
Counterfeit Banknotes

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INTRODUCTION

As the central bank of Denmark, Danmarks Nationalbank holds the exclusive right to issue banknotes. Unfortunately there are people who do not respect this monopoly. For unsuspecting individuals or companies that receive or pass on a counterfeit banknote the matter is unpleasant and may result in a financial loss. For society at large, counterfeiting is, however, still a very limited problem in Denmark.

When the first banknotes were introduced in Denmark in 1713, the signature was the most important authentication feature. Since then a number of security features have been added to the banknotes. Even though today's banknotes are better secured against copying than ever before, relatively deceptive imitations can be produced using modern technology. The counterfeit banknotes found in Denmark so far have, however, been easily identifiable by their lack of well-known security features.

A stable currency system has always been seen as a basis for a well-functioning society. The maximum penalty for counterfeiting is 12 years, one of the most severe under the Danish penal code. Many people are surprised to find that production of a few banknotes can result in an unmitigated sentence of imprisonment.

INCIDENCE OF COUNTERFEITING IN DENMARK

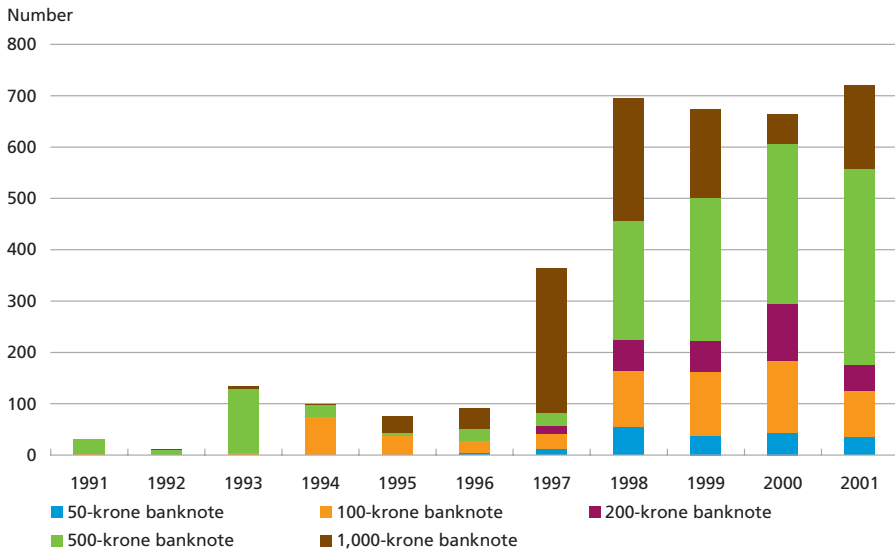
Up through the 1990s the extent of counterfeiting rose significantly in Denmark. All the same, the number of counterfeit banknotes in Denmark is modest – both in comparison with other countries and in terms of the overall effect on the economy. Since the extent of counterfeiting is so low, only few Danes check the authenticity of the banknotes they receive.

The number of counterfeit banknotes annually found in circulation¹ has risen from approximately 100 in the early 1990s to around 700, cf. Chart 1.

¹ On compiling counterfeiting statistics a distinction is made between banknotes found in circulation and confiscated banknotes. All counterfeit banknotes put into circulation are found – if not before, then when they are machine-checked at Danmarks Nationalbank in connection with the general screening to maintain the quality of banknotes. Confiscated banknotes are typically found by the police in their investigation of cases of suspected counterfeiting. They have therefore not yet been put into circulation.

NUMBER OF COUNTERFEIT BANKNOTES FOUND IN CIRCULATION

Chart 1



Source: The police.

The increase during the 1990s can be explained by the more widespread access to new reproduction technology during the past decade. The new technology has made it easier and cheaper to produce counterfeit banknotes.

In many countries, including Denmark, new methods to prevent counterfeiting were introduced in the 1990s. A new series of Danish banknotes with enhanced security features was introduced in 1997-1999.

The most frequently counterfeited Danish banknote is the 500-krone note. While the average number of counterfeit banknotes found per million in circulation was 5.4 in 2001, 20.5 counterfeit 500-krone banknotes were found per million 500-krone banknotes in circulation. The

POLICE REGISTRATION OF COUNTERFEIT BANKNOTES

Box 1

Every case of counterfeiting reported is registered separately, but when unravelling the cases the police try to establish a connection between related reports. An initial measure is to compare the serial numbers of counterfeit banknotes received to see whether the same original has been used.

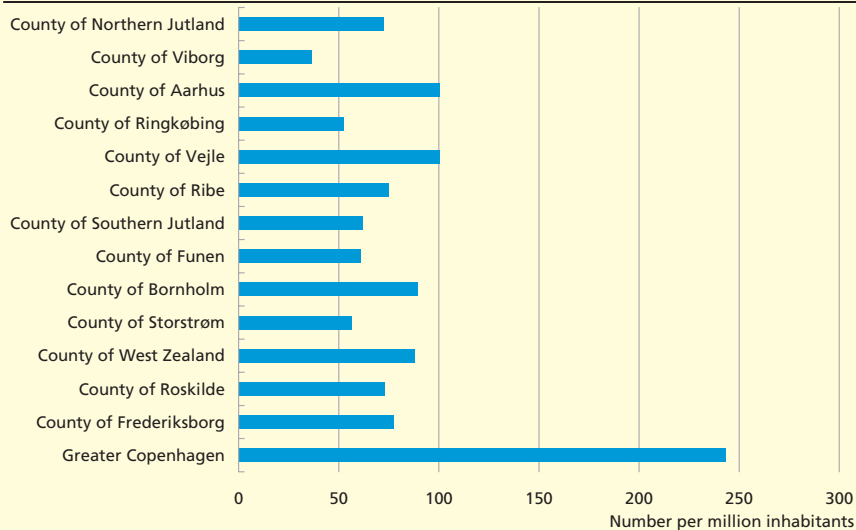
In addition to counterfeit banknotes found in circulation the police from time to time seize large or small quantities of counterfeit banknotes in connection with their work. In the last decade there have only been few major seizures, which supports the conclusion that the incidence of professional counterfeiting is limited in Denmark.

THE PROFILE OF COUNTERFEITING IN DENMARK

Box 2

Counterfeiting differs from most other serious crimes in that only few of those charged come from a criminal environment. Relative to the population, most incidents are reported in and around Copenhagen, which is in line with the general crime pattern in Denmark.

GEOGRAPHICAL DISTRIBUTION OF REPORTED COUNTERFEITING INCIDENTS



Note: The figures are averages for the period 1995-2000.

Source: The police and Statistics Denmark.

The typical profile of a counterfeiter is a young man from Copenhagen or a large town. The age distribution is worth noting, in that more than half of those convicted are between 15 and 20 years of age. In most cases they have produced a small number of banknotes which they attempt to put into circulation within a limited geographical area.

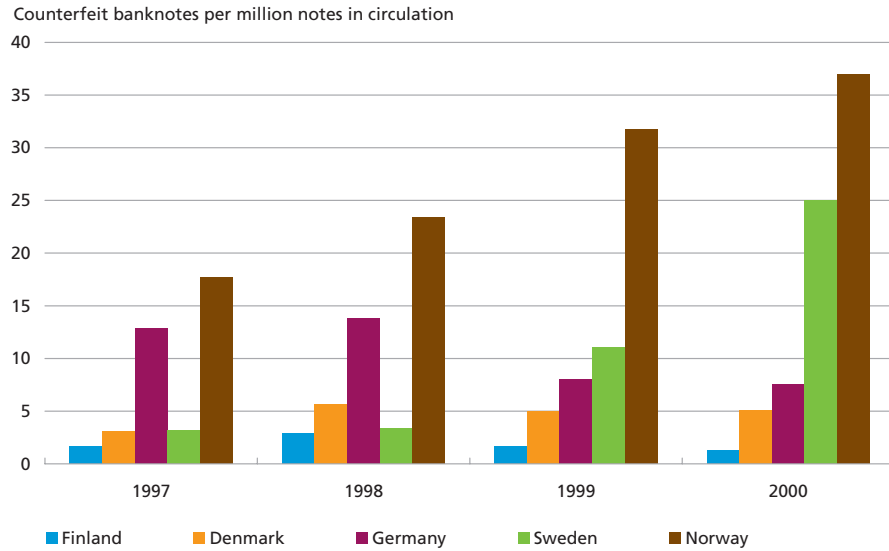
500-krone banknote is the denomination preferred by counterfeiters, presumably because it is used in relatively many everyday transactions, but is also sufficiently valuable to make it attractive to counterfeit. Correspondingly the number of counterfeit 50-krone banknotes is very low.

International comparison

In Denmark's neighbouring countries there is great variation in both the level of and the trend for the number of counterfeit banknotes found in circulation as a ratio of banknotes in circulation. In Norway and Sweden, where there have been significant increases in recent years, the ratios

**COUNTERFEIT BANKNOTES FOUND IN CIRCULATION,
INTERNATIONAL COMPARISON**

Chart 2



Source: National central banks.

have been considerably higher than in Denmark, Finland and Germany, cf. Chart 2¹.

In Norway and Sweden, counterfeiting has been concentrated on a few denominations. In 2000, the two most frequently counterfeited banknotes (the 100- and 500-krona notes in Sweden and the 200- and 1,000-krona notes in Norway) accounted for more than 90 per cent of the counterfeited banknotes found². The high concentration of especially the 200-krona banknote in Norway meant that 102 counterfeit 200-krona banknotes were found per million 200-krona banknotes in circulation in 2000. The central banks in Norway and Sweden have sought to counteract the relatively high incidence of counterfeiting by adding new security features to their banknotes. In Norway, a number of security-enhancing features were introduced in 1999-2001, while the Swedish 100- and 500-krona banknotes were upgraded in 2001. Preliminary Norwegian figures for 2001 indicate that the incidence of counterfeiting declined in that year.

Germany has seen a declining trend in recent years, and the incidence of counterfeiting has generally been relatively low. This is particularly remarkable, considering that the D-mark was in widespread use beyond

¹ The 2001 figures for these countries are not yet available. However, Germany has registered a 42 per cent increase in the number of counterfeit banknotes from 2000 to 2001.

² The corresponding figure for Denmark in 2001 was 76 per cent (for the 500- and 1,000-krona notes).

Germany, especially in central and eastern Europe, and was therefore more susceptible to counterfeiting. The low incidence is a result of successful preventive measures – such as the addition of new security features to the most frequently counterfeited banknotes (the 50-, 100- and 200-mark notes) in 1997. Yet it should be noted that while the incidence of counterfeiting has declined for the upgraded denominations, and on an overall basis, it has risen for the denominations that have not been upgraded.

Several euro-area member states, including Germany, experienced an increase in counterfeiting in 2001. This is attributed to criminals attempting to dispose of their stocks of counterfeit banknotes in the national currencies before the introduction of euro banknotes and coins from 1 January 2002. The incidence of counterfeiting in Germany in 2001 was thus the highest since 1993.

TECHNOLOGICAL DISPERSION – INCREASED COUNTERFEITING

The single most important factor behind the increase in counterfeiting in Denmark, as elsewhere, is the development of new technology. The reproduction quality achievable at a given price has been enhanced significantly, and equipment reserved for experts a few years ago has now become accessible to a large proportion of the population.

New methods

Production of counterfeit banknotes requires equipment to scan a genuine copy and to reproduce the scanned image as a colour print. Technological advances within the last decade mean that modern standard scanners can distinguish colours in a high resolution. Moreover, an ordinary printer can now produce high-resolution colour prints. High-resolution colour prints are therefore available at a moderate cost today, whereas copies of an equivalent quality would have been relatively expensive to produce only a few years ago.

Dispersion

Technological advances within reproduction equipment have not only enhanced the quality of the reproductions available at a given cost. They have also made this technology available to a very large group of people who previously would not have had access to equipment which might be used for counterfeiting. Such equipment includes colour copiers, scanners and colour printers.

Today a colour printer is standard equipment, often sold with a PC. In 1994, 33 per cent of all Danish families owned a PC. In 2000 the figure

was 65 per cent. Many of these families also own a colour printer, and moreover a large proportion of the population have access to PCs and printers at work or via educational institutions and libraries.

The dispersion of reproduction equipment means that potentially more people can produce counterfeit banknotes. While only 10-15 years ago a typical counterfeiter would be a specialist, with access to specialist equipment, professional skills are not essential qualifications for today's counterfeiters.

The primary counterfeiting technologies

In the early 1990s photocopying was the primary technology used for counterfeiting banknotes. The counterfeit banknotes were not of particularly good quality, and few people had access to colour copiers. The colour copiers sold today have technology installed which leaves an identification mark on the copy so that it is traceable to the place of production.

In the mid-1990s photocopying was replaced by the use of colour printers, which account for most of today's counterfeit banknotes. In the USA the proportion of counterfeit banknotes produced using colour printers rose from 0.5 per cent in 1995 to 43 per cent in 1998. In Norway and Denmark, too, most counterfeit banknotes in recent years have been produced using colour printers. The increase in colour printers in private homes generally coincides with the greater prevalence of counterfeiting in Denmark.

COMBATING COUNTERFEITING

Banknote producers have always had to reckon with counterfeiting. On early banknotes, the hand-written signature was proof of authenticity. Over time a number of methods – e.g. watermarks – have been used to protect banknotes against counterfeiting as *inter alia* new printing methods have been developed. Relatively few years ago the most important protection against counterfeiting was high-quality workmanship: the banknotes were printed on high-quality paper using high-quality inks, and the impression itself was very finely drawn, which made it difficult to imitate.

Modern Danish banknotes are still of a high quality, but technological advances have made it easier to produce counterfeits printed in a quality that is good enough for the print not to differ significantly from the genuine article. In recent years it has therefore been necessary to introduce new methods to protect banknotes in circulation: i.e. a number of new security features. This applies in Denmark as in other countries.

New methods to protect banknotes are being developed on an on-going basis to prevent the greater prevalence of new technology from resulting in an upward trend in counterfeiting. Work is being done in this field in Denmark, and new methods will be implemented. The on-going development of new methods will ensure that in future all counterfeit banknotes will still be easily recognisable by anyone who wishes to check the money they receive.

As counterfeiting has gone from being a highly specialised form of crime to not requiring any particular professional skills, the focus of the preventive measures taken by central banks has shifted. Previously, they tended mainly to focus on technology, but today there is an increasing realisation that information is also important. Technology ensures that counterfeit banknotes are easy to detect. Information about security features helps to discourage potential counterfeiters and increase awareness of security, e.g. in connection with the introduction of upgraded banknote series.

Security features

By far the majority of western countries have improved the quality of their banknotes during the 1990s in direct response to the technological advances within reproduction equipment.

A number of different features have been introduced to make banknotes more difficult to imitate, e.g.:

- Window thread with colour shift
- Holograms/patches with changing patterns and colours
- Plastic banknotes with a transparent window
- Fluorescent effect visible under ultraviolet light

A common characteristic of all these security features is that they are not immediately reproducible via simple copying techniques. Window threads and patches, where the colours and patterns change, can only be copied in one colour or with one pattern, which makes it easy to see that a banknote is not genuine.

Some security features are immediately recognisable, e.g. window threads, patches and holograms, while others require a closer examination, e.g. the fluorescent effect visible under ultraviolet light. The various features reflect different considerations. It is important to protect the public from counterfeit banknotes by including easily recognisable features, but it is also essential to be able to detect any sophisticated counterfeits which are not immediately distinguishable from genuine banknotes. The various features do not exclude each other – adding several features enhances security.

All other things being equal, the introduction of a new, upgraded banknote will lead to a reduction in the number of counterfeit banknotes. The rate of decline depends on the technology and the general public's awareness of the appearance of banknotes.

Information

In addition to their continued measures to improve the security of banknotes, central banks can help to reduce the incidence of counterfeiting by informing the general public about the banknotes' security features and increasing the general awareness of counterfeit banknotes. A three-pronged strategy is applied: regular information about banknotes in circulation, a targeted strategy when banknotes are replaced, and information about the consequences of counterfeiting.

The ongoing measures include informing the public about how to easily recognise genuine banknotes. Danmarks Nationalbank's website, www.nationalbanken.dk, includes detailed information on the security features of Danish banknotes. Should large-scale counterfeiting occur, public awareness can be raised via an enhanced effort to point out the primary security features which distinguish the genuine banknotes from the counterfeit notes. So far all counterfeits found in Denmark could be detected by checking the well-known security features. A high degree of passive preparedness increases the odds against counterfeiters, as it becomes more difficult to distribute counterfeit banknotes.

When a new series of banknotes is introduced, the incidence of counterfeiting may rise. Counterfeiters may exploit the fact that the general public is not yet familiar with the new banknotes. To reduce uncertainty, the replacement of banknotes is normally followed up by targeted information measures aimed at the general public. As people become more familiar with the banknotes, the risk that counterfeiters can successfully distribute their output declines. Therefore the information measures are aimed at quickly enhancing familiarity with the new banknotes. For instance, Danmarks Nationalbank conducted a campaign in connection with the replacement of the former banknote series in 1997-1999. In the euro area an extensive information campaign was launched on 30 August 2001 to increase awareness of the appearance and security features of the new euro banknotes and coins in order to ease the transition and reduce insecurity. It is particularly important for citizens of euro-area member states with a low incidence of counterfeiting (e.g. Finland) to be attentive.

To the extent that counterfeiting reflects ignorance of the law, including the high maximum penalty, more information about the potential

consequences of counterfeiting may help to reduce the number of people who are tempted to try their luck. This is in the interests of society.

CONCLUSION

Up through the 1990s the incidence of counterfeiting has risen in Denmark. To a large extent this has been a result of the technological development over the same period: on the one hand technological advances have made it possible to make high-quality reproductions at low cost, on the other hand equipment which used to be accessible to experts only has now become available to a large part of the population. This means that counterfeiting has changed from being a specialist form of crime to a crime which anyone can commit.

Despite the increase, the level of counterfeiting is still modest in Denmark – both in comparison with other countries and in terms of the overall effect on the economy. Nevertheless, Danmarks Nationalbank faces a challenge which it cannot ignore. Most western countries have indeed upgraded their banknotes by adding new security features during the 1990s.

As the nature of counterfeiting has changed, the focus of preventive efforts on the part of the central banks has shifted. Previously they concentrated mainly on the technology, but today central banks have adopted a more balanced approach, stressing the importance of information on e.g. security features.

New technology can be expected to be developed at the same rapid pace. Central banks will monitor the situation carefully to be ready to strike back against the new technologies – in the form of new security features, as well as information. Security features are particularly effective if they are accompanied by information measures to ensure that any citizen in doubt can quickly verify whether a banknote is genuine. The counterfeit banknotes found in Denmark so far have all been immediately distinguishable by their lack of security features. Counterfeiting can never be defeated completely, but it is important for society to reduce it to the lowest possible level.