A method for measuring the public's appreciation and knowledge of banknotes

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ABSTRACT

No matter how sophisticated a banknotes’ security features are, they are only effective if the public uses them. Surveys conducted by the De Nederlandsche Bank (the Dutch central bank; hereinafter: DNB) in the period 1989-1999 have shown that:
- the more people like a banknote, the more they know about it, including its security features;
- there is a positive correlation between the appreciation of a banknote (beautiful or ugly) and the knowledge of its security features, its picture and text elements;
- hardly anybody from the general public knows more than 4 security features by heart, which is why the number of security features for the public should be confined to a maximum of 4;
- the average number of security features known to a Dutchman was about 1.7 in 1999;
- over the years, the awareness of banknote security features gradually increased from 1.03 in 1983 to 1.7 in 1999, as a result of new banknote design and information campaigns.

In 1999, DNB conducted its last opinion poll on NLG-notes. After the introduction of the euro banknotes on 1 January 2002, a new era of measurements will start. It is DNB’s intention to apply the same method for the euro notes as it used to for the NLG-notes, as this will permit:
- a comparison of the results of surveys on Dutch banknotes with those of surveys on the new euro notes (NLG) x (EUR),
- a comparison between the results of similar surveys conducted in other euro countries: (EUR1) x (EUR2).

Furthermore, it will enable third parties to compare their banknote model XXX with the euro: (XXX) x (EUR).

This article deals with the survey and the results regarding the NLG-notes (see Appendix II for the questionnaire used) and is, moreover, intended as an invitation to use the survey method described.

Keywords: market research, consumer research, public awareness of banknotes, measuring method for public's knowledge of security features, measuring method for public's appreciation of banknotes, questionnaire/public opinion poll on banknotes.

1. INTRODUCTION

Central banks are increasingly interested in the public’s awareness of banknotes. Statements like 'The man in the street won’t be able to tell!' or 'Not even my wife would be able to check that!', which usually come from banknote printers, are no longer accepted by central banks issuing banknotes. Central banks have a knowledge gap concerning the public's awareness of banknotes. The only way to collect reliable data about the effectiveness of security features is to invest in market research and especially in consumer research.

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The public gathers banknote-related information both from banknotes and through media tools. Market research can focus on banknotes, on the media tools, or on both.

**Target groups**
Market research usually starts with an analysis of the target groups. A much-used selection of target groups for media tools about banknotes can be found in Table 1.

<table>
<thead>
<tr>
<th>Target groups media tools</th>
<th>Number of people</th>
<th>Information control</th>
</tr>
</thead>
<tbody>
<tr>
<td>General public</td>
<td>X millions</td>
<td>Freedom of speech</td>
</tr>
<tr>
<td>Cashiers (e.g. bank tellers, retail workers, small businesses, casino cashiers)</td>
<td>Some 1 to 2% of X</td>
<td>Limited freedom of speech</td>
</tr>
<tr>
<td>Experts (e.g. law enforcement officers, police, technical analysts)</td>
<td>Approx. 100 - 1,000</td>
<td>Confidential (no speak)</td>
</tr>
<tr>
<td>Central bank employees</td>
<td>Approximately 100 - 5,000</td>
<td>Confidential (no speak)</td>
</tr>
</tbody>
</table>

*Table 1*
Target groups of banknote media tools and their information control.

Central banks may be interested in the effectiveness of their communication efforts. Did the public see the flyer? Did they read it? Did retailers use the video folder? What do police officials know? The Dutch opinion polls are designed to measure response to (new) banknotes and the effectiveness of any media tools used for the introduction of new banknotes. The banknote and media tools are regarded as a black box and the total effect of the banknote is measured. The following three National Central Banks (NCBs) have shown an interest in the method:
- Department of Treasury, Bureau of Engraving and Printing, Washington DC,
- Board of Commissioners of Currency Singapore (BCCS),
- Bank of Canada.
In 2000 and 2001, these NCBs were provided with written documentation on the opinion polls.

*One or more measurements?*
Central banks often focus on the effect of the media tools used, forgetting about the banknote itself. Usually, only one measurement is performed, i.e. shortly after the issuance of a new banknote. These single measurements are more useful if reference material is available like data from previous surveys (zero measurement), or if the results may be compared with the survey results of another central bank. A single measurement may yield misleading results. For example, the
public’s appreciation of banknotes may have been influenced by the exchange rate obtaining at the time of the survey. If the exchange rate of the euro drops, so may the appreciation of the design of the euro banknotes. Studies in time are longitudinal studies. Telephone companies and railroad companies, but also political parties, measure customer satisfaction by this type of study.

Public information increases knowledge
In the period 1983-1999, the public’s knowledge of NLG-notes’ security features increased by about 65%, from 1.03 features in 1983 to 1.7 in 1999! Although the individual effects of the various media tools listed in Figure 1 was not measured, there is some evidence that these media tools helped increase public knowledge. In 1987, the effects were measured of the first large-scale edition of leaflets accompanying the launch of a new banknote, i.e. the NLG 250/Lighthouse, and of a 35-minute television programme about the NLG-notes. It was found that respondents who had read the leaflet and watched the programme could name an average of 0.5 security features more than those who had not [9]. It was also found that 7.5 % stated that they had read the leaflet on the NLG 250 note.

Maintain the information flow
Of course, information about banknotes should be a continuous activity for a central bank, and not be confined to the period right after the launch of a new banknote. The information campaign may be adjusted on the basis of feedback obtained through subsequent polls. Lesser-known features might be given extra attention.

Information known by heart
One important aspect of opinion polls is the way people are approached. Are they asked to react to a product held in front of them or to draw on their memory? In the method used, people were asked to do the latter. As in doing so, it measures the public's real basic knowledge, the poll proceeds from a worst case situation.

Bearing in mind that it takes a long time for the public to learn new security features, central banks should be careful about altering or leaving out features to which the public has grown accustomed.

The benefit of consumer research
From the research conducted by DNB it is clear that these efforts helped improve both Dutch banknote design and related public information campaigns. But there is another advantage. Central banks gain from providing these kind of marketing figures besides figures on counterfeit notes, as it enhances their reputation as banknote circulation guardian. In DNB’s experience, these figures are used in many external publications on banknotes [2, 4, 5, 8, 9, 11, 12, 14, 15, 16, 17, 18, 19, 31, 37, 38, 39, 52].

2. FEEDBACK FROM THE PUBLIC

2.1 Product development cycle of banknotes
Banknotes are an industrial, mass-produced product. The development of new banknotes is comparable with other industrial designs, but there are some important differences. First of all, the production volumes are very large, 1,000 million specimens being no exception. Another difference is that all the notes produced should be exactly alike, from the first batch to the final batch. But one of the greatest difficulties about banknote development is the lack of a test market. Without the introduction of specific tools, there is no feedback from the customer, i.e. the general public. How can a central bank minimise the risk of disappointment or misunderstanding by the public? Feedback from customers is equally essential for good banknote design as it is for any industrial product design.

Life cycle of industrial products
Most producers can infer the success of their product from the number of sold articles. A typical life cycle for an industrial product, based on the volumes sold, is given in Figure 2. On the other hand, being a monopolist, a central bank cannot deduce the appreciation of a new model from the circulation figures. The public does not have a choice between different models of one denomination, except when the model is replaced by a new one. It seems that the value of the note is much more important to the public than the design. The public can not choose between a dynamically styled modern banknote or a senior model with a bigger letter type. There are a few exceptions, though. In Hong Kong and Scotland, for example, each denomination comes in three models, each one issued by a different bank.
Figure 2
A typical life cycle of a standard industrial product as a function of time: $N = N(t)$.

Normally, a central bank satisfies the demand for banknotes and refrains from stimulating market demand for a specific denomination. The public does have influence on the relative success of a denomination, though. In the Netherlands, for example, the NLG 100 note is by far the denomination that is used the most. In 2001, circa 38% of the notes in circulation were NLG 100 notes. The most successful design, i.e. the NLG 250 note or *Lighthouse*, is a denomination that is not used much at all, making up a little over 4% of all the NLG-notes in circulation.

Methods to receive feedback on banknotes
Over the years DNB, has developed the following four methods to gain feedback from the public:
1) a consumer survey by opinion polls conducted every two years,
2) circulation trials,
3) perception research,
4) a consumer survey specifically for the visually handicapped.

This article discusses the method and the results of the opinion polls.

Feedback by means of an opinion poll
Searching for a method to gain feedback, DNB decided to make use of a so-called omnibus survey, provided by NIPO, an established market research company in the Netherlands (see Appendix I, for a more detailed explanation).

This public opinion poll measures the public’s knowledge and appreciation of the latest banknote design, ensuring objective feedback that can be used as input for the next design (see Figure 3). The banknotes are developed, originated and issued one by one. As, basically, once every two years a new model is issued, a series of 6 denominations is renewed once every 12 -15 years. This permits new techniques to be implemented quickly while ensuring feedback on issued notes. For this reason, the research frequency was fixed at once every two years.

Ask for the public’s opinion afterwards
It is relevant to note that the public’s opinion on banknote design can only be measured after the new notes have been issued. Asking the public about design subjects before the banknote has been designed will yield no reliable information, since every respondent will visualise a different image. A good designer possesses the talent to turn any subject, no matter how dull, into a good design!

To ensure that a new banknote design scheduled for issuance in 2001 was as much as possible in line with the public’s preference, the Bank of Canada asked the public for their favourite note theme. However, this approach is no guarantee of a positive response to the eventual banknote, because this also depends on the design. However, response to the new banknote, the CAD 10, was positive, even though the selected theme was only used on the reverse side.
2.2 Perception research

Perception research, on the other hand, can be very effective if conducted before a design project. This kind of research measures the effectiveness of certain design principles. In 1985-1986, DNB conducted perception research to test the recallability of figurative and abstract image elements in complex pictures [6]. In this test, the respondents were shown a main image and smaller, surrounding items, in both a figurative and an abstract version. The outcome was that the figurative pictures were more easily recalled than the abstract pictures. Any relation between the main figure and the items was found to be of no influence.

3. OPINION POLL ON NLG-NOTES

3.1 Organisation

In the period 1981-1999, DNB conducted a total of 10 opinion polls (see Table 2). But, also before 1981, DNB had conducted a few opinion polls on banknotes and especially the public's attitude towards new denominations, like NLG 5 (NIPO, 1963) and NLG 50 (NIPO, 1978).
Table 2
Overview of DNB opinion polls on NLG-notes conducted in the period 1981-1999.

<table>
<thead>
<tr>
<th>Year</th>
<th>Anchor note</th>
<th>First day in circulation</th>
<th>Latest model</th>
<th>First day in circulation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>NLG 100/Snipe</td>
<td>16 Mar 1981</td>
<td>NLG 100/Snipe</td>
<td>16 Mar 1981</td>
<td>Appreciation only</td>
</tr>
<tr>
<td>1983</td>
<td></td>
<td></td>
<td>NLG 50/Sunflower</td>
<td>7 Sep 1982</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td></td>
<td></td>
<td>NLG 50/Sunflower</td>
<td>7 Sep 1982</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td></td>
<td></td>
<td>NLG 250/Lighthouse</td>
<td>7 Jan 1986</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td></td>
<td></td>
<td>NLG 25/Robin</td>
<td>27 Mar 1990</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td></td>
<td></td>
<td>NLG 25/Robin</td>
<td>27 Mar 1990</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>NLG 100/Little Owl</td>
<td>7 Sep 1993</td>
<td>NLG 1000/Lap Wing</td>
<td>2 Apr 1996</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td></td>
<td>NLG 1000/Lap Wing</td>
<td>2 Apr 1996</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>NLG 10/Kingfisher</td>
<td>3 Jul 1997</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the last two decades, DNB commissioned several other opinion polls on various subjects, sometimes including banknotes. The availability and quality of the NLG 10 notes, the note-coin boundary, was the subject of a poll held in 1994 [22]. One year later, a separate survey was conducted to find out whether the Dutch public preferred euro banknotes with one national side and one common side to euro banknotes with two common sides [23].

The surveys were conducted as part of NIPO’s weekly public opinion poll, on four successive Mondays and Tuesdays, except during carnival, from late January to early March. This means that each week 500 people were interviewed. The time required to complete one interview was about 5 minutes.

**Anchor note**

A series of banknotes is often built up of 4, 5, 6 or 7 banknotes. To keep the questionnaire short, only two denominations are selected: one anchor note as a reference and the note that is of special interest, usually the last note issued. The anchor note is always the same in each opinion poll. This note should be well known and often used. It should be taken from the middle of the series. In the Netherlands, the NLG 100/Snipe (1981-1993) and later the NLG 100/Little Owl (1995-1999) were chosen as anchor notes. Furthermore, corresponding questions relating to the different banknote models were split up into two parts, half of the respondents first being asked about the NLG 100 anchor note and the other half first about the latest model. This split-up served to prevent distortions due to the order in which the questions were asked, thus ensuring comparability of the answers relating to the two notes.

In Annex I, a brief description is given of the NLG-opinion poll.

**3.2 Order of questions: denominations, knowledge and appreciation**

**Introductory questions about the denominations**

The questions in an omnibus survey are modules embedded between questions on another product, e.g. washing powder or coffee. To create neutral attention for the banknotes, the first question measures awareness of denominations. New denominations might be introduced, like the NLG 250 note in 1986 or other notes might lose their legal tender, like the NLG 5 note in 1995. Or a complete new set of denominations might be introduced, such as the euro banknotes!
After receiving a spontaneous answer, the interviewer shows a list of all the possible denominations printed in text, asking the respondent to answer the same question again. As should be expected, the respondent is now able to name more denominations in circulation.

*Picture elements in first note*
These two introductory questions about the denominations are followed by the first question about picture elements of a particular banknote, like e.g. the NLG 25/Robin. The respondents are asked to name all the picture elements, signs and colours they know by heart. The interviewer does not prompt or read out the answer categories, but just ticks the pre-coded answers on the questionnaire or since 1997 in a hand held computer, if applicable. After the first answers the interviewer repeats the question to check if any more picture elements are recalled.

*Text elements in first note*
The question about the picture elements is followed by a question is about the text elements, again for this particular banknote.

*Repeat questions relating picture and text elements on second note*
The same questions about picture and text elements are repeated for the second note, for e.g. the anchor note, the NLG 100/Snipe.

*Appreciation*
These memory-testing questions are followed by easier questions, viz. about the appreciation of the banknotes, starting with the first banknote. The same routine is repeated for the second banknote, until all banknotes have been covered.

*Control question about appreciation*
Since these ranges of appreciation-related questions are asked consecutively, they contain a control question. Serving to obtain an ordinal ranking of the degrees of appreciation of the various banknote models, this question reads: Which of the banknote models x, y and z do you appreciate most?

*Security features*
As by now the respondents have had a few minutes to reflect on the banknotes, the moment has come to ask the most crucial question, i.e. about their knowledge of the security features. The question about the security features is a general question, not related to any particular note.

*Additional, specific questions*
The structure of the questionnaire allows for additional, free questions in each poll, for example, assessing the knowledge of a specific security feature like, e.g. the watermark. Such questions may be asked at the end of the session, and will not influence the outcome of the standard set of questions.

### 4. PUBLIC'S APPRECIATION OF NLG-NOTES

#### 4.1 Calculating method of appreciation
Asked for their appreciation of a certain banknote model, respondents can select from the following range of five answers:
- very ugly
- ugly
- neither ugly, nor beautiful
- beautiful
- very beautiful.

The given answers were split into two categories: *beautiful* and *ugly*. The group of respondents stating that the model was neither ugly nor beautiful was equally divided over both categories. The respondents that gave no answer, or one that was not applicable, were not weighted. If the respondents answering *neither ugly/nor beautiful* are left out, even higher scores were calculated, e.g. 97% *beautiful* for the NLG 250/Lighthouse in 1999 [39].
After 1987, when a new designer was enlisted, it became possible to inquire after the public’s judgement on two graphic designers: R.D.E. Oxenaar and J.T.G. Drupsteen. From all polls held so far, it emerged that the Dutch public preferred the first’s designs to the latter’s more abstract designs issued later.

4.2 Appreciation of the banknotes designed by R.D.E. Oxenaar
In line with the Dutch public, the Dutch Minister of Finance, Mr. Gerrit Zalm, favours the NLG 250/Lighthouse most [34]. Since its issuance in 1986, more than 90% of the respondents have stated they liked this note best; in 1997, even as much as 91%! This is a very high score indeed. The second best liked NLG-note is the 50-guilder Sunflower (87% in 1999!). In Figure 4, an overview is given of the public’s appreciation of the notes designed by Ootje Oxenaar over the years 1983-1999.

![Image of banknotes](a) (b) (c)

**Figure 4**
The Dutch public’s appreciation of the Huisje-boompje-beestje series designed by R.D.E. Oxenaar.
(a) = NLG 50/Sunflower, issued 7 September 1982,
(b) = NLG 100/Snipe, issued 16 March 1981,
(c) = NLG 250/Lighthouse, issued 7 January 1986.
The reference curve represents the appreciation of NLG 100/Snipe (by Oxenaar) and NLG 100/Little Owl (by Drupsteen).
Strikingly, there is a significant difference between male and female respondents as regards to these two notes! Male respondents often name the Lighthouse as the most beautiful note, while the majority of female respondents show a preference for the Sunflower.

**Series design is better appreciated**

A banknote model \( x \) that is part of a series design gets a higher appreciation (A) than a solitary note. This hypothesis can be confirmed when:

\[
A_x > A_{x-1}
\]

The results of the NLG-models prove this hypotheses. Each newly issued model - by the same designer - received a higher appreciation than its predecessor did:

\[
A_{250} > A_{50} > A_{100}
\]

This was found to be true, except for the NLG 50/Sunflower in the years 1983 and 1985.

Another indication in favour of a series design is that the appreciation of a model \( x \) issued at time \( t \) increased at time \( t+1 \), when this note got a *brother or sister* note:

\[
A_x(t+1) > A_x(t)
\]

From the data in Figure 4 it is clear that this is the case for the NLG 50/Sunflower and NLG 250/Lighthouse: the 50-guilder and the 250-guilder notes gained in popularity over the years. The first model of this series, the NLG 100/Snipe, showed a constant appreciation A (see also Sec. 4.4).

The slight break in the data 1997 (see Figure 4) is caused by a change in the survey method, following the introduction of CAPIBUS (see also Appendix I).

### 4.3 Appreciation of the banknotes designed by J.T.G. Drupsteen

Also in the case of designer Drupsteen it has been proven that each new model received a higher appreciation than the one before (Figure 5):

\[
A_{10} > A_{1,000} > A_{100} > A_{25}
\]

The other hypothesis, \( A_x(t+1) > A_x(t) \), is also valid for the notes designed by Drupsteen. Older models gained in appreciation when new models were added to the series.

Again, the slight break in 1997 is due to the introduction of the CAPIBUS method.

Only two reasons were found for the decrease in the appreciation of the NLG 1,000/Lap Wing (from 85% to 77%):
- this note started with a high appreciation,
- NLG 1,000 is a high denomination not commonly used by the public. In 1999, as little as 3.5% of the NLG-notes in circulation were NLG 1,000 notes.

*Preference of public for face values?*

Among respondents to the question 'Which banknote do you like best?' there are invariably *jokers* that name the highest face value, i.e., NLG 1,000. However, the surveys conducted showed no evidence that this category accounted for a substantial percentage of the appreciation of the highest denominations (see also Sec. 5.1).

Money gurus also suggest the magic power assigned to high face values. They advise people to make sure there is always a high face value in their wallets. This creates a *Scrooge McDuck* feeling: you feel richer knowing that every day you can look at, or even better, feel a banknote with a high face value [41].
The Dutch public’s appreciation of the Abstract series by J.T.G. Drupsteen.

(a) = NLG 10/King Fisher, issued 1 September 1997,
(b) = NLG 25/Robin, issued 27 March 1990,
(c) = NLG 100/Little Owl, issued 7 September 1993,
(d) = NLG 1,000/Lap Wing, issued 2 April 1996.

The reference curve represents the appreciation of NLG 100/Snipe (by Oxenaar) and NLG 100/Little Owl (by Drupsteen).

### 4.4 Appreciation of NLG 100/Snipe

Appreciation (A) for a banknote model x could be given as a function of time: $A_x(t)$. For banknotes, central banks would like to have a more-or-less constant (C) appreciation over the years.

$A_x(t) = C$
Figure 6
When the appreciation of a banknote model $x$ is constant in time: $A_x(t) = C$.

Figure 7
Appreciation of the NLG 100/Snipe over the years 1981-1993.

Figure 6, which illustrates this statement, should be compared with the typical life cycle (see Figure 2). The NLG 100/Snipe is the first banknote model whose appreciation by the public was measured over the note’s full life cycle: 1981-1993 (see Figure 7). As may be clear, the NLG 100/Snipe matches the ideal curve (see Figure 6).

In the first years following its introduction, young people liked the Snipe better than older people did. A few years later, however, this difference had narrowed. Men like the Snipe slightly better than do women.

The longer a note has been in circulation, the more elements people tend to recall. The full name of the bird on the front and of the note, is *water snip*, but very soon the public abbreviated this to *snip*. Two years after its introduction, in 1983, the word *snip* (snipe) was mentioned by only 37%. In subsequent years this percentage increased to 68% in 1999. The word *snip* had become synonymous with 100 guilder! The public is eager to learn the name of a note if the main picture has a name and is well chosen and well designed. A short name with one or two syllables seems best for the purpose.

4.5 Correlation between knowledge and appreciation
With each opinion poll, a positive correlation was found between the appreciation of a note and the knowledge of its picture, text elements and security features. In other words, it has been proven that the more people like a NLG-note, the more they know about it and, consequently, the more security features they memorise. This is why the creation of highly appreciated notes may be seen as an intermediate step towards more secure notes.
Furthermore, the opinion polls showed that older people are less pronounced in their preference for a given model of a series than younger people are.

4.6 People like their own, national banknotes
The appreciation of one’s country’s banknotes often has a nationalistic bias. People tend to like their national notes better than the notes of another national currency. On the basis of an opinion poll it conducted in 1989, the Austrian National Bank concluded that Austrian banknotes were considered both more secure and much more attractive than those of other European currencies were [28].

The Dutch are also proud of their banknotes, as was found in a NIPO survey commissioned by a Dutch broadcasting company [27]; 62% of the respondents thought the Dutch banknotes more beautiful than foreign banknotes. This bias is also in evidence in a recent Dutch article stating that 'Dutch banknotes are exceptional, they are phenomenal' [45], quoting a Dutch graphic designer as saying 'Nowhere in the world can you find such beautiful notes as in Holland' [46], and writer Jan Wolkers as declaring that 'The Dutch notes are the most beautiful money in the world.' [51].

Psychology
There are at least two psychological explanations for this bias regarding banknotes. First of all, according to the cognitive dissonant theory, people feel more comfortable when they can feel positive about their own banknotes. A second explanation may be found in the theory of 'ich nahe - ich ferne' products. Often, people hold a more personal opinion of the products they use close to their body such as clothes, jewellery and mobile telephones: the ich nahe products. Bridges, busses and satellites are examples of ich ferne products, they are further removed from the human body and people care less about their design. By this theory, coins and banknotes are ich nahe products - people carry them on their body! Therefore, people may have strong feelings about the national design of their coins and their banknotes. Expectations that the euro money will create a European feeling are backed by these two psychological views. In other words, by using the euro coins and banknotes the citizens of the 12 member states of the European Monetary Union will become more European than those of countries that have not acceded yet.

5. PUBLIC KNOWLEDGE OF NLG-NOTES

5.1 Denominations
The four following NLG-denominations are the best known: 10, 25, 100 and 1,000. These denominations were spontaneously mentioned by more than 95% of the respondents. The NLG 50 is the least known banknote, being spontaneously named by around 85% of the respondents.

Predominance of denominations 1, 10, 100, 1,000
One intriguing aspect is the predominance in the circulation for banknotes with a face value starting with the figure 1, like 10, 100 or 1,000. Banknotes with a face value starting with 2 like the 20 and 200 are often less popular. A survey of the European Central Bank (hereinafter: ECB) prior to the launch of the euro also led to the conclusion that denominations starting with the figure 2 were the least known banknote values (the 2-cent and 2 euro coins and the euro 200 banknote). The 10-cent coin and the euro 10, 50 and 100 banknotes were known best [43].
5.2 No more than 4 text elements, picture elements and security features

One of the most important survey findings is the fact that the general public cannot memorise more than 4 text elements, 4 picture elements or 4 security features. Four seems to be the maximum. Most people could recall about 2 text elements and about 2 picture elements. Concluding from this result DNB decided in 1985 to limit the number of the public security features in a banknote to 4. If the 4 features are well chosen they can cover the three major production techniques (paper, offset and intaglio) and the 4 major physical and chemical effects (resolution, colour, optical density and geometry) [39].

Realistic versus abstract

The new Dutch banknote designs by Mr. Jaap Drupsteen are often called abstract. But this is only partly correct. Instead of featuring just one figurative element, like a portrait or a flower, Mr. Drupsteen’s designs contain several. The watermark is a bird supporting the main colour of the note; the see-through register is a poppy flower, an egg, a mouse or a small fish; and the microtext is a poem especially written for the note. Together, these public security features are there to support the note's main theme: its colour.

The latest Abstract series no longer features a realistic picture, each note’s theme being simply its denomination and its colour. As stated in Sec. 2.2, realistic images are better recalled than abstract ones, which is why the design of the public security features in the NLG-notes are realistic designs. In 1990, DNB introduced the first abstract banknote of a new series. Nevertheless, the public security features of this NLG 25/Robin were pictures of a bird, a robin for the watermark, and a tulip and poppy flower for the see-through register. Although the opinion poll is not designed to quantify the effect of these realistically designed public security features, this effect is clearly not negligible.

The abstract note posed one problem. How should it be named? The design team first called it Model 1989. Later this name was changed to Robin, after the bird in the watermark. Thus, this banknote model was the first ever to be named after its watermark, a public security feature. And it worked. Some evidence for this is found in advertisements that use the name of the watermark to refer to the notes of the Abstract series (see also Sec. 5.10). Although the public in daily life uses these names, they are not heard as often as Snipe or Lighthouse.

5.3 Colour and main theme best recalled picture element

The picture element of the Abstract series that is recalled by far the most is the note’s colour. For the Huisje-boompje-beestje series, this element ranks second directly after the element named first by most respondents, i.e. the main printed image (Snipe, Sunflower, Lighthouse). This was the outcome of all the opinion polls held. The last four NLG-notes were directly associated with the colour and no longer with the main image.

While people are very well able to compare the colours of one banknote with those of another banknote or the colours of a real note with those of a counterfeit specimen, learning the exact colours by heart appears to be very difficult. So, people primarily recall qualitative colours (red, yellow and blue) as picture elements rather than shades like deep red and brownish red.

The front should be more colourful than the back

A banknote's front should be more colourful than its back, judging by the fact that the NLG 100/Snipe's reverse side is often displayed as the front, e.g. at exhibitions [13] or in printed articles [53, 54]. The reason for this is error is probably the Snipe’s back, which is, contrary to other banknotes, more colourful than its front.

Public dislikes pale colours

Market research conducted in 1997 to test the public’s response to 10 designs selected for the euro banknote design contest showed that a banknote’s colour is the element the public first respond to when judging a banknote design. In response to the question 'What is attractive at the very first sight?' people answered: the colours. In the majority of cases designs were thought unattractive designs because they were found too pale [33]. Although partly selected by the public for its bright colours, the winning design by Robert Kalina was still considered too pale by Dutch journalists when the euro notes were unveiled to the Dutch public on 3 September 2001 [48,49].

Other experience, too, indicates that colour is among the picture elements recalled best. Often, notes that have been out of circulation for many years are first of all remembered by their colour: 'Oh, that old grey, 2.50-guilder note!' Nicknames for Dutch banknotes quite often refer to a colour, like geeltje (little yellow one) for 25-guilder note or rode rug (red back) for 1,000-guilder note. The entries in a Dutch contest on nicknames for the euro coins and banknotes in
2001 were often based on colour. Two out of the seven winning nicknames were based on colours: blauwtje (little blue one) for the blue 20 euro and the hulk for the green 100 euro note [55].

5.4 General awareness of security features

Over the years, the public's awareness of security features increased from an average of 1.03 feature in 1983 to 1.7 in 1999. This was the result of both banknote design and information campaigns (see Figure 8).

One of the most relevant conclusions of the research is that a correlation has been found between the appreciation of the notes and the number of security features memorised.

![Figure 8](image)

The average public's knowledge of Dutch banknotes security features. Thanks to banknote design and information campaigns the average number of correctly named security features increased from 1.03 in 1983 to 1.7 in 1999.

**Leaflets**

In the said period, DNB intensified the public information campaign on new issues. The first leaflet of DNB on security features was issued in 1979 and was, after the Swiss leaflets distributed in 1978, one of the first in the world. DNB's leaflet, however, was only a summary review of the watermark, tactile marks, dimensions and precise printing and was very limited, since it was only distributed on request.

A trial with a leaflet on the NLG 50 note in 1983 led to a large-scale (0.5 million copies) production of this leaflet, that was to accompany the introduction of the NLG 250/Lighthouse. The graphical designer of the banknotes, Mr. Oxenaar and his assistant Mr. J.J. Kruit designed these leaflets.

The first large public information campaign accompanied the introduction of the NLG 25/Robin in 1990, being the first note of the new Abstract series. This campaign was developed by an advertisement agency. For this occasion, two different leaflets were made. A small one, which was enclosed with statements of account (circa 6.5 million copies) and a more extensive one, for cashiers as well as for the general public, on request.

**Video's**

In 1991, the first Dutch video with currency as theme (Vals Geld) was produced, dealing with counterfeit money. This DNB-sponsored video, which was intended for the experts as listed in Table 1, marked the 70th anniversary of the co-ordinated Dutch fight against counterfeiting by the police, central bank, commercial banks, paper mill and printers. A booklet was also issued on this occasion [14].

Not fully edited currency video's been for the first time made by DNB in 1992, which included images of the new NLG 100-note in production at the printing works. Different parts of this video could be used and sound could be added. This video was frequently used successfully in the news broadcasts and other television programmes. DNB was quite content with this free publicity.
Posters

The introduction of the NLG 100 in 1993 was supported, for the first time, by a *poster*. Posters of a later date, for the NLG 1,000 and NLG 10, were on request of the users, decreased in size.

Dutch people know security features the best of euro-zone

Another important achievement in the period 1983-1999 is the drop in the number of respondents unable to mention one security feature (see Figure 9).

![Figure 9](image_url)

In 1983-99, the people unable to mention one single security feature dropped over the years 1983 - 1999 from 20% to 11%.

In 1983 still about 20%, this number decreased to 11% in 1999, which is attributed to both banknote designs and the public information campaigns. Of course, a central bank cannot be satisfied if still more than 10% of the public cannot recall one single security feature.

The ECB’s security features awareness survey showed that the Dutch know their security features very well. They scored best of the euro-zone when asked to name a security feature! Of the *small business* respondents only 26 % could not name one security feature, while the average for the whole euro-zone was 42% (see also Table 3) [43].

Decrease of wrong answers

The public's awareness of security features is distorted by wholly or partly incorrect responses (see Figure 8). The percentage of partly wrong responses dropped from 0.81 in 1983 to 0.70 in 1999, again as a result of banknote design and the public information campaign. The most frequent wholly/partly incorrect responses relate to the following characteristics:
- tactile marks,
- banknote numbers,
- type of paper.

Tactile marks

The mean value of wholly/partly wrong answers concern the tactile marks mentioned by 49% of the respondents in 1983, and still by 35% in 1999. Blind marks are classified as partly wrong responses, because the tactile marks are part of the ink relief or tactile ink layer. In 1990, the design policy on blind marks was adjusted, because the blind marks were found to attract too much attention from the people with eyesight [39]. In depicting banknotes, cartoonists tend to draw only the most essential characteristics. In Dutch cartoons, the blind marks on banknotes from the Huisje-boompje-beestje series are frequently used elements. As in the Abstract-series, the two functions of a blind mark - a tactile security feature for the public and recognition mark for the blind - were combined, it was no longer considered necessary to provide the banknotes with special blind marks.
Banknote numbers
Banknote numbers also count as wrong answers (in 1983: 16%, in 1999: 16%). The public cannot verify if a banknote is genuine on the basis of the banknote number, for a reproduction would carry exactly the same number. It was found that cashiers score significantly higher (19%) than the public (9%) when it comes to knowing banknote numbers. For most of the other security features there is no significant difference between the more professional cash handlers and the public, except where the fluorescent features are concerned. Of course, the fact that there are cashiers etc. who thinks they can verify a banknote genuineness by its banknote number is not very satisfactory.

In the Abstract series, the banknote number is a bar code, while on the Huisje-boompje-beestje series an OCR-B number is used. Here, too, the design philosophy worked: the bar code, an abstract number, was mentioned in the category text elements by only 3% of the respondents, while the banknote number in this category was mentioned by 10% (1999).

Type of paper
The Dutch public often mentions the sound or feel of the paper as a security feature. Following a systematic campaign, the frequency of this response dropped from 10% in 1983, to 6% in 1999. These answers were also classified as wrong/partly wrong.

Sound of the paper
The sound of the paper is not a reliable security check at all. A piece of paper cut the same size as the banknote and having the same paperweight will sound similarly when rattled. Furthermore, the sound of wrinkled paper, like used banknotes, differs from that of unwrinkled, new notes.

Feel of the paper
The feel of the paper is not a reliable check either. Central banks often name the tactile qualities of the cotton paper used for banknotes as a security feature. Some NCBs reported that the first alert for people to realise that something is wrong with a banknote is the feel of the note. In 1986, the Bank of England published the outcome of a study of the distinguishableness of counterfeit banknotes by the feel of the paper [10]. After police officials had stated they distinguished a counterfeit note by the feel of the paper and the banknote's number carried the study carried further. Experienced cashiers were offered 21 different types of paper, including the real banknote paper. It was found that the real banknote paper was often classified as counterfeit and non-banknote paper was frequently mistaken for the official quality. The conclusion was that a banknote paper’s feel is not a reliable security feature.

A report from the Central Bank of Ireland tells that shop cashiers and super market checkout staff were asked the question: 'What was it about the note that first alerted you to the fact that something was wrong?' Approximately 70% said that it was the feel of the note [30].

However, the tactility of a banknote is not a reliable mark of distinction between genuine and forged banknotes. There is a great difference between the feel of new and that of used notes, while, moreover, each banknote size comes with its own tactility. A new euro 5 note feels different from a new euro 500 note, while the paper specifications are the same! Cashiers might be able to distinguish a counterfeit note by the touch of the paper, but only because so many notes pass their hands each day. The information campaign about the euro banknotes mentions the special tactility of the genuine specimens, adding that a counterfeit note might feel waxy or too smooth and look too shiny [47]. From the point of view of communication, it is better to focus on the features of genuine banknotes only and not to elaborate on forged notes as well.

5.5 Knowledge of public security features
DNB conducted its first opinion poll in 1963. At the time, the watermark was the best-known security feature (mentioned by 49% of the 4,000 respondents). Twenty years later, in 1983, the watermark was still the best known security feature, now mentioned by 75% of the public. The other 3 public security features were known less well (see Figure 10). Over the years, the public's awareness of these 3 lesser-known security features increased, but never exceeded 20%.

In 2000 and 2001, the ECB conducted a survey of the public's expectations regarding the euro notes’ security features. The findings are in line with those of the DNB-NIPO survey. The conclusions for the Netherlands match those of DNB reasonably well (see Table 3), be it that the DNB figures were invariably lower than the ECB’s findings.

Dutch people are well aware (62%) of the watermark, but are not familiar with the security thread (6%), as the NLG-notes do not have this feature.
Figure 10
Security features named by the public over the years 1983 - 1999.

5.6 Knowledge of cashier security features
The knowledge of the cashier features increased spectacularly over the years 1983 - 1999 (see Figure 11). One cashier feature, i.e. the fibres that turn fluorescent when held against non-fluorescent paper, stood out. In many shops it has become quite common by now to check notes under blue ultra violet light (UV).

In 1989 the awareness of UV suddenly increased, caused by a full-scale campaign held at the time by the Dutch Postbank in order to discourage counterfeiting of the popular girobetaalkaart, a guaranteed cheque. To counteract this fraud, retailers were in 1987 provided with UV-lamps, at a special low price.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Watermark</td>
<td>80%</td>
<td>62%</td>
<td>60%</td>
</tr>
<tr>
<td>2. Security thread</td>
<td>-</td>
<td>6%</td>
<td>52%</td>
</tr>
<tr>
<td>3. Feel of paper and print</td>
<td>6%</td>
<td>40%</td>
<td>39%</td>
</tr>
<tr>
<td>4. Holograms/foils</td>
<td>7%</td>
<td>13%</td>
<td>30%</td>
</tr>
<tr>
<td>5. Different size for each</td>
<td>-</td>
<td>4%</td>
<td>27%</td>
</tr>
<tr>
<td>denomination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Colour shifting ink</td>
<td>-</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>7. Easy-to-read denomination</td>
<td>-</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td>number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. UV-lamp *</td>
<td>19%</td>
<td>43%</td>
<td>24%</td>
</tr>
<tr>
<td>9. Infra red *</td>
<td>-</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>10. Magnifier *</td>
<td>-</td>
<td>1%</td>
<td>4%</td>
</tr>
<tr>
<td>11. Any feature</td>
<td>58%</td>
<td>82%</td>
<td>88%</td>
</tr>
<tr>
<td>12. Doesn’t know *</td>
<td>11%</td>
<td>26%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Table 3
DNB survey (NIPO, 1999) compared with ECB survey (RBI, March 2001) [43].
Percentages indicate the number of respondents who mentioned the security feature.
* = provided to small business respondents.
The *metameric* feature is only used in the NLG 25/Robin and the NLG 250/Lighthouse. A red filter is needed to see the fish in the 25-guilder note or the rabbit in the 250-guilder note.

From the surveys conducted it can be concluded that cashiers do not know many more security features than the general public, except for retailers, who can name significantly more than non-retailers! The ECB survey also showed that the Dutch small business respondents are quite familiar with the UV-lamp (see Table 3).

### 5.7 Wording of public security features

Security features are often referred to by a technical name unknown by the vast majority of the public, except may be for the watermark. Hence, people often have difficulty finding the right words to describe a security feature. For example, they may know that the picture segment on the front of the see-through register should makes one perfect whole with that on the back, but they do not know the word *see-through register*; or, they are aware that there should be a shiny element, but are not familiar with the word *foil patch* or *hologram*. The same holds for tactile elements and *intaglio print* or change of colours instead of *optical variable ink*. That is why, in 1992, on its poster about the new NLG 100/Little Owl, DNB adopted a more functional approach, telling people what they should do to inspect a security feature (see Figure 12). The instructions on the poster read (translated):

- **FEEL IT**,  
- **PUT IT UNDER THE MAGNIFYING GLASS**,  
- **HOLD IT AGAINST THE LIGHT**,  
- **AND LET IT GLITTER!**

The instructions cover respectively the intaglio relief, the microtext, the watermark and the see-through register, and finally the glossy elements like the foil, iridescent planchettes and iridescent and metallic inks.

The euro banknote information campaign used a similar approach in 2001. With terms like FEEL, LOOK and TILT, human handling of the note is used as a stepping stone to explain the security features [47]. CHECK was added to FEEL - LOOK – TILT, as a header for the instruments that could be used like an UV-lamp or a magnifying glass.

The latest Swiss banknotes, first issued in 1995, were supported by a new communication strategy [25, 26]. The denomination numerals were designed to serve as the '5 easy to check' security features like the *magic number*, the *coloured number*, the *moving number*, the *chameleon number* and the *glittering number*.

Table 4 gives an overview of the human functions in relation to the security feature to be checked.
Figure 12
Left: first DNB poster for banknotes: NLG 100/Little Owl (1992).
Right: enlargement of poster detail.

Table 4
Overview of popular public security features and action required to verify the feature.

<table>
<thead>
<tr>
<th>FEEL</th>
<th>LOOK</th>
<th>TILT</th>
<th>LIGHT</th>
<th>LOUPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rub/feel with finger(s)</td>
<td>Hold to the light</td>
<td>Move, tilt</td>
<td>UV-light, IR</td>
<td>Magnify</td>
</tr>
<tr>
<td>1. Watermark</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Security thread</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hologram</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>4. Special inks, e.g. OVI</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Intaglio ink relief</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Micro perforation</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Fluorescent fibres</td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>8. Fluorescent ink</td>
<td></td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>9. Infra red image</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>10. Microtext</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Text by security feature serving as memory aid
To aid the public in finding a name for a public security feature, in 1989 DNB decided to print the name of the figuratively designed image close to the feature. The argument for this measure was found in the literature: when a feature has a name, it will be better-recalled [1]. Figure 13 shows two examples.

Memory text of public security features printed on the note!
To help the public memorise the public security features, DNB was the first central bank to print a brief instruction for use, a memory text, on the notes. Why print leaflets that people might discard or forget, if a short memory text may be printed on the note? Of course, DNB did both. The first memory text was designed as a security feature on the NLG 25/Robin, issued in 1990. This microtext also referred to itself, reading: this text should be readable! In fact, the smallest letters are so minute that in further issues the memory text became a feature in its own right. This memory text is less extensive than in the leaflets. In 1993, the order of the 4 public security features was changed with the help of the public opinion polls. The best known feature was referred to on the last line (the watermark); the least-known feature (see-through register) on the first line. The memory text on the NLG 10/Kingfisher reads (translated into English):
In the Abstract series, the name of the public security feature is printed next to the feature. This was first done in 1989, in the NLG 25/Robin. Left: the text KIEVIT (LAP WING) above the watermark in the NLG 1000/Lap Wing. Right: the text STEKELBAARS (STICKLE BACK) in the see-through register (NLG 10/King Fisher).

Seen against the light, the precisely fitting elements form a stickleback. The text beside the watermark can be read through a magnifying glass. The ink-layer on the front can be felt. The kingfisher in the watermark has light and dark tints.

The printed memory text of the 4 public security features on the NLG 10/King Fisher. Right: NLG 10/King Fisher, reverse side. Left: enlargement of memory text.

5.8 Way-finding features
Besides the wording of the security feature the public often does not know where to look for the security feature. Finding a security feature is a 4-step process:

1) Orientation - where is it?
2) Navigation - how to get there?
3) Identification - what is it?
4) Information - what do I have to do?

The design of banknotes could be improved if the designers would take better account of the above aspects. A solution to this problem is the use of so-termed way-finding features or road signs, which are tiny symbols printed close to the security features, representing the functions as given in Table 4. These way-finding features might also be used to point
out a specific feature, after the public has been alerted to the occurrence of counterfeits. Of course, introducing a world-
wide-standardised set of pictograms for these way-finding features would be the most effective means. The Swiss 
central bank were the first to introduce way-finding features on banknotes as shown in Figure 15 [25, 26]. Not much 
later, a Dutch publishing house Keesing introduced pictograms on their CD-ROM [35]. And, as from 1 October 2001, 
new Dutch passports feature pictograms in support of the four security features as given in Figure 16 [50].

![Figure 15: Way-finding features in the CHF 50; here given as co-ordinates.](image)

Left: CHF 50/Sophie Taeuber, first issued on 3 October 1995.
Right: Enlargement of detail with way-finding features C and D.

![Figure 16: Pictograms used in leaflet for new Dutch passport [50].](image)

(a) = use finger to feel intaglio relief
(b) = tilt the document and see the hologram move
(c) = hold to the light for the watermark and the perforated image

Uniform terminology for security features for different security documents
A uniform standardised terminology for security features would be very helpful for the public. Nowadays the public 
often has to learn different names for more-or-less the same security feature in for example a passport or a banknote. 
For this reason, the issuing authorities should avoid trademarks like Kinegramme® or MicroPerf®, but use easy-to-
memorise uniform names in their information campaigns instead, e.g. not Kinegramme® but hologram.

5.9 Portrait knowledge
A survey conducted in Austria in 1987 showed that 25% of the respondents stated they recognised the face value of a 
banknote by the portrait featured on it [7].
DNB conducted a similar survey in 1995, adding a question about the portrait of Frans Hals on the NLG 10 note issued 
in 1968. After 27 years (!) of using this low denomination, the Dutch public was asked to name the person depicted on 
this note (Figure 17). Only 14% managed to come up with the right answer; more than half (53%) did not know, and 
9% gave an incorrect answer. The remaining 24% gave answers that were only partly right: historical person (16%), 
painter (7%) or man (1%).
5.10 Knowledge of watermarks

The watermark image in the NLG-notes differs from the main image on the printed note, as this makes the designs more interesting to inspect and will also reduce the risk of confusion with counterfeits. Two different, juxtaposed representations of one image may be confusing, since the counterfeit note will feature the same two more or less similar images too.

From the survey, several remarkable results emerged regarding the design of watermarks.

Watermarks in the Huisje-boompje-beestje series

The watermark in the NLG 50/Sunflower, i.e. a bee, is part of the theme of the note: sunflower and bee. Asked what the watermark in this note is, in 1985, 6% of the respondents gave the correct answer (bee), and 8% an incorrect answer (flower). Fourteen years later – when this note was still in circulation - 7% of the people answered correctly and an increased number - 13% - incorrectly.

The same results were found for the NLG 250/Lighthouse with a rabbit for a watermark. One year after the introduction of this new note, 10% of the people answered correctly, 2% mentioned a different animal and only 1% thought the watermark was a lighthouse. By 1999, many people had forgotten about the rabbit (only 4% of the answers were correct) and 4% of the public “guessed” that the watermark was a lighthouse.

The best-known watermark in the Huisje-boompje-beestje series is the watermark representing a snipe, i.e. in the NLG 100/Snipe. In 1993, 17% of the respondents gave this answer, while 9% gave a bird’s head for an answer. As, in this model, the watermark is identical to the printed image, the chance of respondents guessing correctly is higher. This may explain the relatively high score.

Figure 18

The little owl watermark in the NLG 100/Little Owl. The owl’s eyes are an integrated electrotype watermark. This watermark is very successful, both in- and-outside the Netherlands. It is often used in publications and posters, and in 2001 was selected by the BPC/Paper Committee as the most attractive, most aesthetic and most innovative watermark [44].
Watermarks in Abstract series
The watermarks in the Abstract series gave their name to the note. These watermarks need not have to compete with the printed main theme. This series led to a significantly higher score of correct answers than the Huisje-boompie-beestje series.

In 1990, the first note of a new series was issued, with a watermark representing a robin. When asked to describe the watermark, survey respondents named robin (7%) or a bird’s head (4%) in 1991 and 8 years later in 1999 not much has changed: both robin and a bird’s head scored 6%. While this may still not be a very satisfactory score, at least no incorrect answers were given. The same holds for the other 3 new models, but the best score was measured in relation to the NLG 100/Little Owl. When the knowledge of the watermarks in these models was first measured, in 1995, 8% of the respondents gave the correct answer, i.e. little owl or owl, and in 1999, 11%. The second answer category, i.e. a bird’s head, was given by 13% in 1995 and by 10% in 1999.

For both series, it holds that awareness of the watermark is quite poor. The correct answers snipe and a bird’s head for the NLG 100/Snipe in 1993 was given by 26% of the respondents at best.

It is concluded for both series that the percentage of correct answers to these watermark-related questions as given by cashiers is not significantly higher compared to other respondents.

5.11 Some reflections on the Euro design
DNB conducted its first survey on euro notes in 1995, before the euro notes were designed. This survey aimed at gauging the public’s view on banknotes with one national side and one common side, or with two common sides. The outcome at the time was that 53% wanted identical euro notes, without a national side, and that 36% preferred euro notes with one common side and one side featuring a national symbol. 8% stated to have no preference and 3% gave no answer [23].

On the basis of the representations of the euro banknotes that the ECB has published since 1 July 1997 (see Figure 19), in the opinion poll of February 1999, the Dutch public was asked to describe these notes.

Figure 19
Picture of dummy 20 euro note - front and reverse side - in use since 1 July 1997.

In 1999, the Dutch were not very familiar with the euro notes: 73% could not name any aspects, and those that did respond, gave the following answers:
- text 'EURO' (7%)
- buildings (6%)
- denomination figures (5%)
- bridges (4%)
- Queen Beatrix (4%)
- European stars (3%)
- Colours (3%)
- Euro symbol (2%)
- Map of Europe (2%)
- European flag (2%)
According to 4%, Queen Beatrix will appear on the euro notes, whereas this is not the case. Her effigy is found, though, on the national, Dutch side of the euro coins. According to a survey conducted by the ECB, the Dutch public was mistaken the most about the banknotes: 74% thought that one side would be different! [e.g. 33].

There is a difference of opinion regarding the theme on the front (windows and gates) and the theme on the back (bridges). Journalists are usually the first to come up with a reaction to a new design. Several articles and brochures suggest that the bridges on the reverse side of the euro notes communicate better and are better recalled, than the windows and doors on the front side [e.g. 36, 42].

Dutch people are already familiar with non-portraits on banknotes, e.g. a building on the NLG 250/Lighthouse, while the public in the other 11 euro countries still needs to get used to non-portrait banknotes. And just as the lighthouse is merely modelled after an existing lighthouse in the Netherlands, the images on the euro banknotes are no exact copies either, but representations of existing building elements and structures adapted by the banknote designer Robert Kalina. However, the reasons for adapting the designs by Oxenaar and Kalina were different. While the lighthouse of Haamstede was changed for graphical reasons, the buildings on the euro notes were adapted to preclude association with existing buildings in Europe.

5.12 Future work
DNB will measure the Dutch public’s appreciation of the euro banknotes for the first time in February 2002. This will be a historically unique moment for more than one reason:
- being new, the euro notes will be scrutinised with great interest (the NLG-opinion polls used to be conducted more than one year after the issuance of a new banknote ),
- the information campaign on the euro banknotes is the most comprehensive campaign on banknotes (and coins) ever. This is especially true for the Netherlands were in total around 35 million euro is spend on the information campaign and is - in absolute terms - the highest in the euro zone.

Figure 19 shows the expected response by the Dutch public to the new euro banknotes. There will be - for the second time - a methodological break in the figures, as the NIPO no longer provides omnibus surveys and the interviews will be conducted by telephone. The break comes at a suitable time, since it will coincide with the introduction of the cash euro. To ensure a link with former surveys, the questionnaire will include several questions about the NLG-notes, which will still be in circulation in February 2002. After an expected all time high in February 2002, the knowledge will probably drop as years go by. The next measurements are scheduled to be held in February 2003 and 2005.

6. SURVEYS CONDUCTED BY OTHERS

Becoming increasingly convinced of the usefulness of maximising the public’s awareness of banknote features, more and more central banks have lately begun to conduct consumer research on banknotes and publish the results. A
comprehensive overview of the last two decades - as far as known to the author – of surveys measuring the public’s knowledge of security features is given in Table 5 [21].

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Watermark</td>
<td>75%</td>
<td>52%</td>
<td>40%</td>
<td>-</td>
<td>80%</td>
<td>56%</td>
</tr>
<tr>
<td>Tactile ink</td>
<td>7%</td>
<td>3%</td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td>31%</td>
</tr>
<tr>
<td>Microtext</td>
<td>3%</td>
<td>-</td>
<td>seldom</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>See through register</td>
<td>1%</td>
<td>12%</td>
<td>-</td>
<td>-</td>
<td>47%</td>
<td>-</td>
</tr>
<tr>
<td>Security thread</td>
<td>-</td>
<td>79%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>52%</td>
</tr>
<tr>
<td>Latent image</td>
<td>-</td>
<td>5%</td>
<td>33%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hologram/Kinegramme</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>-</td>
<td>27%</td>
<td>-</td>
</tr>
<tr>
<td>Foil/strap</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>80%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Colour shifting ink (OVI)</td>
<td>-</td>
<td>-</td>
<td>10%</td>
<td>39%</td>
<td>22%</td>
<td>-</td>
</tr>
<tr>
<td>UV-fibres</td>
<td>3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Diff. size each denomination</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>80%</td>
<td>41%</td>
<td>-</td>
<td>-</td>
<td>83%</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 5
Overview of some of the results of opinion polls held in the period 1981-2001 [7, 20, 29, 32, 43].
1) Since 1983, DNB has conducted surveys at two-year intervals.
2) A temporary decrease to 40%; in 1990: 70%.
3) Public’s expectation (adults) of security features in future euro notes, measured in March 2001, in 12 euro countries. Similar surveys were conducted in September 2000 and November 2001 [40].
4) Feel of paper and print are combined.

As every method used was different, results are only partly comparable. One of the last reports came from the ECB [43], which in three waves (September 2000, March 2001, and November 2001) measured the public’s:
- practical knowledge of the introduction of the euro, like the introduction date, and the period during which a national currency remains legal tender after the new currency’s introduction (dual period),
- practical knowledge of the euro notes and coins, like denominations and security features,
- sentiments about the introduction of the euro.

This survey was conducted in the 12 euro countries among some 275 adults, 100 children and 100 small businesses per country, by means of face-to-face interviews.
The first two waves (surveys) were completed before the ECB unveiled the security features of the euro on 30 August 2001. The third wave, in November 2001, focussed on the impact of the mass media campaign. The results of this research came too late for this article.

It is obvious that a standardised, uniform opinion poll will lead to more comparable results in the future. Or do the French really know their security features so much better than the Austrians, Finnish or Dutch?
Remarkably, in several countries a great many people name other features than the ones that the NCB is promoting.
From Table 5, also some more qualitative conclusions can be drawn, namely:
- the watermark is the best-known security feature,
- holograms and foils are well-known.

Methods to increase the public’s knowledge
In the 1980s, the Austrian National Bank used an interesting method on several occasions. Together with the information leaflet on the new Austrian banknote, a reply card was distributed. The public was invited to fill in the 5 security features described in the leaflet. To be able to do so, the public was compelled to peruse the information leaflet. As, subsequently, respondents needed to write down the security features on the reply card, these features, was the idea,
would stick to their memories better. By way of an extra stimulus for people to participate, the reply card, if sent in completed, doubled as a lottery ticket. This method worked; especially the lesser-known features were mentioned more often [3]. Perception research by DNB came with a similar result: it was found that people recalled items better if they had been asked beforehand to memorise them [6].

Number of public features in NCB leaflets
More and more NCBs choose to keep the number of security features in their banknotes confined to a maximum of 5, 6 or 7 public security features. Just recently, in 2000, the US Treasury Department published the 5 public security features of the US dollar [40].

Table 6 gives an overview of the numbers of public security features used by different NCBs.

<table>
<thead>
<tr>
<th>Number of security features for the public</th>
<th>National Central Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Sweden, Korea</td>
</tr>
<tr>
<td>4</td>
<td>ECB, Finland, Netherlands</td>
</tr>
<tr>
<td>5</td>
<td>Australia, Austria, Germany, Spain, Switzerland (easy-to-check), USA</td>
</tr>
<tr>
<td>6</td>
<td>Luxembourg</td>
</tr>
<tr>
<td>7</td>
<td>Denmark, Ireland, Italy, Portugal, United Kingdom</td>
</tr>
<tr>
<td>8</td>
<td>Thailand</td>
</tr>
<tr>
<td>9</td>
<td>Belgium, Greece</td>
</tr>
<tr>
<td>≥ 10</td>
<td>Hong Kong (10), Russia (13), Switzerland (17)</td>
</tr>
</tbody>
</table>

Table 6
Overview of the numbers of security features presented in the latest leaflets for the general public.
The National Bank of Belgium made a distinguishing between the tactility of the paper and the tactility of the print. In the Austrian leaflet, 4 features appear under a common denominator: Kippeffekte (optically variable effects). In Finland the foil patch (high denominations) and the latent image (low denominations) appear under a common denominator. The Swiss central bank uses the 5 easy-to-check features, but in the information brochure accompanying the introduction of this note, attention is also drawn to the 7 old public features, like the watermark, the see-through register, the security thread and the microtext. Initially totalling 16, after the addition of the perforated figure (MicroPerf), the number of public features eventually totalled 17.

It is increasingly becoming common practice to limit the number of security features communicated to the public. Table 7 gives an overview of the public security features in the Euro, US Dollar and Dutch Guilder notes. For a check to be reliable, three features need to be covered.

<table>
<thead>
<tr>
<th>Security feature</th>
<th>USD</th>
<th>EUR</th>
<th>NLG</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Watermark</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>- Security thread</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>- Foil with hologram</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>- Special ink *</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>- Microprinting</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>- Tactile properties</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>- See-through register</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>- Fine-line pattern</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Total public features</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 7
Public features in the leaflets of the US-dollar, the euro and NLG-notes.
*) Colour shifting ink (OVI) or iridescent ink
7. CONCLUSIONS

The conclusions break down into four categories:

1) conclusions about the consumer research method used,
2) conclusions about the appreciation and knowledge of NLG-notes,
3) conclusions for the design policy of new banknotes,
4) conclusions about the communication tools.

7.1 Conclusions about the consumer research method used
7.1.1 The biennial survey conducted by DNB is a reproducible and reliable method for longitudinal consumer research regarding both the public's appreciation of banknotes and its knowledge of the security features. The method allows for the addition of specific questions to each survey, without affecting the comparability of the different measurements.
7.1.2 To facilitate a comparison of the results over the years, one banknote should serve as anchor note in every survey. Its denomination should be selected from the middle of a banknote series.
7.1.3 This method provides valuable feedback to the central bank and its design team.
7.1.4 This method permits comparing the consumer research of one NCB with that of another.
7.1.5 The method is so designed that changes in the interviewer's technique, e.g. using a hand-held computer instead of a hard-copy list to code in answers, do not affect the time series.

7.2 Conclusions about the appreciation and knowledge of NLG-notes
7.2.1 The NLG-notes are highly appreciated by the Dutch public. On average, around 80% of the Dutch public find the NLG-notes beautiful.
7.2.2 The figurative series Huisje-Boompje-Beestje are liked better than the later Abstract series.
7.2.3 Over the years 1981-1999, awareness of NLG-note security features increased by about 65%, as a result of new banknote designs and information campaigns.
7.2.4 In 1999, the Dutch public was found to be able to memorise by heart no more than 1.7 security features on average. This score is too low, since a reliable security check should cover three security features.

7.3 Conclusions about the design policy
7.3.1 The more people like a banknote, the more they know about it, including its security features.
7.3.2 There is a positive correlation between a banknote’s appreciation (beautiful or ugly) and the knowledge of its security features, its picture and text elements.
7.3.3 Colour is one of the most important design parameters. The (European) public does not like pale colours.
7.3.4 A new banknote that is an extension of an existing series heightens the public’s appreciation of it.
7.3.5 The public’s knowledge of the images of watermarks in NLG-notes is rather poor. The public makes less mistakes in the Abstract series than in the Huisje-Boompje-Beestje series (for watermarks not similar to the main image).

7.4 Conclusions about the communication
7.4.1 The number of security features to be communicated to the public should be limited to 4.
7.4.2 To denote public security features, technical terms and trademarks should be avoided. Instructing people how they should proceed to inspect the public security features (e.g. feel this spot, look though that register, tilt the banknote) is more effective.
7.4.4 Assigning a short name to a public security feature is a good memory aid.
7.4.5 Including instructions for inspection of the public security features, or a memory text, in the design is another good memory aid.
7.4.6 Way-finding features will help the public to find the (four) public security features on the note.
7.4.7 Using standard terms and way-finding features for different security documents like banknotes, passports, driving licences etceteras, will be very helpful to the public.
ACKNOWLEDGEMENTS

Over the years, several people, especially from NIPO Market and Opinion Research Institute, have contributed to the method for measuring the public's appreciation and knowledge of NLG-banknotes, described in this document. Special thanks go to Dr. Peter Koeze who was there from the very first start in 1981, and without whose contribution to a solid basis for this method I would not have been able to give an overview covering such a long period!

Finally, I want to thank the Governing Board of the De Nederlandsche Bank for allocating the budget required to conduct the surveys.

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APPENDIX I

Method and Organisation of the Omnibus-system (CAPIBUS)

Introduction
For the research in question, NIPO market and opinion research institute conducted a so-called face-to-face omnibus survey, called CAPIBUS. To this end, the said institute weekly interviewed representative samples of Dutch households for a specific period, using the Computer Assisted Personal Interviewing (CAPI) method. In an omnibus survey, the questions about banknotes constitute a module in a bigger set of questions, relating to all sorts of issues besides banknotes. This is also one of the reasons why this research was relatively inexpensive and could be repeated over the years.

Changes at NIPO after 1 January 2001
Since 1 January 2001, NIPO no longer supports CAPIBUS, as nowadays fewer people can be reached at home during daytime. Samples are no longer representative, since the people that can be reached during daytime are mostly elderly people, students and housewives. Instead, NIPO has adopted several alternative methods like:
- NIPO CAPI@HOME, Computer Assisted Personal Interviewing, a method enabling a representative group of people to answer questions from behind their PCs.
- CAWI, Computer Assisted Web Interviewing, a method designed for interviewing through the Internet.
- CATI, Computer Assisted Telephone Interviewing, for interviews exclusively focussing on banknotes or for banknote-related questions embedded in extensive interviews on all sorts of subjects (the CATIBUS).
- TELEPANEL. A representative group of households (panel), answers questions at home on a convenient moment ('self-completion' research).
- Qualitative Research, like e.g. face-to-face interviews.

1. Sampling method CAPIBUS
This method captures around 2,000, aged 18 and over, which constitute a representative sample of households. The addresses are randomly selected, and for each address there are two reserve addresses. If a household does not wish to take part in the survey, or if nobody is at home, the interviewer goes to the second household on the list of three.

If a household is willing to participate in the survey, the interviewer will first ask for the male head of the household. If the male head is not available, the interviewer will ask for the female head of the household. If she is not available, the interviewer will ask for the oldest male above 18 years. If he is not available, the interviewer will ask for the oldest female above 18 years.

2. Period
Frequency: every two years.
The surveys were held on four successive Mondays and Tuesdays in the period from late January to early March (except during carnival week) as part of the NIPO weekly public opinion poll. This means that each week 500 people were interviewed.

3. Face-to-face interview
The CAPIBUS is a face-to-face survey.

4. Open questions
The questions are open questions, which is the best way to receive unfiltered answers from the respondents. The drawback of this system is that the interviewer will sooner tick the answers on the pre-coded answering list, than write them out in the blank reserved for this purpose.

5. Choose an anchor-note for knowledge items
To permit a comparison of the results obtained over the years a reference, or, anchor note, is required. In the Dutch surveys the NLG 100/Snipe (1981-1993) featured as anchor note, and later the NLG 100/Little Owl (1995-1999). The
anchor note is only necessary for the knowledge-related questions. The method allows for questions regarding the appreciation of all banknotes in circulation.

6. Bias in questionnaire
The sampling method implies that the measurement is directed at the general users of banknotes and not at cashiers etc. This may imply that aspects relevant to the latter group remained underexposed in the answers. In order to ensure comparability, the questions asked in the various surveys were identical.

In each wave, the questionnaire contained the same questions on two banknotes as were asked in previous versions. One was the 100-guilder note (the anchor note), the other was one of the other Dutch banknotes (usually the last note to have been brought into circulation). In order to minimise any bias towards one of the two banknotes, respondents were randomly confronted with either the questions concerning the anchor note or the other banknote. Both types of questionnaires were used in equal amount.

7. Introductory questions
The first questions of every poll concerned the respondent’s sex and profession. The first questions on banknotes concerned the active and passive knowledge of denominations, e.g., in 1987, the new denomination of NLG 250; or, in 1995, the old NLG 5 note, which was replaced by a coin in 1988.

8. Order of questions: first knowledge-related, then appreciation-related
First the knowledge-related questions are asked, covering picture elements, text elements and security elements. Then come appreciation-related questions, including a control question. At the end of the opinion poll, there is an option for more specific question, e.g. about watermarks.

9. Adding specific questions
Specific questions can be added after the standardised questions about knowledge and appreciation. This will not affect the comparability of the final results (see Fig. 1).
In 1999, DNB added a question about the euro banknotes.

<table>
<thead>
<tr>
<th>STANDARD QUESTIONS</th>
<th>+</th>
<th>SPECIFIC QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td></td>
<td>Last</td>
</tr>
</tbody>
</table>

Figure 1
The standard, basic questions should be asked first. Specific, non-periodic questions are optional, and should be asked after the basic set of questions.
APPENDIX II
Questionnaire regarding NLG-notes

This questionnaire, developed by the NIPO market and opinion research institute in close co-operation with De Nederlandsche Bank, is available for use by other national central banks. All copyrights to the questionnaire have been transferred from NIPO to De Nederlandsche Bank NV. DNB will not charge any fee for this license.

Some QUESTIONS are here under blank, meaning that the information is not relevant for the questionnaire. The question tells e.g. to continue with another question in case the respondent does not know any answer.

QUESTION 1, 2

QUESTION 31
To pay in cash in our country we use coins and PAPER MONEY. What values of paper money in circulation in the Netherlands can you name?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

DENOMINATIONS:

2 o NLG  1
3 o NLG  2.50
4 o NLG  5
5 o NLG  10
6 o NLG  20
7 o NLG  25
8 o NLG  50
9 o NLG  100
10 o NLG  200
11 o NLG  250
12 o NLG  500
13 o NLG 1,000
14 o Different answer
15 o Cannot name one note
   o Go to question 40

QUESTION 32
Can you name other denominations?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

DENOMINATIONS:

2 o NLG  1
3 o NLG  2.50
4 o NLG  5
5 o NLG  10
6 o NLG  20
7 o NLG  25
8 o NLG  50
9 o NLG  100
10 o NLG  200
11 o NLG  250
12 o NLG  500
13 o NLG 1,000
14 o Different answer
15 o Cannot name more notes
QUESTION 40

INTERVIEWER: SHOW SHEET 46

Please look at this card. Which of these banknotes are used in the Netherlands?

**DENOMINATIONS:**

<table>
<thead>
<tr>
<th>Denomination</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 o NLG</td>
<td>1</td>
</tr>
<tr>
<td>3 o NLG</td>
<td>2.50</td>
</tr>
<tr>
<td>4 o NLG</td>
<td>5</td>
</tr>
<tr>
<td>5 o NLG</td>
<td>10</td>
</tr>
<tr>
<td>6 o NLG</td>
<td>20</td>
</tr>
<tr>
<td>7 o NLG</td>
<td>25</td>
</tr>
<tr>
<td>8 o NLG</td>
<td>50</td>
</tr>
<tr>
<td>9 o NLG</td>
<td>100</td>
</tr>
<tr>
<td>10 o NLG</td>
<td>200</td>
</tr>
<tr>
<td>11 o NLG</td>
<td>250</td>
</tr>
<tr>
<td>12 o NLG</td>
<td>500</td>
</tr>
<tr>
<td>13 o NLG</td>
<td>1,000</td>
</tr>
<tr>
<td>14 o None of these notes</td>
<td></td>
</tr>
</tbody>
</table>

QUESTION 50

QUESTION 51

Since 1997, a new NLG 10 banknote has been in circulation. Can you please tell by heart, as extensive as possible, what you can see on the new note of NLG 10, things like pictures, signs, colours etc. Do not thinks about the numbers or other texts!

**INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 o</td>
<td>Cubes, joists (10 pieces)</td>
</tr>
<tr>
<td>3 o</td>
<td>Stickleback</td>
</tr>
<tr>
<td>4 o</td>
<td>King fisher</td>
</tr>
<tr>
<td>5 o</td>
<td>Blue colours</td>
</tr>
<tr>
<td>6 o</td>
<td>Circles</td>
</tr>
<tr>
<td>7 o</td>
<td>Triangles</td>
</tr>
<tr>
<td>8 o</td>
<td>(Blue) glossy shamrock shape(foil)</td>
</tr>
<tr>
<td>9 o</td>
<td>Glossy speckles (on the back side)</td>
</tr>
<tr>
<td>10 o</td>
<td>Rosette of 'spider web'</td>
</tr>
<tr>
<td>11 o</td>
<td>Barcode</td>
</tr>
<tr>
<td>12 o</td>
<td>(Tactile) lines</td>
</tr>
<tr>
<td>13 o</td>
<td>Different answer(s)</td>
</tr>
<tr>
<td>14 o</td>
<td>Cannot name anything</td>
</tr>
<tr>
<td></td>
<td>Go to question 61</td>
</tr>
</tbody>
</table>
QUESTION 52

Could you recall any more? What else can you see on a 10-guilder banknote, besides figures and texts?

(INTERVIEWER: On the new design of NLG 10)

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

2 o Cubes, joists (10 pieces)
3 o Stickleback
4 o King fisher
5 o Blue colours
6 o Circles
7 o Triangles
8 o (Blue) glossy shamrock shape(foil)
9 o Glossy speckles (on the back side)
10 o Rosette of 'spider web'
11 o Barcode
12 o (Tactile) lines
13 o Different answer(s)
14 o Cannot name another specific

QUESTION 61

This new 10-guilder note also features figures and texts. What figures and texts can you reproduce by heart?

(INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES)

2 o De Nederlandsche Bank
3 o The text 'ten guilders'
4 o The figures '10'/the number '10'
5 o The text 'King fisher'
6 o The text 'Stickleback'
7 o The text 'The forger or counterfeiter will be punished'
8 o The text 'NLG'
9 o Poem about the King Fisher by Arie van den Berg (microtext)
10 o Different local names for the King Fisher (microtext)
11 o Description of the security features
12 o Text on De Nederlandsche Bank’s copyright
13 o Date
14 o Amsterdam
15 o Penal Code Article 208 (microtext)
16 o Joh. Enschedé en Zonen
17 o J.T.G. Drupsteen
18 o Signature(s)
19 o Banknote number(s)
20 o Different answer(s)
21 o Cannot name anything
22 o Go to question 70
QUESTION 62

What other texts can you recall?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

2 o De Nederlandsche Bank
3 o The text 'ten guilders'
4 o The figures ’10’/the number ’10’
5 o The text 'King fisher'
6 o The text 'Stickleback'
7 o The text 'The forger or counterfeiter will be punished'
8 o The text 'NLG '
9 o Poem about the King Fisher by Arie van den Berg (microtext)
10 o Different local names for the King Fisher (microtext)
11 o Description of the security features
12 o Text on De Nederlandsche Bank’s copyright
13 o Date
14 o Amsterdam
15 o Penal Code Article 208 (microtext)
16 o Joh. Enschedé en Zonen
17 o J.T.G. Drupsteen
18 o Signature(s)
19 o Banknote number(s)
20 o Different answer(s)
21 o Cannot recall more text(s)

QUESTION 70

How do you like the new 10-guilder note?
Do you think its design beautiful, fairly beautiful, rather ugly or very ugly? Or neither one, nor the other?

1 o Very beautiful
2 o Fairly beautiful
3 o Neither one, nor the other
4 o Rather ugly
5 o Very ugly
6 o Doesn’t know

QUESTION 80
QUESTION 81

There are two different 100-guilder notes in circulation now; the Snipe and the new note. The Snipe has been in circulation since 1981 and the new note since 1993.

I would like to talk with you about the NEW note, which has been in circulation for over 5 years now. Besides figures or texts, can you name other specifics of this note? (think of pictures, signs, colours, etc.).

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

2 o Circles or circle-shaped (six sides) elements (100 pieces)
3 o Big circle(s)
4 o Little owl
5 o (Beech) leaf
6 o Mouse
7 o (Gold-coloured) sun
8 o Brown colours
9 o Gold gloss (on front)
10 o Glossy speckles/planchettes (on back side)
11 o A diamond shape with blocks/little blocks
12 o (Thick) match-shaped lines
13 o Barcode
14 o Tactile dots
15 o Different answer(s)
16 o Cannot name any specific
   o Go to with question 91

QUESTION 83

What else can you see on a 100-guilder banknote, other than figures and texts?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

2 o Circles or circle shaped (six edges) elements (100 pieces)
3 o Big circle(s)
4 o Little owl
5 o (Beech) leaf
6 o Mouse
7 o (Gold coloured) sun
8 o Brown colours
9 o Gold gloss (on front)
10 o Glossy speckles/planchettes (on back side)
11 o A diamond shape with blocks/little blocks
12 o (Thick) lines (shape of a match)
13 o Barcode
14 o Tactile dots
15 o Different answer(s)
16 o Cannot name more specifics
QUESTION 91

This new 10-guilder note also features figures and texts. What figures and texts can you reproduce by heart?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1. De Nederlandsche Bank
2. The text 'hundred guilders'
3. The figures '100'/the number '100'
4. The text 'Little Owl'
5. The text 'Mouse'
6. The text 'The forger or counterfeiter will be punished'
7. Poem: 'The Owl' from C. Buddingh' (microtext)
8. Different local names for the Little Owl (microtext)
9. Description of the security features
10. Text on the De Nederlandsche Bank's copyright
11. Date
12. Civil Code, Article 208 (microtext)
14. J.T.G. Drupsteen
15. Signature(s)
16. Banknote number(s)
17. Different answer(s)
18. Cannot name anything
19. Go to question 100

QUESTION 92

What other texts can you recall?

(INTERVIEWER: On the new design of NLG 100.)

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1. De Nederlandsche Bank
2. The text 'hundred guilders'
3. The figures '100'/the number '100'
4. The text 'Little Owl'
5. The text 'Mouse'
6. The text 'The forger or counterfeiter will be punished'
7. Poem: 'The Owl' from C. Buddingh' (microtext)
8. Different local names for the Little Owl (microtext)
9. Description of the security features
10. Text on De Nederlandsche Bank's copyright
11. Date
12. Civil Code, Article 208 (microtext)
14. J.T.G. Drupsteen
15. Signature(s)
16. Banknote number(s)
17. Different answer(s)
18. Cannot name anything
19. Cannot name more texts

QUESTION 100

How do you LIKE the NEW 100-guilder note?
Do you think its design beautiful, fairly beautiful, rather ugly or very ugly? Or neither one, nor the other?

1. Very beautiful
2. Fairly beautiful
3. Neither one, nor the other
4. Rather ugly
5. Very ugly
6  ○ Doesn’t know
QUESTION 1011

There is also a 25-guilder banknote. How do you LIKE this 25-guilder banknote?
Do you think its design beautiful, fairly beautiful, rather ugly or very ugly? Or neither one, nor the other?

- 1  o  Very beautiful
- 2  o  Fairly beautiful
- 3  o  Neither one, nor the other
- 4  o  Rather ugly
- 5  o  Very ugly
- 6  o  Doesn’t know

QUESTION 111

There is also a 50-guilder banknote. How do you LIKE this 50-guilder banknote?
Do you think its design beautiful, fairly beautiful, rather ugly or very ugly? Or neither one, nor the other?

- 1  o  Very beautiful
- 2  o  Fairly beautiful
- 3  o  Neither one, nor the other
- 4  o  Rather ugly
- 5  o  Very ugly
- 6  o  Doesn’t know

QUESTION 112

There is also a 250-guilder banknote. How do you LIKE this 250-guilder banknote?
Do you think its design beautiful, fairly beautiful, rather ugly or very ugly? Or neither one, nor the other?

- 1  o  Very beautiful
- 2  o  Fairly beautiful
- 3  o  Neither one, nor the other
- 4  o  Rather ugly
- 5  o  Very ugly
- 6  o  Doesn’t know

QUESTION 1121

There are two 1,000-guilder banknotes.
I would like to talk with you about the new note that has been in circulation for several years. This note is characterised by diamond shapes in green, grey and silver.
How do you like this note?
Do you think its design beautiful, fairly beautiful, rather ugly or very ugly? Or neither one, nor the other?

- 1  o  Very beautiful
- 2  o  Fairly beautiful
- 3  o  Neither one, nor the other
- 4  o  Rather ugly
- 5  o  Very ugly
- 6  o  Doesn’t know
QUESTION 120

We have spoken about the six new banknotes issued in recent years. Which of these six notes do you like best: the NEW 1,000-guilder note, the 250-guilder note, the 100-guilder note, the 50-guilder note, the 25-guilder note, or the NEW 10-guilder note?

Or don’t you have any preference?

1 o NLG 1,000 note
2 o NLG 250 note
3 o NLG 100 note
4 o NLG 50 note
5 o NLG 25 note
6 o NLG 10 note
7 o No preference

QUESTION 131

To discourage counterfeiting, the banknotes issued by DNB, the new ones in particular, are provided with a great many features enabling cashiers etc. as well as the general public to check if a note is genuine or false.

Could you name some of these security features? What do you do to ascertain if a note is REAL?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1 o Hold up the note against the light to check the (shadow) watermark
2 o Check the microtext, to see if it is legible
3 o Hold up the note to the light to check if the animal or flower segment printed on the font and that printed on the back of the see-through register together make one whole
4 o Check the tactile ink, to see if it has three colours
5 o Check the two colour bars, to see if they are iridescent
6 o Check the colour bars on the edges of the note, to verify if they are evenly distributed.
7 o Hold the banknote under UV light, to check if the paper and ink do not light up.
8 o Hold the paper under UV light, to check if short yellow fibres light up
9 o Xerox the note, to check if the glossy elements become dull or black.
10 o Check the note’s dimensions
11 o Check the banknote numbers
12 o Check the blind marks
13 o Hold the banknote under a red filter, to check if an animal appears (rabbit, fish)
14 o Something else
15 o Cannot name anything
16 o Go to 140

QUESTION 132

What other security features can you name?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1 o Hold up the note against the light to check the (shadow) watermark
2 o Look at the microtext, to check if it is legible
3 o Hold up the note to the light to check if the animal or flower segment printed on the font and that printed on the back of the see-through register together make one whole
4 o Check the tactile ink, to see if it has three colours
5 o Check the two colour bars, to see if they are iridescent
6 o Check the colour bars on the edges of the note, to verify if they are evenly distributed.
7 o Hold the banknote under UV light, to check if the paper and ink do not light up.
8 o Hold the paper under UV light, to check if short yellow fibres light up
9 o Xerox the note, to check if the glossy elements become dull or black.
10 o Check the note’s dimensions
11 o Check the banknote numbers
12 o Check the blind marks
13 o Hold the banknote under a red filter, to check if an animal appears (rabbit, fish)
14 o Something else
15 o Cannot name anything
QUESTION 140

If version = 1, continue with question 141
If version = 2, continue with question 160

QUESTION 1400

The new 10-guilder note, too, bears a WATERMARK.  
Do you know what it represents?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1  ○ A bird
2  ○ A kingfisher
3  ○ Different answer(s)
4  ○ Doesn’t know

QUESTION 141

The new 25-guilder note, too, bears a WATERMARK.  
Do you know what this watermark represents?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1  ○ A bird(head)
2  ○ A robin
3  ○ Different answer(s)
4  ○ Doesn’t know

QUESTION 142

The new 50-guilder note, too, bears a WATERMARK.  
Do you know what this watermark represents?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1  ○ A bee
2  ○ A flower
3  ○ Different answer(s)
4  ○ Doesn’t know

QUESTION 150

The 250-guilder note, too, bears a WATERMARK. 
Do you know what this watermark represents?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1  ○ A little rabbit or hare
2  ○ Another animal
3  ○ Different answer(s)
4  ○ Doesn’t know
QUESTION 160

The NEW 100-guilder bears a WATERMARK.
Do you know what this watermark represents?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1  o  A bird
2  o  A (little) owl
3  o  Different answer(s)
4  o  Doesn’t know

QUESTION 161

The NEW 1,000-guilder bears a WATERMARK.
Do you know what this watermark represents?

INTERVIEWER: DO NOT PROMPT OR READ OUT THE ANSWER CATEGORIES

1  o  A bird (general)
2  o  A lap wing
3  o  Different answer(s)
4  o  Doesn’t know

QUESTION 180

In daily life, does handling money come with your job?

1  o  Yes
2  o  No
    o  Go to question 200

QUESTION 190

What is your profession?

1  o  Salesman or sales woman at e.g. a shop or a department store
2  o  Cashier at a company/shop etceteras
3  o  Post office/bank employee
4  o  Catering business employee (hotel, restaurant, café, bar, etceteras)
5  o  Gasoline station operator
6  o  Housewife
7  o  Different answer(s)

QUESTION 200

What is your position in your family?

1  o  Head of the family - male
2  o  Head of the family - female
3  o  Son
4  o  Daughter
5  o  Live-in companion - male
6  o  Live-in companion - female