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A chronology of Denmark's exchange-rate policy 1875-2003[1]

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Abstract

This paper offers a fact-oriented chronology of the Danish exchange-rate policy since the introduction of the krone as the Danish currency unit in 1875.

Key words: Exchange-rate policy; Danish krone exchange rates; History of exchange rates; Gold Standard; Bretton Woods system; European exchange-rate co-operation.

JEL Classification: E42; F31; F33; N23; N24.

Resumé

Papiret giver en faktuel oversigt over den danske valutapolitik siden indførelsen af kronen som dansk møntenhed i 1875.

Table of contents

1. Introduction[2]

Changes in exchange rates can have significant impact on inflation, interest rates, production and employment in a small, open economy like Denmark. Historically, maintaining the external value of the krone has therefore been in focus of the macroeconomic policy in Denmark.

The purpose of this paper is to present a fact-oriented chronology of the Danish exchange-rate policy since the introduction of the krone as the Danish currency unit in 1875. The paper has been prepared in relation to studies of effective krone rates and purchasing-power parity for Denmark 1875-2002.[3]

The paper is organised as follows: Section 2 reviews the Classical Gold Standard period characterised by free capital movements and Denmark's participation in the Scandinavian Currency Union together with Sweden and Norway.

Section 3 covers World War I, the inter-war period and World War II. The main events were Denmark's return to the Gold Standard at the pre-1914 parity in 1927, the breakdown of the international Gold Standard in 1931, introduction of a comprehensive exchange-control system in 1932, a major Danish devaluation in 1933 following the Kanslergade Agreement

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[2] For a short description of the Danish monetary and exchange-rate policy in each of the years since 1886/87, see the annual Report and Accounts from the Danish central bank (the Nationalbank). Since November 1970 a short description can be found on a quarterly basis in the Nationalbank's Monetary Review.

More comprehensive studies of the Danish monetary and exchange-rate policy in the period since 1875 have been published by the Nationalbank in connection with its 100th, 150th and 175th anniversaries, cf. Rubow, A., *Nationalbankens historie 1818-1878*, Copenhagen: Nationalbanken i Kjøbenhavn 1918; Rubow, A., *Nationalbankens historie 1878-1908*, Copenhagen: Nationalbanken i Kjøbenhavn 1920; Hansen, S. Aa. & Svendsen, K. E., *Dansk pengehistorie 1700-1914*, Copenhagen: Danmarks Nationalbank 1968; Hoffmeyer, E. & Olsen, E., *Dansk pengehistorie 1914-1960*, Copenhagen: Danmarks Nationalbank 1968; Mikkelsen, R., *Dansk pengehistorie 1960-1990*, Copenhagen: Danmarks Nationalbank 1993; and Hoffmeyer, E., *Pengepolitiske problemstillinger 1965-1993*, Copenhagen: Danmarks Nationalbank 1993. The most recent period since the beginning of the 1990s is covered in Christensen, A. M. & Topp, J., *Monetary policy in Denmark since 1992*, in: Monetary policy in the Nordic countries: Experiences since 1992, BIS Policy Papers, No. 2, Basel: BIS 1997, 5-23; and Danmarks Nationalbank, *Monetary Policy in Denmark*, Copenhagen: Danmarks Nationalbank 2003.

The literature on the international monetary system covering the periods after 1875 is substantial. For an overview, one may refer to e.g. Einzig, P., *The History of Foreign Exchange*, London: MacMillan 1962; McKinnon, R. I., The Rules of the Game: International Money in Historical Perspectives, *Journal of Economic Literature*, Vol. XXXI, 1993, 1-44; Bordo, M. D, The Gold Standard, Bretton Woods and Other Monetary Regimes. A Historical Appraisal, *NBER Working Paper*, No. 4310, April 1993; Bordo, M. D. & Schwartz, A. J., The Specie Standard as a Contingent Rule: Some Evidence for Core and Peripheral Countries 1880-1990, *NBER Working Paper*, No. 4860, September 1994; Eichengreen, B. & Flandreau, M., Blocks, zones and bands: International monetary history in light of recent theoretical developments, *Scottish Journal of Political Economy*, Vol. 43, 1996, 398-418; Bordo, M. D. & Jonung, L., A Return to the Convertibility Principle? Monetary and Fiscal Regimes in Historical Perspective: The International Evidence, chapter 8 in: Leijonhufvud, A. (ed.), *Monetary Theory and Policy Experience*, International Economic Association. Conference Volume No. 132, New York: Palgrave 2001, 225-283; and Bordo, M. D., Exchange Rate Regime Choice in Historical Perspective, *IMF Working Paper*, No. 03/160, 2003.

[3] Cf. Abildgren, K., Nominal and real effective krone rate indices for Denmark 1875-2002, *Danmarks Nationalbank Working Paper*, No. 13, April 2004; and Abildgren, K., An empirical examination of the purchasing-power-parity hypothesis for Denmark 1875-2002, *Danmarks Nationalbank Working Paper*, No. 14, April 2004. The first of these papers contains long historical time series on bilateral krone rates as well as nominal and real effective krone rate indices.

and subsequently the peg of the Danish krone to the British pound most of the remaining period until the outbreak of World War II.

Denmark's participation in the Bretton Woods system and the devaluations in 1949 and 1967 are reviewed in section 4. This period saw a gradual liberalisation of current-account payments and a return to international current-account convertibility of the krone in 1958.

Finally, section 5 offers an overview of the Danish participation the European exchange-rate co-operation since 1972, the gradual process towards introduction of free capital payments to and from Denmark in 1988 and the road to the current fixed-exchange-rate policy vis-à-vis the euro.

2. The Classical Gold Standard 1875-1913[4]

By the end of the nineteenth century a wide range of industrial countries had adopted the Classical Gold Standard where the monetary authorities ensured convertibility on demand between domestic currency and gold at fixed parities. The Classical Gold Standard system was in most countries implemented as a specie standard where the main coins of a country's currency system had a fixed gold content. Citizens could deliver non-monetary gold for coinage at a fixed price. Token coins made of other metals and paper money (bank-notes) were convertible into gold coins at fixed ratios.

In this "Classical" Gold Standard period, covering the time span 1875-1913, the international economy was in general characterised by a high degree of free multilateral trade relations and free movements of capital (including free private import and export of gold in coins and bars). The monetary authorities held the major proportion of their foreign-exchange

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[4] The Classical Gold Standard period is analysed in e.g. Bordo, M. D., The Classical Gold Standard: Some Lessons for Today, *Federal Reserve Bank of St. Louis Review*, Vol. 63, 1981, 2-17; Cooper, R. N., The Gold Standard: Historical Facts and Future Prospects, *Brookings Papers on Economic Activity*, Vol. 1, 1982, 1-56; Bordo, M. D. & Kydland, F. E., The Gold Standard As a Rule: An Essay in Exploration, *Explorations in Economic History*, Vol. 32, 1995, 423-464; Bordo, M. D. & Rockoff, H., The Gold Standard as a "Good Housekeeping Seal of Approval", *Journal of Economic History*, Vol. 56, 1996, 389-428; Eichengreen, B. & Flandreau, M. (eds.), *The Gold Standard in Theory and History*, Second Edition, London: Routhledge 1997; Flandreau, M., Le Cacheux, J. & Zumer, F., Stability without a pact? Lessons from the European goldstandard 1880-1914, *Economic Policy*, April, 1998, 116-162; Bernstein, P. L., *The Power of Gold. The History of an Obsession*, New York: Wiley 2000; and Catão, L. & Solomou, S., Exchange Rates in the Periphery and International Adjustment Under the Gold Standard, *IMF Working Paper*, No. 03/41, 2003.

For general descriptions of the international economy in the period 1875-1913, one may refer to e.g. Kenwood, A. G. & Lougheed, A. L., *The Growth of the International Economy 1820-1980. An Introductionary Text*, London: Unwin Hyman 1983; and Foreman-Peck, J., *A History of the World Economy. International Economic Relations since 1850*, Second Edition, London: Harvester Wheatsheaf 1995.

The development of the Danish economy is covered by e.g. Hansen, S. Aa., *Early Industrialisation in Denmark*, Copenhagen: GADs Forlag 1970; Hansen, S. Aa., *Økonomisk vækst i Danmark. Bind I: 1720-1914*, Third Edition, Copenhagen: Akademisk Forlag 1984; and Hyldtoft, O., *Danmarks økonomiske historie 1840-1910*, Århus: Systime 1999.

reserves in gold[5], and surplus or deficits on the autonomous items on the balance of payments was reflected through shipments of gold between the countries.

When the Classical Gold Standard reached its widest global coverage as a fixed-exchange-rate regime, around 60 countries adhered to the system. This was primarily a result of a *de facto* convergence of individual countries' monetary standards, rather than a result of formal international policy co-ordination. An international conference with participants from 20 countries[6] was held in Paris in June-July 1867. The aim of the conference was to discuss a co-ordination of existing monetary systems and the formation of a common international Gold Standard, but it was not followed by any policy initiatives.

The Scandinavian countries were among the exceptions from this general tendency of unilateral adoption of the rules of the Gold Standard. The Nationalbank's Committee of Directors raised the question regarding a Danish transition from silver to the Gold Standard on 14 December 1871. On 1 June 1872 the Danish government established a Danish Monetary Commission to prepare the legal basis for a transition to gold, and on 5 July 1872 the Commission recommended to explore the possibilities for a common Scandinavian currency system based on gold. A Scandinavian Monetary Commission was subsequently established on 3 August 1872 with members from all three Scandinavian countries. The Scandinavian Monetary Commission delivered its report on 20 September 1872, and on 18 December 1872 Denmark, Sweden and Norway entered into an agreement to form a Scandinavian Currency Union with a common currency system based on gold. The agreement was broadly in line with the recommendations from the Scandinavian Monetary Commission.[7]

The Coin Act of 23 May 1873 changed the monetary standard in Denmark from silver to gold. At the same time, the Act implied a transition from the rigsdaler to the krone as the

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[5] Based on a survey of the monetary authorities in 35 countries, the holdings of foreign exchange in 1880 amounted to around 10 per cent of the gold reserves, cf. Bordo, M. D. & Eichengreen, B., *The Rise and Fall of a Barbarous Relic: The Role of Gold in the International Monetary System*, Paper prepared for the conference honouring Robert Mundell, co-sponsered by the IMF, The World Bank, the University of Maryland, MIT and UC Berkeley, January 1998.

[6] The U.S.A., Russia, the Ottoman Empire and a range of European countries, cf. page 291 in Einaudi, L. L., From the franc to the 'Europe': the attempted transformation of the Latin Monetary Union into a European Monetary Union 1865-1873, *Economic History Review*, Vol. LIII, 2000, 284-308.

[7] For studies of the Scandinavian Currency Union one may refer to Nielsen, A., *Den Skandinaviske Møntunion – Et Historisk Rids*, Copenhagen: Børsen's Forlag 1917; Heckscher, E. F., Den Nordiska Myntunionen, *Nationaløkonomisk Tidsskrift*, Vol. 60, 1922, 8-27; Wilcke, J., *Sølv- og guldmøntfod 1845-1914*, Copenhagen: GADs Forlag 1930; Bergman, M., Gerlach, S. & Jonung, L., The rise and fall of the Scandinavian Currency Union 1873-1920, *European Economic Review*, Vol. 37, 1993, 507-517; Henriksen, I. & Kærgård, N., The Scandinavian Currency Union 1875-1914, chapter 4 in Reis, J. (edt.), *International Monetary Systems in Historical Perspective*, London: Macmillan 1995; and Bergman, M., Do Monetary Unions Make Economic Sense? Evidence from the Scandinavian Currency Union 1873-1913, *Scandinavian Journal of Economics*, Vol. 101, 1999, 363-377.

The report of 20 September 1872 from the Scandinavian Monetary Commission, and the agreement of 18 December 1872 on the Scandinavian Currency Union, are reproduced on page 133-157 in Wilcke, *op. cit*.

Danish currency unit.[8] From 1875 the Danish krone and the Swedish krona had the same gold content in accordance with the agreement on the Scandinavian Currency Union.[9] The Norwegian krone joined the Union with effect from 1877.[10]

The Scandinavian Currency Union was originally based on free circulation of main coins (in gold) and token coins (in silver and bronze) as legal tender in all three participating countries.[11] Each member state within the union continued to issue their own coins, but the denomination, fineness and weight of the coins were regulated by the agreement of 1872. The agreement also regulated the total outstanding amount of main coins[12] within the Union. However, Sweden, Norway and Denmark kept *de jure* full sovereignty over their monetary policy (i.e. there was no agreement on common interest-rate policy), and a member country could terminate the agreement on Currency Union with a one-year notice.

Following a proposal of August 1885 from the Nationalbank, an agreement of 1 November 1885 was reached whereby each of the three central banks could issue and redeem drafts (bills of exchange) on the other two central banks free of charge for the customers in order to

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[8] 1 rigsdaler was exchanged for 2 kroner. At the same time, the decimal system was introduced with 1 krone being equivalent to 100 øre. The Coin Act of 1873 set a value of kroner 2,480 for 1 kg of fine gold (i.e. 1 krone corresponded to 0.4032258 grams of fine gold), and according to the Act kroner should be legal tender on 1 January 1875 at latest. However, the new gold 10- and 20-koner coins were made legal tender already with effect from 1 January 1874 by regulation of 16 December 1873. According to the Coin Act the rigsdaler ceased to be legal tender by the end of 1878 for main coins and end-1881 for token coins. This transition period was fully in line with the agreement on the Scandinavian Currency Union of 18 December 1872. In practice, the old token coins quickly went out of circulation, and on 1 November 1875 the smallest token coins ceased to be legal tender according to regulation of 24 March 1875. The rest of the old token coins lost their status as legal tender on 31 December 1875 by regulation of 21 October 1875. Finally, the old main coins ceased to be legal tender by 1 October 1876 according to regulation of 17 March 1876.

The transition from silver to the Gold Standard was partly "prepared" through Royal Resolutions of 8 January 1872 and 1 October 1872 whereby the Nationalbank was allowed to use gold rather than silver as part of the assets backing its notes in circulation. Furthermore, by Royal Resolutions of 2 September 1872 the Nationalbank's obligation to purchase silver bars at a fixed price was suspended.

In June 1920 Sønderjylland (the northern part of the old Duchy of Schleswig) was reunited with Denmark after a referendum in accordance with the Versailles Treaty. By Act of 28 June 1920 the krone was introduced as legal tender in Sønderjylland. In a transition period until end-1920, German Mark could still be used as legal tender in Sønderjylland.

[9] Sweden ratified the agreement on the Scandinavian Currency Union on 27 May 1873. A brief survey of the Swedish exchange-rate policy since the Scandinavian Currency Union is found in Jonung, L., Från guldmyntfot till inflationsmål – svensk stabiliseringspolitik under det 20:e seklet, *ekonomisk debatt*, Vol. 28, 2000, 17-32.

[10] A narrow majority (58 votes against 51) in the Norwegian Parliament first rejected the agreement on the Scandinavian Currency Union on 8 May 1873. On 27 May 1873 Denmark and Sweden concluded a new agreement on a bilateral Currency Union between the two countries following principles identical to the agreement of December 1872. By a supplementary protocol of 16 October 1875, Norway joined the Union with effect from 1 January 1877. However, Norway had already partly "prepared" its participation in the Union by changing its currency system from silver to gold by Act of 4 June 1873. The Norwegian exchange-rate policy since 1873 is described in Mestad, V., Frå fot til feste – Norsk valutaret og valutapolitikk 1873-2001, *Norges Banks skriftserie*, No. 30, Oslo: Norges Bank 2002.

[11] Actually the main coins from the three Scandinavian countries already to some extent circulated cross-border before the establishment of the gold-based Scandinavian Currency Union. The reason was that the silver content in 5 Danish rigsdaler, 10 Swedish rigsdaler and 2.5 Norwegian species were approximately the same. To some extent bank-notes also circulated cross border among the three countries. In 1867 the Nationalbank and the central bank of Sweden entered into an agreement whereby the Nationalbank with effect from 1868 to July 1873 was empowered to purchase Swedish bank-notes in Denmark on behalf and account of the central bank of Sweden.

[12] The amount of token coins in circulation was not regulated by the agreement. Each country was allowed to issue the amount of token coins they considered appropriate.

facilitate foreign trade and payments between the three countries.[13] As part of the arrangement the three central banks granted each other the right to have overdrafts on their reciprocal accounts without fees or interest charges.[14] The arrangement between Denmark and Sweden came into force on 5 March 1886, and Norway joined on 1 August 1888.[15]

Since the establishment of the Scandinavian Currency Union the central bank of Sweden had accepted Norwegian and Danish bank-notes at par, and in 1894 the central banks in Norway and Sweden established a practice whereby the two banks mutually accepted each other's bank-notes at par. In 1896 the central bank of Norway proposed the Nationalbank to enter into an agreement of mutual acceptance of each other's bank-notes at par, but the Nationalbank declined. However, the financial co-operation between the Scandinavian countries was further strengthened by a common legislation on cheques in 1897[16], and in August 1901 the Nationalbank finally notified the two other central banks that it accepted Norwegian and Swedish bank-notes at par from mid-September 1901.[17] A formal agreement of mutual acceptance of bank-notes at par was made between Denmark and Norway. No formal agreement between Sweden and Denmark was made, but Sweden continued its already established practice of acceptance of Danish bank-notes at par.[18]

The British pound had *de facto* been on the Gold Standard since December 1717[19]. Canada adopted the Gold Standard in 1854[20], Germany in December 1871[21], the Netherlands in 1875

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[13] The agreement applied only for drafts above 10,000 kroner. The limit was decreased to 5,000 kroner in 1891 following a proposal from the Nationalbank. The agreement of 1 November 1885, and the related protocol, are reproduced on page 117-120 in Rubow, A., *Nationalbankens historie 1878-1908*, Copenhagen: Nationalbanken i Kjøbenhavn 1920.

[14] However, according to the agreement a central bank with a net credit position had the right to require settlement in gold on demand.

[15] The agreement of 1885 limited the amount of each other's gold coins that had to be exchanged between the central banks in the three countries. After the breakdown of the political union between Norway and Sweden in 1905, the central bank of Sweden terminated the agreement on 14 June 1905 with effect from 15 September 1905 (later postponed to 30 September 1905). A modified agreement between Sweden and Denmark came into force on 1 October 1905. The new agreement included the possibility to charge fees for issuing and acceptance of drafts under the facility. Furthermore, the new agreement limited the access to overdrafts between the central banks. A similar agreement was made between Sweden and Norway. Norway and Denmark continued the arrangement in accordance with the agreement from November 1885, although the possibility to charge fees was introduced with effect from 1 January 1910. The Nationalbank began to charge fees for transactions of drafts on Norway and Sweden on 28 June 1910. On 20 April 1912 the Nationalbank's fee reached a level of 0.1 per cent – significantly above the costs for shipment of bank-notes between the countries (around 0.03-0.05 per cent). Since Danish bank-notes still were accepted at par by the central banks in Norway and Sweden, this implied an increase in the use of Danish bank-notes relative to drafts in connection with payments to Sweden and Norway in the period up to World War I, cf. page 63-66 in Nielsen, A., *Den Skandinaviske Møntunion – Et Historisk Rids*, Copenhagen: Børsen's Forlag 1917.

[16] In Denmark Act of 23 April 1897. Also Norway implemented the common cheque rules in 1897, and Sweden followed in 1898.

[17] The Nationalbank announced this decision publicly through Ritzaus Bureau.

[18] The Central bank of Sweden declared in 1905 – during the renegotiations of the agreement of 1885 – that it did not have any obligations regarding acceptance of bank-notes from Norway and Denmark at par. However, the three central banks continued the practice of acceptance of each other's bank-notes at par until the outbreak of World War I.

[19] U.K. was *de jure* on a bimetallic standard until 1816, but since 22 December 1717 the gold-silver parity had been fixed at a ratio making the system *de facto* a gold standard. Convertibility was abandoned with the Bank Restriction Act of 3 May 1797 due to the Napoleon Wars. With the Coin Act of 1816 – when convertibility still

and Finland in 1877. France, Belgium and Switzerland moved from bimetallism to a pure gold standard in 1878 within the Latin Currency Union[22], and the U.S.A. restored the gold convertibility in January 1879[23]. Most of Denmark's main trading partners – cf. table 1 – were thus linked to gold from the second half of the 1870s, implying only insignificant fluctuations in the bilateral exchange rates of the krone vis-à-vis the currencies of these countries during the period up to the outbreak of World War I in 1914.[24] Later many of Denmark's other trading partners joined the Gold Standard, e.g. Austria-Hungary (August 1892[25]), Russia (1897[26]) and Japan (1897[27]). Some countries were linked to gold in part of the period, e.g.

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was suspended – the use of silver was reduced to token coins. Gold convertibility of bank-notes was resumed in May 1821 in accordance with the Resumption Act of May 1819.

[20] According to the Currency Act passed in 1853 and proclaimed on 1 August 1854, cf. Powell, J., *A History of the Canadian Dollar*, Canada: Bank of Canada 1999.

[21] Before unification in 1871 the individual German states were on silver or bimetallic standards (Prussia and around 35 minor German states participated together with Austria until 1866 in the silver-based Münzverein founded on 24 January 1857). The German transition to gold decided by the German Reich Act of 4 December 1871 (and finally arranged by the Coin Act of 9 July 1873) had to be completed in all the German states by 1 January 1876. The German exchange-rate policy since 1876 is described in Deutsche Bundesbank (edt.), *Fifty Years of the Deutsche Mark*, Oxford: Oxford University Press 1999.

[22] France, Belgium, Switzerland and Italy originally signed the Convention on the bimetallic Latin Currency Union in Paris on 23 December 1865. Later other countries joined (Rumania in 1867; Greece in April 1867; and Austria in 1868). The treaty of the Latin Currency Union ensured free circulation of gold and silver main coins within the Union at fixed exchange rates while token coins in bronze and bank-notes were not covered by the agreement. The national Treasuries of the participating member states were obliged to accept payments in other member states' main coins, whereas citizens were not forced to accept other member states' currencies as legal tender before November 1885. Each of the member states of the union was subject to common standards of minting, but the member states could continue to issue their own national coins. Also the control of the total money supply in each member states remained at matter of national discretion. In January 1874 the members of the Latin Currency Union agreed to limit their coinage in silver, and the silver coinage within the Union was suspended altogether in 1878. On 1 January 1878 gold convertibility of French bank-notes was resumed *de jure* (*de facto* in 1874) following the suspension in 1870 due to the Franco-Prussian War.

The Latin Currency Union was formally dissolved on 1 January 1927. For studies of the Latin Currency Union, cf. Flandreau, M., On the inflationary bias of common currencies. The Latin Union puzzle, *European Economic Review*, Vol. 37, 1993, 501-506; and Einaudi, L. L., From the franc to the 'Europe': the attempted transformation of the Latin Monetary Union into a European Monetary Union 1865-1873, *Economic History Review*, Vol. LIII, 2000, 284-308.

[23] The U.S.A. adopted *de jure* a bimetallic standard by the Coin Act of 2 April 1792, but with the Coin Act of 1834 the gold-silver parity was fixed at a ratio implying *de facto* a gold standard from 1849. On 30 December 1861 the U. S. Treasury suspended the citizens' right to convert notes into gold, and during the Civil War the U.S.A. switched to a paper standard via the introduction of unconvertible bank-notes ("greenbacks") by the Legal Tender Act of 25 February 1862. On 1 January 1879 gold convertibility for Civil War greenbacks was resumed in accordance with the Resumption Act of 14 January 1875. In the last quarter of the nineteenth century silver still played a role in the US monetary system due to the Bland-Allison Act of 28 February 1878 and the Sherman Silver Purchase Act of July 1890. *De jure* the U.S.A. adopted the Gold Standard on 14 March 1900 with the Gold Standard Act, cf. Friedman, M. & Schwartz, A. J., *A Monetary History of the United States 1867-1960*, Princeton: Princeton University Press 1963; and Officer, L. H., The U.S. Specie Standard 1792-1932: Some Monetarist Arithmetic, *Explorations in Economic History*, Vol. 39, 2002, 113-153.

[24] In theory, exchange-rate fluctuations under the Classical Gold (Specie) Standard were limited by the so-called "gold points" determined by the spot-exchange rates, transaction costs of gold shipments between countries, insurance costs, coinage costs and financing. According to Royal Resolution of 20 December 1873, and the Nationalbank's Royal Privilege of 12 July 1907, the Nationalbank was obliged to purchase gold at a fixed price of kroner 2,480 per kg of fine gold less ¼ per cent to cover coinage costs.

The newsmagazine, The Economist, began to report gold points with effect from September 1877, cf. page 403 in Eichengreen, B. & Flandreau, M., Blocks, zones and bands: International monetary history in light of recent theoretical developments, *Scottish Journal of Political Economy*, Vol. 43, 1996, 398-418.

[25] The Austro-Hungarian gulden was floating before the transition to the gold florin with the Monetary Law in 1892, cf. Flandreau, M. & Komlos, J., Target Zones in History and Theory: Lessons From Austro-Hungarian Experiment (1896-1914), *University of Munich Discussion paper*, No. 2003-18, July 2003.

[26] Russia went from a floating exchange rate ("paper standard") to the Gold Standard in 1897.

Portugal[28], Italy[29] and Greece[30]. A few countries (e.g. Spain[31]) stayed outside the international Gold Standard during the whole period up to World War I.

3. World Wars and inter-war period 1914-1945[32]

During World War I most countries suspended the Gold Standard. Some countries left *de jure* the Gold Standard at the outbreak of the war in 1914. Other countries introduced restrictions

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[27] At the beginning of the 1870s Japan was on a paper standard. In May 1878 the silver yen became legal tender and in 1886 Japan was *de facto* on a silver standard. Japan switched to the Gold Standard with the Coin Act in 1897, cf. Patrick, H. T., *External Equilibrium and Internal Convertibility: Financial Policy in Meiji Japan*, Journal of Economic History, Vol. XXV, 1965, 137-213; and Shimazaki, M. & Solomou, S., Effective exchange rates in Japan 1879-1938, *Japan and the World Economy*, Vol. 13, 2001, 161-177.

[28] Portugal moved from bimetallism to gold in 1854. Except from a few months in 1876 Portugal remained on the Gold Standard until 1891 where convertibility was suspended and a paper standard introduced, cf. Rodriguez, A. L., Terms-of-trade variability and adherence to the gold standard. The cases of Portugal and Spain, chapter 10 in: Marcuzzo, M. C., Officer, L. H. & Rosselli, A. (eds.), *Monetary Standards and Exchange Rates*, London: Routledge 1997.

[29] By the Monetary Act of August 1862 the gold Lira was made the sole legal tender of the new unified Italy. Before unification around 270 different legal-tender coins circulated in the area. Italy joined the bimetallic Latin Currency Union in 1865, but convertibility was suspended in 1866 when the war against Austria broke out. On 12 April 1884 gold and silver convertibility was re-established, but the mint parities implied that Italy *de facto* was on a gold standard. In 1894 convertibility was suspended again and a paper standard introduced, cf. Tattara, G., Paper money but a gold debt: Italy on the Gold Standard, *Explorations in Economic History*, Vol. 40, 2003, 122-142; and Conte, L., Toniolo, G. & Vecchi, G., Monetary Union, Institutions and financial market integration: Italy, 1862-1905, *Explorations in Economic History*, Vol. 40, 2003, 443-461.

[30] In 1828 Greece established a national monetary system based on silver, but already in 1831 convertibility was suspended. By decree of 8 February 1833 a bimetallic standard was introduced based on the Drachma as legal tender. Convertibility was suspended in several periods (4 April 1848 – 16 December 1848, January 1868 – July 1870 and June 1877 – December 1884). In April 1867 Greece signed the agreement on the Latin Currency Union, but it did not adopt the currency standards of the Union, and in 1868 Greece suspended the convertibility of its bank-notes due to the revolution in Creta. In January 1885 gold convertibility was introduced but suspended again already in September 1885. In April 1910 Greece returned to the Gold Standard, cf. Lazaretou, S., Government Spending, Monetary Policies, and Exchange Rate Regime Switches: The Drachma in the Gold Standard Period, *Explorations in Economic History*, Vol. 32, 1995, 28-50; and Lazaretou, S., Greek Monetary Economics in Retrospect: The Adventures of the Drachma, *Bank of Greece Working Paper*, No. 2, April 2003.

[31] Spain was on a bimetallic standard (*de facto* a silver standard) from April 1848 (fully operative from 1868) to 1883 when convertibility was suspended and a free floating paper standard introduced, cf. Rodriguez, A. L., Terms-of-trade variability and adherence to the gold standard. The cases of Portugal and Spain, chapter 10 in: Marcuzzo, M. C., Officer, L. H. & Rosselli, A. (eds.), *Monetary Standards and Exchange Rates*, London: Routledge 1997.

[32] The international monetary system in the period 1914-1945 is covered in many of the previously cited references. Further studies are found in e.g. Brown, W. A., Gold as a Monetary Standard 1914-1949, *Journal of Economic History*, Supplement IX, 1949, 39-49; Eichengreen, B. & Sachs, J., Exchange Rates and Economic Recovery in the 1930s, *Journal of Economic History*, Vol. 45, 1985, 925-946; Bjørtvedt, E. & Venneslan, C., The Gold Standard, Trade and Recovery in the 1930s: The Norwegian case, *Scandinavian Economic History Review*, Vol. 47, 1999, 23-44; Obstfeld, M. & Taylor, A. M., Sovereign Risk, Credibility and the Gold Standard: 1870-1913 Versus 1925-1931, *Economic Journal*, Vol. 113, 2003, 241-275; and Bordo, M. D. & MacDonald, R., The inter-war gold exchange standard: credibility and monetary independence, *Journal of International Money and Finance*, Vol. 22, 2003, 1-32.

For general descriptions of the international economy in the period 1914-1945, one may refer to Hardach, G., *The First World War 1914-1918*, The Pelican History of World Economy in the Twentieth Century, Harmondsworth, Middlesex: Penguin 1987; Aldcroft, D. H., *From Versailles to Wall Street 1919-1929*, The Pelican History of World Economy in the Twentieth Century, Harmondsworth, Middlesex: Penguin 1987; Kindleberger, C. P., *The World in Depression 1929-1939*, The Pelican History of World Economy in the Twentieth Century, Harmondsworth, Middlesex: Penguin 1987; and Milward, A. S., *War, Economy and Society 1939-1945*, The Pelican History of World Economy in the Twentieth Century, Harmondsworth, Middlesex: Penguin 1987.

The development of the Danish economy is covered by e.g. Hansen, S. Aa., *Økonomisk vækst i Danmark. Bind II: 1914-1983*, Third Edition, Copenhagen: Akademisk Forlag 1983.

on convertibility and on gold exports which *de facto* meant a suspension of the Gold Standard.

In the case of Denmark an Act was passed on 2 August 1914 suspending the Nationalbank's obligation to convert its notes into gold, and on 6 August 1914 an Act introduced a Danish ban on the export of gold (and silver) in coins and bullion. The Nationalbank resumed encashment of its notes into gold on 2 March 1916 – unless the Nationalbank suspected that the gold would be subject to illegal export. On 1 May 1917 the Nationalbank was once again *de jure* obliged to convert its notes into gold. However, by Royal Resolution of 30 June 1919 it was stated that the Nationalbank had no obligation to encash its notes into gold if it was believed to be incompatible with monetary policy objectives.

World War I *de facto* terminated the Scandinavian Currency Union. Like Denmark also Sweden and Norway suspended the gold convertibility of their bank-notes and introduced a ban on gold exports during the War.[33] Since no exemptions were made regarding gold export to other members of the Scandinavian Currency Union, this ended the free circulation of main coins among the three countries. In October 1915 the practice among the Scandinavian central banks of mutual acceptance of each other's bank-notes at par ceased, and by the end of 1915 bank-notes from the three countries no longer traded at par. In 1916 laws were passed suspending citizens' rights in the three countries to deliver gold for coinage in accordance with the provisions in agreement on the Scandinavia Currency Union.[34] In 1921 the free circulation of token coins among the Scandinavian countries ceased, and in July 1923 the central banks in the three countries began a mutual exchange of their remaining stock of each other's token coins. On 24 February 1924 a new Currency Act was implemented in Denmark taking into account the abolishment of the provisions regarding token coins within the Scandinavian Currency Union. Negotiations on a re-establishment of the Scandinavian Currency Union was initiated in December 1928, but the Currency Union was newer re-established.

Immediately after the end of World War I, the international monetary system was characterised by floating exchange rates. At the international monetary conference in Brussels in 1920 it was the recommendation to return to the Gold Standard after a gradual deflationary process. The international monetary conference held in Geona in Italy in the spring of 1922 also recommended to re-establish the Gold Standard – but in view of the different price

[33] Norway suspended gold convertibility of bank-notes on 4 August 1914 and introduced a ban on gold exports on 18 August 1914. Sweden made her notes inconvertible and introduced a ban on gold export on 2 August 1914.

[34] In Sweden Act of 8 February 1916; Norway Act of 16 April 1916; and Denmark Act of 17 April 1916 (which came into force on 1 May 1916). These laws were a result of an agreement among the Scandinavian central banks from 24 February 1916 (reproduced on page 88-89 in Ussing, C. Th., *Nationalbanken 1914-24*, Copenhagen: GADs Forlag 1926). The laws also implied a suspension of the Nordic central bank's obligation to purchase gold against bank-notes at a fixed price of kroner 2,480 per kg of fine gold. However, Danmarks Nationalbank still had

development not necessarily with a return to the pre-war parity for all countries. In order to reduce the need for monetary gold, the Genoa conference recommended to abandon circulation of gold coins and rely on gold bullion standards with convertibility between bank-notes and gold bars. Furthermore, it was recommended that the central banks in smaller countries began to hold a larger part of their foreign-exchange reserves in foreign currencies, which could be exchanged for gold (the Gold Exchange Standard).[35]

The U.S.A. (June 1919[36]), Sweden (November 1922[37]), Austria (March 1925), the U.K. (28 April 1925), Australia (25 April 1925), the Netherlands (April 1925), Canada (1 July 1926), Norway (April 1928), Switzerland (1929) and Japan (December 1930) all returned to the Gold Standard at the 1913 parity. A number of countries returned to the Gold Standard with a devalued currency, e.g.: France (July 1926[38] – new parity around 20 per cent of the pre-war level); Belgium (24 October 1926 – new parity around 15 per cent of the pre-war level); Italy (21 December 1927 – new parity around 28 per cent of the pre-war level); Finland (January 1926 – new parity around 13 per cent of the pre-war level); Greece (14 May 1928 – new parity around 7 per cent of the pre-war level); and Portugal (1 July 1931 – new parity around 5 per cent of the pre-war level). Most marked was the case of Germany, which returned to the Gold Standard in November 1923 after a period of massive hyperinflation and a monetary reform.[39]

After World War I the Danish krone depreciated gradually from a level close to the pre-war parity vis-à-vis the U.S. dollar as well as vis-à-vis the British pound by end-1918 to a level around 70 per cent of the pre-war parity in 1923.

On 15 December 1919 a Danish Currency Council was established with representatives from the governmental administration, the Nationalbank, commercial banks, business

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an obligation to buy gold against bank-notes at a certain minimum price (kroner 2,330 per kg of fine gold in April 1916).

[35] However, gold still played the main role in the foreign-exchange reserves in the inter-war period. Based on a survey of the monetary authorities in 21 countries, the holdings of foreign exchange amounted to less than 25 per cent of their gold reserves in 1930, cf. Bordo, M. D. & Eichengreen, B., *The Rise and Fall of a Barbarous Relic: The Role og Gold in the International Monetary System*, Paper prepared for the conference honouring Robert Mundell, co-sponsered by the IMF, The World Bank, the University of Maryland, MIT and UC Berkeley, January 1998.

[36] The U.S.A. formally remained on the Gold Standard until March 1933, but exports of gold were prohibited from September 1917 to June 1919.

[37] Sweden returned *de facto* to the Gold Standard in November 1922 and *de jure* on 1 April 1924.

[38] *De facto*. *De jure* France returned to the Gold Standard on 25 June 1928.

[39] In November 1923 Germany made a monetary reform which introduced a new temporary currency, the Rentenmark, which were to circulate in parallel with the old “paper” Reichsmark. One Rentenmark was set equivalent to 1,000,000,000,000 paper Reichsmark. On 1 September 1924 the Rentenmark was replaced by a new Reichsmark equivalent to one Rentenmark. For studies of the German the hyperinflation and the monetary reform in 1923 one may refer to Schacht, H:, *Die Stabilisierung Der Mark*, Berlin: Deutsche Verlags-Anstalt Stuttgart 1927; Hetzel, R. L., German Monetary History in the First Half of the Twentieth Century, Federal Reserve Bank of Richmond, *Economic Quarterly*, Vol. 88, Winter 2002, 1-35; Humphrey, T. M., Eliminating Runaway Inflation: Lessons from the German Hyperinflation, Federal Reserve Bank of Richmond, *Economic Review*, July/August 1980; Michael, P., Nobay, A. R. & Peel, D. A., The German Hyperinflation and the Demand for Money Revited, *International Economic Review*, Vol. 35, 1994, 1-22; Sargent, T. J., *Rational Expectations and Inflation*, New York: Harper & Row 1986; and references therein.

organisations and trade unions as members. The aim was to increase the value of the krone through a voluntary import regulation. However, the Currency Council dissolved itself again already on 4 June 1920 after a proposal from the Council regarding a legally backed compulsory import regulation had been rejected by the Danish Parliament. On 4 September 1920 the Minister of Trade established a Commission with representatives from the Nationalbank, commercial banks, business organisations and trade unions as members to review the currency issue. In the Commission's report of 10 November 1920 a majority of the Commission's members proposed import regulation as the main tool to strengthen the value of the krone. However, a minority of the members was against import regulation and no initiatives were taken.

In July 1923 the Nationalbank – after agreement with the government – invited representatives from commercial banks, the business sector, trade unions, research institutions etc. to a conference to discuss the causes for the weak krone and propose initiatives for a strengthening of the external value of the krone. The participants in the conference supported Denmark's return to the Gold Standard in the longer run. However, there was disagreement regarding the choice of parity level: Some recommend a return to the pre-war level ("the honest krone"), while others recommended a return to a level of 75 per cent of the pre-war level. In the final recommendations[40] from the Conference of 24 October 1923 it was therefore only mentioned that a strengthening of the krone was warranted. Furthermore, it was proposed to establish a Stabilisation Fund to support the krone by interventions in the foreign-exchange market.

The Stabilisation Fund (in Danish: Kursegaliseringsfonden) was implemented by Act of 16 November 1923. Furthermore, by Act of 29 March 1924 an Exchange Control Office was established. The Act of March 1924 implied a centralisation of the foreign-exchange market, so trading in foreign exchange had to go through the Nationalbank, the Stabilisation Fund, the four main commercial banks or other foreign exchange dealers authorised by the Exchange Control Office. The Act also empowered the Minister of Trade to require reporting of all foreign exchange positions.

On 4 July 1924 the government established a Currency Council with representatives from the political parties, the business sector, trade unions, the Nationalbank, the Stabilisation Fund, and the Exchange Control Office. The Currency Council was chaired by the Prime Minister and delivered its report on 5 November 1924. The report recommended introduction of a maximum bilateral exchange rate vis-à-vis the U.S. dollar. This proposal was quickly implemented. In the years 1925-1926 the Nationalbank – in accordance with the Foreign Exchange Acts of 20 December 1924 and of 15 December 1925 – pursued an exchange-rate

[40] Reproduced on page 305-309 in Ussing, C. Th., *Nationalbanken 1914-24*, Copenhagen: GADs Forlag 1926.

policy with the following maximum bilateral exchange rate vis-à-vis the U.S. dollar: 5.74 kroner per U.S. dollar in the first half of 1925; 5.60 kroner per U.S. dollar in the second half of 1925; and 4.20-4.35 kroner per U.S. dollar in 1926. Since the U.S. dollar was on the Gold Standard this policy implied a gradual appreciation of the krone.

With effect from 1 January 1927 the Gold Standard was reintroduced in Denmark. In line with its main trading partners the Danish krone returned to gold at the pre-war parity. According to Act of 27 December 1926 the re-established Gold Standard in Denmark was based on an obligation for the Nationalbank to convert its notes into gold in amounts in multiples of 28,000 kroner. The Nationalbank could choose between enchashment into gold coins, gold bars or gold in other form. On 11 January 1927 the Danish ban on exports of gold in coins and bars was removed vis-à-vis countries with gold-encashment of their currencies.

The international Gold Standard established after World War I covered around 50 countries at its peak, but had only a short life-span. During the late 1920s and the beginning of the 1930s most countries decided to leave the system again. Canada left the Gold Standard already in January 1929[41] followed by Australia on 17 December 1929, New Zealand in April 1930 and Austria in May 1931. The collapse of the global gold-exchange system came when the U.K. by the Gold Standard Amendment Bill went off gold on 21 September 1931. The following day Denmark introduced a ban on the export of gold. On 27 and 28 September 1931 respectively Norway and Sweden left the Gold Standard and began later to stabilise their currencies against the British pound. By Act of 29 September 1931 the Nationalbank was also released from its obligation to redeem its notes into gold. Portugal (September 1931), Finland (October 1931), Japan (December 1931) and Greece (April 1932) also quickly left the Gold Standard and devalued their currencies. The U.S.A. abandoned the Gold Standard a couple of years later with the suspension of convertibility for residents by executive order of 6 March 1933[42]. The U.S.A. allowed the market price of gold to rise until it wrote down the dollar parity against gold by 41 per cent on 31 January 1934[43] to 35 U.S. dollar per troy ounce[44]. Germany – still officially maintaining the gold value of the Mark – had already on 13 July 1931 introduced a comprehensive system of foreign-exchange control

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[41] *De facto*. Officially Canada did not ban gold export until 31 October 1931, and the redemption of notes into gold was not officially suspended before 10 April 1933.

[42] Ratified by the U.S. Congress with the Emergency Banking Act of 9 March 1933. The Act also forbid Americans to hold gold, use gold for domestic payments and use gold clauses in private contracts. For an overview of the U.S. monetary policy in the 1930s, cf. e.g. Wheelock, D. C., Monetary Policy in the Great Depression and Beyond: The Sources of the Fed's Inflation Bias, *Federal Reserve Bank of St. Louis Working Paper*, No. 011A, 1997.

[43] The Gold Reserve Act of 30 January 1934 had authorised the president to fix the dollar price of gold. Furthermore the Act established the Treasury Exchange Stabilisation Fund enabling the U.S. Treasury to intervene in the foreign-exchange market in order to stabilise the U.S. dollar.

[44] Troy ounce is in the following just termed "ounce". 1 troy ounce is equal to 31.1034807 grammes. For a handbook on the more technical aspects of gold, gold mining and gold trading in past and present one may refer to Green, T. & Russel, D., *The Gold Companion*. London: MKS Finance SA 1991.

and bilateral payments agreements. The last countries to leave the Gold Standard were Belgium (18 March 1935), the Netherlands (27 September 1936), Switzerland (28 September 1936), Italy (October 1936), and France (October 1936)[45].

Immediately after the breakdown of the international Gold Standard system the British pound depreciated by around 20 per cent against gold. With the U.K. still being Denmark's largest export market around 1931, the krone was initially stabilised against the British pound. Furthermore Denmark – in line with around 15 other European countries[46] – introduced foreign-exchange restrictions. An Act of 18 November 1931 introduced certain capital restrictions requiring the foreign-exchange proceed received by Danish exporters to be converted into Danish currency, and by Act of 30 January 1932 the Exchange Control Office (in Danish: Valutacentralen) was established. The main objective of the new Exchange Control Office was to maintain the krone's value against the British pound, and at the same time support domestic production and employment. All payments to foreign countries now required licence from the Exchange Control Office, and priorities were given to imports of raw materials for agriculture and industry.[47]

However, the Danish export of agricultural products to the U.K. market came under increasing pressure in 1932 as a consequence of the Imperial Preference system established by the U.K. with the Ottowa Conference, and by the depreciated currencies of New Zealand and Australia. After a period with gradual depreciation of kroner vis-à-vis the British pound the Danish krone was devalued on 31 January 1933 to 22.50 kroner per pound sterling (equivalent to around 80 per cent of the previous gold parity) after a major political package (The Kanslergade Agreement).

On 7 July 1933 the Danish krone was revalued slightly to 22.40 kroner per British pound and then maintained at this level until the late 1930s. The British pound was also quite stable in the same period. Since the devaluation of the U.S. dollar in January 1934 the exchange rate between the U.K. and the U.S.A. had been kept at a roughly constant level of around 5 dollar per pound. However, during autumn 1938 the British pound began to weaken, and on 25 August 1939 the monetary authorities in the U.K. ceased to stabilise the pound vis-à-vis the

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[45] By the Currency Act of 1 October 1936 France decided to keep the gold value of the Franc within a band of 74.8 and 65.6 per cent of the 1928 gold parity. This was in line with the so-called Tripartite Agreement of 25 September 1936 between the U.S.A., the U.K. and France. The aim of the Tripartite Agreement was to manage the three currencies within certain bands, and the agreement included an obligation not to devaluate without mutual agreement. However, by decree of 30 June 1937 the band for the French francs was abandoned. This made the franc a pure paper based currency and further deprecations of the franc followed.

[46] Spain (May 1931), Germany (13 July 1931), Greece (21 September 1931), Austria (9 October 1931), Italy (26 May 1934), Belgium (18 March 1935), Luxembourg (1 April 1935), Norway (May 1935), Poland (April 1936) and the U.K. (25 August 1939) were among the group of European countries that introduced exchange controls during the 1930s. Exchange controls were also introduced by some countries outside Europe, e.g. by Japan (1 July 1932) and Canada (16 September 1939).

dollar. This was followed by further depreciations of the pound. On 28 August 1939 the Swedish krona was pegged to the U.S. dollar instead of the British pound, and at the same time Sweden devalued by 1 per cent against the dollar. The following day the central bank of Norway announced that it also would cease to base the exchange rate on the British pound, and the Norwegian krone was simultaneously devalued by 3 per cent vis-à-vis the U.S. dollar. On 1 September 1939 Denmark also decided to peg the krone to the U.S. dollar rather than the British pound. At the same time the krone was devalued by around 7.5 per cent to 5.18 kroner per dollar.

On 9 April 1940 five years' occupation by German forces started, implying a forced switch of the main part of the Danish foreign trade towards Germany. During the German occupation of Denmark the expenses of the occupying power were compulsorily financed via German accounts at Danmarks Nationalbank against a guarantee from the Danish central government. On 22 January 1942 the Danish authorities were able to come through with a revaluation of the krone by 8 per cent vis-à-vis the Mark and all other currencies equivalent to a dollar rate of 4.79 kroner per dollar. These rates were maintained during the rest of World War II.

4. Bretton Woods 1946-1971[48]

After World War II the Bretton Woods fixed-exchange-rate system was established under the auspices of the International Monetary Fund (IMF) in accordance with the agreement concluded at the Bretton Woods Conference of 22 July 1944. Representatives from 45 governments participated in the conference. Since Denmark was without a government in 1944, Denmark could only participate as an observer. However, Denmark was granted permission to enter as an original member of the IMF.[49]

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[47] For studies of the employment effects of the Danish exchange control in the 1930s, cf. Abildgren, K. & Nørskov, A., Var Valutacentralens allokering af importen i 1934 beskæftigelsesmæssig optimal?, *Nationaløkonomisk Tidsskrift*, Vol. 130, 1992, 591-604 and references therein.

[48] The international monetary system in the Bretton Woods period is covered in more detail by e.g. Andersen, B. N. & Holten, H., Udviklingen i det internationale valutasystem siden 1945, *Nationaløkonomisk Tidsskrift*, Vol. 116, 1978, 6-22; Bordo, M. D., The Bretton Woods International Monetary System: An Historical Overview, *NBER Working Paper*, No. 4033, March 1992; De Vries, M. G., *The IMF in a changing world 1945-85*, Washington: International Monetary Fund 1986; and Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992. For a comprehensive chronology of the exchange-rate policy of nearly all individual countries of the world in the post World War II period, cf. Reinhart, C. M. & Rogoff, K. S., The Modern History of Exchange Rate Arrangements: A Reinterpretation, *Quarterly Journal of Economics*, Vol. CXIX, 2004, 1-48; and Reinhart, C. M. & Rogoff, K. S., *Parts I and II. Background Material to A Modern History of Exchange Rate Arrangements: A Reinterpretation*, mimeo, Washington: IMF 2003.

For general descriptions of the international economy in the post-war period, one may refer to e.g. van der Wee, H., *Prosperity and Upheaval. The World Economy 1945-1980*, The Pelican History of World Economy in the Twentieth Century, Harmondsworth, Middlesex: Penguin 1987.

The development of the Danish economy is covered by e.g. Pedersen, P. J., Post-war growth of the Danish economy, chapter 17 in Crafts, N. & Toniolo, G. (eds.), *Economic Growth in Europe Since 1945*, Cambridge: Cambridge University Press 1996.

[49] Also Sweden and Finland were among the countries that were not officially invited to participate in the Bretton Woods Conference in 1944. However, the U.S.A. had already in 1943 indicated a positive attitude toward Swedish

The Bretton Woods monetary system was designed as a fixed-exchange-rate system, where the participating countries pegged their currencies to gold or the U.S. dollar and kept the exchange rate within a band of +/- 1 per cent around the par value by intervention. However, all countries *de facto* pegged their currencies to the U.S. dollar with a fluctuation band of +/- 1 per cent around the official dollar parity.[50] The U.S.A. maintained convertibility for official transactions with central banks of dollars into gold at a fixed price of 35 dollars per ounce gold. The "rules of the game" under the Bretton Wood system allowed countries to adjust their peg to the dollar in case of a fundamental disequilibrium on the balance of payments after consultation with the IMF.[51] According to the Articles of Agreements of the IMF, the member states should in general make their currency convertible for current-account transactions. Furthermore, they were not allowed to have multiple exchange-rate arrangements whereas capital-payment restrictions were accepted as a tool for exchange-rate management.

The Danish parliament ratified the Bretton Woods Agreement on 22 March 1946, and on 10 October 1946 the Danish Minister of Finance communicated the Danish initial parity rate to the IMF. Denmark joined the Bretton Woods system with an initial parity rate equivalent to the 22 January 1942 exchange rate against the U.S. dollar. On 18 December 1946 the initial parity rate for Denmark was announced together with parity rates for 31 other countries – including many of Denmark's main trading partners[52]. IMF began its financial operations on 1 March 1947.

During the 1930s and the World War II the international economy had developed into a system characterised by a complex net of bilateral clearing arrangements. After the war the U.S. dollar, the Swiss franc and gold were the only fully international convertible means of payments. On 15 July 1947 the British pound was made convertible vis-à-vis the U.S. dollar for current payments, but convertibility was abandoned only five weeks later[53]. During the

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membership of Bretton Woods, cf. Magnusson, E., *Sverige och Bretton Woods*, paper presented at the Swedish Economic-History Meeting in Lund, 17-19 October 2003.

[50] During the Bretton Woods period the role of gold as a foreign exchange reserve asset declined. The monetary authorities' holdings of foreign-exchange reserves in per cent of their gold reserves (market values) rose from 48 in 1948 to 142 in 1970, cf. Bordo, M. D. & Eichengreen, B., *The Rise and Fall of a Barbarous Relic: The Role og Gold in the International Monetary System*, Paper prepared for the conference honouring Robert Mundell, co-sponsered by the IMF, The World Bank, the University of Maryland, MIT and UC Berkeley, January 1998.

[51] The IMF could not disapprove of a change in the parity rate less than 10 per cent on a cumulative basis from the initial par value. A change of more than 10 per cent had to be decided by the IMF in less than 72 hours. In the case of an unapproved devaluation, the IMF could restrict member countries' access to draw on IMF lending facilities and – as an ultimate sanction – require the country to withdraw its membership of IMF.

[52] The announcement of parity rates on 18 December 1946 included Belgium, France, Luxembourg, the Netherlands, Norway, the U.K and the U.S.A. Parity rates for Sweden and Finland were fixed in 1951, for West Germany and Japan in 1953, Spain in 1959, Italy in 1960, Greece in 1961 and Portugal in 1962. However, many of these countries participated in the Bretton Woods system much earlier than the date for the official fixing of parity rates. Switzerland newer became a member of the Bretton Woods system.

[53] 20 August 1947.

following decade a more gradual process towards free and multilateral international payment relations were initiated in all industrial countries.

Immediately after the war Denmark concluded a range of bilateral payment agreements with its main trading partners.[54] Compared to the former clearing arrangements, the agreements contained short-term central-bank credit arrangements so temporary payments imbalances did not have to be settled in gold or U.S. dollars.

The establishment of the European Payment Union (EPU) with effect from 1 July 1950 ensured a high degree of *de facto* internal current-account convertibility among the participating European currencies – including Danish kroner[55] – through a monthly multilateral clearing system for current payments. Within the EPU each member state had a quota corresponding to 15 per cent of the total current-account expenditures and receipts. If a country by the end of a month had a net payment deficit vis-à-vis the other EPU members exceeding the quota, the country would normally have to pay the difference in gold or U. S. dollars. End-month deficits below the quota could automatically be partly financed by multilateral credit facilities supplied by the countries within the Union with a surplus on the current payments. Within a month the EPU agreement contained unlimited drawing rights between the participating central banks. The Bank for International Settlements acted as agent for the EPU.

On 18 May 1953 Denmark entered into an agreement with Belgium, the U.K., France, the Netherlands, Switzerland, Sweden and Germany on a multilateral arbitrage system for spot currency transactions.[56] The agreement gave Danish foreign-exchange dealers (mainly commercial banks) free access to carry out spot-currency transactions in the currencies of these countries with resident and foreign banks at commercially determined exchange rates within +/- 0,75 per cent of the IMF parity rates. On 5 October 1953 the arrangement was expanded to cover multilateral arbitrage in forward-currency transactions with maturity up to 3 months.[57] The multilateral arbitrage system reduced the gross amounts of payments that had to be settled via the EPU.

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[54] Cf. e.g. Müller, O., De handels- og valutapolitiske spørgsmål, som Marshall-Planen rejser for Danmark, *Økonomi & Politik*, Vol. 60, 1987, 266-276.

[55] All OEEC-members participated in the EPU, i.e. Iceland, Norway, Sweden, Belgium, Luxembourg, the U.K., France, Greece, the Netherlands, Italy, Portugal, Switzerland, Turkey, Germany (West), Austria, Ireland and Denmark. The EPU-agreement had a "predecessor" in the First Agreement on Multi-currency Monetary Compensation of 18 November 1947 with subsequent amendments. Denmark also participated in this arrangement, but its usage was limited due to its rather bilateral and non-automatic nature.

For a review of the Danish experience with EPU, cf. Mikkelsen, R., *Marshall-hjælpen. Den Europæiske Betalingsunion*, Copenhagen: Danmarks Nationalbank 1999. For recent studies of the European Payment Union, cf. Carlos, J. & Oliva, M., Italy and the Polital Economy of Cooperation: the Marshall Plan and the European Payment Union, Banca D'Italia, *Quaderni dell'Ufficio Ricerche Storiche*, No. 6, April 2003; and references therein.

[56] Norway joined the spot-currency arbitrage system on 14 December 1953.

[57] Norway joined the forward-currency arbitrage system on 20 January 1954.

At the end of 1958 current-account convertibility of 9 European currencies (including Danish kroner)[58] vis-à-vis the U.S. dollar was restored, and the European Monetary Agreement (EMA)[59] replaced the EPU. At the same time, the Danish foreign-exchange dealers were allowed also to carry out currency arbitrage in U.S. dollars.

The permission to Danish foreign-exchange dealers to make current payments to foreign countries without prior permission from the Nationalbank was liberalised in parallel with the restoration of currency convertibility. At the beginning of 1959 around 95 per cent of the Danish foreign trade were settled in convertible currency[60], and almost all exchange controls related to current payments had been removed.

Deregulation of capital-payment restrictions was a much slower process both in Denmark as well as in other countries. In the 1950s Danish residents were given access to grant and obtain commercial credits related to imports and exports of goods and services. In 1953 the currency dealers were allowed to conclude forward-currency transactions with residents, provided that the transactions were linked to commercial transactions and not purely "speculation". In January 1959 the restrictions regarding the foreign-exchange position of the currency dealers were abolished on the conditions that foreign exchange assets were kept in a liquid form. With the foreign exchange regulation of 20 June 1961[61], short-term bank loans for the financing of imports and exports and most non-financial direct investments to and from Denmark below 40,000 kroner (200,000 kroner for related companies) were liberalised. On 1 July 1968 non-financial Danish firms were granted permission to take out financial loans abroad with a maturity of at least 5 years with a maximum size of 1 million kroner (5 million from 1 June 1971[62]). In February 1971 non-residents were allowed to purchase Danish krone-denominated bonds listed on Copenhagen Stock Exchange within an annual quota of 100 million kroner. Most other capital payments to and from Denmark still required permission from the Nationalbank during the Bretton Woods period.[63]

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[58] The 9 countries that made their currency convertible vis-à-vis the U. S. Dollar on 29 December 1958 were: The U.K., Ireland, the 6 original EEC-countries (West Germany, France, Italy, Belgium, the Netherlands and Luxembourg) and Denmark. Austria, Norway, Sweden, Portugal and Switzerland followed quickly after.

[59] With the EMA most of the European countries also adopted a narrow fluctuation margin of +/- 0.75 per cent around the IMF parities (compared to the +/- 1 per cent standard margin within Bretton Woods). The EMA contained certain provisions regarding credit facilities, but in practice the EMA never came to play any significant role. The EMA was finally terminated in December 1972.

[60] Cf. page 13-14 in Danmarks Nationalbank, *Beretning og regnskab for året 1958*.

[61] The foreign exchange regulation of 1961 to a certain extent formalised the administrative practice developed by the Nationalbank since the last regulation of 29 January 1957.

[62] The ceiling was subsequently gradually increased and removed altogether in 1983.

[63] In 1961 and 1964 Denmark had acceded to the codes for liberalisation of capital movements from the Organisation for Economic Co-operation (OECD). However, a number of Danish reservations removed some of the pressure for liberalisation. The foreign exchange regulation of 12 March 1973 incorporated the administrative practice developed by the Nationalbank since the regulation of 20 June 1961 with subsequent amendments. For a review of the foreign exchange liberalisation in Denmark in the period 1950-1985, cf. Danmarks Nationalbank, Foreign-Exchange Liberalization and Capital Movements, *Danmarks Nationalbank Monetary Review*, February 1986, 9-18.

During the Bretton Woods period major parity rate adjustments by Denmark's main trading partners included devaluations by the U.K. on 18 September 1949 (30 per cent) and on 18 November 1967 (14 per cent), revaluations by Germany on 6 March 1961 (5 per cent) and on 26 October 1969 (9 per cent), and devaluations by France on 26 January 1948[64] (44 per cent), on 11 August 1957 (16 per cent), on 29 December 1958 (14 per cent) and on 10 August 1969 (11 per cent).

In the late 1940s the U.K. was still Denmark's largest trading partner, cf. table 1. The devaluation of the British pound by 30.5 per cent on 18 September 1949 was followed fully by Denmark. The British devaluation was also followed fully (e.g. Norway, Sweden, Finland and the Netherlands) or partly (e.g. Germany, France, Portugal, Spain, Italy and Belgium) by a range of other countries. During the 1950s and 1960s Denmark's trade pattern gradually changed towards higher export shares to Central Europe. The devaluation of the pound on 18 November 1967 by 14.3 per cent vis-à-vis the dollar was therefore only followed partly by Denmark (7.9 per cent). The only other European countries following the U.K. devaluation in 1967 were Ireland and Spain.[65] New Zealand – a main exporter of agricultural products to the U.K. market – devalued by 19.5 per cent.

For the first 20 years after its establishment the Bretton Woods system was well functioning, but during the 1960s the system gradually came under pressure. In October 1960 the price of gold at the London gold market rose to around 40 dollar per ounce – significantly above the Bretton Woods parity at 35 dollar per ounce. In November 1961 central banks from 8 countries (the U.S.A., Belgium, France, Germany, Italy, the Netherlands, Switzerland and the U.K.) agreed to form the so-called London Gold Pool. The purpose of the agreement was to stabilise the market price of gold around the Bretton Woods parity through open market operations in the London gold market with the Bank of England acting as agent. Viewed against the background of an increasing amount of dollar assets outside the U.S.A. compared to the gold reserves of the U.S.A., Banque de France announced on 7 January 1965 that it would start to convert its dollar assets into gold at the US Treasury. A little more than two years later, in July 1967, France left the gold pool. On 12 March 1968 the requirement of 25 per cent gold reserve backing of dollar notes issued by the US Federal Reserve was removed. Furthermore the London Gold Pool arrangement was dissolved on 17 March 1968 by the Washington-declaration[66]. Instead the central banks agreed not to make interventions in the gold market by buying and selling gold. Central banks violating this agreement would be

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[64] The French devaluation in 1948 was followed by the introduction of a multiple exchange-rate system and was not approved by the IMF. France was therefore declared ineligible to draw on IMF's lending facilities until 1954.
[65] However, Finland had already devalued by 23.8 per cent on 12 October 1967.
[66] An extract of the communiqué of 17 March 1968 is reprinted on page 225-226 in Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992.

excluded from gold transactions with other central banks.[67] This established a two-tier gold market were only the monetary authorities – and not the private sector – could transact gold at the official price of 35 dollars per ounce.

In an attempt to reduce the reliance on the dollar as a reserve asset it was agreed in September 1967 to form an international reserve currency (SDR[68]) within the framework of IMF. The first allocation of SDR in 1970 amounted to around 6 per cent of the non-gold foreign exchange reserves among the IMF member states. However, SDR never came to play any major role in the international monetary system.

At the beginning of the 1970s the Bretton Woods system collapsed. The foreign exchange markets were closed on 5 May 1971, and on 10 May 1971 the Deutsche Mark and the Dutch Guilder were forced to float, the Austrian Schilling was revalued by 5 per cent[69] whereas Belgium introduced a two-tier foreign-exchange market. On 15 August 1971 the U.S.A. suspended the dollar-gold convertibility. When the foreign-exchange markets opened again on 23 August 1971 most currencies – including Danish kroner – went floating except French francs[70] and the Japanese yen. The yen was forced to float on 28 August 1971.

A short-lived attempt to save the system was made with the Smithsonian Agreement between the Group of Ten Countries[71] on 18 December 1971[72]. With the Agreement the fluctuation bands of the Bretton Woods system were widened from +/-1 per cent to +/-2.25 per cent around parity, and the official gold price was raised from 35 to 38 U.S. dollar per ounce. However, the U.S. dollar remained inconvertible vis-à-vis gold. Furthermore there was agreement of a range of exchange-rate adjustments.[73] The Swedish krona was written down by 1 per cent against gold. A number of currencies were written up against gold, e.g. German Mark (5 per cent) and the Japanese yen (8 per cent). After negotiations among the Nordic countries Denmark and Norway decided to follow Sweden and devalue their currencies by 1 per cent.

For brief period the system was maintained with these new fluctuation bands, but the situation was not sustainable. The market price of gold rose from 43 dollar per ounce in

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[67] Other central banks were invited to join the Washington-declaration. Denmark joined the declaration on 18 March 1968.

[68] 1 SDR (Special Drawing Rights) was originally defined as 1/35 ounce of gold. Since 1 July 1974 the SDR has been defined as the value of a basket of currencies.

[69] Outside the Bretton Wood system the Swiss franc at the same time was revalued by 7 per cent.

[70] However France introduced a two-tier foreign-exchange market. Belgium and the Netherlands decided to float together vis-à-vis other currencies by keeping the exchange rate between the Belgian franc and the Dutch guilder within a 1.5 per cent band.

[71] The Group of Ten Countries included originally the following members of IMF: The U.S.A., Japan, Canada, Germany, Italy, France, the U.K., Sweden, Belgium, and the Netherlands. Later Switzerland was included in the Group without change of the name "Group of Ten".

[72] An extract of the communiqué of 18 December 1971 is reprinted on page 236-238 in Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992.

December 1971 to around 62 dollar per ounce in June 1972 (compared to the official gold price of 38 dollar per ounce), and on 23 June 1972 the British pound went floating. On 22 January 1973 Italy created a two-tier foreign-exchange market and the following day the Swiss franc went floating. At the beginning of February 1973 the foreign-exchange markets were closed. The U.S. dollar was devalued by 10 per cent against gold on 12 February 1973 (equivalent to an official gold price of 42.22 U.S. dollar per ounce). This was followed by a devaluation of the Swedish krona and the Finish markka by around 5 per cent against gold and decisions to let the Japanese yen and the Italian lire float.

However, the currency turmoil continued. The market price of gold reached a level around 74 dollar per ounce in February 1973, and on 2 March 1973 the foreign-exchange markets were closed once again. When the markets were reopened on 19 March 1973 the Smithsonian Agreement had finally broken down.

5. European exchange-rate co-operation since 1972[74]

With the widening of the fluctuation bands by the Smithsonian Agreement to +/-2.25 per cent around the U.S. dollar parities in December 1971, the currencies of the countries in the European Economic Community (EEC) could fluctuate against each other by up to 9 per cent. In order to stabilise exchange rates within the EEC the so-called "Currency Snake" was established with effect from 24 April 1972 covering the original six EEC countries.[75] The snake reduced the overall fluctuation between the EEC currencies to 4.5 per cent via a 2.25[76] per cent band between the strongest and weakest EEC currency. The Snake could move freely within outer margins (the "tunnel") fixed by the intervention limits vis-à-vis the U.S. dollar in the Smithsonian system. If the limits of the Snake were reached mutual interventions (so-

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[73] *De facto* the new parity rates became effective from December 1971 although formally they had to await the approval of the rise in the dollar-gold price by the American congress in March 1972 and the subsequent reporting to and approval by IMF of the new Dollar-parity in May 1972.

[74] The international monetary system and the international economic development since 1972 are covered by many of the previously cited references. Further studies of the European exchange-rate co-operation are found in e.g. Thomsen, J., *Det europæiske moneære samarbejde*, Copenhagen: Handelshøjskolens Forlag 1990; Østrup, F., *The Development of the European Monetary System*, Copenhagen: DJØF Publishing 1992; Christensen, T. A., Kristensen, J. P. & Pedersen, G.W., *Europæisk monetært samarbejde – fra EMS til ØMU*, Copenhagen: Copenhagen Business School Press 1998; and Eichengreen, B., *The EMS Crisis in Retrospect*, Paper prepared for the conference celebrating the 75th anniversary of the Banco de Mexico, 14-15 November 2000.

The process towards the European Monetary Union and introduction of the single currency (the euro) is covered by e.g. Hoffmeyer, E., Decisionmaking for European Economic and Monetary Union, Group of Thirty, *Occasional Paper*, No. 62, 2000; Bartholdy, N. & Thomsen, J., Euro 2002, *Danmarks Nationalbank Monetary Review*, 1st Quarter 2002, 19-31; and Maes, I., On the Origins of the Franco-German EMU Controversies, *National Bank of Belgium Working Paper*, No. 34, 2002.

The development of the Danish economy since 1970 is covered by e.g. Christoffersen, H., *Danmarks økonomiske historie efter 1960*, Århus: Systime 1999.

[75] The Snake arrangement was decided by the Committee of Governors of the EEC central banks in Basle on 10 April 1972. The press communiqué of 10 April 1972 is reprinted on page 239 in Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992.

called “marginal intervention”) had to take place. The central bank, whose currency reached the floor of the Snake, had access to unlimited amounts of short-term credit from the central bank whose currency had reached the ceiling. Adjustment of the central parities could be decided by common agreement among the participants.

The EEC candidate countries also participated in the Snake.[77] The U.K., Ireland and Denmark joined the system on 1 May 1972 and Norway followed on 23 May 1972. However, already on 23 June 1972 the U.K.[78] and Ireland left the Snake again and let their currencies float. The currency market was then closed in a number of countries, and with effect from 27 June 1972 Denmark suspended its participation in the Snake and returned to the “pure” Smithsonian-system. After Danish membership of the EEC was approved by a referendum on 2 October 1972, the Danish krone resumed its participation in the Snake on 10 October 1972. The Italian Lire left the Snake on 14 February 1973 and went floating. After the breakdown of the Smithsonian Agreement on 19 March 1973 the Snake was made floating vis-à-vis the U.S. dollar (“Snake without tunnel”) and Sweden joined the Snake. France suspended its Snake-participation with effect from 22 January 1974 and went floating but re-entered the Snake again on 10 July 1975 at the January 1974 parity. On 15 March 1976 France left the Snake again.[79] Sweden left the Snake on 29 August 1977 and started to manage the Swedish krona vis-à-vis a trade-weighted currency basket. On 12 December 1978 Norway left the Snake and began also to manage its currency vis-à-vis a weighted currency basket. Along with the frequent changes in the composition of the Snake member states a number of realignments of the Snake-currencies took place.[80]

Originally intervention within the Snake co-operation was only allowed at the margin, but in 1974 the system was expanded with intramarginal interventions, i.e. intervention within the fluctuation band. In December 1978 the European exchange-rate co-operation became closer with the agreement on the European Exchange Rate Mechanism (ERM) within the European

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[76] Belgium and the Netherlands decided to maintain the agreement of August 1971 of keeping the fluctuation in the exchange rate between the Belgian franc and the Dutch guilders within a 1.5 per cent band.

[77] In March 1975 Switzerland also applied for membership of the Snake but Swiss participation was never approved.

[78] The U.K. had to leave the system despite massive interventions from other participants in support of the British pound. Other participants had bought British pound for an amount equivalent to 1/3 of the U.K. foreign exchange reserves, cf. page 28 in Mestad, V., Frå fot til feste – Norsk valutaret og valutapolitikk 1873-2001, *Norges Banks skriftserie,* No. 30, Oslo: Norges Bank 2002.

[79] At the same time Belgium and the Netherlands abolished their narrow 1.5 per cent fluctuation band.

[80] Deutsche mark was revalued by 3 per cent on 19 March 1973 and by 5.5 per cent on 29 June 1973. Dutch guilders was revalued by 5 per cent on 17 September 1973. Norwegian kroner was revalued by 5 per cent on 16 November 1973. On 18 October 1976 Deutsche mark was revalued by 2 per cent vis-à-vis Belgian francs and the Dutch guilders, 3 per cent vis-à-vis Swedish kroner and Norwegian kroner and 6 per cent vis-à-vis Danish kroner. On 4 April 1977 Swedish kroner was devalued by 6 per cent while Norwegian kroner and Danish kroner were devalued by 3 per cent. When Sweden left the Snake 29 August 1977 and devalued by 10 per cent vis-à-vis a trade weighted currency basket Norwegian kroner and Danish kroner were devalued by 5 per cent within the Snake. Norwegian kroner was further devalued by 8 per cent on 13 February 1978. On 16 October 1978 Deutsche mark was revalued by 4 per cent vis-à-vis Norwegian kroner and Danish kroner and 2 per cent vis-à-vis the Dutch guilder and Belgian francs.

Monetary System (EMS).[81] Many of the characteristics of the ERM resembled those of the Snake. ERM was a fixed-exchange-rate system based on a grid of bilateral central parities (in ECU[82]) for all the participating currencies and accompanying intervention bands.[83] The bilateral intervention bands were set at +/- 2.25 per cent around the central parities but with the opportunity for new participants to use a wider fluctuation band of +/- 6 per cent in a transitional period. If the bilateral margins of the band were reached multilateral intervention had to take place, and a system of unlimited intervention credits at the margin was included in the agreement.[84] The system also included certain credit facilities for intramarginal interventions. The central parities within the ERM could be adjusted from time to time – by common agreement among all ERM-participants and the European Commission – if the parities were believed not to be sustainable. The ERM-system also included an indicator of divergence that measured each currency's average deviation from the central parity. When a currency crossed its threshold of divergence, the relevant country was supposed to take initiative to correct the situation through intervention, change in interest rates, changes in central parities or other policy measures. However, in practice the indicator of divergence never came to play any role.[85]

When the ERM came into operation on 13 March 1979 Denmark, Belgium, Luxembourg, France, Germany, Ireland and the Netherlands participated with the narrow +/- 2.25 per cent band while Italy adopted the +/- 6 per cent band. Spain joined the ERM on 19 June 1989, Britain on 8 October 1990 and Portugal on 6 April 1992 – with the +/- 6 per cent band for all three countries. On 8 January 1990 the fluctuation band for the Italian Lire was narrowed to +/- 2.25 per cent.[86] During the currency turmoil in Europe at the beginning of the 1990s the U.K. left the ERM again and Italy suspended its intervention obligations (17 September 1992).

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[81] Cf. Resolution of the European Council on the establishment of the European Monetary System (EMS) and related matters of 5 December 1978 (reprinted on page 288-294 in Christensen, T. A., Kristensen, J. P. & Pedersen, G.W., *Europæisk monetært samarbejde – fra EMS til ØMU*, Copenhagen: Copenhagen Business School Press 1998). An extract is reprinted on page 255-258 in Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992.

[82] The ECU (European Currency Unit) was a unit of account based on a basket of currencies.

[83] This implied that each participating currency had a central bilateral parity with accompanying intervention bands vis-à-vis each of all the other participating currencies.

[84] However, as a precondition for participation Deutsche Bundesbank was ensured in an agreement with the German government that "in case of fundamental conflict arising for monetary policy as a consequence of the obligation to defend a particular exchange rate the Bundesbank would have the option to suspend its intervention obligation in the exchang-rate mechanism", cf. page 130-131 in Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992; and references therein.

[85] Cf. page 131 in Hoffmeyer, E., *The International Monetary System: An Essay in Interpretation*, Amsterdam: North-Holland 1992.

[86] At the same time the Italian lira was devalued by 3.7 per cent implying that the lower intervention limit for the lira remained unchanged.

On 2 August 1993 the ERM fluctuation band was widened to +/- 15 per cent.[87] This implied a *de facto* suspension of the ERM as a fixed-exchange-rate co-operation, but the central parities were still in place and the EU Treaty's paragraphs on ERM remained unchanged. According to article 121 of the Treaty establishing the European Community "the observance of the normal fluctuation margins provided for by the exchange-rate mechanism of the European Monetary System, for at least 2 years, without devaluing against the currency of any other Member State" is one of the convergence criteria for becoming a member of the single currency, cf. below. Following their membership of the European Union with effect from 1 January 1995 Austria (9 January 1995) and Finland (14 October 1996) therefore joined the ERM. Greece had been a member of the EEC since 1981 and chose to participate in ERM with effect from 16 March 1998.

In the late 1970s Germany became Denmark's largest single export market, cf. table 1, and within the ERM Denmark pursued a fixed-exchange-rate policy against mainly Deutsche Mark. However, up to the beginning of the 1980s the krone was often written down when exchange-rate realignments took place within the ERM.[88] On 9 September 1982 the incoming Danish government announced an abolishment of devaluation as an economic policy instrument. The new policy was put to a serious test when Sweden devalued its currency by 16 per cent on 8 October 1982 just a few weeks after the Danish fixed-exchange-rate policy announcement, but the Danish government stuck to the declared fixed-exchange-rate policy. The Deutsche Mark was revalued several times within the ERM in the period 1982-1987, including vis-à-vis the krone, but not on the initiative of Denmark.[89] The last realignments of the central parity for Danish kroner vis-à-vis Deutsche Mark within ERM occurred at the beginning of 1987. Since then Denmark pursued a "hard" fixed-exchange-rate policy against

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[87] Germany and the Netherlands made a bilateral agreement to keep the fluctuation of the Mark and the Guilder within +/- 2.25 per cent.

[88] On 24 September 1979 Deutsche mark was revalued on a German initiative by 5 per cent vis-a-vis Danish kroner and by 2 per cent vis-à-vis other ERM-currencies. On 30 November 1979 the other ERM-currencies was revalued by 5 per cent vis-à-vis Danish kroner on a Danish initiative. The Italian lira was devalued by 6 per cent on 23 March 1981 following an Italian initiative. On 5 October 1981 on a German and French initiative Deutsche mark and the Dutch guilder were revalued by 5.5 per cent while French francs and the Italian lire at the same time were devalued by 3 per cent. On a Belgian initiative the Belgian franc was devalued by 8.5 per cent on 22 February 1982 while Danish kroner at the same time was devalued by 3 per cent. Both Belgium and Denmark had made request for larger devaluations in February 1982, but the other participants could not approve this. On 14 June 1982 Deutsche mark and the Dutch guilder were revalued by 4.25 per cent. At the same time the Italian lira was devalued by 2.75 per cent and the French franc was devalued by 5.75 per cent. The adjustments in June 1982 were made on a German and French initiative. All exchange-rate realignments within the ERM are listed on page 152-153 in Danmarks Nationalbank, *Beretning og regnskab 1998*.

[89] On a German initiative the following adjustments were made on 21 March 1983: Revaluation of Deutsche mark (5.5 per cent), Dutch guilder (3.5 per cent), Danish kroner (2.5 per cent) and Belgian francs (1.5 per cent); Devaluation of Irish pounds (3.5 per cent), French francs (2.5 per cent) and Italian lira (2.5 per cent). On an Italian initiative the Italian lira was devalued by 6 per cent and the other ERM-currencies revalued by 2 per cent on 22 July 1985. On a French initiative the following adjustments were made on 7 April 1986: Deutsche mark and the Dutch guilder were revalued by 3 per cent, the Belgian franc and the Danish krone was revalued by 1 per cent while the French franc was devalued by 3 per cent. On 4 August 1986 the Irish pound was devalued by 8 per cent on an Irish initiative. On 12 January 1987 Deutsche mark and the Dutch guilder were revalued by 3 per cent and the Belgian franc by 2 per cent.

Germany, despite the breakdown of the narrow band in the ERM in 1993 and major devaluations by some of Denmark's main trading partners.[90]

On 1 January 1999 the euro was introduced as the single currency in 11 European Union (EU) Member States[91] in accordance with the Maastricht Treaty that came into force on 1 November 1993. Greece joined the euro with effect from January 2001. Following the outcome of several referendums Denmark has decided not to participate in the single currency.[92]

After the introduction of the euro in 1999 a new fixed-exchange-rate system, ERM II[93], replaced the ERM. ERM II is a fixed-exchange-rate co-operation between the European Central Bank (ECB) and non-euro area EU Member States. The standard width of the fluctuation band for each participating currency in ERM II is +/- 15 per cent around a central rate vis-à-vis the euro.[94] It is, however, possible to negotiate a narrower band for a participating currency in ERM II. If the exchange rate of a participating country reach the upper or lower limit in ERM II, both the ECB and the central bank of the participating country must intervene to strengthen the weaker of the two currencies, so that the exchange rate is kept within the fluctuation band. Interventions at the margin are in principle automatic

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[90] In the first half of the 1990s Europe experienced a period of sustained currency turmoil. Within the ERM the Italian lira were devalued on 14 September 1992 by 3.5 per cent while the other ERM currencies at the same time were revalued by 3.5 per cent On 17 September 1992 the British pound left the ERM, Italy suspended its intervention obligations and the Spanish peseta was devalued by 5 per cent. On 23 November 1992 Portuguese escudos and Spanish pesetas were written down by 6 per cent. On 1 February 1993 the Irish pound was devalued by 10 per cent. On 14 May 1993 Spanish pesetas was devalued by 8 per cent while Portuguese escudos at the same time was written down by 6.5 per cent. The fluctuation bands in ERM were then widened on 2 August 1993 to +/- 15 per cent (Germany and the Netherlands made a bilateral agreement to keep fluctuations in the exchange rate between Deutsche mark and Dutch guilders within 2.25 per cent).

Outside the ERM Finland (8 September 1992), Sweden (19 November 1992) and Norway (10 December 1992) abandoned their unilateral peg to the European Currency Unit they had introduced just a few years earlier (Norway 22 October 1990, Sweden 17 May 1991 and Finland 7 June 1991). This was followed by substantial depreciation of the three currencies.

The rest of the ERM period until the introduction of the euro in 1999 was characterised by very few adjustments of the central parities within the ERM system. On 6 March 1995 Spanish pesetas was devalued by 7 per cent while Portuguese escudos was devalued by 3.5 per cent. Italy resumed its intervention obligations on 25 November 1996. Finally the Irish pound was revalued by 3.0 per cent on 16 March 1998 less than 10 months before entering the euro. No marginal interventions occurred within the ERM from 2 August 1993 – 31 December 1998 since none of the currencies reached the border of the wide +/- 15 per cent band.

[91] Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland.

[92] At a referendum on 2 June 1992 50.7 per cent of the voters rejected a Danish approval of the Maastricht Treaty. At another referendum on 18 May 1993 a majority of 56.7 per cent of the voters approved Danish accession of the Maastricht Treaty and the Edinburgh Agreement which included an activation of the Danish reservation regarding participation in the euro. The use of the Danish reservation against euro-participation was reconfirmed by a majority of 53.1 per cent of the voters at another referendum on 28 September 2000.

[93] The formal basis for ERM II are: the Resolution of the European Council at its meeting in Amsterdam of 16 June 1997 (reprinted on page 308-311 in Christensen, T. A., Kristensen, J. P. & Pedersen, G.W., *Europæisk monetært samarbejde – fra EMS til ØMU*, Copenhagen: Copenhagen Business School Press 1998); the communiqué issued by the informal meeting of the ECOFIN Council on 25-27 September 1998 in Vienna between the EU member states' ministers for economy and finance and their central-bank governors (reprinted in Danmarks Nationalbank, Danmarks deltagelse i ERM II, Danmarks Nationalbank, *Kvartalsoversigt*, 4. kvartal 1998, 19-20); and the Agreement of 1 September 1998 between the European Central Bank and the national central banks of Members States outside the euro area (published in *the Official Journal of the European Communities*,1998).

[94] ERM II follows a so-called "hub and spokes" model where each participating currency has a central parity vis-à-vis the euro but not vis-à-vis the other participating currencies as they did in ERM.

and unlimited, unless they conflict with the primary objective of price stability in the participating country or the euro area. ERM II also comprises provisions on credit facilities to support such interventions. Decisions relating to central rates and the standard fluctuation band require agreement between the ministers from the euro-area member states, the ECB and the ministers and central-bank governors of the non-euro-area member states participating in ERM II.

On the establishment of the ERM II on 1 January 1999 Denmark and Greece were the only participants besides the ECB. Greece participated in the ERM II with the standard fluctuation band of +/- 15 per cent until 1 January 2001 where Greece adopted the euro. Since then and until now (March 2004) Denmark has been the only member of ERM II.[95] Due to its high degree of convergence as a result of sustained stability-oriented economic policies, Denmark has been able to conclude a special agreement with the ECB and the euro area Member States. According to this agreement the Danish krone participates in the ERM II system with a narrow fluctuation band of +/- 2.25 per cent. The central parity of kroner within ERM II (7.46038 kroner per euro) corresponds exactly to the central parity rate vis-à-vis Deutsche Mark from 1987. Within ERM II Denmark has continued the “hard” fixed-exchange-rate policy. Until now (March 2004) there have been no adjustments of the central parity for the Danish krone within ERM II[96], and the krone rate has been kept very close to its central parity.

With the Danish membership of EEC in 1973 Denmark became subject to EEC’s capital directives. This initiated a gradual process with further deregulation of the Danish capital-payment restrictions. From 1 January 1973 non-residents were given free access to buy Danish exchange-listed shares (portfolio investments) and from 1 December 1974 also Danish exchange-listed bonds (with an original maturity of more than 2 years). However on 6 February 1979 this permission was abolished again regarding krone denominated Danish government bonds issued since 1975. On 1 May 1983 non-residents once again was granted permission to buy krone denominated Danish government bonds (with an original maturity of more than 2 years). On 1 January 1978 residents got permission to purchase exchange-listed bonds issued by international organisations of which Denmark was a member and on 1 May 1983 this permission was extended to cover all exchange-listed foreign bonds (with an original maturity of more than 2 years). On 1 January 1984 residents were granted free access to purchase exchange-listed foreign shares. With effect from 1 June 1985 the minimum

[95] With the enlargement of the EU in 2004 more countries must be expected to participate in ERM II in the years to come, cf. also European Central Bank, Policy Position of the Governing Council of the European Central Bank on Exchange Rate Issues Relation to the Acceding Countries, *Press release*, 18 December 2003.

maturity of non-financial Danish firms financial loans abroad was decreased from 5 years to 1 year. In the mid-1970s foreign banks were allowed to establish branches and subsidiary banks in Denmark (and vice verse regarding Danish banks' activities abroad) and the maximum limits regarding direct investments were gradually raised during the 1970s and 1980s. The last capital restrictions in Denmark – mainly concerning money market papers, Danish banks' foreign-exchange loans to residents, loans in kroner to residents from Danish banks' foreign units, private individuals' loans abroad and private individuals' access to open accounts in foreign banks - were removed on 1 October 1988.[97]

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[96] To date (March 2004) the only adjustments of the central parities within ERM II has been the revaluation of the Greek Drachma vis-à-vis euro by 3.5 per cent on 17 January 2000.

[97] The foreign exchange regulation of 18 March 1981 formalised the administrative practice developed by the Nationalbank since the last regulation of 12 March 1973 with subsequent amendments. The next foreign exchange regulation was issued 20 May 1985. The last Danish capital restrictions were removed with the foreign exchange regulation effective from 1 October 1988. For a review of the last foreign exchange liberalisation in Denmark in 1988, cf. Biltoft-Jensen, K., Capital Flows and the Liberalization of Foreign-Exchange Restrictions, *Danmarks Nationalbank Monetary Review*, May 1991, 16-21.

Tables

Table 1: Danish exports and imports of goods by country 1875-2001, per cent

	Exports							Imports						
	1875	1913	1927	1949	1967	1979	2001	1875	1913	1927	1949	1967	1979	2001
Germany	29	25	22	7	13	18	20	37	38	31	3	20	20	22
U.K., Ireland	42	62	60	44	24	15	11	28	16	13	32	14	12	9
Sweden	13	2	4	5	14	13	11	11	8	6	7	14	13	12
Norway	10	2	2	5	7	6	6	3	1	1	4	4	4	5
U.S.A.	0	1	1	3	7	5	7	1	10	15	16	9	5	4
France	0	1	1	5	3	5	5	2	2	4	5	4	5	6
Spain	0	0	0	1	1	1	2	0	0	0	1	0	1	2
Italy	0	0	0	2	4	5	3	0	0	1	2	4	3	4
Portugal	0	0	0	0	0	0	0	0	0	0	1	1	0	1
Belgium, Luxembourg	1	0	0	5	2	2	2	2	1	2	5	3	4	4
Netherlands	1	1	1	2	2	4	5	3	2	4	2	4	6	7
Japan	...	0	0	0	1	2	3	...	0	0	0	2	2	1
Finland	...	1	1	3	2	2	3	...	1	1	4	3	4	3
Switzerland	...	0	1	3	2	2	1	...	0	1	2	2	2	1
Other countries	4	5	6	15	18	19	20	12	18	21	16	17	19	20
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Sources:
Johansen, H. C., *Danish historical statistics 1814-1980*, Copenhagen: Gyldendal 1985; Statistics Denmark, *Statistisk tabelværk*, various issues; Statistics Denmark, *Statistical ten-year review*, various issues; Statistics Denmark, *Statistical Yearbook*, various issues; Statistics Denmark, *50-year review*, Copenhagen: Statistics Denmark 1995; and Statistics Denmark, *50-year review*, 2nd Edition, Copenhagen: Statistics Denmark 2001.