was 8-11 years and 50 % was 12-15 years).

The DNB-research focussed on adults only. Within this group of circa 2,000 respondents there are always some 8 % respondents retailers or other people that deal more-or-less professionally with money [2].

The interviews in the US-research and in the DNB-research 2002 were done over the telephone. The ECB-research 2002 and the DNB-research 1999 were done face-to-face.

Operational differences like costs and reporting time
The three studies are also clearly different from an operational point of view as is given in Figure 3. The Dutch study is relatively inexpensive, has a short reporting time and is repeated every two years, except for an additional research in the year 2003. It establishes a standard from which subsequent results can be measured.

<table>
<thead>
<tr>
<th>Study</th>
<th>Costs excluding VAT</th>
<th>Field work</th>
<th>Report time</th>
<th>Total length of study</th>
<th>Research frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Treasury - focus groups</td>
<td>USD 145,000.--</td>
<td>2 months</td>
<td>4 weeks</td>
<td>12 weeks</td>
<td>first time¹</td>
</tr>
<tr>
<td>DNB</td>
<td>EUR 30,000.--</td>
<td>1 month</td>
<td>6 weeks</td>
<td>10 weeks</td>
<td>2 years²</td>
</tr>
<tr>
<td>ECB - Wave 4</td>
<td>EUR 344,016.--</td>
<td>1 month</td>
<td>4 weeks</td>
<td>16 weeks</td>
<td>no follow up</td>
</tr>
</tbody>
</table>

Figure 3.
Overview of the costs and time span of the different studies.
¹ This was the first study, however, follow up studies are planned in subsequent years.
² This was the first study, however, follow up studies are planned in subsequent years.
³ Additional to 2002 a research will be done in 2003. From 2003 onwards a 2 year frequency is planned: 2005, 2007 etc.

3. RESEARCH RESULTS THAT CAN BE COMPARED

The outcome of the studies can be compared on several subjects:
3.1 Public’s appreciation of the notes
3.2 Unaided knowledge of the security features
3.3 Unaided knowledge of design elements like texts, signatures, picture elements

3.1 Public’s appreciation of the notes
The public’s appreciation for the USD-series, the EUR-series and the NLG-series can be compared with each other, as can be found in Figure 4.
Americans have a higher appreciation of the USD-series than the Europeans do for the euro notes. The dichotomised method used tells that 73 % of the Americans find the USD-series beautiful and 27 % finds it ugly.

The dichotomised method is explained in Figure 4, under remark 1) and can also be found in reference [2].
The Dutch people judge the EUR-series less beautiful than the Americans judge the USD-series: 65,7 % of the Dutch public judges the EUR-series as beautiful.
Not fully comparable figures are given by the ECB, but from these figures it can be concluded that the average of the whole EMU-area (59 %) like the EUR-notes more than the Dutch people do (54 %). The figures are not fully comparable because these figures miss 50 % of the scores ‘neither attractive/nor unattractive’. Therefor the appreciation of the EUR-notes in this research is higher; how much higher is unknown.
<table>
<thead>
<tr>
<th>Remarks</th>
<th>USD</th>
<th>EUR in EMU</th>
<th>EUR in NL</th>
<th>EUR in NL</th>
<th>NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average appreciation for whole series</td>
<td>73 %</td>
<td>59 %</td>
<td>54 %</td>
<td>65,7 %</td>
<td>79,8 %</td>
</tr>
<tr>
<td>Best appreciated note</td>
<td>not measured</td>
<td>not measured</td>
<td>not measured</td>
<td>EUR 50</td>
<td>NLG 250</td>
</tr>
<tr>
<td>Least appreciated note</td>
<td>not measured</td>
<td>not measured</td>
<td>not measured</td>
<td>EUR 5</td>
<td>NLG 25</td>
</tr>
</tbody>
</table>

**Figure 4.**

Appreciation of the USD-banknotes and the EUR-banknotes.

1) Dichotomised method: very attractive (17 %) + fairly attractive (42 %) + neither attractive/nor unattractive (0.5 x 28 % = 14 %). Total attractive consumers = 73 %.

2) Dichotomised method: very attractive (17 %) + fairly attractive (42 %) + neither attractive/nor unattractive (0.5 x ? % = 59 %). Total attractive EUR in EMU = 59 %.

3) Dichotomised method: very attractive (11 %) + fairly attractive (43 %) + neither attractive/nor unattractive (0.5 x ? % = 54 %). Total attractive EUR in NL = 54 %.

4) In 1999.

Respondents in the American study appreciate USD-Series 1996 currency design because it is patriotic, has historical significance, and is easily recognised. Despite the rather high appreciation of 73 %, the US-paper currency remains visually unappealing to a segment of target individuals. A number of respondents refer to US-currency as ‘boring’ or ‘bland’, in part because all notes look alike [6].

In the DNB-research the appreciation of all 7 euro notes are measured. Most denominations received around 68-69 % score for beauty, with hardly any apparent difference except for two notes. The grey euro 5 note scores a mere 54 % and the reddish euro 10 note scores 64 % beautiful.

Asked for ‘which euro banknote you’re aware of, do you like most?’ people answered the euro 50.

The Dutch liked their NLG-notes very much: 79,8 % found them beautiful. It can also be concluded that the lowest appreciation score in the Netherlands (NLG 25, 67 % beautiful in 1991) is higher than the average score for the EUR-series (65,7 %).

### 3.2 Unaided knowledge of the security features

Both ECB and DNB has asked the public questions about the security features in the banknotes. These questions were asked for the whole series and not for one specific banknote. The public had to answer by heart, without any help. The research done in the USA has done both, unaided and aided answers. Using the category 'unaided' an overview could be made in which the different answers could be compared, as is done in Figure 5.

The watermark (42 %) and security thread (43 %) are the security features that Americans recalled most. It is important to note that the watermark, which was a newly introduced feature in the USD 1996-series, is almost as well known as the security thread that was previously introduced in USD 1990-series and enhanced in the 1996-series. The new colour shifting ink (CSI) received only a 17 % score. Interestingly, both the US and European studies report that the colour-shifting inks are not very well known by the public.

The micro lettering was introduced on the USD-notes in 1990 and is mentioned by 8 % of the respondents. Also in Europe the knowledge of the micro lettering is low.

The best known security feature in all three studies seems to be the watermark, although the US-research shows that the public’s awareness of the security thread is similar to the watermark. The hologram is the second best recalled feature in Europe. A difference between the DNB- and ECB-research is that the DNB-research does not discriminate
<table>
<thead>
<tr>
<th>SECURITY FEATURES</th>
<th>USD</th>
<th>EUR in EMU</th>
<th>EUR in NL</th>
<th>EUR in NL</th>
<th>NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Total unaided sf</td>
<td>By ECB, Adults</td>
<td>By ECB, Adults</td>
<td>By DNB</td>
<td>1999</td>
</tr>
<tr>
<td>Average knowledge of public security features</td>
<td>not measured</td>
<td>-</td>
<td>-</td>
<td>2.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Do not know one security feature</td>
<td>15 %</td>
<td>-</td>
<td>-</td>
<td>11 %</td>
<td>11 %</td>
</tr>
<tr>
<td>Watermark</td>
<td>42 %</td>
<td>64 %</td>
<td>82 %</td>
<td>70 %</td>
<td>80 %</td>
</tr>
<tr>
<td>Hologram</td>
<td>-</td>
<td>foil stripe 57 %</td>
<td>foil stripe 64 %</td>
<td>61 %</td>
<td>-</td>
</tr>
<tr>
<td>Security thread</td>
<td>43 %</td>
<td>57 %</td>
<td>52 %</td>
<td>31 %</td>
<td>-</td>
</tr>
<tr>
<td>Colour shifting ink</td>
<td>17 %</td>
<td>32 %</td>
<td>30 %</td>
<td>5 %</td>
<td>-</td>
</tr>
<tr>
<td>Iridescent ink/strip</td>
<td>-</td>
<td>adults: 40 %</td>
<td>adults: - sb: 51 %</td>
<td>5 %</td>
<td>-</td>
</tr>
<tr>
<td>Different size</td>
<td>-</td>
<td>48 %</td>
<td>45 %</td>
<td>2 %</td>
<td>3 %</td>
</tr>
<tr>
<td>Fine line printing patterns</td>
<td>18 %</td>
<td>-</td>
<td>-</td>
<td>2 %</td>
<td>1 %</td>
</tr>
<tr>
<td>Micro printing</td>
<td>8 %</td>
<td>adults: n/a sb: 14 %</td>
<td>adults: n/a sb: 16 %</td>
<td>3 %</td>
<td>11 %</td>
</tr>
<tr>
<td>See through register</td>
<td>-</td>
<td>adults: 22 % sb: 23 %</td>
<td>adults: n/a sb: 12 %</td>
<td>7 %</td>
<td>6 %</td>
</tr>
<tr>
<td>Texture of note, intaglio relief</td>
<td>12 %</td>
<td>adults: 35 % sb: 42 %</td>
<td>adults: n/a sb: 38 %</td>
<td>7 %</td>
<td>12 %</td>
</tr>
<tr>
<td>Ultra Violet</td>
<td>not measured</td>
<td>adults: n/a sb: 27 %</td>
<td>adults: n/a sb: 34 %</td>
<td>11 %</td>
<td>29 %</td>
</tr>
<tr>
<td>Unique serial number</td>
<td>4 %</td>
<td>-</td>
<td>-</td>
<td>1 %</td>
<td>16 %</td>
</tr>
<tr>
<td>Kind of paper</td>
<td>not measured</td>
<td>-</td>
<td>-</td>
<td>7 %</td>
<td>6 %</td>
</tr>
<tr>
<td>Low-vision feature, large denomination numeral</td>
<td>9 %</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Figure 5.
Overview of the security features recalled by the public, 'unaided/mentioned by heart'.
sb = small business people, n/a = not available and/or no answers.
It is not clear what causes the - sometimes large - deviations between several answers. One explanation could be that the ECB-research was done face-to-face, while the other two researches were done by telephone.

1) Mentioned under 'picture elements'; not reported under 'security features'.
2) Different colours of fluorescent fibres in the paper = 5 %.
   Front: ink brightens up under UV-lamp (e.g. flag and signature) = 3 %.
   Back: ink brightness up under UV-lamp (e.g. bridge and map of Europe) = 2 %.
   UV-dull paper = 1 %.
   Total UV= 11 %.
3) Fluorescent fibres in the paper = 19 %.
   UV-dull paper and print = 10 %.
   Total Ultra Violet = 29 %.
4) The low vision feature is not really a security feature, but is mentioned in the public leaflet as a feature for the poor sighted people.
between hologram stripe and hologram patch. From the ECB-research it can be concluded that a foil stripe is better recalled than a foil patch.

The third most recalled security feature according to the ECB- and DNB-research is the security thread. Here the ECB- and DNB-research show a large deviation: the ECB-research reports for the Netherlands a much higher score for the security thread (52 %) than the DNB-research (31 %). These kind of deviations should probably be explained and - most likely - demonstrate the differences in the methodology of the different studies done.

The percentage of people that can not tell one security feature are similar in the USA and in the Netherlands. In both countries more than 10 % of the population is not able to recall any security feature: in the USA 15 % and in NL 11 %.

The average number of security features that the Dutch public can tell by heart has increased over 35 % with the introduction of the euro. This is now 2.3 and has increased 0.6 features since 1999. This must be the effect of the massive euro introduction campaign in 2001 and 2002. The public leaflet of the ECB mentions four security features and the USD-leaflet mentions 6, as is given in Figure 6.

<table>
<thead>
<tr>
<th>Security feature</th>
<th>USD</th>
<th>EUR</th>
<th>NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Watermark</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>- Security thread</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>- Foil with hologram</td>
<td></td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>- Special ink 1</td>
<td></td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>- Micro printing</td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Tactile properties</td>
<td></td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>- See-through register</td>
<td></td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>- Fine-line pattern</td>
<td></td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>- Low-vision feature 2</td>
<td></td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>Total public features</td>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 6.
Public features in the leaflets of the USD-, the EUR- and the NLG-notes.

1) Colour shifting ink (CSI) or iridescent ink.
2) The low vision feature is not really a security feature, but is mentioned in the public leaflet as a feature for the poor sighted people.
3) The euro banknotes incorporate two more public features: the tactile properties and the see-through register. The tactile properties are - without a picture - mentioned in the leaflet (‘… some parts on the front side are printed in relief’). The see-through register is not mentioned in the public leaflet.

Differences between the two DNB-researches - done in 1999 and 2002 - could partly be explained by this euro introduction campaign. For the euro banknotes the Dutch public had to learn three new public features that were not present in the NLG-notes: security thread, hologram and special ink. The three ‘old’ public features of the guilder notes received some attention in information products, like e.g. the brochure 'Official Training Guide', that were made for cashiers, retailers and others that deal professionally with money.

3.3 Unaided knowledge of design elements like picture elements, texts and signatures,

Next to the knowledge of security features the awareness of some design elements like picture elements, texts, and signatures can be compared.
DESIGN FEATURES

<table>
<thead>
<tr>
<th>Remarks</th>
<th>USD</th>
<th>EUR in EMU</th>
<th>EUR in NL</th>
<th>EUR in NL</th>
<th>NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>By ECB, Adults</td>
<td>By ECB, Adults</td>
<td>By DNB EUR 50</td>
<td>1999 NLG 100</td>
</tr>
<tr>
<td>Larger/off-centre portrait</td>
<td>82 %</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Large size numbers/low vision feature</td>
<td>20 %</td>
<td>Adults: 39 %</td>
<td>Adults: 35 %</td>
<td>72 %</td>
<td>57 %</td>
</tr>
<tr>
<td>One dominant colour</td>
<td>-</td>
<td>38 %</td>
<td>49 %</td>
<td>29 %</td>
<td>55 %</td>
</tr>
<tr>
<td>Signature</td>
<td>-</td>
<td>11 %</td>
<td>n/a</td>
<td>4 %</td>
<td>6 %</td>
</tr>
</tbody>
</table>

Figure 7.
Comparing the knowledge of USD- and EUR-notes on design features like picture elements, texts and signatures. All figures are based on 'unaided/mentioned by heart'.

The best recalled design feature in the USD-series 1996 is the large/off-centre presidential portrait, as given in Figure 7. Secondly the respondents recalled the large size numbers (low vision feature). In the euro-series the large numerals are also very well recalled and so are the dominant colours. The signature on the USD-notes are not reported, while in Europe the signature is mentioned by a few percent of the respondents.

From figure 7 not much more can be concluded by comparing design features of the USD and the EUR. Comparing the DNB- and ECB-research provided more information on design features like picture and text elements, as is given in Figure 8. Some conclusions can be drawn from this table like:
- colour seems to be the most important picture element according to the DNB-research, while the main image seems to be the most important picture element according to the ECB-research.
- the denomination figures and the word euro are the most important text elements.

EURO 50/WHOLE EURO SERIES

<table>
<thead>
<tr>
<th>Picture elements</th>
<th>DNB Adults</th>
<th>ECB Adults</th>
<th>Text elements</th>
<th>DNB Adults</th>
<th>ECB Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orange/orange colours</td>
<td>29 %</td>
<td>n/a</td>
<td>1. The figure 50/the number 50</td>
<td>72 %</td>
<td>n/a</td>
</tr>
<tr>
<td>2. Mentioned other colours than orange or brown</td>
<td>29 %</td>
<td>n/a</td>
<td>2. The word EURO</td>
<td>32 %</td>
<td>52 %</td>
</tr>
<tr>
<td>3. Brown/brown colours</td>
<td>23 %</td>
<td>n/a</td>
<td>3. The word EYPO</td>
<td>9 %</td>
<td>n/a</td>
</tr>
<tr>
<td>4. Hologram/foil stripe</td>
<td>18 %</td>
<td>n/a</td>
<td>4. Banknote number(s)</td>
<td>7 %</td>
<td>n/a</td>
</tr>
<tr>
<td>5. (Part of a) building/historical building</td>
<td>15 %</td>
<td>40 %</td>
<td>5. BCE/ECB/etc (initials ECB in 5 versions)</td>
<td>6 %</td>
<td>19 %</td>
</tr>
<tr>
<td>6. Bridge</td>
<td>9 %</td>
<td>67 %</td>
<td>6. Signature/signature Duisenberg</td>
<td>4 %</td>
<td>13 %</td>
</tr>
<tr>
<td>7. Gate or door</td>
<td>8 %</td>
<td>7. The euro currency symbol €</td>
<td>3 %</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>8. Stars, European stars/circle of stars</td>
<td>8 %</td>
<td>47 %</td>
<td>8. The figure 50 in the watermark</td>
<td>3 %</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Figure 8.
The 8 best recalled picture- and text elements of the euro 50 [7] compared with the design features for the whole series mentioned by the public in the ECB-research [4].

1) reported as ‘Architectural style of Europe’s cultural history’.
2) reported as ‘Bridges, window, gateways’.
Figure 8 also demonstrates some large deviations that - again - can only be explained by the differences in methodology between the different studies, for example the score of the same design feature 'flag of European Union'. The DNB-research reports an active knowledge by 3 % of the respondents, while the ECB-study reports for the same design feature a score of 22 %.

4. THE EFFECT OF PUBLIC INFORMATION TOOLS

Educational campaigns introducing the new USD 1996-series and the euro notes both aimed at increasing awareness of currency security features. The US- and ECB-studies also reported on some effects of the materials used in the public information campaign.

The US-research reported that target audiences had a positive interest in learning more about the security features of US-currency and also in ways to authenticate currency. Four fifths of those interviewed expressed interest in learning more about US-currency features (81 %), and a third (34 %) are very interested. Although, consumers are significantly less interested than the other segments in learning about security features of US-currency [5].

The most effective means for educating professional cash handlers and law enforcement officials about currency authentication is in the workplace; either by displaying educational brochures and posters, or by conducting formal training sessions (89 % find each effective). Also relatively effective are articles in an employer newsletter, brochures enclosed with one's pay stub or bank statement and featured news stories or interviews (77 %). The optimal communications vehicle for educating consumers about authenticating currency is through television i.e. featured news stories or new interviews (77 %). The optimal communications vehicle for educating consumers about authenticating currency is through television i.e. featured news stories or new interviews (78 % effective), or advertisements (68 %) [5].

Also for the ECB the television was important. The aim of the television and print campaign was to reach 80 % of the population, giving them an opportunity to see each ad 2.5 times. This goal was reached. In some countries, 90 % of the population was reached.

From the Public Information Leaflet (PIL) from the ECB the following can be concluded [4]. Those who have seen the PIL have higher knowledge of all features mentioned in the PIL, as is given in Figure 9. In total 80 million leaflets were printed for circa 300 million inhabitants of the euro-zone.

The conclusion from the data in Figure 9 should be that the effect of the leaflet is disappointing.

<table>
<thead>
<tr>
<th>Public security feature</th>
<th>Recalled by public read the leaflet</th>
<th>Recalled by public NOT read the leaflet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watermark</td>
<td>69 %</td>
<td>62 %</td>
</tr>
<tr>
<td>Security thread</td>
<td>61 %</td>
<td>55 %</td>
</tr>
<tr>
<td>Foil stripe</td>
<td>65 %</td>
<td>54 %</td>
</tr>
<tr>
<td>Foil patch</td>
<td>39 %</td>
<td>32 %</td>
</tr>
<tr>
<td>Iridescent stripe</td>
<td>43 %</td>
<td>39 %</td>
</tr>
<tr>
<td>Colour shifting ink</td>
<td>35 %</td>
<td>31 %</td>
</tr>
</tbody>
</table>

Figure 9.
Euro public security features recalled by the public - by heart - that have read the public information leaflet (PIL) compared with the respondents that did not read this leaflet.

Still there are some positive effects. The features that were not mentioned in the PIL, like dominant colours and mini lettering did not receive a higher knowledge, while others did.

The 'printed relief' was mentioned in the PIL, but wasn't really recalled, probably because of the absence of an 'intaglio' picture in the PIL.

The vast majority who have received the PIL found it useful. Still only a minority (30 %) claim to have received or seen a copy of the PIL. Information on security features had less impact (44 %) than other information like 'introduction date' (76 %), 'how many coins' (66 %), 'how many banknotes' (67 %), 'which denominations' (56 %) and 'what do they look like' (55 %).
The 'Look-Feel-Tilt' slogan used as a stepping stone for memorising the public security features of the euro notes was not mentioned in the public leaflet of the ECB, but was only used in information for the more professional cash handlers and not for the general public. Therefore the impact of this public friendly slogan was not that high as might have been expected; in February 2002 45% of the adults recalled unprompted this test.

The given ECB-budget for the 'Euro 2002 Information Campaign' to introduce the euro coins and banknotes was 80 million euro (circa 0.27 euro per inhabitant). In addition countries could increase this budget for their national introduction campaign. The Dutch seemed to have invested most of all EMU-countries in this campaign; in the Netherlands circa 5 euro was spent for each of the 16 million citizens. The total costs of the NL-euro campaign were circa 90 million euro, divided over circa 87 million euro paid by the Dutch Government (excluding the 'eurokit') and circa 2.9 million euro paid by the ECB. The reported increase of the public's knowledge of security features in the Netherlands with 35% in 2002 should be seen as one of the results of these investments and is probably not representative for the euro-zone.

5. HOW ARE COUNTERFEITS DETECTED?

Working knowledge of public security features in the US and Europe is reported in paragraph 3.2. Only the US conducted research on public awareness of counterfeits. The results of the US survey on counterfeit detection showed that the majority of consumers do not regularly authenticate currency, however, certain circumstances alert respondents to check currency to determine if it is genuine. Common conditions that prompt Americans to check a note’s authenticity are the look (26%), feel (17%) or if the note is a high denomination (23%) given in Figure 10. A small percentage of professional cash handlers and law enforcement officials always check their currency (9%), Other triggers for authenticating currency are if the person passing the note seems suspicious or untrustworthy (10%), if someone hears that counterfeits have recently been circulated.

![Figure 10. Circumstances under which respondents authenticate currency (unaided)](image)

Note: Percentages may add up to more than 100 percent because multiple responses were accepted. Only responses mentioned by 2 percent or more of respondents are shown.
6. CONCLUSIONS

6.1 Appreciation

6.1.1 The appreciation of the USD, the EUR and the NLG-series can be compared. Highest appreciation is received for the NLG notes (79.8% beautiful), followed by the USD-notes (73% beautiful). The EUR-notes receive in the Netherlands a beautiful score of 65.7% for the whole series.

6.1.2 The US measured the public's appreciation of the USD-design across the entire 1996-series; individual denominations within the USD-series were not measured.

6.1.3 Unlike the NLG-notes, the Dutch public does not have a strong preference for a specific euro banknote in particular. However, the euro 5 banknote turns out to be the least likeable. The 50 euro banknote turns out to be most popular, followed by the euro 20 banknote.

6.2 Security features

6.2.1 Similar figures are found in both the USA and in the Netherlands for the number of people that cannot tell any security feature. In both countries more than 10% of the population (in the USA 15%, in NL 11%) can not name a single security feature.

6.2.2 The public is relatively unaware of special inks such as 'iridescent inks' and 'colour shifting inks.' In both the USD-notes as in the EUR-notes these inks seem less effective than other public security features. In the US 17% of the public recalled, without prompting, such a feature, while in Europe DNB reported for both inks 5% and the ECB reported a score of 32% for the colour shifting ink.

6.2.3 The US-, DNB- and ECB-studies established similar results regarding the most well-known public security feature. The US-study revealed that the public is most aware of the watermark, security thread and off-centre portrait with fine-line printing, while both European studies found that the watermark, security thread and holographic foil stripe are mentioned most.

6.2.4 Introduction of new public security features should be done with care. Once the public has learned a defined set of 4-6 public security features, a learning curve will start for the new features. More prominent features are learned quickly (e.g. holographic stripe in the euro notes, watermark in the dollar notes) than less prominent features (e.g. micro lettering in the dollar notes).

6.2.5 In the US, the general public usually detect counterfeits because a note feels suspicious, looks suspicious or is a high denomination (50, 100). Americans do not generally authenticate their currency by checking specific public security features. If a note seems suspicious, the public tends to use security features as a way of confirming a note's authenticity.

6.3 Public information

6.3.1 Television is the best media for educating consumers about authenticating currency, specifically stories featured on the news in the US.
The aim of the television campaign for the introduction of the euro coins and banknotes was to reach 80% of the population, giving them an opportunity to see each ad 2.5 times. This goal was reached. In some countries, 90% of the population was reached.

6.3.2
In contrast with television, brochures/posters or formal training sessions in the workplace are the most effective vehicle for communicating currency authentication features to professional cash handlers and law enforcement officials.

6.3.3
In the USA the cash handlers prefer brochures or posters at their workplace explaining new features in currency. Following television consumers pay attention to brochures explaining changes in US currency enclosed with their bank statement.

6.3.4
In the USA law enforcement officers, bank tellers and casino cashiers are among the most knowledgeable about currency security features. Also in Europe the 'small business' respondents have significantly more knowledge of currency security features than the general public.

6.4 Research methods used

6.4.1
All three research methods used provide valuable information about the public's awareness of banknotes. Although the aim of the three methods differed, it was possible to compare scores on appreciation, knowledge of security features and some knowledge of design elements.

6.4.2
Several large deviations are found in the results of the three studies. These differing results can most likely be attributed to the variety of research methods used. To permit future comparison of research of consumer awareness, research of one national central bank with that of another, more standardisation and harmonisation is advised.

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