Chapter 4 – Bond markets and bond yields in Norway 1820–2003

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1. Introduction

The first bond issue of the newly reborn Kingdom of Norway was negotiated with the banking firm of Bennecke Brothers in Berlin early in 1820. In the following century most long-term bond issues were raised abroad, which implied that the main markets for Norwegian government bonds were to be found initially in Hamburg and Copenhagen, later also in London and Paris. From the First World War (WWI) Norwegian government bonds were chiefly traded on the Oslo Bourse rather than abroad. But even before WWI there had been a market for the bonds issued by the state bank for mortgage loans founded in 1852, the Kongeriket Norges Hypotekbank.

In this chapter yield series for these bonds are presented. Some important institutional features of bond markets are presented briefly - not in any way intended to be a complete history of the development of capital markets - but rather as hopefully relevant background material in order to understand how and under which market conditions the data series have been generated.[2]

2. The data

Monthly yield data on bonds issued by the Norwegian government, Kongeriket Norges Hypotekbank as well as private bonds, are tabulated in the appendix. In this section we focus briefly on the sources of bond prices and some of the main principles of the yield calculations.

With one minor exception (Hypotekbank bonds in Christiania (Oslo) prior to 1881), all yield estimates are derived from market quotations on Norwegian bonds traded on the bourses of the main financial centres of Northern Europe (in the century until 1920) and in Christiania/Oslo (beginning 1881). Bond quotations are basically transcribed from contemporary newspaper sources before 1960[3]; thereafter the official lists published daily by the Oslo Stock Exchange have been used. The

[1]I would like to thank Forrest Capie for comments on this chapter. I am also indebted to Øyvind Eitrheim for useful discussions on methodological issues concerning yield curve estimation.

[2]Schön (1989) presents a broader view of Swedish capital import and the foreign borrowing policy of the Swedish government before WWI, which contains many interesting observations relevant to Norway as well.

[3]The most important domestic newspaper source is *Morgenbladet*, which provided Norwegian bond prices from foreign

monthly samples of potentially useful bond quotations increased from a few bonds in the early years before 1850, to about 50 monthly observations of government and Hypotekbank bonds in the period 1920 to 1945. The data base also includes yields on bonds issued by private credit enterprises, beginning in 1920, and private industrial companies from 1960. After the reinvigoration of the domestic second-hand bond market in the early 1980s the number of bonds listed on the Oslo Bourse increased considerably. In the peak years of the mid-1980s we have monthly data for more than 250 bonds issued by credit enterprises, about 100 industrial firms and 70 bonds issued by the government or carrying government guarantees. For each of these bonds all technical aspects of the loan contracts that were relevant to the correct calculation of the yield were coded and fed into a computer program that calculated the yields on individual bonds.

The main purpose here is to derive a representative monthly yield series for each of the issuer categories referred to above. Before 1921 the character of the bonds traded only permits the computation of the yield on long-term maturities. However, we are able to present yield estimates of all maturities along the yield curve, although with some gaps at the short end, beginning in 1921 for government bonds. Such estimates have also been derived for the bonds of private credit enterprises and industrial companies as from 1960, but short-term maturities are available only from the 1980s.

In order to derive time series of bond yields we need to clarify the principles involved in (1) computing the yield on individual bonds, (2) which bonds to include in the samples from which monthly yield estimates are computed, and, finally (3) the method used to estimate the yield for a given maturity. We comment briefly on each of these issues.

The calculation of the yield of individual bonds follows the principles advocated by the International Securities Market Association, using the concept of *redemption yield* as our yield measure.[4] A *redemption yield* is (in contrast to simple or current yield) what is usually referred to somewhat loosely as the 'effective yield' of a bond; more formally it is the discounting factor that would make the sum of the present value of all assumed future expected cash flows (coupon payments and repayments of capital) equal to the market price of the bond. In conformance with recent practice an annual compounding period is used, which makes the calculated yield comparable across bonds with different coupon periods per year.[5]

At present nearly all actively traded bonds in the Norwegian market are straight bullet loans, i.e.

markets for nearly a century starting in March 1822. In a few periods quotations were not printed. For the years 1867 - 1880 and 1912 bond prices in Hamburg were taken from *Hamburger Börsenhalle*. London quotations beginning December 1876 were transcribed from *The Investor's Monthly Manual*, a monthly supplement to *The Economist*. Norwegian bonds were quoted on the Paris Bourse from 1886 and were found in *L'Economiste Français.* Other sources used include *Berlingske Tidende, Farmand, Dagbladet* and *Bergens Tidende.*

[4] See Brown (1998). Norske Finansanalytikeres Forening (2001) provides some details on institutional features of the bond markets in Norway at present which are useful in this connection.

[5] In the 120 year period prior to the 1980s nearly all bonds considered here carried half-yearly coupons. From the early 1990s all government bonds and bills as well as many private bonds have annual coupons. Before 1860 quarterly coupon payments was a normal feature of government and Hypotekbank bonds.

bonds with fixed coupons and a single redemption date. In this case yield calculations are fairly straightforward. Before 1990, however, for the vast majority of bonds, capital repayments were distributed over a number of years, which is often referred to as a sinking fund. In such cases calculating the yield as if the bond was held until the final maturity date is less relevant than a yield measure that takes into account the expected life of the bond. A key concept in this regard is the *average life* of a bond issue, which is defined as the average of the sinking fund dates weighted by the repayments. In this chapter we mainly use average life as a summary measure of the expected time to maturity. In yield calculations we use a slight modification of the average life concept, which is *equivalent life*, obtained by discounting capital repayments at the redemption yield.[6]

A further complicating feature in yield calculations of long-term bonds is the existence of call options. Typically this allows the issuer to redeem the bond at par after a certain period from the date of issue, say 5 or 10 years, but well before the scheduled final maturity date. This option is of value to the issuer if a funding operation can be undertaken whereby the original bond is redeemed and a new issue is launched at a lower interest rate. This presents a major problem in yield calculations during long periods of a generally falling nominal interest rate level, such as the early 1880s and much of the 1930s.[7] In general, we follow as a rule the conventional practice of computing the yield to the first call date if the bond is trading above par and disregarding the call option if it is quoted at par or lower. However, the likelihood of the call option being exercised will always depend on the circumstances prevailing at the time, and each case must be evaluated separately. Generally, the most consistent estimates of long-term bonds in such cases are obtained by relying on bonds with the lowest coupon rates.

Having computed the yield on individual bonds, the next issue to be dealt with is the selection of bonds to be included in the estimates of the representative yield series. We use a weighted average of the yields on all bonds (within the relevant maturity range) whose yields are not distorted by such extraneous factors as call features and other factors that make them unrepresentative of the present state of the market. The weights are recalculated each month on the basis of the updated sizes of the bonds in the sample. For bonds where a sinking fund is in operation the amounts outstanding are reduced gradually in line with the redemption schedule. Ideally, we would liked to base our estimates of the relative volumes traded, but this is infeasible. The amount outstanding is clearly a proxy for the liquidity and marketability of the bond, although far from perfect in this regard. But it seems intuitively reasonable to regard the yield of a large bond issue as more 'representative' than a smaller one, which normally would be less frequently traded.

[6] A related measure is the *duration* of a bond, which is defined as the average life of the present values of all future cash flows from the bond. Thus, the duration concept implies discounting both capital and coupon payments, while equivalent life only uses the present value in the case of capital payments.

[7] The historical literature abounds with examples of bond yield estimates being distorted because of the influence of early redemption on the market price of the bond. For one example affecting Norwegian government bonds, see Statistics Norway (1965, p. 305).

Until 1920 the government and Hypotekbank bonds traded on the bourses were nearly all of very long maturity. This is due to the fact the new bonds issued were extremely long-term, mostly 30 to 60 years to final maturity. In addition, the period of falling nominal interest rate level extending from the early 1870s to the late 1890s implied that many issues were redeemed at an early date, typically after about 10 years of issue, and converted into bonds with lower coupon rates. During the 1920s, however, a sufficient number of observations belonging to the short end of the yield curve gradually emerge, enabling us to estimate representative yields for the whole maturity range above one year.

There are several methods that can used to estimate the term structure of interest rates. A widely used technique is to estimate spot yield curves (as well as forward rates) by econometric methods.[8] We made some attempts with the modified Nelson-Siegel model suggested by Svensson (1995). However, during part of the period considered here we lack yield observations at the very short end of the yield curve, i.e. one year or less, which often resulted in rather extreme functional forms of the estimated yield curve at the short end. It was decided instead to use a non-parametric averaging method around each maturity, which gives a smoothed but quite flexible functional form of the estimated yield curve.[9] In short, this procedure estimates the yield at a specific point of the yield curve, say 5 years of average life, by first calculating a weighted average of two size-weighted portfolios of bonds within a fixed range on either side of 5 years. The weights decline with the distance from the 5 year maturity.[10] Then the yields of these two portfolios are weighted together so that the average life is exactly five years. Thus the weight given to a particular yield observation will be higher the closer the bond is to the chosen maturity and the greater the size of the bond issue.

3. The period 1820 - 1914: The integrated European bond market era

3.1. The bond markets

3.1.1. Government bonds 1820 - 1914

The foreign loan of 1820 was only the first of many foreign loans that were raised by the Norwegian government in the period to 1914, as can be seen from Table 1, which summarizes some important features of the long-term government bond issues.[11]

[8] See for example Anderson, Breedon, Deacon, Derry and Murphy (1996) for a general overview.

[9] A similar (but not size-weighted) method is currently used by the Oslo Stock Exchange to compute bond indices, see *www.oslobors.no* for further technical details.

[10] The weights are assumed to follow the normal distribution, which is a conventional (but not theory based) assumption.

[11] In addition to the long-term bonds several other external loans of short duration were contracted. These include a loan denominated in pound sterling, amounting to 4 million kroner, from Baring Brothers during the commercial crisis in 1857, and a loan of 6 million kroner provided by Skandinaviska Kreditaktiebolaget in Stockholm in 1876. Both loans were repaid within one or two years and do not seem to have been among the listed securities on the bourses. Some small bond issues that were seldom quoted on the markets are also excluded from the table, including 1.3 million kroner of sterling and krone bonds in 1899, which were issued in connection with the government purchase of the shares of Hovedbanen, the first Norwegian railway line.

The Kingdom of Norway, the new sovereign state born in 1814, made some vain attempts at raising a badly needed foreign loan in London and Amsterdam in 1817 and 1818. The failure may be due to a number of political and economic factors, including market perceptions of the viability of the newly constructed nation as well as stringent money markets. It is also surmised that the poor credit rating of Norwegian businessmen at the time was transferred to the sovereign.[12] Eventually, a loan was concluded with the banking firm of Bennecke in Berlin in January 1820, using Norway's custom revenues as collateral. The exact cost of the loan is somewhat ambiguous, as there is conflicting information about the net price, but the effective rate of interest was probably in excess of 12 per cent.[13] As a new borrower it is likely that Norway had to pay a certain risk premium to obtain this loan, but it is not clear how large this premium was, considering the very strict terms other sovereigns faced on the European bond markets at the time.[14]

The high interest cost and, in particular, the patronizing and costly administration of the Bennecke loan, led to the conviction that the bond issue was a national disgrace and was thus conducive to its early redemption in 1825. A new loan was agreed with the banker C. J. Hambro in Copenhagen already in 1822, which marked the beginning of a long-standing financial relationship. Over a period of more than 150 years the banking firm of Hambro was to serve as bankers to the Norwegian government. Hambro played a leading role in all new bond issues in the next 30 years following the 1822 loan and in the relatively large bond issues of the 1870s and 1880s.[15] As was the case with several of the issuing houses figuring in Table 1, the financial connections established during pre-WWI period were still actively used a hundred years later; the Deutsche Bank was involved in many government loans in the 1960s and 1970s and the most recent loan floated by Hambros Bank was a USD loan in 1978. The most prominent lender to governments in large parts of the nineteenth century, however, the House of Rothschild[16] is not on the list. In the crisis year of 1848 the Norwegian government did in fact approach the Frankfurt house of the Rothschilds with regard to a loan, but in the end the Hambro connection was what secured a loan contract.[17]

There are several general features of the pre-WWI bond markets to be noted from this table. With some minor exceptions the Norwegian government bearer bond issues of this period were floated abroad. Hamburg, London, Copenhagen and Berlin provided most of the funds until the 1890s.[18]

[12] Kristiansen (1925, 1931) provides a useful overview of the economic and financial development of Norway between 1814 and 1830.

[13] The figures given in Table 1 are based on the information in Kristiansen (1931, pp. 289-290).

[14] The Austrian 5 per cent *metalliques* bonds yielded about 7 per cent at the end of 1819, the 4 per cent Prussian government bond was quoted at 71.625 yielding 5.6 per cent, according to the data in Kahn (1884). See also the discussion in Kristiansen (1931, p. 290).

[15] See Bramsen and Wain (1979) for the history of the Hambros.

[16] Ferguson (2000).

[17] In a report to the Storting from the Department of Finance dated October 1848 it emerges that Baron Rothschild had politely declined to give a loan to Norway, although he held the highest regard for the credit rating of the Kingdom. He also stated that his opinion was that only Hambro was able to provide such a loan at the moment (*Norwegian Parliamentary Papers, St. prp. no. 3 of 1851*).

[18] The banking firm of C. J. Hambro and Son moved from Copenhagen to London in 1838.

Beginning with the loan of 1894 French capital became very important, being the chief source of all the relatively large loans raised during the next eleven years up to and including the 1905 loan. After the major conversion loan operations of 1886 and 1888 London, which was equivalent with Hambro, was not involved until the final pre-WWI government bond of 1911. Ever since 1822 Danish banks had participated in many issues, typically taking a 10 - 25 per cent share of the loan. Beginning 1896 this applied to Swedish banks as well.

Looking at the list of issuing houses and the currencies of denomination, it is evident that financial markets in Europe were highly integrated. In many cases banking firms from several countries participated in floating the loans, which were typically launched simultaneously on the bourses of Hamburg, London, Paris, Copenhagen, Stockholm and Oslo.[19] A typical mixture of lenders in the 1870s and 1880s was German banks and Hambro of London. In the 1890s German and French banks, with some Scandinavian participation, were leading the issues - but French and British capital together was never observed.

The international character of the secondary markets for these bonds went beyond the issue market. The four loans issued between 1822 and 1834 were contracted with Hambro of Copenhagen, but also extensively traded in Hamburg. The 1886 and 1888 loans, for which Hambro of London was the sole bank of issue, were traded on the bourses of Paris, Hamburg and the Scandinavian capitals. Prior to the loan of 1876 the Hamburg bourse provides the most consistent source of secondary market quotations for Norwegian government bonds, which signals that the German market was the most important in these years. The loan of 1876 marked the beginning of a period of strong British participation, and during the next twenty years London and Hamburg were the major markets. In the first decade of the twentieth century Paris was indisputably the leading market for Norwegian government bonds.[20] The strong position of Paris in the late 1890s and in the 1900s is worth noting, even the domestic loan of 1895, which was denominated in kroner only, was quoted in Paris. After 1909 the French dominance seems to have subsided somewhat. The loan of 1911 witnessed the return of Hambro to the Norwegian issue market. In this case Hambro cooperated with another London based merchant bank, Swiss Bankverein, as well as with German and Swedish banks.

All bonds listed in Table 1 were payable in currencies of fixed silver or gold value. Before 1874 all bonds were in silver. Hamburg Banco was the standard unit of account during the silver standard period.[21] This currency was equivalent to a fixed amount of fine silver, but it was not minted in silver specie, i.e. coins.[22] The Norwegian currency prior to 1873, the speciedaler, obtained a fixed market value in terms of silver only in 1842. The speciedaler loans of 1828 and 1834 were therefore

[19]The name of the capital of Norway was Christiania or Kristiania until 1925, but for simplicity we refer to the city as Oslo throughout the period in this chapter.

[20]This was explicitly stated (p. 2) in the 1902 issue of Kierulf's *Haandbok over norske obligationer og aktier*. The same source notes that these bonds were also traded in London, and to a lesser extent, in Hamburg.

[21]The United Kingdom was on a gold standard as early as 1821. Even so, the 1848 and 1851 loans, in which Hambro (then based in London) played a leading role, were denominated in silver (banco) only.

[22]See Keilhau (1952, p. 40-41).

denominated in silver specie rather than in speciedaler valued at the market rate, which made them more readily marketable in Copenhagen and Hamburg.

After most European countries had abandoned silver in favour of gold in the early 1870s bonds could cross the borders freely without much consideration of exchange rates. As can be seen from the table, in most cases these securities were even formally multicurrency bonds, being denominated in various currencies convertible at fixed exchange rates. The loan contract of the 1884 loan, for example, stated that bonds of, say, £100 were equal to 2520 French francs, or 2040 reichmarks or 1813.33 kroner. The bondholders could freely choose in which currency the payment of coupons or amortization should be made by presenting the documents at the proper location.[23]

[23]The Commerz- und Disconto-Bank in Hamburg was the sole contractor of the 1884 loan, and was of course its agent in Hamburg, but according to the contract, payments could also be effected by London and Hanseatic Bank in London, Banque d'Escompte de Paris in Paris, Deutsche Bank in Berlin, Deutsche Effecten- und Wechselbank in Frankfurt, the House of Lippmann, Rosenthal and co. in Amsterdam as well as by Christiania Bank og Kreditkasse in Oslo.

Table 1. The bearer bond issues of the Kingdom of Norway 1820 - 1914

Year of issue	Coupon rate	Net contract price	Net interest cost	Nominal loan amount	Issuing houses	Currency denominations	Year of scheduled maturity	Actual year of redemption
1820	5.0	58.9	12.56	3.6	Bennecke	H Banco	1840	1825
1822	6.0	83.3	8.13	9.6	Hambro	H Banco	1852	1834
1825	4.0	92.0	5.42	3.4	Hambro	H Banco	1840	1836
1828	4.0	91.0	4.89	1.2	Hambro	Nspd silver	1858	1858
1834	4.0	95.0	4.93	4.8	Hambro	[H Banco, Nspd silver]	1849	1847
1848	4.0	91.0	4.94	6.0	[Hambro, Heine]	H Banco	1878	1878
1851	4.0	97.0	4.39	4.8	[Hambro, Heine]	H Banco	1881	1881
1858	4.5	96.0	5.09	14.4	[NorddB 50, Heine 29, Erlanger 21]	H Banco	1888	1880
1863	4.5	96.5	4.98	6.0	[NorddB, Heine, Suhr, PrivbK]	H Banco	1893	1880
1871	4.5	98.6	4.83	1.0	none	kr	1881	1881
1872	4.5	97.5	4.77	6.0	[DnC, CBK, DanskeLM]	Nspd(kr)	1903	1884
1874	4.5	97.5	4.79	20.0	[Hambro, NorddB, Warschauer, PrivbK]	rmk,kr	1905	1884
1876	4.5	95.0	5.08	24.0	Hambro	£	1916	1887
1878	4.5	95.0	5.08	30.9	[Hambro, NorddB]	£,rmk	1932	1889
1880	4.0	97.7	4.32	21.0	[Hambro 67,	£,rmk,frcs	1934	1892

Table 1. The bearer bond issues of the Kingdom of Norway 1820 - 1914

Year of issue	Coupon rate	Net contract price	Net interest cost	Nominal loan amount	Issuing houses	Currency denominations	Year of scheduled maturity	Actual year of redemption
					NorddB 33]			
1884	4.0	98.1	4.19	25.0	CommerzDB	£,rmk,frcs,kr	1926	1888
1886	3.5	96.1	3.75	30.9	Hambro	£,rmk,frcs,kr	1961	1961
1888	3.0	86.1	3.69	64.6	Hambro	£,rmk,frcs,kr	1963	1963
1892	4.0	98.9	4.12	10.0	[CommerzDB 25 DeutscheB 27, BerlinHG 27, NationalbD 20]	rmk,kr	1942	1903
1894	3.5	96.2	3.76	39.7	[Behrens, Bleichröder, DiscontoGB, CNEParis, DanskeLM]	£,rmk,frcs,kr	1944	1944
1895	3.5	99.4	3.59	12.1	ChrHBank	kr	1920	1920
1896	3.0	98.2	3.12	25.4	[ChrHBank 4, SEB 28, CrLyonnais 34, BPPays-Bas 34]	frcs,£,kr	1946	1946
1898	3.5	96.6	3.93	20.9	[SEB 13, DanskeLM 7, PrivbK 7, CrLyonnais 30, BPPays-Bas 30, Behrens 7, NorddB 7]	frcs,£,kr	1918	1918
1900	3.5	91.0	4.08	32.4	(as for 1898 loan)	frcs,£,kr	1950	1950
1902	3.5	96.0	3.74	36.4	[CentralbN 5, SEB 11, DanskeLM 5, PrivbK 5,	frcs,£,kr	1962	1962

Table 1. The bearer bond issues of the Kingdom of Norway 1820 - 1914

Year of issue	Coupon rate	Net contract price	Net interest cost	Nominal loan amount	Issuing houses	Currency denominations	Year of scheduled maturity	Actual year of redemption
					CrLyonnais 27, BPPays-Bas 27, DeutscheB 10, Behrens 5, NorddB 5]			
1903	3.0	91.2	3.53	13.3	CNEParis	frcs,£,rmk,kr	1953	1953
1904	3.5	97.1	3.68	41.2	[CentralbN 7, SEB 11, Danske LM 7, PrivbK 7, CrLyonnais 27, BPPays-Bas 27, Behrens 7, NorddB 7]	frcs,£,kr	1964	1964
1905	3.5	96.0	3.75	36.2	[CrLyonnais, BPPays-Bas]	frcs,£,kr	1964	1964
1911	4.0	98.0	4.15	40.0	[Hambro 15, SwissBV 20, NationalbD 15, SchaaffhBV 15, BHIBerlin 15, SEB 7, StockhH 7, BSödraS 5]	£,frcs,rmk,kr	1971	1938

NOTES by column: Coupon rate: Coupon payments were made half-yearly, except in the case of the loan issues of 1822 through 1851, which had quarterly coupons. The coupon rate of the 1886 loan was reduced to 3 per cent in 1898. Net contract price: This is the percentage of the face value paid by the loan contractors to the government. Net interest cost: The net borrowing cost, computed as an annually compounded rate on the assumption that all bonds are redeemed at par according to the scheduled plan. The calculation takes into account the net issue price, costs of bond issue incurred by the government, including any commission paid by the borrower in connection with the payments of coupon interest and amortization. Beginning with the loan of 1858 the semi-annually net interest rate calculated by the Department of Finance has been used after converting it to an annually compounded rate; for the loan issues of 1820 through 1851 this figure is calculated here on the basis of information in loan contracts and other sources listed below. Nominal loan amount: Nominal value of bonds issued, calculated in millions of Norwegian kroner. Issuing houses: In the case of several contractors the numbers given are their percentage share of the issues; if no number is given the shares are equal. The abbreviations used are: Bennecke = Bennecke Brothers, Berlin; Hambro = C.J. Hambro & Son, London (located in Copenhagen before 1839); Heine = Salomon Heine, Hamburg; NorddB = Norddeutsche Bank, Hamburg; Erlanger = Raphael Erlanger, Frankfurt; Suhr = J. V. Suhr, Copenhagen; PrivbK = Privatbanken i Köbenhavn; DnC = Den norske Credtibank; CBK = Christiania Bank og Kreditkasse; Danske LM = Danske Landmandsbank, Copenhagen; Warschauer = Rob. Warschauer, Berlin; CommerzDB = Commerz- und Disconto-Bank, Hamburg; DeutscheB = Deutsche Bank, Berlin; BerlinHG = Berliner Handels-Gesellschaft; NationalbD = Nationalbank für Deutschland, Berlin; Behrens = L. Behrens & Sons, Hamburg; Bleichröder = Bleichröder, Berlin; DiscontoGB = Direction der Disconto-Gesellschaft, Berlin; CNEParis = Comptoir National d'Escompte, Paris; ChrHBank = Christiania Handelsbank; SEB = Stockholms Enskilda Bank; CrLyonnais = Credit Lyonnais, Paris; BPPays-Bas = Banque de Paris et des Pays-Bas, Paris; CentralbN = Centralbanken for Norge, Oslo; SwissBV = Swiss Bankverein, London; SchaaffBV = A. Schaaffhausenscher Bankverein, Berlin; BHIBerlin = Bank für Handel und Industri, Berlin; StockhH = Stockholms Handelsbank; BSödraS = Bankaktiebolaget Södra Sverige, Helsingborg. Currency denominations: H(amburg) Banco had a fixed silver content throughout the period, which in practice made this currency equivalent to silver species. Nspd silver = Norwegian speciedaler in fixed silver value, kr = kroner (Norwegian, Swedish or Danish), rmk = German reichsmarks; frcs = French francs. **SOURCES:** Details on the loan issues are taken from the annual volumes of *Norwegian Parliamentary Papers* (published as *St. prp.* or *St. med.*) Much information is also available from *Kierulfs haandbok over aktier og obligationer* of 1902 and later issues, covering the loans from 1886 onwards; see also Kristiansen (1931), Woxen (1889) and *Farmand* March 10, 1894, for useful summaries.

3.1.2. The bonds of Kongeriket Norges Hypotekbank 1851 - 1914

In 1851 the Norwegian parliament decided to establish a public bank whose purpose was to offer mortgage loans to private individuals. The Kongeriket Norges Hypotekbank soon became the primary source of long-term credit in connection with the conveyance of farms and landed property. The share capital was provided by the parliament, but otherwise it was dependent on floating long-term bonds on the market with respect to funding the mortgage loans.[24]

The long-term bearer bonds issued by the Hypotekbank were sold on tap from its main office in Oslo and on commission in Hamburg, Altona and Copenhagen.[25] This pattern remained much the same throughout the 19th century; the domestic market and German investors purchased the bulk of the

[24]The general history of the Hypotekbank is written by Kaartvedt and Hartsang (1952). It contains much interesting material on the development of the bond markets in Norway and abroad in this period. A short account of the financial activities of the bank up to 1890 is given by Aschehoug (1891). Annual reports and detailed accounts were sent to the Storting and were published in Norwegian Parliamentary Papers as *Stortingsmelding.*

[25]The commissioners in Hamburg and Altona in the 1850s and 1860s were the bankers C. H. Donner and Salomon Heine; in Copenhagen J. P. Suhr was their commissioner. Later Behrens and Söhne in Hamburg and Danske Landmandsbank in Copenhagen were the chief connections.

new bonds, some bonds were also sold in Denmark. The English market was never opened to the bonds of Kongeriket Norges Hypotekbank, but between 1900 and 1909 Credit Lyonnais and Banque de Paris et des Pays-Bas were the sole purchasers of the bond issues. The dominance of French capital markets as a source of finance in the first decade of the twentieth century parallels the case of government loans discussed above.

From the annual accounts of the Hypotekbank we know the geographical distribution of the interest payments to bondholders. These bonds were, as was the case for most government bonds, multicurrency bonds, denominated in kroner and reichsmark at a fixed exchange rate. Between 1900 and 1909 bond issues were also denominated in French francs. On the assumption that bonds presented for payment in Oslo were owned by Norwegians, those presented in Hamburg were held by Germans etc. an estimate of the distribution of the stock of Hypotekbank bonds can be readily made. This assumption is quite plausible before August 1914 because of the small currency fluctuations during the metallic standards.[26]

Between 1854 and 1860 as well as from 1870 to 1893 more than 50 per cent of interest payments were made in Norway. In the 1860s Copenhagen and Altona/Hamburg accounted for 50 to 70 per cent. The German proportion grew steadily from 26.9 per cent in 1880, passing 50 per cent in 1894. The domestic proportion was reduced from more than 60 per cent in 1889 to 20 to 25 per cent around the mid 1890s, at which level it was maintained until WWI. This was a period of heavy capital import to Norway, and it is also consistent with the fact that government bonds were less frequently quoted in Christiania in the 1890s and 1900s than in the 1880s. Beginning 1900 the French issues increase the proportion of interest paid in Paris, passing Hamburg in importance in 1910. At the eve of WWI almost 45 per cent of the bonds were presented for payment in France.

The connection between the location of interest payment and the nationality of the bond holders is far more questionable after 1914, as reichmarks and francs depreciated against Norwegian kroner. By 1917 Swedish kronor had appreciated against Norwegian kroner. We know that the Hypotekbank allowed Danish and Swedish bondholders to get their coupon payments in Copenhagen and Stockholm, in Danish kroner and Swedish kronor, respectively. It was consequently more profitable for French and German bondholders to claim payment in Swedish kroner, which was honoured in 1917 (when 26 per cent was paid there), but not thereafter, although these bondholders were offered payment in Norwegian kroner.[27] From 1914 the proportion of domestic interest payments increased rapidly, by 1918 98.4 per cent was paid in this country and by 1920 only a small fraction (0.7 per cent) was still presented for payment in Stockholm.

[26] This was also the practice according to Kaartvedt and Hartsang (1952, p. 373).

[27] After 1920 French bondholders also claimed payment in gold because the text of the bonds stipulated a fixed gold content of the currency of denomination. This became a major legal issue between foreign bondholders and the Hypotekbank in the 1920s, as well as a political issue between the French and Norwegian governments. The gold clause was never honoured by the Hypotekbank. See Kaartvedt and Hartsang (1952, pp. 372-382) for a discussion.

Table 2 gives an overview of the nominal amounts of Norwegian government and Hypotekbank bonds on the markets in selected years between 1850 and 1920. The currency note circulation of Norges Bank is also included as a benchmark. Exact figures of domestic holdings of government bonds are unavailable for the period before 1899, but it is evident that only a small amount was held in this country. Of the loans listed in Table 1 the issues of 1871, 1872 and 1895 were intended for the domestic market. In addition, there were some perpetual bonds issued at several occasions during the nineteenth century. These amounted to approximately 8 million kroner until 1886-1887, when they were redeemed.[28]

Table 2. Nominal amount outstanding of government and Hypotekbank bonds 1850 - 1920. Millions of NOK.

Year	Government bonds		Hypotekbank bonds		Currency
	total amount	of which held domestically	total amount	of which held domestically	circulation
1850	14	(8)	0	0	20
1860	31	(8)	20	14	26
1870	30	(8)	36	20	28
1880	106	(11)	55	30	39
1890	115	(0.2)	80	45	50
1899	197	10	119	28	62
1914	358	6	220	64	134
1920	892	379	249	247	492

NOTES: The figures in parentheses in column 3 for the years before 1899 are government loans in Norwegian kroner issued in Norway only. Beginning 1899 the figures refer to estimates of government bonds actually held by domestic sectors, taken from Skånland (1967, pp. 100-101). The amount of Hypotekbank bonds held by domestic sectors is based on the fraction of interest payments presented in Oslo, see text for more discussion. Other sources are *Statistical Survey 1948, Statistics Norway, Oslo, 1949* and Klovland (1984).

The total amount of government bonds was larger than that of Hypotekbank bonds except in 1870. However, the amount of Hypotekbank bonds held by domestic sectors was much greater than the amount of government bonds in all the pre-WWI period. In summary, the active markets for Norwegian government bonds in the years before WWI were all abroad, initially in Hamburg and Copenhagen, later also in London and Paris. Hypotekbank bonds were traded actively in both Oslo and Hamburg, and, beginning in 1900, also in Paris.

3.1.3. Bond yields before WWI

A consular report from May 1820 referred to by Kristiansen (1931, p. 293) stated that the Norwegian loan of 1820 was quoted on the bourses in Hamburg and Berlin at 75 and 78 (to yield 7.5 and 7.2 per cent, respectively). As the loan was obtained from the bankers Bennecke in Berlin at a net price

[28] See Woxen (1889) for further details on loans issued in 1822 (redeemed by 1872) and 1828 (redeemed by 1858).

of 61.7 per cent in January 1820, this seems to imply a handsome profit for the issuing house.[29] However, a yield of about 7.5 per cent in 1820 was very much in line with the level at which Danish government bonds, denominated in silver, were traded at the time.[30] Accordingly, the market did seem to have reasonable confidence in the financial resilience of the Kingdom of Norway right from its first year as a borrower on the international loan markets.

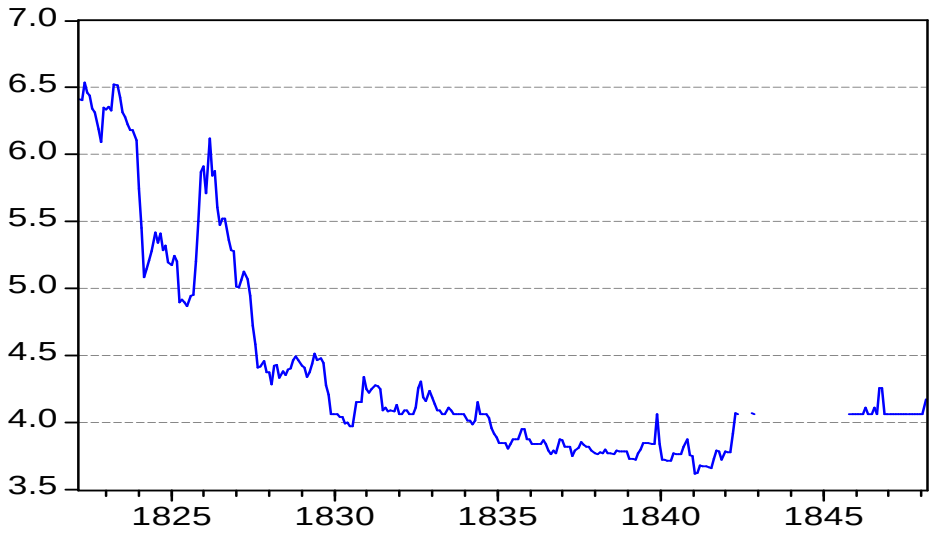

Figure 1: Yield on long-term Norwegian government bonds March 1822 - March 1848. Silver (Hamburg banco) bonds traded in Hamburg, Berlin and Copenhagen

Our continuous monthly yield data start in March 1822, when the Norwegian newspaper *Morgenbladet* began to publish regular reports on the market prices of government loans quoted in Berlin and Hamburg. A representative yield series is shown in Figure 1 for the period through March 1848.[31]

The figure shows a significant decline in the long-term interest rate during the 1820s; by the beginning of 1830 the 4 per cent loan of 1828 was trading at par. There was a marked but short-lived rebound in the level of the yield in the autumn of 1825 and winter of 1826, which is in conformance with the final phase of the international business cycle boom and money market stringency at the time. The rest of the period until 1848 is very tranquil with respect to long-term interest rate move-

[29] However, the report also surmised that the price could be brought down towards 70 by purchasing large volumes directly from Bennecke.

[30] See Danmarks Statistik (1969) for quarterly prices and yields of bonds quoted in Copenhagen.

[31] Before February 1824 the yield is derived from Berlin quotations; thereafter mostly Copenhagen, between February 1836 and December 1839 also Hamburg. The government yield data which are used in the graphs in this chapter can be found in Table A4 of the appendix. This series is considered to represent the most representative long-term yield on Norwegian government bonds. See the text for details on the actual maturities and market places used in computing the yield data in the various subperiods.

ments. Yields dipped below 4 per cent in 1834 and edged gradually downwards to 3.6 per cent in 1840-1841. In the middle of 1842 the yield rose to slightly above 4 per cent, around which it seems to hover until 1848. In the 1840s the amount of Norwegian government bonds traded on the market became very small, no longer being quoted on the bond market lists published in the contemporary newspapers.[32] The exceptionally strong financial position of the Norwegian government in the 1840s is thus the reason why our interest rate series exhibit significant gaps in the mid 1840s.

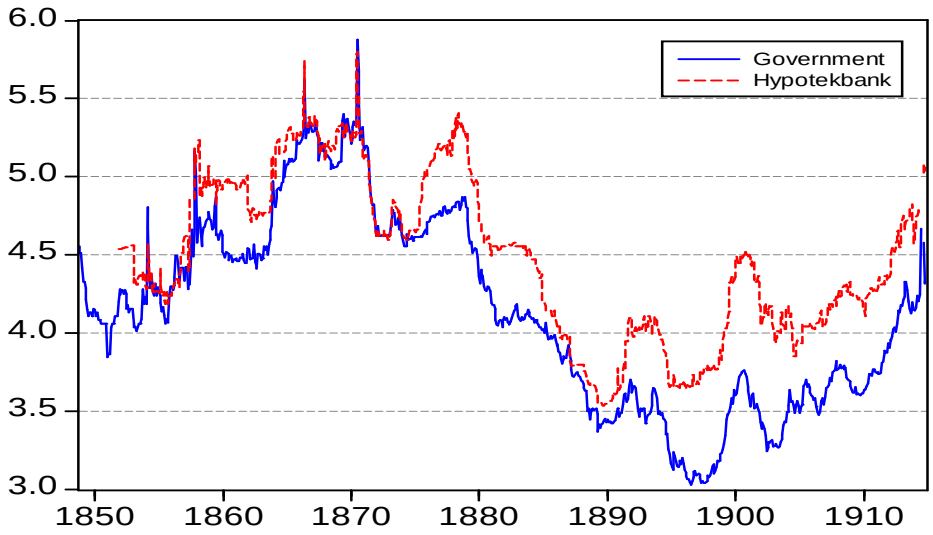

Figure 2: Yield on long-term Norwegian bonds October 1848 - December 1914

The new 30-year bond issue of 1848 was quoted on the Hamburg Bourse in October of that year at a price of 94.5, yielding 4.56 per cent. At first this loan was also regularly quoted in Copenhagen, but from the early 1850s it is evident that Hamburg superseded Copenhagen as the leading market place for Norwegian bonds. This did not only apply to government bonds, but to the bonds issued by the Kongeriket Norges Hypotekbank, which found its greatest market there in the 1850s. The monthly yields on government and Hypotekbank bonds from 1848 to 1914 are shown in Figure 2.[33]

[32] By December 1842 there were only two loans on still on the market, the small issue of 1828 (0.8 million NOK still not redeemed) and the rapidly diminishing stock of the 1834 loan (2.5 million still outstanding), scheduled to mature in 1849. Both issues were listed on the official price list of the Copenhagen Stock Exchange (*Københavns Kongelige Adressecomptoirs Efterretninger*, published in the Danish Newspaper *Berlingske Politiske og Avertissement Tidende*), but there are no quotations in 1843 and 1844. However, beginning November 1846 a new price list of stocks and bonds appear in *Berlingske Tidende*, which contains quotations on the 1828 issue (until March 1848) and the 1834 issue (discontinued after January 1847). The same conclusion as to the non-availability of price quotations of Norwegian government bonds in these years can be inferred from Danmarks Statistik (1969, pp. 160-163).

[33] The government bond yield curve is based on Hamburg quotations October 1848 to November 1876; thereafter and until the end of 1914 an unweighted average of London and Hamburg prices is used (the latter through October 1911 only), from February 1887 also Paris. The Hypotekbank series is based on Hamburg data before February 1881 and Oslo Bourse prices thereafter.

1848 was a year of economic crisis in Europe, and as the depression in economic activity lingered on, bond prices followed their normal course upwards, peaking in the winter of 1851, when the yield was once more below 4 per cent. The influence of business cycle events is evident from Figure 2. A particular example is the great commercial crisis of 1857, culminating in the autumn of that year, which is mirrored in a sharp peak of the government bond yield in November, a time of panic at the bourses of Northern Europe. The business cycle peak of 1866 and its concomitant financial market crisis in Europe is another example.

Business cycle effects are not the only factors shaping the short-run fluctuations in Figure 2, however. On several occasions, notably in February 1854, around the end of 1863 and July 1870 war events affecting Germany caused the prices of all bonds on the Hamburg market to plunge, even those of a small non-implicated country like Norway.[34] From the late 1870s, when the holdings of Norwegian bonds were shared between Hamburg and London, later also Paris, such war event effects seem to be less transparent. It is noteworthy that no political events emanating from Norway is evident from the graph. Even in the spring and summer of 1905, when Norway was on the brink of war with Sweden over the dissolution of the personal union, the yield series are hardly affected.[35]

The long-run trends in the level of the interest rates is evidently visible in the graph, swamping the cyclical fluctuations when a longer run view of Figure 2 is taken. From a low in the early 1850s the level rises to above 5 per cent towards the latter half of the 1860s and the year 1870, then falling to a secular low of slightly above 3 per cent in 1897. Towards WWI the trend of nominal interest rates is again rising, with the usual disturbances caused by business cycles. This picture is much in line with the evidence from the yield of other European nations' debt.[36] The long-run picture in Figure 2 is also yet another visualization of the strong correlation between nominal interest rates and the *level* of commodity prices in the pre-WWI era, known as the Gibson paradox.[37]

It is evident from Figure 3, showing the yield differential between Hypotekbank and government bonds, that the Norwegian government was in general able to borrow on international markets at lower rate of interest than the Hypotekbank. Over the 1852 - 1914 period the yield differential averaged 34 basis points (0.34 per cent). There is a marked structural break in the mid-1870s, however, when the yield differential increased markedly. Between January 1852 and November 1876 the yield differential was 16 points, compared to 46 basis points from December 1876 until the Great War. The introduction of Norwegian government bonds to the London market following the Hambro loans of 1876 and 1878 may have contributed to the lower yield. This follows from the fact

[34] The first episode is related to the start of the Crimean war. The other two war events are the German-Danish conflict over Schleswig-Holstein early in 1864 and the Franco-Prussian war of 1870, respectively.

[35] As noted below, the prices of Norwegian government bonds in London were unusually weak relative to those in Hamburg and Paris in the first half of 1905, but it is not known whether there are any political considerations underlying this episode.

[36] See for example Homer (1977).

[37] Following the contributions of Irving Fisher it has been more natural to test for a positive relationship between the *rate of change* in prices and interest rates rather than looking for a connection between the *level* of prices and interest rates, hence the latter relationship is thought of as a paradox. See for example Friedman and Schwartz (1982) for further discussion.

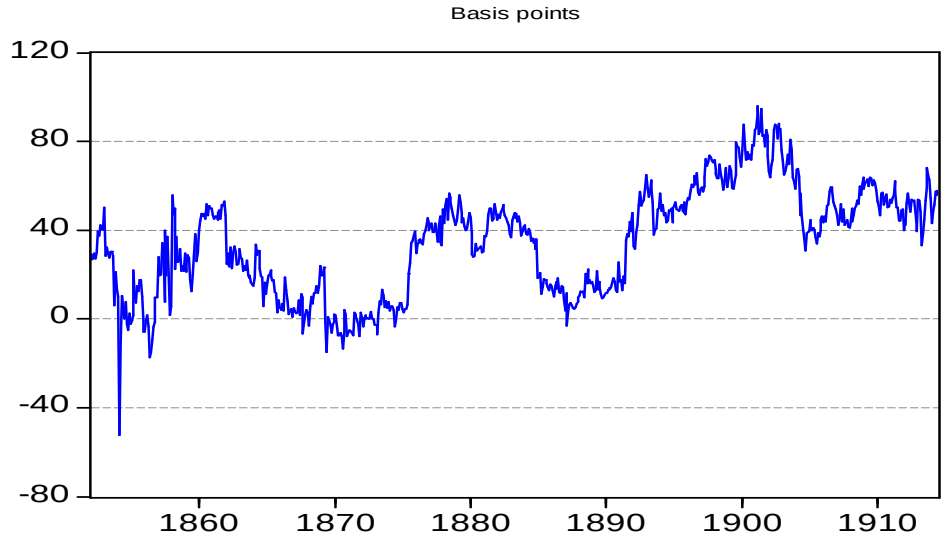

Figure 3: Yield differential (basis points) between Hypotekbank and government bonds 1852 - 1914

that the rate of interest on high-grade investments was as a rule lower in London than in Hamburg.

In the early years there are also some shorter periods of a negative yield differential, i.e. the government bond yield was higher than that of the Hypotekbank bonds, both being quoted in Hamburg. It occurs in some cases during periods of rapidly falling bond prices, as in the onset of the Crimean War in February 1854 and the Franco-Prussian War in 1870. The market for government bonds reacted evidently more quickly to unfavourable news than the market for Hypotekbank bonds, as would be typical of a larger and more liquid market.

The yield differentials derived from Norwegian government bonds quoted in London, Hamburg and Paris are shown in Figure 4. Disregarding for the moment the observations in 1887 and the first half of 1888, which are distorted by special factors,[38] the broad impression is that yield differentials were rather small. The great majority of observations of yield differentials fall within 10 basis points of each other.[39] Over the period from July 1888 to December 1912 the *mean* yield differentials between London, Hamburg and Paris were 3 basis points or less in any of the three pairwise comparisons that can be made.[40] Over the same time period it emerges that the mean yield differential was less than 2

[38]The Hamburg observations are based on the 4 per cent 1880 loan through June 1888, whose price was affected by expectations of an early call being exercised by the government.

[39]Note that a direct comparison of published bond *prices*, rather than *yields* would not be appropriate. On the London and Paris bourses the convention was to quote the dirty price, i.e. the transaction price including accrued interest, whereas in Hamburg (and Oslo) the clean price (net of accrued interest) was quoted. Our yield calculations take into account these differences.

[40]In absolute value terms the average yield differentials were 5 basis points or less.

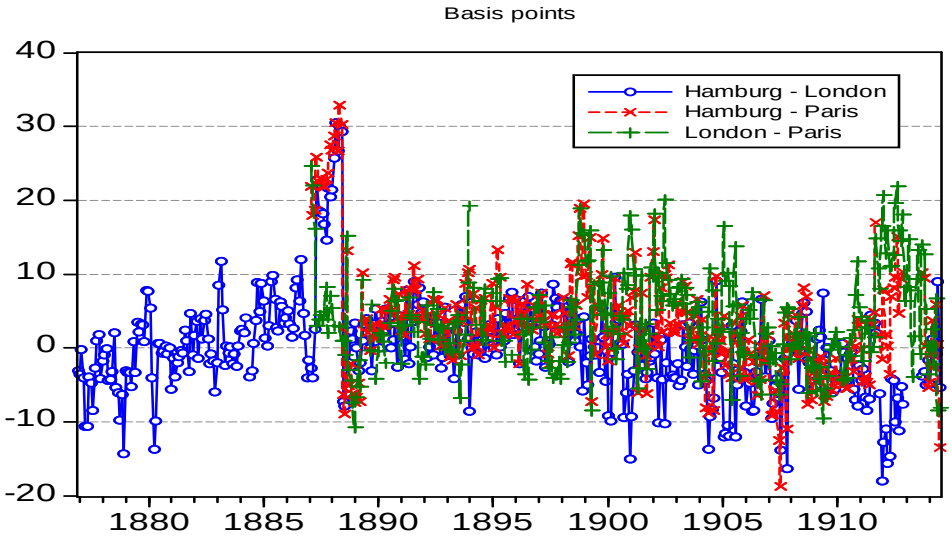

Figure 4: Yield differentials (basis points) on Norwegian government bonds quoted in London, Hamburg and Paris 1876 - 1914

points between Oslo and London, although it will be seen from the appendix table that these bonds were infrequently traded in Oslo in large periods after 1898.[41]

Thus, these data indicate that any large price differentials seem to have been quickly arbitraged away, as one would expect in an efficient market. Whether there still were unexploited profit opportunities after taking into account transaction costs has not been examined, but the broad impression is that the European market for Norwegian government bonds in this period can be regarded essentially as *one* single market. This implies, then, that although these bonds were crowded out from active trading on the domestic bond market in Oslo by the higher-yielding Hypotekbank bonds during large parts of the pre-WWI period, their yields, as inferred from quotations on foreign bourses, can be regarded as representative of krone denominated Norwegian government bonds.

The yield differentials on Hypotekbank bonds traded in Oslo, Hamburg and Paris are visualized in Figure 5. These curves highlight some important features of these data. To obtain a domestic yield series before 1881 we have to rely on information on the Hypotekbank bonds sold directly from its main office in Oslo, and our quotations are based on the recorded sales prices. During the money market stringency in 1857 and 1858 the Hypotekbank was severely curtailed on the domestic market

[41] It should be noted that these comparisons in many cases do not strictly refer to yield comparisons of identical bond issues. Bonds of the large issue of 1888 were frequently quoted in both London, Hamburg and Paris, but otherwise the most actively traded issues differed somewhat between the capitals. In Paris, the predominantly French issues of 1896 through 1905 (see Table 1) accounted for the bulk of trading in Norwegian bonds, but these were not quoted in London or Hamburg. Even so, yield differentials involving Paris were not greater than the London-Hamburg differential.

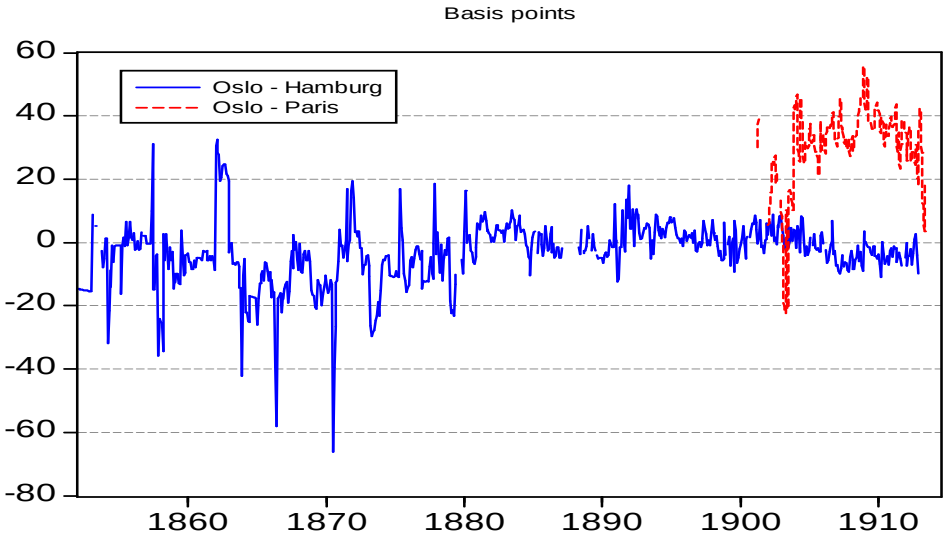

Figure 5: Yield differentials (basis points) on Hypotekbank bonds quoted in Oslo, Hamburg and Paris 1852 - 1914

because of the clause in the bank's rules that 4 per cent bonds could not be sold domestically below 92 per cent.[42] Also in later periods of capital market stringency sales tended to dry up, as the bank was generally slow to adjust its bond prices at home to the falling market prices in Hamburg. During such periods the domestic yield series derived from the primary market may be a biased estimate of the true market rate of interest. In addition, for some years the information on how bond prices varied over the year is somewhat ambiguous. Consequently, prior to 1881, the Hamburg series should be considered as more representative than the Oslo data.

More significantly, during the period from 1881 to the end of 1912, when the Hypotekbank bonds were quoted on the Oslo Stock Exchange, there is a close covariation between Oslo and Hamburg. The mean yield differential was less than 1 basis point. The Hypotekbank issues traded in Hamburg were the same as those actively traded in Oslo, and the prices of these bonds fluctuated closely together. The French issues of 1900 through 1909, however, were not introduced to the Hamburg market, and infrequently traded in Oslo. As can be seen from Figure 5 there was a fairly large and persistent yield differential between Oslo (based on the 1885 - 1898 issues) and Paris. This may be another manifestation of the relative capital market easiness of the French market in the early 1900s, but it should be pointed out that there is also a possibility that the yield differential is due to

[42]This clause was in line with the usury laws which did not permit mortgage rates being above 5 per cent. This had the effect that mortgage credit through regular financial intermediaries dried up during periods of high interest rates. See Kaartvedt and Hartsang (1952, pp. 114-131) for an account of this episode.

a technical aspect of the bond issues.[43]

4. The period 1915 - 1945: The growth of domestic bond markets

During the First World War the markets for Norwegian bonds changed character in several respects. The fluctuating exchange rates implied that the prices and yields of the multicurrency Norwegian bond issues now differed between the various financial centres.[44] The large surpluses on the current account in 1915 and 1916 were in part mirrored by the repatriation of Norwegian government and Hypotekbank bonds held abroad.[45] Disputes arose regarding gold clauses attached to the pre-WWI bonds and the right of bondholders to claim payments of coupons and amortized bonds in appreciated currencies (chiefly pound sterling or Swedish kronor). In the 1930s new legalization was introduced to prevent the flow of bond capital across the borders. All these features transformed the bond markets from being international to being primarily domestic.

In this period bonds issued by the Norwegian government dominated the market. The Hypotekbank also remained an important player on the domestic market, and other state banks (chiefly Norges Kommunalbank) gradually increased their funding on the bond markets as these institutions developed in the 1930s. The interwar years also experienced a nascent market for bonds issued by private credit enterprises.

We now give a brief overview of the activities on the new issue markets before turning to the yield data.

4.1. The new issue markets

After the outbreak of WWI loans denominated in Norwegian kroner (NOK), which were intended for the domestic market only, constituted the bulk of new issues. The bond issues floated abroad were now of the *foreign bond* category, i.e. they were denominated in the currency of the foreign country only.[46] The multicurrency bonds that dominated the pre-WWI era were no longer issued, reflecting the change in exchange rate regimes and less globalized capital markets. Table 3 shows the amount and currency composition of new issues for this period.

The foreign bond issues of this period will not be subject to further analysis here, but we note the

[43] The French Hypotekbank issues of 1902 through 1909 were all redeemable by drawings *or* purchase, whereas the latter option was not available in the case of the German issues prior of 1898 and earlier. Assuming that the bonds traded below par and that the government made use of the repurchase option to fulfi ll the redemption requirement, this might increase bond prices slightly above the market level and produce a spuriously low yield.

[44] Compare the yields in Oslo, London and Paris for the years 1915 to 1920 in Tables A1 and A2 of the data appendix.

[45] A similar tendency of repatriation of government bond issues can be observed in Sweden, see Franzén (1989).

[46] In the modern financial market literature (see e.g. Solnik and McLeavey (2003, p. 313)) the term *foreign bond* refers to a bond issued on a local market by a foreign borrower, denominated in the local currency. A *domestic bond* is issued locally by a domestic borrower.

heavy concentration on USD loans in the 1920s.[47] The traditional links to European bond markets from the pre-war gold standard era were now severed with the sole exception of a pound sterling loan in 1921 arranged by Hambros and Barclays in London. In the 1930s several relatively small bond issues were raised on the Swedish market by the government as well as by the Hypotekbank and other state banks. A new feature is also a small government loan in Swiss francs in 1938.

The activity on domestic bond markets was significantly higher during the three decades following the outbreak of the First World War than in previous or later decades. In contrast to the international character of the pre-WWI markets Norwegian government bonds denominated in NOK were now to a large extent traded at home. Some of the pre-war multicurrency bond issues were still quoted in London in the interwar years, but amortization and repatriation of these bonds gradually dried up the markets abroad.

The outbreak of the great war thus marked the watershed as to bond market activity in Norway. Kongeriket Norges Hypotekbank continued to finance their mortgage loan business by bearer bond issues, which in contrast to the pre-war years were now almost exclusively sold at home. Other state banks also increased their bond financing activities on the home market, surpassing the Hypotekbank as to the volume of new issues from the 1930s. But, as is evident from Table 3, the government was now the largest player on the market, being particularly active in the first half of the 1920s. Many new issues were also floated in the 1930s, which contributed to sustain an active market, but much of the activity was linked to conversion operations.

A new feature of the bond market in this period is represented by the private credit enterprises. The first bearer bond series issued by these institutions were launched in 1909. The bonds were very long term, with a final maturity date linked to the maturity of the mortgage loans which the bonds financed, often more than fifty years. The amounts issued were initially quite small, but increased gradually, particularly from the second half of the 1930s.

The war years mark a very special period in the financial history of Norway. The vast amounts of money needed to finance the expenditures of the Wehrmacht were obtained directly from Norges Bank by orders from the German administration. The result was that currency held by the public and bank reserves rose dramatically.[48] The Quisling government floated a number of unprecedentedly large government loans and Treasury bills in order to stem some of the inflationary pressure. Table 3 exhibits a strong increase in new government bonds in the 1940 - 1945 period; net issues during the five war years were far higher than in the previous 25 years. New bond issues were generally

[47] It may be surmised that the six relatively large loans in US dollars floated in New York between September 1920 and February 1928 were, at least in part, motivated by the decision to bring the depreciated Norwegian currency back to gold parity. Once this was achieved, on May 1 1928, borrowing in dollars ceased. The new dollar issues negotiated in 1936 and 1937 were conversions of old loans, undertaken with a view to reducing the coupon payments of the dollar debt.

[48] The monetary base increased from 685 million NOK at the end of March 1940 to 4413 million in May 1945 (see chapter 5 of this volume). See Statistics Norway (1945) and Milward (1972) for an overview of various aspects of the Norwegian economy in the war years.

welcomed by the commercial and savings banks, which were in desperate need of investment opportunities because of their swelling liquid reserves. For these reasons the wartime bond market was quite active in Norway.

4.2. The bond yield data

In the early 1920s the number of government and Hypotekbank bonds quoted on the Oslo Stock Exchange increased markedly as a consequence of the enhanced new issue activity. The effective range of maturities of government bonds was broadened as well, initially mostly due to the issuance of a 5 year government bullet loan in 1920. A more general feature which permitted the computation of medium term and short yields was the fact that when the long term market interest rates fell and many bond price series consequently stayed firmly above par the effective maturity was radically shortened. In line with market conventions it is most correct to calculate the yield to the time of the first possible call date rather than the scheduled final maturity.[49] Table A3 of the appendix lists government bond yields for a range of maturities from 2 years to the very long-term category of 20 - 60 years. Similar long term yields can be found for Hypotekbank bonds and bonds issued by private credit enterprises.[50] All yield data are size-weighted averages centered at the respective maturities, using the same procedures as in the previous periods.

Figure 6 shows the monthly yields of the short and the very long end of the yield curve. The series referred to as 'short' is the shortest maturity for which yields could be calculated; from January to May 1921 this is the four year maturity, from June 1921 to March 1922 three years and two years thereafter, except in November 1939 and some months in the first half of 1940. The 'long' series is an average yield of the 20 - 60 year maturity range, which was the most active market segment in most of the period, as most new government bonds issued were in the 30 - 50 year range. In Figure 6 recession periods are shaded, using the business cycle chronology for manufacturing production in Norway presented in Klovland (1998).

The long run trend in bond market yields was definitely downwards from the early 1920s through the war years, interrupted by relative short periods of higher interest rates, which were most pronounced at the short end of the yield curve. At the beginning of the 1920s both short and long term bond yields were high, in early 1921 the long rate was above 6 per cent and short and medium term rates even above 7 per cent in April and May. The contractionary monetary policy beginning in the second half of 1923, manifested by high central bank discount rates, led to high short term bond yields until

[49] It was sometimes possible to verify that this assumption was consistent with market anticipations by comparing yields on bonds having a regular final maturity date, say in two years' time, with yields on bonds having a call option two years ahead. In general the impression is that yields on such bonds were quite similar. It is also a fact that most bond issues were in fact redeemed at the first possible call date during the interwar years.

[50] The bonds issued by De Norske Bykredittforeninger (originally named De Forenede Norske Kredittforeninger) form the basis for the private credit enterprise yield data in this period. Bonds issued by Norges Kreditforening for Land- og Skogbruk were included in the 1920s, but were not used after 1929 because the yields were no longer in line with the Bykreditt bonds, presumably due to a deterioration of the market's credit risk assessment of these bonds.

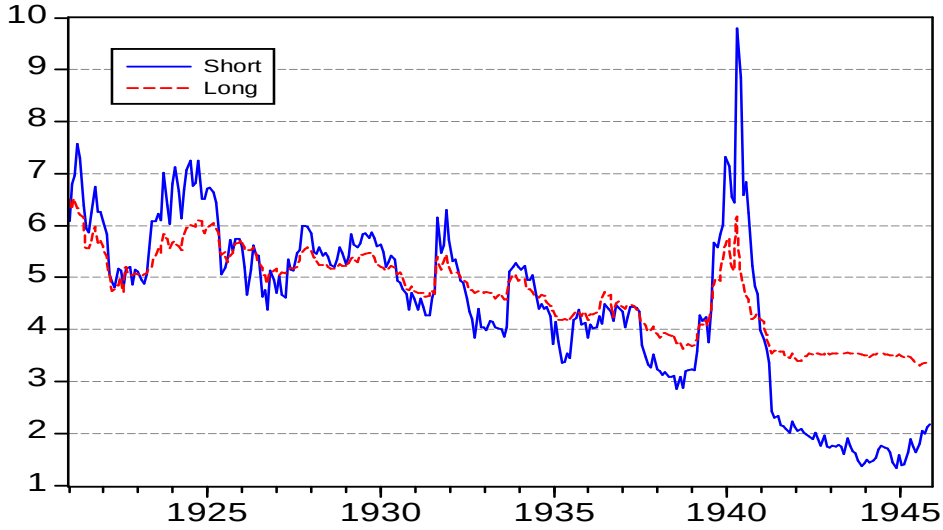

Figure 6: Yield on Norwegian government bonds January 1921 - December 1945

the winter of 1925. Reductions in discount rates, appreciation of the Norwegian currency and a business cycle recession in 1925 brought the level of market interest rates down and inverted the yield curve. During the 1920s long term government bond yields largely remained between 5 and 6 per cent.

There is a clear tendency towards falling interest rates in all recession periods throughout the inter-war years. However, this relationship is broken in September 1931 when Norway followed Britain and left the gold standard. There was a temporary increase in both short and long rates, but in a longer perspective the trend still pointed towards lower interest rates, which allowed the government and the Hypotekbank to carry on a number of conversion operations in the bond markets in the 1930s, reducing the coupon rates of their debt significantly. Domestic and foreign political events account for much of the short term cycles in the rest of the 1930s. The parliamentary election in the autumn of 1933 and the formation of the Labour government in 1935 created some nervousness on the capital markets, particularly in connection with discussions of plans for increased taxation of financial assets.[51] After this the bond markets were easy until the winter of 1939, when international political events brought about a sharp turn upwards in all interest rates.

The German invasion of Norway on April 9 1940 initially created a severe blow to bond prices. The April 1940 data reflect the quotations on April 8 because the Oslo Stock Exchange was closed the following day and did not open until May 21. When the markets opened again trading was extremely

[51] See Rygg (1950, pp. 586-587).

thin with few bid or transactions prices which might change considerably within a few days. The yield estimates must therefore be considered as uncertain in May and June 1940. It was decided by the authorities (the Administrative Council) that *coupon* rates on all bonds should be reduced by 20 per cent as from June 1 1940 - implying that a 5 per cent bond now paid a coupon rate of 4 per cent - subject to a maximum coupon rate of 4.5 per cent and a minimum rate of 3.5 per cent. The 3.5 per cent rate became the target rate for long-term government bonds stipulated by the authorities throughout the war.[52]

Within a short time after the war had begun excess liquidity began to accumulate in the banking sector because of the growing gap between the inflow of deposits caused by monetary expansion and the lack of demand for bank loans. Bonds were in practice the only type of interest bearing assets in which banks could invest their surplus funds. In May 1941 the yield on long term government bonds had fallen to 3.53 per cent, and it would probably have fallen much further if the government had not taken measures to prevent it from falling much below the target rate of 3.5 per cent. In December 1941 the first of six relatively large 3.5 per cent long term bond issues were floated on the market, which soaked up some of the excess liquidity. There were no direct controls of bond prices in the secondary market, but firm statements by the authorities and strict controls of the new issue market conditions ensured that the yield in the secondary market did deviate much from 3.5 per cent for long term government bonds.[53] A maximum of 1 per cent change in bond prices from one trading day to the next was introduced in April 1941, but on the whole the bond price quotations were considered as representative of the true market level during the war.[54]

In May 1941 the government decided to introduce Treasury bills. As bank liquidity soared these securities were in great demand by the banking sector. From December 1941 the maturities offered were 2, 3, 4, 5, 6, and 9 months, in November 1942 one and two year bills were also sold. The interest rates carried by these bills ranged from 0.5 per cent for 2 month bills to 1.5 per cent for two year bills.[55] The Treasury bills were not quoted on the bourse, but we have included them in our yield curve estimates, because it helps anchoring the short end of the yield curve to a representative market level for short term government papers.[56]

The development of the yield differentials of Hypotekbank and private credit enterprise bonds against

[52]The notion of a target long term rate of 3.5 per cent was firmly established by 1942, see Statistics Norway (1945, p. 23). This source contains a useful review of the financial events in the war years.

[53]Market commentaries in the controlled financial press typically informed the public that '[I]t has repeatedly and firmly been stated that the rate of interest now is 3.5 per cent and that the market therefore cannot or will not be allowed to fall below this level' (*Økonomisk Revue*, p. 840, no. 43-44, December 1942). The same source commented in June 1943 (p. 271, no. 23-24) that '[t]he monetary policy of the government is clear. As long as the war lasts the long term rate of interest shall be kept at 3.5 per cent, and later it will under no circumstances be a general increase in interest rates, rather a further reduction of the level of interest rates may take place.'

[54]This evaluation was made after the war in the foreword to the 1945 edition of Kierulf's *Håndbok over norske obligasjoner og aksjer.*

[55]The maturities offered and the discount rates were slightly altered in October 1943, see Statistics Norway (1945, p. 23).

[56]The interest rates were transformed from a discount basis to an equivalent bond yield according to standard procedures, see for example Credit Suisse First Boston (1988).

government bonds show some interesting features in this period. Such yield differentials computed from data in Table A3 are shown for long term bonds (20 - 60 years) in Figure 7. Before studying this graph in more detail a word of caution is required with respect to the interpretation of short term movements in these yield differentials. The government bond market was generally the most active market, representing a broader base from which yields could be computed. The yield on private long term bonds in particular may in some periods of falling interest rates be affected by pending conversion operations, which prevented bond prices from falling much below par, thus biasing the yield estimates. It might also happen that general shocks to the demand for bonds were not immediately reflected in bid or transaction prices in the less active markets. As a consequence it is more safe to focus on trend movements in the yield differential curves, too much significance should not be attached to observations from a single month.

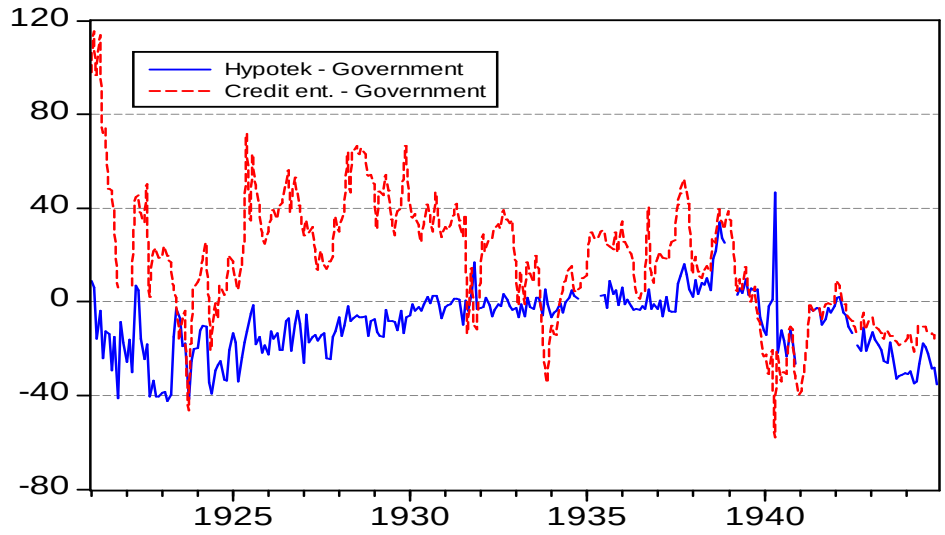

Figure 7: Yield differentials (basis points) against Norwegian government bonds January 1921 - December 1944

The broad conclusions are nevertheless evident from an inspection of Figure 7. In the 1920s the Hypotekbank bond yields were in fact lower than the government bond yields, reflected in Figure 7 as a negative yield differential. The yield gap was as high as 40 basis points in 1923, thereafter it gradually moved towards zero in the rest of the decade. Early in 1930 it had practically ceased to exist. The reasons for the negative yield gap in the 1920s are not obvious - it may reflect growing concern over the mounting government debt, which made the mortgage backed bonds issued by the Hypotekbank look relatively more attractive.[57] The apparent positive yield gap in 1938 is probably

[57]Distress sales of government bonds by troubled commercial banks may also have contributed to the depression of bond prices, but whether this effect was stronger in the case of government bonds than with respect to Hypotekbank bonds is not evident.

mostly a fiction of the data, as the call provisions of the Hypotekbank bonds created a bias to the yield estimates before April 1939. The private credit enterprise bonds yielded on the average some 20 to 30 basis points more than government bonds in the 1920s and 1930s - deviations from this level during several short periods may be partly spurious.

The yield differentials in the wartime are of some historical interest. A notable feature is the fact that the bonds issued by the prewar government were somewhat higher priced than Quisling bonds of similar maturity. This might to some extent be explained by anticipations of a future reversal of the reduced coupon rate, but it also had some political overtones.[58] In a similar way we see that after early 1941 government bonds yielded more than both Hypotekbank and private bonds. Political reasons are rather evident in this case as well - the Quisling government was presumably not particularly more popular with bondholders than with the rest of the population, and the Hypotekbank was a more 'neutral' institution. This motivation was not wholly emotional, as a rational investor might feel considerable uncertainty as to the fate of the bonds issued by the Quisling government after the war was over. The ultimate disastrous effects of inflationary finance might also play a role here; market commentaries often referred to the relative buoyancy of bonds backed by mortgage loans, i.e. Hypotekbank and private credit enterprise bonds.

After the war was over in May 1945 the bond markets were still buoyant, but as there was considerable uncertainty as to the future interest policy of the reinstated Norwegian government, bond prices changed only to a moderate extent in 1945. The yields edged somewhat downwards during 1945 for some of the medium term maturities, but rose slightly for short term bonds.

5. The period 1946 - 1979: The regulated era

The reduction of the discount rate of Norges Bank from 3 to 2.5 per cent on January 9 1946 was a decisive signal to the market that the general level of interest rates was to be adjusted downwards. Early in 1946 the government launched a series of new bond issues on the market. In January a 40 year loan with a 3 per cent coupon rate and 15 year loan paying 2.5 per cent were floated with great success. The heavy oversubscription of these loans allowed the government to offer a 2.5 per cent loan with a maturity of 30 years in March 1946.[59] Although this loan was met with somewhat less enthusiasm by the market, it was now considered that the 2.5 per cent level for long term government bonds had been firmly established.[60] Later in 1946 five more 30 year loans carrying 2.5 per cent interest were issued.

[58] This affected the prewar government loans with original coupon rates above 3.5 per cent, which had been reduced in June 1940. The first (rational investor) explanation can be found in *Økonomisk Revue*, p. 287, no. 25-26, June 1943. The second (politically motivated) investor theory is strongly endorsed in Statistics Norway (1945, p. 22). Both sources may be right.

[59] Note that because of the steeply upward sloping yield curve an increase in maturity for a given coupon rate represents an easing of market conditions with respect to new issues.

[60] This is the evaluation made in the preface to the 1946 edition of Kierulf's *Håndbok over norske obligasjoner og aksjer.*

The yield estimates during the transition to the new target level of interest rates in the first half of 1946 are somewhat uncertain because of the pending conversion operations of the existing prewar loans and the yet uncertain fate of the 3.5 per cent Quisling government bonds.[61] Some information from the new issue market has therefore been built into the long term yield estimates in the first months of 1946, but the exact timing of the fall of the long end of the yield curve down to 2.5 per cent is difficult to pin down with certainty. A similar problem affects the bonds issued by the private credit enterprises. In Table A3 it appears that the new level of 2.5 per cent was established in May 1946 for private bonds, when new issues bearing 2.5 per cent coupons came on the market.[62] The yield estimates in the previous months are likely to be biassed upwards because of the anticipated conversions affecting the prices of the higher coupon bonds.

Figure 8 shows the most representative long government bond yield (15 - 20 years maturity through 1949 and 10 - 15 thereafter) and the short term (2 year) rate for the period from January 1946 to December 1979. The most striking feature of Figure 8 is the appearance of almost pervasive control over interest rates in this period exercised by the monetary authorities. In this period the authorities basically controlled both quantities and prices in all new issue markets. The level of interest rates was administratively fixed. In general there was upward pressure on interest rates in the markets throughout the period from 1950, to which the government yielded on several occasions, heralded by an increase in discount rates. This occurred in February 1955, September 1969, March 1974, September 1976, February 1978 and November 1979.[63] These discount rate increases are reflected in Figure 8 as distinct steps in the bond yield series.[64]

The excess liquidity in the banking sector made it fairly easy to keep the long term bond yields at the 2.5 per cent level targeted in 1946 until the spring of 1950. At that time several factors began to exert an upward pressure on interest rates: the excess reserves of the banking sector had been significantly reduced, the Korean War created increases in consumer prices and higher interest rates elsewhere in Europe engendered expectations of a similar development in Norway.[65] The long bond yield edged above 3 per cent at the end of 1950 and rose further to 3.39 in November 1951 before falling back slightly in 1952. The government managed to stabilize the bond yields at that level in the following years, which was in line with the decision taken in 1952 to pursue a policy of low and administered interest rates.[66]

[61] At the end of June 1946 the coupon rates of the 3.5 loans issued by the Quisling government were changed permanently to 2.5 per cent, formally in breach of the loan contracts, as the first call dates of these loans were in 1947 and later.

[62] Between May 1946 and December 1949 the size-weighted average private credit bond yields in Table A3 also include bonds issued by Norges Hypotekforening for Næringslivet.

[63] The discount rate was reduced from 5.5 per cent to 5 per cent in October 1975, but raised to 6 per cent in September 1976.

[64] The exceptions are the 1976 and 1978 discount rate changes which were not accompanied by an increase in bond yields. Instead a 1.5 percentage point rise in bond yields was permitted in December 1977, when the first steps toward a liberalized bond market were taken.

[65] A useful review of the financial events in the 1950s can be found in Statistics Norway (1965), but note that the bond yield depicted on page 305 is highly misleading because it is a mixture of a short-term yield until the autumn of 1950 and long-term thereafter, see Klovland (1976).

[66] See Hanisch, Søilen and Ecklund (1999, pp. 183-187) for a survey of the contemporary discussion of monetary policy

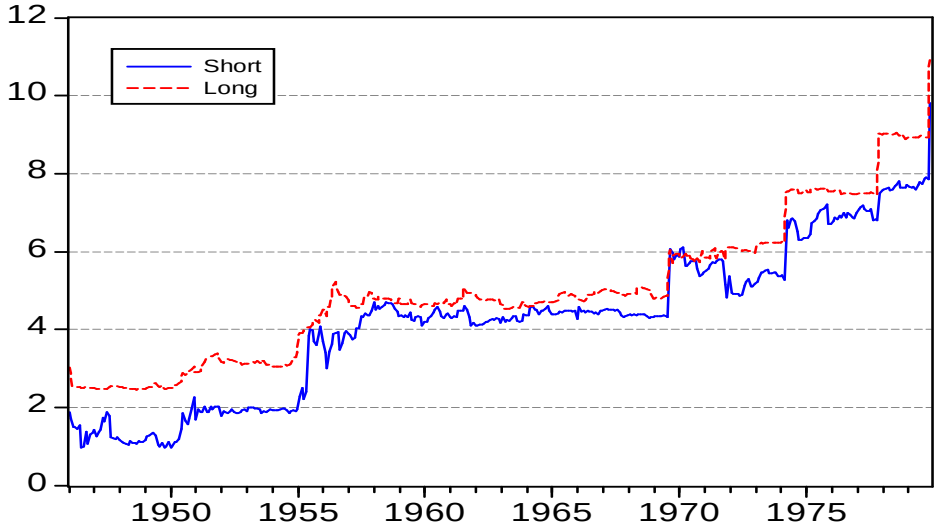

Figure 8: Yield on Norwegian government bonds January 1946 - December 1979

The government bond yield data of Table A3 are as far as possible based on bonds redeemable by drawings only. The new government bonds issued from 1946 to 1950 were also redeemable by purchase, but beginning with the 2.5 per cent issue of 1952 this option was no longer present, presumably intended as a slight concession to the market. From the mid 1950s the purchase option began to exercise an increasing upward pressure on the prices of these bonds, which resulted in their yields no longer being representative of the true market yield, and these issues were consequently no longer included in our sample.[67]

Because of the limited number of government bonds traded on the Oslo Stock Exchange the bonds issued by state banks and state owned companies that were fully guaranteed by the government were included in the sample beginning in January 1960. A regression equation was run for each monthly sample in which the yield of the individual bonds was regressed on terms including the time to maturity (average life) and a set of dummy variables taking on the value of unity for each bond category except government bonds.[68] This equation gave a monthly series of estimates of the yield differential against government bonds for state bank and other bonds with government

and the control measures taken.

[67] This feature of the bond market was noted by Schilbred (1972).

[68] The regression format is a simplified version of the Nelson-Siegel model adopted by Svensson (1995). Let R be the yield, m the average life and D a vector of dummy variables representing bond categories. The regression equation is specified as

$$R_i = \beta_0 + \beta_1 \exp(-m_i) + \beta_2 \cdot [1 - \exp(-m_i)]/m_i + \gamma D_i$$

Please note that the yield curve estimates are *not* derived from this model. The sole purpose is to estimate the γ coefficient, representing the average yield differential against government bonds. Experiments with adding coupon rate terms to the equation were done but the results were considered to be more robust without these terms.

guarantees. Typically this yield difference was about 20 to 30 basis points. Before applying the procedure used in estimating the size-weighted average yield for each maturity the estimated yield gap was subtracted from the non-government bond yields. Thus an implicit assumption here is that there is a liquidity or risk premium on non-government bonds that is constant along the yield curve and that the term structure of the non-government bonds is the same as for government bonds except for this constant risk premium. This is not obviously true, and may introduce a bias here, but there is a tradeoff between 'purity' (using only government bonds) and spanning the whole maturity range with a sufficient number of observations. If the sample had been restricted to government bonds only the yield estimates would have spanned a smaller portion of the yield curve during some periods.[69]

The rise in the long interest rate following the discount rate rise in February 1955 may have gone further than desired by the government, as it passed the 5 per cent level in the summer of 1956. From early 1957 to September 1969 the long-term interest rate was kept in a narrow range between 4.5 and 5 per cent. During this period a number of new control measures and legislation were introduced with a view to ensure full control over all aspects of the bond markets.[70] The 1960s and 1970s constitute a period of low bond market activity on the Oslo Stock Exchange. Commercial and savings banks were enforced to purchase bonds through annual 'agreements' with the authorities; from 1965 new legislation formalized such measures by stipulating that a certain percentage of the increase in bank assets were to be invested in bonds. The new issue market was closely regulated by the authorities, while it might seem as if the secondary market on the stock exchange was subject to hostile neglect. Many bond issues were placed directly with financial institutions and never quoted on Oslo Stock Exchange. In January 1978 there were six government bond issues on the A-list, of which five were issued by the Quisling government during WWII. Seven more government bonds could be found on the B-list, which were traded twice weekly.

Although trading on the bond markets as a whole was at a low level this period nevertheless saw some interesting developments with regard to private bonds. The expansion of the activities of the credit enterprises were severely restricted by quotas set by the authorities regarding their bond finance, but these institutions consolidated their importance during this period.[71] Yield data for credit enterprises are presented in Table A3. In principle these are size-weighted averages of all credit enterprises, but some of the early low coupon bond issues have been excluded from the sample.[72]

Subject to government approval some industrial companies were allowed to issue bonds, often re-

[69] Three month Treasury bills were used in the same way as in the years 1941 - 1945 to determine the very short end of the yield curve. The bill market became inactive and the yield on Treasury bills was well below market levels after the war but this hardly affects the estimated yield on bonds with two year of average life, which is the shortest maturity reported here.

[70] See Hanisch et al. (1999).

[71] See for example Strømme Svendsen (1984).

[72] By January 1979 this category includes bonds issued by De Norske Bykredittforeninger, Den Norske Hypotekforening for 2. prioritets pantelån, Eksportfinans, Norges Hypotekforening for Næringslivet, Næringskreditt, Sparebankenes Kredittselskap, Norges Skibhypotekforening, Norsk Skibs Hypothekbank and Redernes Skibskreditforening. In this month there are 114 yield observations from which the yield data are computed.

ferred to as ‘paragraph 15 bonds’. Within a monetary policy regime of credit rationing this form of long term finance was considered as attractive. Bond finance was only granted for purposes that were favoured by the authorities, mostly export oriented manufacturing companies or projects associated with electricity supply.

Long term bond yields have also been estimated for industrial companies. These data begin in 1960. Because credit ratings may differ considerably between industrial companies a difficult decision is which bonds to include in the sample. Bond yields that were significantly above the average yield were evaluated and possibly excluded from the sample. This affected for example several paper mills in the late 1960s and early 1970s as well as a number of individual cases throughout the period. It is difficult to make a yield series of private bonds that is perfectly homogenous over time, as some credit risk will nearly always be attached to private companies, but the most obvious extreme observations have been removed from the sample. The private credit and industrial bond yield data are printed in Table A3 for the most active maturity ranges, which were from 5 years and upwards.

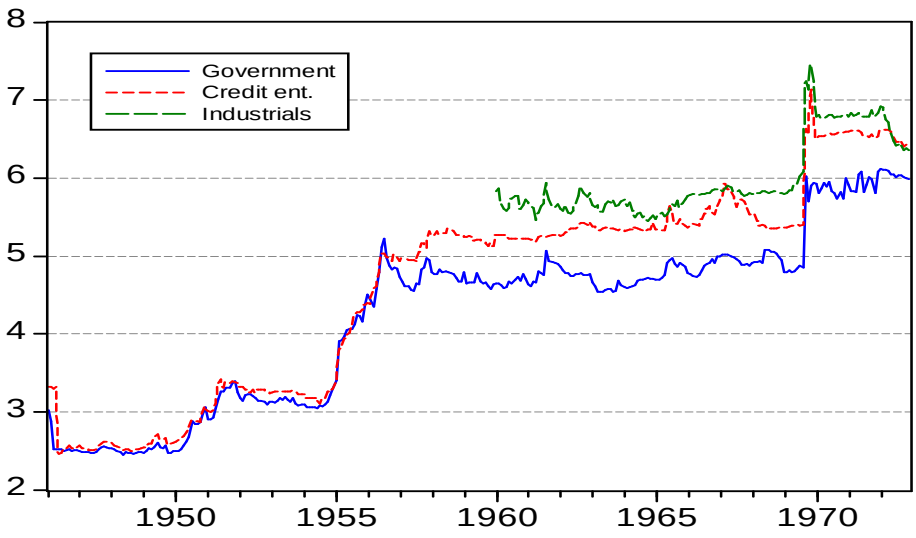

Figure 9: Yield on long-term Norwegian government and private bonds January 1946 - December 1979

Figure 9 shows the long term (more than 10 years) yields on government and credit enterprise bonds. Also shown is the 5 year yield on private industrial bonds. The credit enterprise bond yields were very close to government bond yields in the first ten years of the postwar period, but as from the mid-1950s we see a yield gap emerging. In the 1960s this gap typically was about 60 to 80 basis points, sometimes rather lower in the 1970s. There was no public concern over the solidity of the credit enterprises in this period, in contrast to the 1990s, and these bonds were generally more actively

traded than government bonds, so that such a risk premium may perhaps seem to be on the high side. Although still below a hypothetical free market level the yield on credit bonds may have been closer to such a level than government bonds. The yield on private industrial bonds are mostly slightly above the credit bonds until the mid-1970s, when the reverse situation emerges. It must be borne mind that the former are 5 year bonds, which would require a lower yield than long-term bonds with 10 years to maturity or more, given the steeply upwards sloping yield curve in this period.

6. The period 1980 - 2003: The normalized bond markets

Following the publication of the report of a public commission on monetary policy in 1980 (NOU 1980:4 (1980)), a general deregulation process of credit markets was initiated. The bond market was leading the way in this respect. The two main pillars of the tight regulation system, the strict control of new issues (with respect to both quantity and price) and the bond investment requirement that was enforced on financial intermediaries were both dismantled in several steps during the first years of the 1980s.[73] The commercial and savings banks were permitted to float bond issues with increasingly longer maturities. By the end of the decade the bond market was essentially freed from the strict control measures that it had been subject to for the past fifty years - a belated return to normality.

The monetary authorities' attitude to trading in the secondary markets changed radically as well. In 1984 Norges Bank began to operate as a market maker in the government bond market. The responsibility for quoting prices in the government bond market was transferred to a limited number of primary dealers in 1995.[74] A further boost to market liquidity was introduced in 1991 by the decision to concentrate the government's borrowing to a few relatively large benchmark loans.[75] These measures increased the liquidity of the Norwegian government bond market. Since the mid-1980s the Norwegian government's domestic borrowing requirement has been small as a consequence of the Treasury's strong financial position, so the size of the market is still modest by international standards.[76]

The liberalization of bond markets also created opportunities for a significant expansion of the activities of the private credit enterprises. The 1980s witnessed a plethora of new bond issues by these institutions and by private industrial companies. In the mid-1980s there are more than 200 different credit enterprise bond issues quoted in our sample and 70 to 100 private industrial issues. Most issues were rather small, which resulted in infrequent trading, with only bid prices being available. During the business cycle downturn starting in the late 1980s it turned out that the rapidly expanding loan portfolios of the private credit enterprises concealed a large number of bad loans, which even-

[73] See NOU 1989:1 (1989, pp. 76-82) for details.
[74] Winje (1995).
[75] Prøsch (1992, 1994).
[76] For a description of government bond markets in recent years see Søvik (1998) and Hein (2003).

tually led to the failure or restructuring of several leading bond-issuing credit enterprises. As the very high interest rates of the late 1980s receded somewhat, many bond issues were called, because the majority of issues had call options after one to three years, occasionally five years or more. In line with the development in the government bond market the reduced quantity of new bonds sold was concentrated to much larger issues. From 1990 the number of private bonds actively quoted on the Stock Exchange diminished significantly, to somewhat above 20 credit enterprise issues and 10 industrials towards the end of the decade.[77]

The yield data have been constructed much along the same principles as for the previous period. The Treasury bill market was revitalized in February 1985, which provided useful information on the short end of the yield curve.[78] In the 1980s, particularly in the first half of the decade, there were periods of great uncertainty in many respects in the bond markets, both with respect to the pace and extent of the liberalization process and the direction of interest rate changes.[79] For government bonds prior to January 1984 and for much of the decade for private bond issues it is a fact that the quoted bid prices did not always adjust immediately to a market clearing level. This applies in particular to small issues and those long-term issues that had reached the final stages of their life.[80] But since our yield curve estimates are size-weighted such issues usually constitute only a small fraction of our effective samples. In general the yield curve estimates are considered to give a fair estimate of the true market level of interest rates but any use of these data for detailed month-to-month comparisons or for econometric purposes should bear in mind the imperfections of the bond markets in this period.

Bonds issued by private credit enterprises and private companies that experienced severe problems with their credit ratings were excluded from the sample. This applies in particular to some of the largest credit enterprises in the early 1990s.[81] As discussed above for the previous period the industrial firms are much less homogenous with respect to credit risk, and our sample necessarily represent some average quality which may vary over time. Cases of soaring yields on bonds issued by private companies were excluded if it was felt that if reflected a significant downgrading of credit rating by the market.

Figure 10 shows the yield on short (2 years) and the longest actively traded maturity in the gov-

[77] After early 1990 the bid prices of the many small old issues were no longer maintained, only the most actively traded issues were cared for by the market makers.

[78] The market was not particularly well-functioning until 1993, but the prices quoted were probably roughly in line with market conditions.

[79] For a description of the bond market in the early deregulation period see Rostoft (1984).

[80] A lower size limit was applied to different categories of bonds with respect to inclusion in the sample. In the case of government bonds no issue with an outstanding amount of less than NOK 10 million was included. For bonds with less than one year remaining the limits were set much higher, for example NOK 100 million for non-bullet issues, which weeded out many of the most illiquid maturing issues.

[81] No bonds issued by Den Norske Hypotekforening were included after March 1990, when this company went out of business. Also excluded were the bonds issued by De Norske Bykredittforeninger and Realkreditt in 1991 as well as Vestenfjelske Bykredittforening between August 1992 and January 1995.

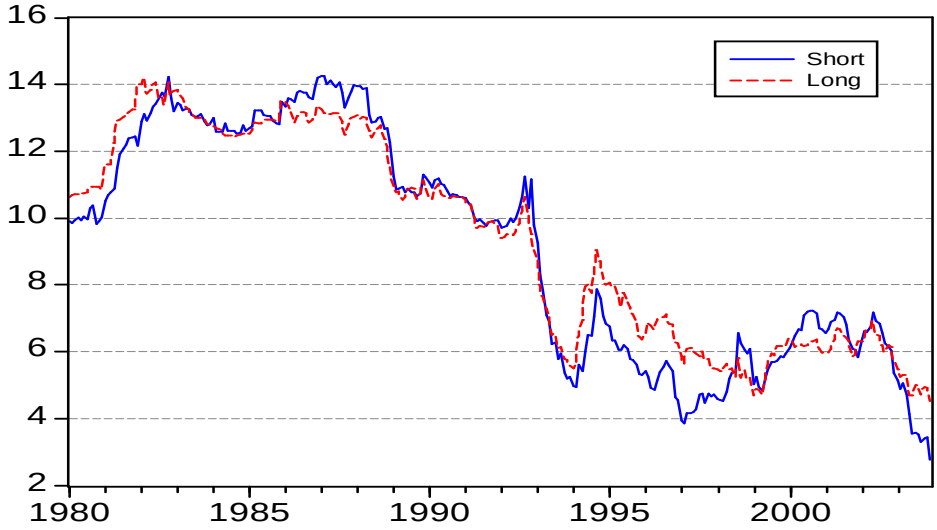

Figure 10: Yield on Norwegian government bonds January 1980 - December 2003

ernment market. Since the early 1990s the policy has been to provide the market with a 10-year benchmark bond, but as a closer inspection of the data in the appendix will show, the longest maturity quoted on the market was less than 10 years during some short periods. The figure portrays the rather dramatic interest rate development of the 1980s and the 1990s - the 10-year yield falling from a true all-time high of 14.07 in October 1982 to a more normal level in the 4 to 7 per cent range from late 1993.

In Figure 11 the 5-year yields of government, credit enterprise and industrial bonds are shown. The yield differentials between government and private bonds vary somewhat over time, as theory and empirical evidence from other countries would suggest. An interesting application of these data might be the use of such yield differentials, serving as an indicator of the market assessment of credit risk, in business cycle analysis, particularly with a view to forecast recessions.[82] A caveat here is necessary, however, concerning the use of these data in the period when banks were subject to primary reserve requirements, which was the case until September 1987. Investment in private bonds were then less attractive to banks than investment in government bonds because the latter was exempted from the base to which the reserve requirements were applied. Changes in yield differentials may therefore partly reflect regulatory changes in addition to credit risk.

[82] See for example Duca (1999).

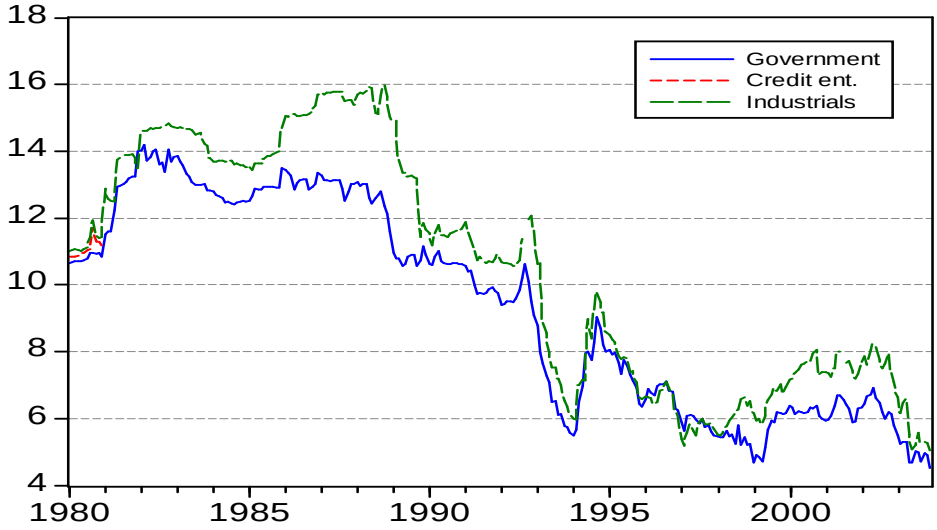

Figure 11: Yield on 5-year Norwegian government and private bonds January 1980 - December 2003

7. A long view of the real rate of interest in Norway

What is the 'normal' level of the real rate of interest? There is no single correct answer to this question, but one way of approaching it is to compute an average of real interest rates over long time periods. We exploit the material derived here to produce a 152 year series of long-run real interest rate from 1852 to 2003, using the yield on Hypotekbank bonds before 1915 and the long-run domestic government bond yield thereafter (see above for actual maturities used in each subperiod). The inflation rate is computed from the consumer price data presented in Chapter 3 in this book.

Two variants of the resulting real interest rate series are presented in Figure 12. The actual real rate is calculated by subtracting the annual rate of inflation from the nominal interest rate. A smoother series is obtained by taking the average inflation rate over the past five years.

The average real interest rate over the 152-year period is 2.8 per cent. As is evident from Figure 11 there are many short cycles as well as long run swings in the real rate. The pre-WWI period from 1852 to 1914 is characterized by many short cycles but a relatively stable long run level. The average is 4.1 per cent (using the 5-year average of inflation hereafter).

The positive (higher than expected) inflation surprises during WWI and the negative ones after the war stand out clearly in the figure, causing strongly negative real rates from 1916 to 1920 and real rates close to or even in excess of 10 per cent in the years from 1925 to 1932. The period from 1915 to 1945 as a whole gives an average of 1.7 per cent.

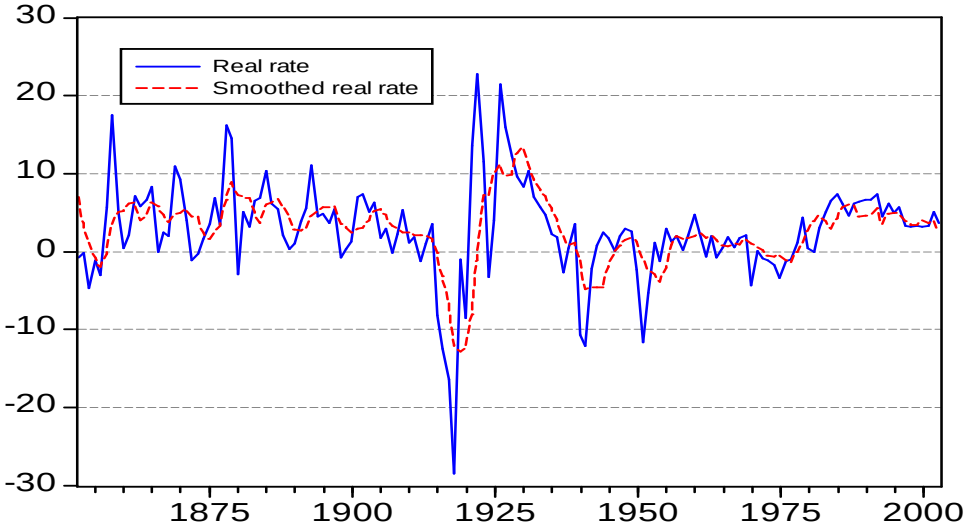

Figure 12: The long-term real interest rate 1852 - 2003

In the postwar years from 1946 to 1980 real rates were often close to zero, making the average only 0.4 per cent. The tightly regulated bond markets in Norway in this period may have contributed to a particularly low rate in this country, but low real interest rates in these years are to a large extent an international feature.[83]

The return to normality after 1980 is also reflected in the real rate, which is 4.3 per cent on the average. This is not far from the 4.1 per cent average of the 1852 - 1914 period. Within a longer run perspective on globalization and capital market behaviour it is perhaps no coincidence that the two periods produce so similar results. The rich empirical evidence presented in Obstfeld and Taylor (2004) suggests that the pre-WWI decades, and the period of the classical gold standard from 1880 to 1914 in particular, were the years which most closely resemble the most recent decades with respect to capital mobility and market integration. This is also a forceful argument for the usefulness of studying the behaviour of money and capital markets in a longer run historical perspective - there are lessons to be learnt from the history of the nineteenth century that never could be entangled from the quagmire of highly regulated financial markets of the more recent past.

[83] Chadha and Dimsdale (1999).

Table 3. New bond issues 1915 - 1945
Domestic and foreign issues in millions of NOK.

	1915 -1919	1920 -1924	1925 -1929	1930 -1934	1935 -1939	1940 -1945
Norwegian government						
NOK gross issues	225	625	258	515	628	1950
called loans	0	0	145	435	383	0
NOK net issues	225	625	113	80	245	1950
USD gross issues	18	529	283	0	312	0
called loans	0	0	0	0	312	0
USD net issues	18	529	283	0	0	0
other foreign	0	73	0	0	86	0
Kongeriket Norges Hypotekbank						
NOK gross issues	46	113	147	110	210	150
called loans	0	0	0	56	295	172
NOK net issues	46	113	147	54	-85	-22
foreign issues	0	0	0	0	57	0
Other state banks						
NOK gross issues	20	77	99	178	221	243
called loans	0	0	11		84	122
NOK net issues	20	77	88	178	137	121
foreign issues	0	0	48	61	67	
Private credit enterprises						
NOK net issues	16	22	44	69	152	61

SOURCES: Derived from information on the size of individual loan issues in various volumes of Kierulf's *håndbok over norske obligasjoner og aksjer* 1920 - 1946.

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A. Technical appendix: The data and the yield estimates

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1820													
Berlin					7.16								7.16 ∗
Hamburg					7.51								7.51 ∗
1821													
1822													
Berlin			6.41	6.40	6.54	6.46	6.44	6.34	6.31	6.19	6.09	6.35	6.35 ∗
Hamburg			6.37					6.34		6.32		6.60	6.41 ∗
1823													
Berlin	6.33	6.36	6.33	6.52	6.52	6.43	6.31	6.28	6.22	6.18	6.18	6.11	6.31
Hamburg	6.65	6.26		6.82	6.75	6.73	6.57	6.53	6.44	6.43	6.43	6.33	6.54 ∗
1824													
Berlin	5.74	5.03	4.83	5.02									5.16 ∗
Hamburg	6.19	5.61	5.01										5.60 ∗
Copenhagen		5.45	5.08	5.15	5.21	5.28	5.42	5.34	5.41	5.29	5.32	5.20	5.29 ∗
1825													
Berlin	5.33												5.33 ∗
Hamburg	5.33	5.28	5.32										5.31 ∗
Copenhagen	5.17	5.24	5.20	4.89	4.92	4.89	4.87	4.95	4.95	5.20	5.50	5.87	5.14
1826													
Copenhagen	5.91	5.71	6.12	5.84	5.88	5.61	5.48	5.52	5.52	5.36	5.28	5.28	5.63
1827													
Copenhagen	5.01	5.01	5.06	5.12	5.07	4.94	4.72	4.58	4.41	4.42	4.46	4.37	4.77
1828													
Copenhagen	4.38	4.28	4.42	4.43	4.33	4.38	4.36	4.39	4.40	4.46	4.49	4.46	4.40
1829													
Copenhagen	4.42	4.41	4.34	4.37	4.44	4.51	4.47	4.48	4.44	4.27	4.21	4.06	4.37
1830													
Copenhagen	4.06	4.06	4.04	4.04	3.99	3.99	3.97	3.97	4.15	4.15	4.15	4.34	4.08
1831													
Copenhagen	4.25	4.22	4.25	4.27	4.27	4.25	4.09	4.11	4.08	4.09	4.08	4.13	4.17
1832													
Copenhagen	4.06	4.06	4.09	4.09	4.06	4.06	4.11	4.26	4.31	4.18	4.16	4.23	4.14
1833													
Copenhagen	4.18	4.13	4.09	4.09	4.06	4.06	4.11	4.09	4.06	4.06	4.06	4.06	4.09
1834													
Copenhagen	4.06	4.01	4.01	3.99	4.01	4.15	4.06	4.06	4.06	4.03	3.95	3.92	4.03
1835													
Copenhagen	3.89	3.85	3.84	3.84	3.80	3.84	3.87	3.87	3.87	3.95	3.95	3.87	3.87
1836													
Hamburg		3.81	3.81	3.81	3.81	3.81	3.81	3.72	3.72	3.72	3.67	3.89	3.78 ∗
Copenhagen	3.87	3.87	3.87	3.87	3.86	3.93	3.86	3.86	3.80	3.87	3.87	3.85	3.86
1837													
Hamburg	3.88	3.88	3.88	3.88	3.75	3.79	3.79	3.83	3.83	3.80	3.80	3.80	3.83
Copenhagen	3.84	3.75	3.75	3.75	3.75	3.79	3.83	3.88	3.83	3.83	3.83	3.78	3.80
1838													

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Hamburg	3.75	3.75	3.77	3.77	3.77	3.77	3.77	3.76	3.76	3.76	3.76	3.76	3.76
Copenhagen	3.78	3.77	3.77	3.77	3.82	3.77	3.77	3.76	3.81	3.81	3.81	3.81	3.79
1839													
Hamburg	3.75	3.65	3.65	3.64	3.74	3.79	3.90	3.90	3.90	3.90	3.89	4.06	3.81
Copenhagen	3.80	3.80	3.80	3.80	3.80	3.79	3.79	3.79	3.79	3.79	3.78		3.79 ∗
1840													
Hamburg	3.83	3.61	3.61	3.60	3.59	3.60	3.59	3.58					3.63 ∗
Copenhagen	3.83	3.72	3.72	3.71	3.71	3.77	3.76	3.76	3.76	3.82	3.88	3.75	3.77
1841													
Copenhagen	3.75	3.62	3.62	3.68	3.67	3.67	3.67	3.66	3.73	3.79	3.78	3.72	3.70
1842													
Hamburg					4.33								4.33 ∗
Copenhagen	3.78	3.78	3.78	3.92	4.07	4.06					4.07	4.06	3.94 ∗
1843													
1844													
1845													
Copenhagen											4.06	4.06	4.06 ∗
1846													
Copenhagen	4.06	4.06	4.06	4.06	4.11	4.06	4.06	4.11	4.06	4.26	4.25	4.06	4.10
1847													
Copenhagen	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06
1848													
Hamburg										4.56	4.51	4.51	4.53 ∗
Copenhagen	4.06	4.06	4.17									4.54	4.21 ∗
1849													
Hamburg	4.42	4.33	4.33	4.28	4.22	4.15	4.10	4.13	4.13	4.10	4.11	4.15	4.20
Copenhagen	4.56	4.42	4.56	4.42	4.28	4.15	4.15	4.15	4.15	4.15	4.15	4.20	4.28
1850													
Hamburg	4.15	4.11	4.13	4.08	4.08	4.08	4.06	4.06	4.06	4.06	4.06	4.06	4.08
Copenhagen	4.20	4.15	4.15	4.11	4.29	4.24	4.20	4.15	4.15	4.13			4.18 ∗
1851													
Hamburg	3.85	3.87	3.86	4.04	4.06	4.06	4.06	4.11	4.11	4.11	4.20	4.28	4.05
Copenhagen	4.01					4.06			4.16	4.20			4.11 ∗
1852													
Hamburg	4.25	4.27	4.27	4.25	4.27	4.25	4.15	4.18	4.13	4.15	4.16	4.16	4.21
Copenhagen					4.35								4.35 ∗
1853													
Hamburg	4.06	4.04	4.04	4.01	4.04	4.06	4.06	4.06	4.09	4.28	4.18	4.23	4.10
1854													
Oslo					4.30					4.35			4.32 ∗
Hamburg	4.18	4.81	4.68	4.36	4.29	4.36	4.26	4.24	4.29	4.31	4.24	4.29	4.36
1855													
Hamburg	4.26	4.24	4.19	4.14	4.16	4.11	4.06	4.09	4.06	4.09	4.24	4.30	4.16
1856													
Hamburg	4.30	4.27	4.30	4.35	4.49	4.50	4.44	4.33	4.42	4.41	4.42	4.42	4.39
1857													
Hamburg	4.33	4.42	4.42	4.28	4.31	4.31	4.45	4.66	4.49	4.66	5.16	5.01	4.54

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1858													
Hamburg	4.58	4.67	4.74	4.64	4.56	4.62	4.67	4.68	4.71	4.73	4.73	4.77	4.68
1859													
Hamburg	4.73	4.72	4.66	4.68	4.81	4.87	4.63	4.63	4.59	4.63	4.66	4.62	4.69
1860													
Hamburg	4.52	4.51	4.48	4.52	4.51	4.51	4.47	4.50	4.50	4.45	4.47	4.47	4.49
1861													
Hamburg	4.47	4.46	4.46	4.46	4.48	4.48	4.47	4.50	4.46	4.44	4.45	4.54	4.47
1862													
Hamburg	4.53	4.47	4.48	4.47	4.48	4.57	4.45	4.43	4.41	4.51	4.51	4.50	4.48
1863													
Hamburg	4.46	4.48	4.48	4.55	4.53	4.55	4.50	4.57	4.60	4.65	4.69	4.97	4.59
1864													
Hamburg	4.84	4.80	4.86	4.91	4.93	4.93	4.91	4.96	4.97	5.10	4.99	5.05	4.94
1865													
Hamburg	5.08	5.08	5.11	5.10	5.10	5.12	5.10	5.10	5.11	5.23	5.21	5.22	5.13
1866													
Hamburg	5.21	5.22	5.24	5.27	5.36	5.61	5.25	5.30	5.28	5.34	5.32	5.32	5.31
1867													
Hamburg	5.28	5.29	5.29	5.36	5.27	5.25	5.10	5.15	5.21	5.22	5.16	5.17	5.23
Copenhagen				5.27	5.14	5.17	5.11	5.08					5.15 ∗
1868													
Hamburg	5.13	5.13	5.14	5.12	5.11	5.10	5.05	5.08	5.05	5.06	5.06	5.07	5.09
1869													
Hamburg	5.09	5.09	5.09	5.10	5.36	5.40	5.26	5.28	5.37	5.37	5.31	5.28	5.25
1870													
Hamburg	5.21	5.24	5.32	5.35	5.33	5.33	5.88	5.67	5.47	5.24	5.27	5.32	5.39
1871													
Hamburg	5.17	5.19	5.19	5.20	5.19	5.07	4.91	4.85	4.82	4.82	4.82	4.69	4.99
1872													
Hamburg	4.62	4.68	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.63
1873													
Hamburg	4.62	4.66	4.73	4.78	4.77	4.77	4.69	4.69	4.73	4.66	4.74	4.70	4.71
Copenhagen	4.62					4.70	4.62	4.59			4.74	4.63	4.65 ∗
1874													
Hamburg	4.62	4.59	4.55	4.55	4.55	4.63	4.59	4.60	4.60	4.62	4.59	4.59	4.59
Copenhagen		4.41	4.59	4.55	4.55	4.67	4.55	4.59	4.63	4.71	4.71	4.71	4.61 ∗
1875													
Hamburg	4.61	4.61	4.61	4.61	4.61	4.61	4.62	4.61	4.63	4.65	4.66	4.63	4.62
Copenhagen		4.67											4.67 ∗
1876													
Hamburg	4.71	4.71	4.71	4.75	4.74	4.75	4.75	4.74	4.75	4.76	4.75	4.76	4.74
London												4.79	4.79 ∗
1877													
Hamburg	4.75	4.75	4.73	4.75	4.76	4.76	4.74	4.74	4.77	4.78	4.79	4.78	4.76
London	4.79	4.75	4.77	4.85	4.86	4.79	4.79	4.82	4.80	4.77	4.77	4.83	4.80
1878													

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Hamburg	4.80	4.80	4.80	4.81	4.82	4.82	4.80	4.79	4.79	4.82	4.81	4.80	4.81
London	4.82	4.81	4.80	4.86	4.86	4.86	4.78	4.84	4.85	4.92	4.88	4.94	4.85
1879													
Hamburg	4.79	4.78	4.70	4.59	4.57	4.57	4.53	4.54	4.56	4.55	4.54	4.52	4.61
London	4.82	4.82	4.74	4.65	4.56	4.60	4.49	4.52	4.53	4.52	4.53	4.45	4.60
1880													
Hamburg	4.40	4.34	4.39	4.31	4.31	4.30	4.27	4.26	4.29	4.29	4.28	4.27	4.31
London	4.32	4.29	4.43	4.45	4.41	4.29	4.27	4.27	4.30	4.29	4.29	4.27	4.32
1881													
Oslo			4.33	4.33	4.23	4.23	4.23	4.23	4.23				4.26 ∗
Hamburg	4.16	4.17	4.16	4.15	4.08	4.05	4.04	4.09	4.09	4.06	4.06	4.07	4.10
London	4.22	4.18	4.20	4.17	4.09	4.06	4.05	4.06	4.08	4.09	4.01	4.08	4.11
1882													
Hamburg	4.11	4.10	4.09	4.09	4.08	4.07	4.09	4.10	4.11	4.14	4.14	4.14	4.10
London	4.09	4.06	4.10	4.05	4.06	4.03	4.05	4.09	4.13	4.14	4.16	4.20	4.10
1883													
Hamburg	4.17	4.15	4.15	4.10	4.09	4.08	4.09	4.09	4.11	4.11	4.14	4.13	4.12
London	4.19	4.06	4.03	4.05	4.11	4.08	4.10	4.09	4.13	4.12	4.16	4.13	4.10
1884													
Hamburg	4.12	4.11	4.10	4.11	4.06	4.06	4.06	4.07	4.07	4.08	4.06	4.06	4.08
London	4.10	4.09	4.08	4.07	4.06	4.10	4.10	4.06	4.03	3.99	4.01	3.97	4.06
1885													
Oslo												4.09	4.09 ∗
Hamburg	4.05	4.02	4.00	4.08	4.04	4.01	4.00	3.98	3.99	3.99	4.01	4.00	4.01
London	3.99	4.01	4.00	4.05	3.95	3.91	3.93	3.95	3.97	3.93	3.95	3.97	3.97
1886													
Oslo	4.09	4.04	4.04	4.04	4.04	3.98	3.98	3.98	3.98	3.98	3.98	3.98	4.01
Hamburg	3.97	3.94	3.94	3.89	3.89	3.87	3.85	3.87	3.91	3.86	3.85	3.87	3.89
London	3.93	3.89	3.91	3.87	3.86	3.79	3.75	3.80	3.79	3.81	3.83	3.91	3.85
1887													
Oslo	3.61	3.62	3.63	3.63	3.61	3.61	3.61	3.61	3.61	3.61	3.64	3.63	3.62
Hamburg	3.91	3.92	3.87	3.84	3.89	3.86	3.87	3.88	3.88	3.87	3.88	3.88	3.88
London	3.93	3.95	3.91	3.81	3.66	3.67	3.68	3.70	3.71	3.72	3.66	3.67	3.76
Paris		3.70	3.69	3.65	3.63	3.63	3.64	3.66	3.66	3.64	3.64	3.60	3.65 ∗
1888													
Oslo	3.63	3.61	3.58	3.58	3.58	3.58	3.58	3.44	3.43	3.44	3.44	3.44	3.53
Hamburg	3.86	3.87	3.87	3.83	3.84	3.83	3.45	3.46	3.48	3.49	3.50	3.50	3.66
London	3.64	3.62	3.57	3.56	3.54	3.53	3.53	3.54	3.50	3.51	3.48	3.49	3.54
Paris	3.59	3.59	3.57	3.56	3.51	3.52	3.52	3.55	3.35	3.54	3.52	3.56	3.53
1889													
Oslo	3.43	3.43	3.45	3.46	3.41	3.38	3.39	3.39	3.40	3.41	3.43	3.43	3.41
Hamburg	3.49	3.49	3.49	3.45	3.41	3.44	3.42	3.43	3.42	3.44	3.47	3.46	3.45
London	3.46	3.49	3.52	3.47	3.40	3.41	3.38	3.41	3.42	3.47	3.44	3.41	3.44
Paris	3.56	3.56	3.54	3.52	3.30	3.41	3.38	3.41	3.42	3.41	3.44	3.45	3.45
1890													
Oslo	3.41	3.39	3.42	3.42	3.43	3.43	3.43	3.47	3.44	3.48	3.48	3.50	3.44
Hamburg	3.44	3.45	3.45	3.45	3.45	3.46	3.45	3.45	3.47	3.52	3.52	3.56	3.47

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
London	3.42	3.45	3.42	3.43	3.40	3.41	3.42	3.45	3.46	3.49	3.55	3.51	3.45
Paris	3.42	3.43	3.40	3.42	3.42	3.41	3.38	3.40	3.38	3.43	3.48	3.48	3.42
1891													
Oslo	3.50	3.46	3.50	3.50	3.53	3.57	3.57	3.57	3.62	3.66	3.71	3.71	3.57
Hamburg	3.48	3.51	3.49	3.59	3.61	3.63	3.63	3.63	3.63	3.71	3.74	3.70	3.61
London	3.44	3.49	3.50	3.51	3.64	3.63	3.59	3.54	3.55	3.65	3.66	3.65	3.57
Paris	3.46	3.46	3.47	3.51	3.57	3.58	3.55	3.51	3.55	3.61	3.70	3.66	3.55
1892													
Oslo	3.71	3.66	3.66	3.66	3.71	3.59	3.53	3.53	3.53	3.53	3.56	3.60	3.61
Hamburg	3.66	3.67	3.67	3.65	3.58	3.53	3.50	3.51	3.54	3.49	3.51	3.55	3.57
London	3.59	3.63	3.68	3.65	3.57	3.54	3.46	3.49	3.51	3.52	3.53	3.50	3.56
Paris	3.60	3.65	3.63	3.64	3.57	3.46	3.43	3.44	3.50	3.49	3.50	3.50	3.53
1893													
Oslo	3.46	3.44	3.44	3.44	3.51	3.57	3.57	3.57	3.71	3.69	3.69	3.67	3.57
Hamburg	3.42	3.44	3.45	3.46	3.46	3.52	3.54	3.62	3.68	3.67	3.67	3.62	3.55
London	3.42	3.41	3.46	3.47	3.51	3.50	3.55	3.56	3.62	3.63	3.60	3.61	3.53
Paris	3.42	3.40	3.47	3.48	3.47	3.46	3.51	3.63	3.64	3.62	3.58	3.52	3.52
1894													
Oslo	3.59	3.53	3.53	3.53	3.53	3.51	3.51	3.47	3.45	3.42	3.32	3.28	3.47
Hamburg	3.49	3.50	3.50	3.50	3.49	3.45	3.47	3.43	3.37	3.36	3.27	3.24	3.42
London	3.57	3.50	3.51	3.48	3.49	3.46	3.47	3.42	3.38	3.35	3.24	3.21	3.42
Paris	3.38	3.50	3.43	3.44	3.49	3.46	3.40	3.41	3.30	3.34	3.24	3.21	3.38
1895													
Oslo	3.25	3.21	3.19	3.28	3.28	3.26	3.19	3.21	3.22	3.22	3.21	3.22	3.23
Hamburg	3.20	3.14	3.14	3.29	3.24	3.19	3.16	3.17	3.18	3.22	3.21	3.21	3.20
London	3.19	3.14	3.15	3.25	3.24	3.18	3.15	3.12	3.15	3.16	3.13	3.20	3.17
Paris	3.11	3.14	3.08	3.16	3.15	3.17	3.14	3.14	3.15	3.16	3.14	3.20	3.14
1896													
Oslo	3.24	3.17	3.17	3.16	3.13	3.13	3.13	3.09	3.11	3.15	3.15	3.17	3.15
Hamburg	3.19	3.17	3.09	3.10	3.09	3.09	3.09	3.06	3.07	3.08	3.13	3.12	3.11
London	3.15	3.10	3.11	3.08	3.06	3.03	3.04	2.99	3.04	3.08	3.13	3.14	3.08
Paris	3.15	3.10	3.11	3.04	3.04	3.07	3.00	3.03	3.04	3.06	3.08	3.08	3.07
1897													
Oslo	3.19	3.14	3.14	3.15	3.11	3.10	3.10	3.09	3.10	3.11	3.11	3.11	3.12
Hamburg	3.10	3.11	3.15	3.11	3.07	3.04	3.04	3.06	3.09	3.08	3.08	3.11	3.09
London	3.11	3.10	3.08	3.08	3.09	3.03	3.04	3.03	3.00	3.01	3.02	3.07	3.06
Paris	3.04	3.07	3.08	3.08	3.04	3.05	3.07	3.02	3.04	3.05	3.06	3.09	3.06
1898													
Oslo	3.10	3.10	3.10	3.10	3.10		3.19	3.19	3.17	3.17		3.27	3.15 ∗
Hamburg	3.10	3.13	3.13	3.17	3.15	3.15	3.17	3.15	3.21	3.24	3.25	3.24	3.17
London	3.04	3.07	3.11	3.12	3.17	3.10	3.11	3.14	3.19	3.20	3.25	3.30	3.15
Paris	3.08	3.06	3.09	3.14	3.16	3.04	3.06	3.12	3.15	3.09	3.06	3.14	3.10
1899													
Oslo	3.27	3.27			3.41							3.54	3.37 ∗
Hamburg	3.31	3.28	3.30	3.39	3.42	3.51	3.47	3.51	3.53	3.63	3.60	3.60	3.46
London	3.27	3.30	3.35	3.40	3.41	3.51	3.48	3.51	3.57	3.58	3.59	3.65	3.47
Paris	3.11	3.18	3.23	3.24	3.50	3.42	3.48	3.45	3.48	3.53	3.45	3.60	3.39

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1900													
Hamburg	3.64	3.56	3.58	3.67	3.78	3.75	3.78	3.77	3.77	3.73	3.72	3.72	3.71
London	3.64	3.65	3.68	3.68	3.69	3.71	3.74	3.76	3.76	3.83	3.78	3.76	3.72
Paris	3.62	3.58	3.58	3.65	3.69	3.73	3.72	3.72	3.73	3.73	3.70	3.67	3.68
1901													
Oslo									3.49		3.50	3.50	3.50 ∗
Hamburg	3.61	3.62	3.60	3.58	3.58	3.62	3.54	3.53	3.50	3.52	3.51	3.52	3.56
London	3.76	3.71	3.63	3.55	3.58	3.59	3.56	3.50	3.54	3.55	3.52	3.53	3.59
Paris	3.58	3.55	3.52	3.45	3.64	3.62	3.46	3.50	3.51	3.58	3.50	3.43	3.53
1902													
Oslo	3.51	3.46	3.46	3.46	3.51	3.42	3.38	3.42	3.42	3.33	3.36	3.36	3.42
Hamburg	3.48	3.44	3.42	3.37	3.42	3.33	3.24	3.29	3.34	3.29	3.30	3.31	3.35
London	3.45	3.45	3.46	3.48	3.41	3.38	3.34	3.31	3.32	3.33	3.34	3.35	3.38
Paris	3.35	3.26	3.41	3.37	3.34	3.31	3.14	3.20	3.23	3.26	3.28	3.28	3.29
1903													
Oslo	3.36	3.36	3.34	3.34	3.34	3.34	3.34	3.34	3.31	3.30	3.36	3.37	3.34
Hamburg	3.26	3.29	3.27	3.29	3.31	3.30	3.28	3.32	3.32	3.34	3.42	3.45	3.32
London	3.30	3.31	3.32	3.33	3.28	3.29	3.30	3.29	3.33	3.38	3.42	3.45	3.34
Paris	3.24	3.23	3.24	3.24	3.22	3.21	3.23	3.30	3.31	3.33	3.38	3.39	3.28
1904													
Oslo	3.40			3.51			3.51	3.54		3.49	3.48		3.49 ∗
Hamburg	3.41	3.52	3.51	3.51	3.60	3.48	3.54	3.51	3.43	3.60	3.53	3.56	3.52
London	3.46	3.46	3.50	3.54	3.64	3.62	3.63	3.60	3.50	3.51	3.55	3.57	3.55
Paris	3.41	3.50	3.47	3.55	3.68	3.57	3.52	3.52	3.52	3.51	3.51	3.55	3.52
1905													
Oslo	3.51	3.56	3.50		3.53	3.61							3.54 ∗
Hamburg	3.52	3.46	3.48	3.50	3.49	3.65	3.68	3.67	3.64	3.67	3.67	3.66	3.59
London	3.55	3.58	3.59	3.61	3.61	3.62	3.70	3.79	3.69	3.66	3.64	3.59	3.64
Paris	3.53	3.42	3.50	3.51	3.53	3.69	3.64	3.65	3.63	3.69	3.62	3.60	3.58
1906													
Oslo	3.66												3.66 ∗
Hamburg	3.57	3.55	3.56	3.56	3.50	3.49	3.47	3.45	3.48	3.58	3.61	3.54	3.53
London	3.60	3.63	3.60	3.61	3.58	3.58	3.50	3.46	3.48	3.52	3.60	3.58	3.56
Paris	3.61	3.59	3.55	3.57	3.51	3.51	3.51	3.51	3.52	3.58	3.54	3.56	3.55
1907													
Oslo							3.66						3.66 ∗
Hamburg	3.54	3.59	3.59	3.60	3.63	3.67	3.63	3.58	3.73	3.76	3.67	3.83	3.65
London	3.55	3.58	3.68	3.68	3.68	3.71	3.69	3.72	3.76	3.78	3.84	3.84	3.71
Paris	3.52	3.60	3.68	3.69	3.69	3.76	3.76	3.77	3.75	3.73	3.78	3.79	3.71
1908													
Oslo									3.72	3.72	3.72		3.72 ∗
Hamburg	3.77	3.77	3.78	3.82	3.75	3.77	3.82	3.82	3.82	3.68	3.70	3.66	3.76
London	3.75	3.76	3.78	3.78	3.80	3.78	3.78	3.75	3.77	3.70	3.71	3.70	3.76
Paris	3.77	3.76	3.76	3.78	3.76	3.78	3.77	3.73	3.75	3.76	3.70	3.73	3.75
1909													
Oslo									3.55				3.55 ∗
Hamburg	3.66	3.63	3.62	3.62	3.62	3.67	3.58	3.58	3.60	3.58	3.56	3.58	3.61

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
London	3.69	3.68	3.61	3.60	3.61	3.60	3.60	3.58	3.60	3.61	3.62	3.63	3.62
Paris	3.72	3.66	3.67	3.64	3.63	3.69	3.65	3.65	3.64	3.62	3.62	3.62	3.65
1910													
Hamburg	3.60	3.60	3.61	3.63	3.64	3.64	3.71	3.73	3.73	3.69	3.75	3.75	3.67
London	3.63	3.65	3.65	3.62	3.65	3.69	3.73	3.74	3.74	3.75	3.82	3.83	3.71
Paris	3.61	3.65	3.65	3.67	3.69	3.70	3.77	3.73	3.75	3.73	3.74	3.71	3.70
1911													
Hamburg	3.75	3.73	3.72	3.70	3.69	3.71	3.83	3.83	3.89	3.95		3.85	3.79 ∗
London	3.77	3.77	3.75	3.77	3.78	3.77	3.79	3.81	3.86	3.93	3.93	3.91	3.82
Paris	3.72	3.73	3.77	3.74	3.74	3.76	3.79	3.80	3.84	3.78	3.82	3.83	3.78
1912													
Oslo		4.05	4.05	4.05			4.05				4.06	4.20	4.08 ∗
Hamburg	3.83	3.88	3.91	3.87	3.89	4.04	4.06	4.00	4.10	4.09	4.16	4.14	4.00
London	4.02	4.01	4.02	4.03	4.03	4.08	4.10	4.10	4.17	4.20	4.22	4.22	4.10
Paris	3.85	3.80	3.89	3.87	3.92	3.97	3.97	3.91	3.95	4.04	4.07	4.04	3.94
1913													
Oslo	4.20					4.34							4.27 ∗
Hamburg										4.16	4.19	4.17	4.17 ∗
London	4.21	4.21	4.29	4.27	4.31	4.34	4.32	4.27	4.15	4.19	4.22	4.22	4.25
Paris	4.15	4.13	4.14	4.19	4.34	4.32	4.23	4.13	4.16	4.05	4.09	4.17	4.18
1914													
Hamburg	4.12	4.09	4.18	4.22	4.23	4.25	4.15						4.18 ∗
London	4.13	4.14	4.17	4.22	4.24	4.16	4.21						4.18 ∗
Paris	4.17	4.14	4.15	4.25	4.17	4.25	4.29	4.67		4.58	4.32	4.33	4.30 ∗
1915													
Oslo	5.05	5.05	5.05	5.05	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.09	5.06
London	4.61	4.69	4.65	4.63	4.69	5.24	5.38	5.40	5.20	5.17	5.06	5.06	4.98
Paris	4.28	4.27	4.27	4.29	4.27	4.21	4.23	4.30	4.26	4.24	4.43	4.58	4.30
1916													
Oslo	5.18	5.33	5.40	5.36	5.24	5.06	5.12	5.06	5.06	5.07	5.06	5.06	5.17
London	5.08	5.11	5.19	5.14	4.93	4.87	4.83	4.79	5.14	5.05	5.06	5.01	5.02
Paris	4.59	4.42	4.41	4.43	4.47	4.50	4.32	4.34	4.42	4.46	4.56	4.55	4.46
1917													
Oslo	5.06	5.09	5.12	5.12	5.08	5.09	5.11	5.09	5.08	5.15	5.19	5.21	5.12
London	5.03	5.24	4.99	4.93	4.94	4.89	4.71	4.67	4.58	4.42	4.45	4.70	4.80
Paris	4.57	4.64	4.50	4.68	4.48	4.57	4.54	4.49	4.14	4.02	4.20	4.28	4.42
1918													
Oslo	5.30	5.36	5.45	5.45	5.49	5.69	5.76	5.68	5.70	5.69	5.69	5.70	5.58
London	4.89	5.00	4.76	4.84	4.94	4.89	4.87	4.88	4.98	5.49	5.52	5.40	5.04
Paris	4.42	4.63	4.47	4.58	4.63	4.41	4.45	4.39	4.96	5.49	5.37	5.42	4.77
1919													
Oslo	5.62	5.77	5.78	5.80	5.74	5.81	5.69	5.65	5.66	5.76	6.08	5.98	5.78
London	5.42	5.47	5.47	5.50	5.44	5.47	5.67	5.70	5.70	5.78	5.95	6.72	5.69
Paris	5.48	5.30	5.10	4.86	4.74	4.22	4.59	4.12	4.23	4.09	4.02	4.41	4.60
1920													
Oslo	6.01	6.18	6.28	6.28	6.42	6.65	7.50	7.53	7.19	7.23	7.11	6.84	6.77
London	6.82	6.76	6.83	6.99	7.02	7.57	7.71	7.75	8.08	7.57	7.53	7.45	7.34

Table A1. Norwegian long-term government bonds

1820 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Paris	4.16	3.90	3.81	3.21	4.29	4.19	5.05	4.55	4.27	3.84	3.52	2.62	3.95

Table A2. Kongeriket Norges Hypotekbank long-term bonds

1851 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1851													
Hamburg											4.53	4.54	4.53 ∗
1852													
Oslo	4.39	4.39	4.39	4.39	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.41	4.40
Hamburg	4.54	4.54	4.54	4.54	4.55	4.55	4.55	4.55	4.55	4.56	4.56	4.56	4.55
1853													
Oslo	4.41	4.41	4.36	4.36	4.36	4.36	4.36	4.37	4.37	4.31	4.32	4.32	4.36
Hamburg	4.56	4.32	4.36	4.31	4.31	4.36	4.36	4.37	4.37	4.34	4.39	4.37	4.37
1854													
Oslo	4.29	4.30	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.26	4.26	4.26
Hamburg	4.28	4.28	4.57	4.46	4.34	4.39	4.26	4.31	4.26	4.26	4.26	4.27	4.33
1855													
Oslo	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.26	4.26	4.25
Hamburg	4.26	4.26	4.41	4.26	4.23	4.26	4.19	4.26	4.24	4.19	4.24	4.24	4.25
1856													
Oslo	4.25	4.30	4.30	4.30	4.32	4.32	4.32	4.33	4.40	4.53	4.53	4.54	4.37
Hamburg	4.24	4.27	4.32	4.32	4.32	4.35	4.35	4.29	4.40	4.51	4.51	4.51	4.37
1857													
Oslo	4.61	4.61	4.62	4.62	4.70	4.70	4.70	4.71	4.82	4.82	4.82	4.83	4.71
Hamburg	4.61	4.62	4.62	4.62	4.60	4.39	4.85	4.85	4.86	4.86	5.18	5.07	4.76
1858													
Oslo	4.88	4.89	4.89	4.90	4.87	4.90	4.91	4.91	4.92	4.91	4.92	4.92	4.90
Hamburg	5.14	5.14	5.24	4.87	4.93	4.88	4.94	5.00	4.93	4.97	4.95	5.07	5.00
1859													
Oslo	4.84	4.85	4.85	4.85	4.86	4.86	4.86	4.87	4.87	4.87	4.88	4.88	4.86
Hamburg	4.94	4.97	4.95	4.95	4.98	4.99	4.82	4.91	4.97	4.97	4.92	4.92	4.94
1860													
Oslo	4.88	4.89	4.89	4.90	4.90	4.90	4.91	4.91	4.92	4.91	4.92	4.92	4.90
Hamburg	4.92	4.95	4.96	4.98	4.98	4.96	4.99	4.96	4.97	4.96	4.97	4.97	4.96
Copenhagen												4.80	4.80 ∗
1861													
Oslo	4.88	4.89	4.89	4.90	4.90	4.90	4.91	4.91	4.92	4.91	4.92	4.92	4.90
Hamburg	4.94	4.92	4.92	4.92	4.93	4.96	4.96	4.95	4.97	4.95	4.97	5.01	4.95
Copenhagen			4.88			4.81			4.86			4.95	4.87 ∗
1862													
Oslo	5.09	5.09	5.01	4.99	4.99	5.00	4.99	5.00	4.96	4.96	4.97	4.98	5.00
Hamburg	4.78	4.77	4.72	4.71	4.80	4.80	4.75	4.75	4.71	4.75	4.76	4.78	4.76
Copenhagen			4.73			4.66			4.71			4.71	4.70 ∗
1863													
Oslo	4.75	4.75	4.75	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.71	4.71	4.71
Hamburg	4.78	4.75	4.75	4.77	4.77	4.77	4.76	4.77	4.78	4.85	4.85	5.13	4.81
Copenhagen			4.71			4.77			4.87			4.99	4.83 ∗
1864													
Oslo	4.88	4.94	4.98	4.98	4.98	4.99	4.98	4.98	4.98	4.98	4.99	4.99	4.97
Hamburg	4.99	4.99	5.20	5.20	5.23	5.24	5.14	5.15	5.15	5.16	5.16	5.17	5.15
Copenhagen			5.23			5.24			5.15			5.34	5.24 ∗
1865													

Table A2. Kongeriket Norges Hypotekbank long-term bonds

1851 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Oslo	4.98	5.10	5.19	5.19	5.19	5.20	5.16	5.16	5.16	5.17	5.17	5.18	5.15
Hamburg	5.24	5.27	5.31	5.32	5.29	5.29	5.28	5.22	5.23	5.26	5.29	5.27	5.27
Copenhagen			5.22			5.26			5.19			5.18	5.21 ∗
1866													
Oslo	5.09	5.15	5.15	5.15	5.16	5.16	5.15	5.15	5.16	5.16	5.16	5.17	5.15
Hamburg	5.26	5.26	5.31	5.31	5.55	5.74	5.33	5.33	5.32	5.38	5.33	5.35	5.37
Copenhagen			5.23			5.62			5.36			5.34	5.39 ∗
1867													
Oslo	5.19	5.19	5.19	5.20	5.20	5.20	5.19	5.17	5.17	5.17	5.18	5.15	5.18
Hamburg	5.33	5.32	5.32	5.39	5.36	5.26	5.22	5.25	5.15	5.20	5.18	5.21	5.26
Copenhagen			5.37			5.29			5.19			5.21	5.27 ∗
1868													
Oslo	5.07	5.10	5.10	5.13	5.13	5.14	5.14	5.14	5.14	5.15	5.15	5.15	5.13
Hamburg	5.16	5.10	5.19	5.23	5.18	5.18	5.16	5.20	5.20	5.17	5.21	5.31	5.19
Copenhagen			5.20			5.18			5.27			5.29	5.24 ∗
1869													
Oslo	5.12	5.12	5.12	5.13	5.13	5.13	5.13	5.14	5.14	5.14	5.15	5.15	5.13
Hamburg	5.28	5.29	5.33	5.33	5.34	5.25	5.27	5.27	5.34	5.31	5.29	5.27	5.30
Copenhagen			5.28			5.24			5.29			5.28	5.27 ∗
1870													
Oslo	5.12	5.12	5.13	5.13	5.13	5.14	5.14	5.14	5.15	5.15	5.17	5.18	5.14
Hamburg	5.23	5.26	5.29	5.28	5.25	5.27	5.80	5.54	5.41	5.27	5.30	5.24	5.34
Copenhagen			5.24			5.22			5.28			5.33	5.27 ∗
1871													
Oslo	5.15	5.13	5.13	5.09	5.09	5.11	5.10	4.80	4.80	4.80	4.91	4.91	5.00
Hamburg	5.11	5.14	5.14	5.14	5.11	5.10	4.93	4.86	4.81	4.80	4.74	4.71	4.97
Copenhagen			5.19			5.07	4.96		4.77			4.75	4.95 ∗
1872													
Oslo	4.76	4.68	4.66	4.66	4.66	4.66	4.60	4.60	4.55	4.55	4.55	4.55	4.62
Hamburg	4.62	4.65	4.62	4.64	4.62	4.63	4.62	4.62	4.65	4.62	4.62	4.60	4.63
Copenhagen			4.62			4.75			4.65			4.65	4.67 ∗
1873													
Oslo	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55
Hamburg	4.59	4.62	4.66	4.81	4.85	4.84	4.83	4.80	4.79	4.74	4.79	4.76	4.76
Copenhagen			4.62	4.69	4.76	4.69	4.62	4.58	4.59	4.55	4.62	4.42	4.61 ∗
1874													
Oslo	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55
Hamburg	4.70	4.62	4.61	4.61	4.59	4.60	4.59	4.66	4.66	4.66	4.66	4.66	4.63
Copenhagen	4.55	4.55	4.55	4.52	4.52	4.59	4.59	4.52	4.59	4.62	4.59	4.63	4.57
1875													
Oslo	4.55	4.55	4.55	4.55	4.85	4.86	4.87	4.87	4.87	4.88	4.88	4.88	4.76
Hamburg	4.66	4.64	4.66	4.66	4.68	4.82	4.83	4.87	4.97	5.00	5.04	5.03	4.82
Copenhagen	4.69	4.69	4.70	4.70		4.85			5.00			5.01	4.80 ∗
1876													
Oslo	4.87	4.99	5.01	5.02	5.03	5.05	5.07	5.11	5.13	5.14	5.15	5.18	5.06
Hamburg	5.01	5.05	5.05	5.10	5.10	5.10	5.09	5.12	5.15	5.18	5.21	5.21	5.11
1877													

Table A2. Kongeriket Norges Hypotekbank long-term bonds

1851 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Oslo	5.02	5.05	5.06	5.07	5.08	5.08	5.08	5.08	5.11	5.12	5.13	5.32	5.10
Hamburg	5.17	5.17	5.18	5.19	5.20	5.21	5.16	5.13	5.21	5.23	5.13	5.14	5.18
Copenhagen									5.37				5.37 ∗
1878													
Oslo	5.27	5.27	5.28	5.28	5.28	5.29	5.29	5.29	5.29	5.30	5.30	5.31	5.29
Hamburg	5.30	5.24	5.31	5.38	5.29	5.41	5.33	5.34	5.32	5.34	5.29	5.29	5.32
Copenhagen						5.65			5.46			5.35	5.49 ∗
1879													
Oslo	5.06	5.07	5.07	4.91	4.92	4.92					4.92	4.86	4.97 ∗
Hamburg	5.25	5.29	5.28	5.15	5.05	5.02	4.97	4.95	4.94	4.94	4.97	4.96	5.06
Copenhagen			5.30						4.86			4.83	5.00 ∗
1880													
Oslo	4.86	4.86	4.86	4.66	4.66	4.66	4.55	4.55	4.55	4.55	4.55	4.55	4.66
Hamburg	4.82	4.70	4.70	4.66	4.64	4.64	4.58	4.58	4.61	4.62	4.60	4.57	4.64
Copenhagen			4.71			4.61			4.55			4.50	4.59 ∗
1881													
Oslo	4.55	4.55	4.55	4.55	4.55	4.55	4.54	4.52	4.53	4.55	4.55	4.55	4.55
Hamburg	4.49	4.50	4.51	4.47	4.49	4.48	4.44	4.45	4.50	4.51	4.52	4.53	4.49
Copenhagen			4.48			4.43						4.46	4.46 ∗
1882													
Oslo	4.55	4.55	4.55	4.55	4.56	4.56	4.56	4.56	4.57	4.58	4.57	4.55	4.56
Hamburg	4.55	4.54	4.55	4.53	4.51	4.51	4.52	4.52	4.54	4.55	4.54	4.55	4.53
Copenhagen			4.50			4.50						4.55	4.52 ∗
1883													
Oslo	4.55	4.55	4.55	4.55	4.55	4.55	4.53	4.55	4.55	4.49	4.54	4.54	4.54
Hamburg	4.51	4.49	4.51	4.51	4.50	4.49	4.43	4.47	4.48	4.49	4.49	4.49	4.49
Copenhagen						4.50			4.52			4.53	4.52 ∗
1884													
Oslo	4.53	4.51	4.47	4.47	4.47	4.47	4.43	4.43	4.39	4.39	4.35	4.37	4.44
Hamburg	4.45	4.45	4.44	4.43	4.43	4.44	4.44	4.45	4.44	4.45	4.45	4.40	4.44
Copenhagen			4.48			4.52			4.55			4.52	4.52 ∗
1885													
Oslo	4.21	4.21	4.21	4.17	4.14	4.14	4.14	4.14	4.14	4.11	4.11	4.14	4.15
Hamburg	4.19	4.17	4.17	4.17	4.17	4.11	4.12	4.11	4.15	4.15	4.12	4.09	4.14
1886													
Oslo	4.10	4.04	4.03	4.03	4.04	3.97	3.98	3.96	3.97	3.98	3.98	3.97	4.00
Hamburg	4.09	4.07	4.05	4.00	3.99	4.00	3.99	4.01	4.01	4.00	4.00	4.02	4.02
Copenhagen			4.09			4.06			4.04			4.01	4.05 ∗
1887													
Oslo	3.96	3.97	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.82
Hamburg	4.01	3.99	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.83
1888													
Oslo	3.79	3.79	3.79	3.77	3.76	3.73	3.70	3.67	3.67	3.67	3.67	3.68	3.72
Hamburg	3.79	3.79	3.79	3.77	3.77	3.76	3.66	3.67	3.70	3.70	3.70	3.69	3.73
1889													
Oslo	3.67	3.66	3.64	3.61	3.58	3.55	3.56	3.56	3.53	3.53	3.54	3.54	3.58
Hamburg	3.62	3.65	3.64	3.64	3.56	3.57	3.58	3.56	3.57	3.58	3.59	3.59	3.60

Table A2. Kongeriket Norges Hypotekbank long-term bonds

1851 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1890													
Oslo	3.54	3.56	3.56	3.56	3.56	3.56	3.58	3.62	3.60	3.61	3.64	3.77	3.60
Hamburg	3.59	3.62	3.60	3.60	3.59	3.61	3.62	3.61	3.61	3.63	3.65	3.65	3.62
1891													
Oslo	3.63	3.66	3.66	3.67	3.80	3.77	3.94	3.94	3.94	4.10	4.10	4.10	3.86
Hamburg	3.63	3.65	3.79	3.79	3.81	3.79	3.84	3.94	3.97	3.96	4.02	3.99	3.85
1892													
Oslo	4.10	3.98	3.98	4.04	4.00	4.02	4.04	4.01	4.02	4.02	4.05	4.10	4.03
Hamburg	3.92	3.93	3.93	3.93	4.01	3.93	3.93	3.93	3.93	3.99	4.04	4.09	3.97
1893													
Oslo	4.07	4.01	4.01	4.04	4.11	4.08	4.06	3.98	4.05	4.05	4.11	4.08	4.05
Hamburg	4.04	3.97	3.97	3.98	4.05	4.02	4.01	4.03	4.04	4.08	4.08	3.99	4.02
1894													
Oslo	4.05	3.99	3.99	3.99	3.95	3.93	3.88	3.87	3.84	3.84	3.75	3.66	3.89
Hamburg	3.96	3.95	3.97	3.94	3.94	3.88	3.85	3.85	3.79	3.78	3.69	3.58	3.85
1895													
Oslo	3.66	3.65	3.65	3.73	3.70	3.66	3.66	3.66	3.65	3.66	3.68	3.67	3.67
Hamburg	3.58	3.59	3.58	3.65	3.65	3.64	3.64	3.64	3.65	3.65	3.68	3.69	3.64
1896													
Oslo	3.68	3.67	3.64	3.66	3.66	3.66	3.65	3.67	3.66	3.73	3.68	3.67	3.67
Hamburg	3.65	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.66	3.69	3.71	3.70	3.66
1897													
Oslo	3.67	3.69	3.67	3.69	3.70	3.76	3.74	3.75	3.78	3.78	3.76	3.79	3.73
Hamburg	3.67	3.68	3.69	3.69	3.69	3.69	3.70	3.72	3.79	3.77	3.77	3.76	3.72
1898													
Oslo	3.79	3.76	3.76	3.78	3.80	3.80	3.76	3.76	3.76	3.80	3.87	3.89	3.79
Hamburg	3.72	3.73	3.73	3.77	3.77	3.81	3.81	3.79	3.82	3.85	3.92	3.83	3.80
1899													
Oslo	3.82	3.89	3.98	4.01	4.03	4.07	4.10	4.14	4.32	4.36	4.32	4.34	4.11
Hamburg	3.86	3.89	3.99	4.00	4.10	4.07	4.08	4.23	4.25	4.32	4.39	4.39	4.13
1900													
Oslo	4.32	4.36	4.49	4.45	4.44	4.45	4.50	4.47	4.49	4.48	4.52	4.50	4.46
Hamburg	4.34	4.37	4.47	4.40	4.44	4.50	4.49	4.46	4.49	4.46	4.48	4.44	4.44
Paris								4.30					4.30 ∗
1901													
Oslo	4.51	4.49	4.50	4.48	4.43	4.46	4.47	4.34	4.35	4.32	4.36	4.32	4.42
Hamburg	4.45	4.40	4.44	4.44	4.43	4.45	4.39	4.35	4.36	4.36	4.35	4.31	4.40
Paris		3.95			4.13	4.07		4.05					4.05 ∗
1902													
Oslo	4.17	4.05	4.07	4.10	4.10	4.19	4.12	4.14	4.11	4.17	4.17	4.17	4.13
Hamburg	4.10	4.02	4.00	4.05	4.08	4.10	4.12	4.12	4.12	4.12	4.12	4.09	4.09
Paris		3.99	4.01	3.98	3.95	3.93	3.88	3.86	3.93	3.95	3.94		3.94 ∗
1903													
Oslo	4.03	4.00	3.93	3.96	3.97	4.01	4.01	4.00	4.13	4.11	4.05	4.05	4.02
Hamburg	3.94	3.95	3.91	3.97	3.99	4.00	3.96	4.01	4.13	4.07	4.04	4.01	4.00
Paris	3.90	3.91	3.94	4.16	4.19	3.91	4.22	4.19	3.96	3.96	3.92	3.95	4.02
1904													

Table A2. Kongeriket Norges Hypotekbank long-term bonds

1851 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Oslo	4.01	4.17	4.17	4.17	4.10	4.12	4.03	3.95	3.85	3.85	3.92	3.95	4.02
Hamburg	3.97	4.19	4.12	4.13	4.13	4.14	3.95	3.87	3.84	3.89	3.93	3.99	4.01
Paris	3.58	3.75	3.70	3.89	3.85	3.69	3.58	3.57	3.59	3.60	3.60	3.65	3.67
1905													
Oslo	3.93	3.93	3.93	3.94	3.95	4.06	4.04	4.04	4.04	4.04	4.04	4.06	4.00
Hamburg	3.96	3.92	3.93	3.94	3.96	4.03	4.06	4.06	4.06	4.07	4.07	4.04	4.01
Paris	3.63	3.57	3.56	3.62	3.63	3.72	3.75	3.77	3.78	3.83	3.76	3.68	3.69
1906													
Oslo	4.06	4.03	4.03	4.02	4.04	4.04	4.06	4.07	4.09	4.14	4.11	4.07	4.06
Hamburg	4.03	4.03	4.03	4.04	4.10	4.10	4.09	4.07	4.08	4.07	4.14	4.10	4.07
Paris	3.77	3.71	3.69	3.74	3.69	3.67	3.70	3.69	3.72	3.74	3.70	3.71	3.71
1907													
Oslo	4.03	4.05	4.07	4.11	4.19	4.15	4.15	4.19	4.17	4.19	4.21	4.23	4.14
Hamburg	4.11	4.12	4.16	4.21	4.27	4.19	4.21	4.26	4.23	4.25	4.30	4.32	4.22
Paris	3.71	3.75	3.74	3.71	3.73	3.80	3.78	3.85	3.86	3.86	3.92	3.90	3.80
1908													
Oslo	4.17	4.21	4.27	4.23	4.24	4.28	4.30	4.30	4.30	4.31	4.26	4.30	4.26
Hamburg	4.22	4.24	4.33	4.32	4.32	4.33	4.35	4.31	4.35	4.34	4.34	4.39	4.32
Paris	3.90	3.91	3.93	3.91	3.95	3.95	3.96	3.95	3.88	3.88	3.80	3.85	3.91
1909													
Oslo	4.33	4.24	4.24	4.24	4.25	4.25	4.25	4.24	4.21	4.21	4.22	4.23	4.24
Hamburg	4.29	4.24	4.24	4.25	4.26	4.26	4.28	4.28	4.22	4.22	4.27	4.27	4.26
Paris	3.77	3.79	3.82	3.82	3.72	3.87	3.87	3.88	3.85	3.86	3.84	3.80	3.82
1910													
Oslo	4.19	4.16	4.14	4.11	4.22	4.25	4.25	4.27	4.28	4.29	4.27	4.27	4.23
Hamburg	4.24	4.20	4.21	4.22	4.22	4.28	4.32	4.33	4.34	4.33	4.34	4.30	4.28
Paris	3.75	3.74	3.74	3.77	3.83	3.87	3.95	3.94	3.91	3.95	3.93	3.90	3.86
1911													
Oslo	4.29	4.27	4.29	4.29	4.36	4.32	4.31	4.32	4.31	4.33	4.36	4.37	4.32
Hamburg	4.30	4.31	4.30	4.31	4.37	4.38	4.35	4.35	4.36	4.40		4.37	4.35 ∗
Paris	3.89	3.90	3.92	3.92	3.92	3.94	4.02	3.97	4.07	4.02	3.98	3.98	3.96
1912													
Oslo	4.33	4.35	4.38	4.48	4.54	4.55	4.52	4.54	4.59	4.66	4.62	4.55	4.51
Hamburg	4.38	4.36	4.45	4.52	4.59	4.57	4.59	4.58	4.58	4.63	4.66	4.65	4.55
Paris	3.97	4.01	4.12	4.18	4.19	4.18	4.26	4.25	4.31	4.41	4.31	4.35	4.21
1913													
Oslo	4.57	4.71	4.75	4.72	4.65	4.71	4.72	4.73	4.74	4.81	4.80	4.82	4.73
Paris	4.39	4.35	4.33	4.43	4.54	4.68	4.53						4.46 ∗
1914													
Oslo	4.70	4.57	4.65	4.75	4.78	4.78	4.80			5.02	5.08	5.03	4.82 ∗
1915													
Oslo	4.98	5.00	5.19	5.28	5.33	5.36	5.46	5.47	5.75	5.69	5.67	5.98	5.43
Paris								4.59	4.59	4.46	4.58	4.61	4.57 ∗
1916													
Oslo	6.33	6.32	6.43	6.35	5.94	5.53	5.50	5.46	5.33	5.36	5.38	5.40	5.78
Paris	4.34	4.36	4.88	4.85	4.58	4.24	4.27	4.33	4.49	4.60	4.59	4.54	4.51
1917													

Table A2. Kongeriket Norges Hypotekbank long-term bonds

1851 - 1920

Annualized yield computed from end-of-month quotations in different markets.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
Oslo	5.43	5.38	5.39	5.37	5.35	5.25	5.25	5.22	5.24	5.29	5.60	5.61	5.37
Paris	4.48	4.47	4.24	4.39	4.36	4.32	4.25	4.03	4.08	3.96	4.06	4.44	4.26
1918													
Oslo	5.85	5.81	5.79	5.85	5.77	5.76	6.05	5.74	6.06	6.07	6.17	6.07	5.92
Paris	4.58	4.63	4.52	4.52	4.56	4.49	4.39	4.58	4.76	5.47	5.39	5.31	4.77
1919													
Oslo	5.88	5.90	6.10	5.93	5.96	5.86	5.77	5.85	5.84	5.93	6.00	6.21	5.93
Paris	5.37	5.34	5.14	5.11	4.89	4.74	4.47	4.27	4.37	4.01	4.11	4.25	4.67
1920													
Oslo	6.43	6.58	6.66	6.76	6.91	7.28	7.73	7.83	7.72	7.65	7.54	7.23	7.19
Paris	4.14	3.95	3.78	2.56	3.69	4.39	4.74	4.62	4.51	4.41	4.15	3.47	4.04

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	H	K
Maturity	2	3	4	5	6	7	8	10	10-15	15-20	20-60	20-60	20-60
1921 JAN			6.09	6.09	6.21	6.27	6.30	6.35	6.44	6.48	6.50	6.58	7.48
FEB			6.79	6.79	6.76	6.72	6.68	6.61	6.42	6.48	6.32	6.38	7.48
MAR			6.95	6.95	7.02	7.01	6.98	6.92	6.68	6.69	6.51	6.35	7.48
APR			7.57	7.57	7.50	7.40	7.31	7.17	6.74	6.57	6.34	6.30	7.48
MAY			7.29	7.29	7.21	7.11	7.02	6.87	6.43	6.38	6.22	5.97	6.94
JUN		6.39	6.39	7.07	7.23	7.21	7.14	6.98	6.46	6.35	6.15	6.02	6.89
JUL		5.94	5.94	6.05	5.74	5.72	5.68	5.90	5.86	5.59	5.56	5.42	6.04
AUG		5.86	5.86	6.39	5.90	5.94	5.97	6.11	6.01	5.71	5.57	5.27	6.04
SEP		6.25	6.25	6.73	6.17	6.15	6.13	6.15	6.09	5.91	5.65	5.50	6.04
OCT		6.75	6.75	7.02	7.06	6.40	6.30	6.15	6.47	6.30	5.98	5.57	6.04
NOV		6.27	6.27	6.65	6.16	6.12	6.08	6.06	6.18	5.98	5.68	5.59	
DEC		6.26	6.18	6.03	6.05	6.07	6.04	6.10	5.98	5.89	5.72	5.55	6.28
1922 JAN		6.09	6.06	6.05	6.05	5.97	5.88	5.81	5.69	5.67	5.60	5.34	
FEB		5.83	5.76	5.64	5.59	5.58	5.55	5.52	5.36	5.44	5.41	5.25	
MAR		5.06	5.18	5.21	5.18	5.21	5.23	5.23	5.13	5.17	5.12	4.82	5.19
APR	4.91	4.89	4.89	4.88	4.83	4.77	4.75	4.87	4.86	4.88	4.75	4.82	5.19
MAY	4.82	4.85	4.83	4.83	4.80	4.79	4.79	4.85	4.82	4.70	4.77	4.82	5.23
JUN	5.17	5.23	5.16	5.14	5.16	5.18	5.28	5.22	5.10	4.91	4.85	4.69	5.23
JUL	5.13	5.12	5.10	5.12	5.13	5.17	5.27	5.19	5.03	4.95	4.99	4.74	5.32
AUG	4.82	4.90	5.03	4.96	4.93	4.93	5.06	4.95	4.76	4.78	4.71	4.53	5.22
SEP	5.17	5.24	5.38	5.29	5.31	5.28	5.26	5.21	5.24	5.24	5.20	4.79	5.22
OCT	5.20	5.25	5.33	5.28	5.32	5.35	5.41	5.33	5.21	5.04	5.05	4.71	5.26
NOV	4.87	5.01	5.17	5.14	5.18	5.22	5.34	5.27	5.19	5.11	5.05	4.65	5.28
DEC	5.14	5.27	5.31	5.19	5.26	5.27	5.38	5.34	5.33	5.25	5.07	4.67	5.26
1923 JAN	5.11	5.25	5.29	5.19	5.24	5.25	5.34	5.24	5.14	5.15	5.06	4.68	5.26
FEB	4.96	5.12	5.16	5.08	5.11	5.11	5.17	5.13	5.10	5.06	5.03	4.65	5.26
MAR	4.89	5.10	5.16	5.08	5.15	5.17	5.25	5.18	5.16	5.08	5.06	4.63	5.26
APR	5.06	5.20	5.17	5.07	5.14	5.18	5.48	5.27	5.27	5.14	5.09	4.69	5.26
MAY	5.57	5.71	5.50	5.35	5.44	5.47	5.64	5.49	5.46	5.16	5.19	5.04	5.26
JUN	6.09	6.03	5.73	5.67	5.62	5.62	5.65	5.54	5.46	5.41	5.20	5.17	5.22
JUL	6.08	6.02	6.08	5.82	5.75	5.73	5.80	5.68	5.61	5.49	5.42	5.35	5.25
AUG	6.22	6.07	6.02	5.88	5.83	5.85	5.96	5.76	5.64	5.64	5.54	5.35	5.46
SEP	6.09	6.07	6.07	5.88	5.81	5.78	5.80	5.70	5.64	5.61	5.48	5.30	5.44
OCT	7.02	6.74	6.68	6.54	6.47	6.41	6.37	6.31	6.24	5.93	5.82	5.41	5.36
NOV	6.39	6.22	6.19	6.15	6.15	6.13	6.19	6.23	6.30	5.95	5.75	5.50	5.57
DEC	6.03	5.92	5.75	5.74	5.78	5.77	5.62	5.97	5.91	5.82	5.57	5.37	5.62
1924 JAN	6.80	6.66	6.47	6.34	6.22	6.10	6.11	6.06	6.01	5.82	5.62	5.47	5.75
FEB	7.12	6.77	6.55	6.42	6.30	6.20	6.25	6.22	6.19	5.94	5.67	5.56	5.79
MAR	6.65	6.50	6.36	6.28	6.20	6.15	6.18	6.12	6.06	5.78	5.60	5.50	5.79
APR	6.13	6.16	5.91	5.83	5.77	5.80	5.77	5.79	5.81	5.68	5.46	5.42	5.78
MAY	6.69	6.55	6.36	6.28	6.20	6.13	6.15	6.15	6.10	5.78	5.63	5.43	5.79
JUN	7.07	6.80	6.94	6.58	6.49	6.37	6.37	6.35	6.29	6.09	5.96	5.57	5.75
JUL	7.25	7.04	7.14	6.72	6.59	6.39	6.45	6.41	6.34	6.24	6.08	5.72	6.00
AUG	6.77	6.77	6.92	6.55	6.46	6.36	6.35	6.36	6.37	6.17	5.99	5.72	5.92
SEP	6.82	6.80	6.98	6.59	6.51	6.43	6.41	6.41	6.40	6.16	5.98	5.72	6.04
OCT	7.25	7.16	7.20	6.74	6.43	6.47	6.43	6.45	6.47	6.18	6.10	5.77	6.13

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	H	K
Maturity	2	3	4	5	6	7	8	10	10-15	15-20	20-60	20-60	20-60
NOV	6.52	6.53	6.64	6.39	6.30	6.31	6.28	6.25	6.20	6.16	5.99	5.75	6.13
DEC	6.52	6.52	6.19	6.15	6.05	6.07	6.21	6.24	6.29	6.11	5.84	5.65	6.05
1925 JAN	6.71	6.71	6.46	6.36	6.16	6.17	6.20	6.18	6.16	6.09	5.92	5.79	6.09
FEB	6.73	6.73	6.48	6.37	6.18	6.20	6.25	6.29	6.34	6.09	5.99	5.81	6.09
MAR	6.64	6.64	6.51	6.36	6.22	6.24	6.27	6.32	6.32	6.04	6.05	5.70	6.10
APR	6.45	6.65	6.30	6.37	6.14	6.16	6.18	6.18	6.16	6.03	5.94	5.70	6.10
MAY	5.93	6.19	5.92	5.86	6.02	6.03	6.02	5.98	5.95	5.79	5.76	5.68	6.10
JUN	5.05	5.12	5.29	5.35	5.63	5.64	5.66	5.68	5.72	5.48	5.44	5.31	6.16
JUL	5.19	4.96	5.10	5.11	5.57	5.54	5.60	5.67	5.72	5.44	5.49	5.45	5.84
AUG	5.38	5.42	5.42	5.51	5.69	5.65	5.67	5.61	5.53	5.46	5.30	5.27	5.92
SEP	5.72	5.55	5.56	5.57	5.75	5.74	5.75	5.67	5.60	5.52	5.42	5.24	5.92
OCT	5.51	5.38	5.27	5.41	5.48	5.57	5.62	5.62	5.57	5.47	5.48	5.33	5.91
NOV	5.74	5.69	5.64	5.73	5.79	5.81	5.83	5.81	5.77	5.64	5.65	5.44	5.95
DEC	5.75	5.71	5.69	5.74	5.78	5.80	5.82	5.85	5.91	5.64	5.68	5.49	5.92
1926 JAN	5.59	5.65	5.69	5.91	5.91	5.90	5.89	5.93	6.00	5.73	5.73	5.50	6.03
FEB	5.21	5.40	5.51	5.67	5.71	5.73	5.74	5.77	5.85	5.64	5.58	5.46	5.93
MAR	4.67	5.14	5.40	5.51	5.58	5.61	5.64	5.66	5.73	5.60	5.50	5.34	5.89
APR	5.15	5.50	5.53	5.77	5.68	5.67	5.65	5.63	5.67	5.61	5.52	5.38	5.88
MAY	5.61	5.70	5.59	5.77	5.70	5.69	5.67	5.69	5.75	5.62	5.57	5.37	5.97
JUN	5.43	5.50	5.53	5.64	5.65	5.66	5.67	5.68	5.74	5.54	5.49	5.29	5.92
JUL	5.42	5.43	5.45	5.54	5.57	5.59	5.62	5.57	5.57	5.41	5.33	5.25	5.83
AUG	4.63	4.88	5.15	5.38	5.41	5.45	5.50	5.38	5.32	5.31	5.19	5.12	5.75
SEP	4.75	4.87	5.04	5.24	5.28	5.31	5.33	5.21	5.17	5.18	5.04	4.83	5.43
OCT	4.37	4.59	4.79	4.92	4.98	5.06	5.09	5.16	5.22	5.13	4.88	4.79	5.42
NOV	5.14	5.23	5.31	5.33	5.35	5.35	5.34	5.37	5.42	5.27	5.07	5.04	5.53
DEC	4.95	5.04	5.17	5.16	5.29	5.31	5.30	5.37	5.45	5.35	5.13	5.03	5.54
1927 JAN	4.70	4.84	4.97	5.07	5.13	5.18	5.18	5.30	5.39	5.29	5.16	4.90	5.44
FEB	5.02	5.10	5.30	5.40	5.35	5.30	5.22	5.25	5.30	5.28	5.05	5.00	5.40
MAR	4.66	4.89	5.08	5.20	5.20	5.20	5.15	5.19	5.24	5.21	5.10	4.93	5.40
APR	4.62	4.84	5.07	5.16	5.18	5.19	5.16	5.18	5.22	5.11	5.08	4.93	5.40
MAY	5.35	5.27	5.33	5.35	5.32	5.30	5.26	5.32	5.36	5.17	5.15	5.01	5.38
JUN	5.15	5.23	5.42	5.44	5.42	5.41	5.33	5.42	5.48	5.19	5.18	5.01	5.31
JUL	5.14	5.26	5.44	5.45	5.43	5.41	5.33	5.39	5.43	5.22	5.16	5.02	5.37
AUG	5.48	5.48	5.47	5.49	5.46	5.41	5.34	5.35	5.37	5.28	5.21	5.07	5.38
SEP	5.52	5.56	5.74	5.63	5.59	5.58	5.51	5.54	5.58	5.35	5.34	5.09	5.48
OCT	5.99	6.01	6.04	5.95	5.88	5.82	5.75	5.77	5.77	5.58	5.49	5.25	5.67
NOV	6.00	6.05	6.13	6.03	5.98	5.92	5.93	5.95	5.97	5.72	5.55	5.40	5.74
DEC	5.97	6.05	6.07	6.00	5.95	5.85	5.87	5.88	5.90	5.76	5.58	5.45	5.94
1928 JAN	5.86	5.83	5.81	5.79	5.76	5.72	5.74	5.74	5.75	5.64	5.50	5.44	5.80
FEB	5.48	5.66	5.72	5.71	5.69	5.63	5.58	5.71	5.74	5.59	5.39	5.24	5.74
MAR	5.46	5.50	5.56	5.59	5.58	5.52	5.46	5.63	5.67	5.40	5.32	5.21	5.69
APR	5.58	5.53	5.60	5.60	5.58	5.50	5.44	5.69	5.71	5.31	5.24	5.22	5.88
MAY	5.43	5.49	5.56	5.58	5.58	5.52	5.45	5.67	5.70	5.23	5.22	5.14	5.69
JUN	5.48	5.58	5.61	5.60	5.59	5.49	5.53	5.76	5.83	5.33	5.23	5.16	5.87
JUL	5.40	5.55	5.60	5.59	5.58	5.48	5.49	5.65	5.71	5.29	5.20	5.14	5.86
AUG	5.25	5.46	5.52	5.51	5.51	5.42	5.42	5.51	5.57	5.21	5.17	5.11	5.80

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	H	K
Maturity	2	3	4	5	6	7	8	10	10-15	15-20	20-60	20-60	20-60
SEP	5.20	5.35	5.45	5.46	5.46	5.37	5.39	5.46	5.52	5.17	5.17	5.10	5.82
OCT	5.34	5.37	5.53	5.50	5.48	5.38	5.41	5.46	5.51	5.26	5.18	5.11	5.81
NOV	5.59	5.40	5.62	5.58	5.57	5.46	5.48	5.56	5.58	5.31	5.26	5.12	5.80
DEC	5.47	5.34	5.56	5.53	5.46	5.40	5.52	5.54	5.55	5.31	5.22	5.14	5.76
1929 JAN	5.26	5.40	5.48	5.46	5.40	5.34	5.44	5.46	5.52	5.29	5.20	5.13	5.70
FEB	5.40	5.48	5.52	5.49	5.41	5.37	5.47	5.49	5.55	5.33	5.28	5.15	5.59
MAR	5.82	5.70	5.71	5.67	5.59	5.48	5.57	5.56	5.60	5.50	5.37	5.22	5.84
APR	5.63	5.58	5.67	5.65	5.58	5.48	5.64	5.66	5.67	5.54	5.39	5.24	5.84
MAY	5.59	5.49	5.60	5.57	5.48	5.44	5.59	5.62	5.66	5.46	5.29	5.25	5.83
JUN	5.65	5.72	5.69	5.67	5.48	5.48	5.61	5.61	5.61	5.46	5.38	5.29	5.85
JUL	5.82	5.84	5.77	5.70	5.51	5.51	5.60	5.59	5.61	5.56	5.43	5.35	5.79
AUG	5.85	5.85	5.81	5.74	5.51	5.54	5.63	5.62	5.65	5.56	5.45	5.37	5.74
SEP	5.76	5.78	5.77	5.74	5.63	5.64	5.71	5.68	5.71	5.59	5.48	5.35	5.87
OCT	5.86	5.93	5.86	5.78	5.64	5.70	5.75	5.73	5.77	5.63	5.47	5.43	5.87
NOV	5.76	5.79	5.74	5.67	5.53	5.57	5.61	5.59	5.60	5.55	5.38	5.25	5.90
DEC	5.61	5.73	5.64	5.54	5.36	5.47	5.54	5.52	5.52	5.34	5.24	5.17	5.90
1930 JAN	5.64	5.66	5.55	5.42	5.27	5.40	5.47	5.44	5.46	5.21	5.20	5.14	5.63
FEB	5.49	5.53	5.51	5.40	5.23	5.37	5.40	5.37	5.41	5.28	5.18	5.17	5.54
MAR	5.21	5.33	5.34	5.31	5.22	5.28	5.30	5.32	5.37	5.17	5.13	5.09	5.50
APR	5.29	5.44	5.41	5.34	5.25	5.33	5.36	5.34	5.34	5.20	5.15	5.13	5.47
MAY	5.42	5.50	5.49	5.36	5.36	5.39	5.41	5.44	5.48	5.30	5.21	5.18	5.47
JUN	5.34	5.42	5.48	5.28	5.27	5.30	5.31	5.34	5.38	5.24	5.17	5.16	5.50
JUL	4.94	5.12	5.28	5.12	5.12	5.19	5.23	5.24	5.27	5.12	5.05	5.07	5.47
AUG	4.90	5.11	5.27	5.13	5.11	5.22	5.27	5.27	5.28	5.15	5.09	5.09	5.47
SEP	4.78	4.98	5.11	5.04	5.07	5.13	5.17	5.17	5.18	5.09	5.04	5.07	5.34
OCT	4.68	4.86	4.96	4.91	4.84	4.87	4.89	4.97	5.09	4.95	4.77	4.79	5.23
NOV	4.38	4.72	4.87	4.84	4.80	4.81	4.83	4.91	5.12	5.02	4.75	4.74	5.11
DEC	4.70	4.86	4.91	4.91	4.87	4.88	4.87	4.96	5.24	5.08	4.83	4.77	5.11
1931 JAN	4.59	4.78	4.82	4.81	4.76	4.77	4.75	4.81	4.97	4.86	4.73	4.71	5.05
FEB	4.39	4.66	4.74	4.73	4.64	4.66	4.66	4.73	4.87	4.85	4.71	4.69	5.01
MAR	4.59	4.76	4.77	4.74	4.72	4.71	4.70	4.75	4.86	4.85	4.71	4.70	5.04
APR	4.44	4.70	4.71	4.68	4.65	4.65	4.65	4.71	4.79	4.78	4.68	4.69	5.05
MAY	4.26	4.55	4.58	4.56	4.55	4.56	4.57	4.64	4.73	4.70	4.62	4.63	5.04
JUN	4.28	4.52	4.51	4.51	4.51	4.52	4.54	4.62	4.75	4.72	4.65	4.66	5.00
JUL	4.61	4.76	4.80	4.78	4.79	4.79	4.81	4.87	4.97	4.90	4.76	4.66	5.03
AUG	4.76	4.88	4.81	4.80	4.81	4.82	4.83	4.83	4.84	4.76	4.68	4.68	5.05
SEP	6.15	6.07	5.96	6.14	5.93	5.90	5.87	5.72	5.48	5.59	5.41	5.37	5.28
OCT	5.47	5.46	5.33	5.40	5.45	5.52	5.54	5.47	5.41	5.27	5.15	5.18	5.29
NOV	5.62	5.55	5.38	5.45	5.48	5.53	5.54	5.48	5.42	5.43	5.31	5.48	5.21
DEC	6.30	6.00	5.89	5.93	5.86	5.83	5.81	5.76	5.68	5.58	5.44	5.41	5.32
1932 JAN	5.72	5.54	5.44	5.47	5.47	5.48	5.46	5.48	5.52	5.37	5.25	5.23	5.33
FEB	5.31	5.17	5.06	5.12	5.14	5.18	5.18	5.19	5.23	5.12	5.07	5.05	5.36
MAR	5.35	5.32	5.17	5.26	5.28	5.32	5.32	5.32	5.38	5.18	5.09	5.10	5.30
APR	5.16	5.11	5.10	5.17	5.20	5.24	5.23	5.28	5.21	5.18	5.10	5.09	5.36
MAY	4.93	4.98	5.01	4.99	5.01	5.02	5.03	5.08	5.12	5.06	5.00	4.94	5.27
JUN	4.91	4.92	4.94	4.95	4.98	5.00	5.02	5.10	5.23	5.07	4.94	4.91	5.25

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	H	K
Maturity	2	3	4	5	6	7	8	10	10-15	15-20	20-60	20-60	20-60
JUL	4.59	4.75	4.84	4.85	4.86	4.87	4.88	5.00	5.15	5.00	4.89	4.88	5.22
AUG	4.34	4.64	4.74	4.72	4.75	4.77	4.80	4.94	5.11	4.96	4.82	4.80	5.13
SEP	4.19	4.46	4.57	4.60	4.64	4.70	4.71	4.83	4.93	4.93	4.76	4.79	5.15
OCT	3.85	4.17	4.32	4.39	4.46	4.52	4.56	4.70	4.84	4.80	4.70	4.71	5.05
NOV	4.40	4.40	4.49	4.55	4.62	4.67	4.71	4.85	4.96	4.82	4.73	4.71	5.07
DEC	4.04	4.26	4.44	4.53	4.62	4.67	4.69	4.81	4.90	4.82	4.74	4.70	5.08
1933 JAN	4.04	4.27	4.44	4.49	4.56	4.62	4.65	4.76	4.83	4.75	4.70	4.67	4.87
FEB	3.99	4.24	4.46	4.51	4.58	4.62	4.69	4.81	4.87	4.70	4.73	4.66	4.71
MAR	4.16	4.28	4.44	4.49	4.56	4.60	4.61	4.73	4.78	4.76	4.70	4.69	4.82
APR	4.14	4.28	4.43	4.52	4.59	4.65	4.67	4.77	4.82	4.76	4.69	4.63	4.68
MAY	4.04	4.22	4.29	4.37	4.44	4.50	4.55	4.65	4.73	4.64	4.60	4.62	4.77
JUN	4.02	4.24	4.28	4.38	4.45	4.53	4.57	4.64	4.68	4.69	4.65	4.63	4.77
JUL	4.01	4.31	4.34	4.43	4.50	4.57	4.60	4.66	4.72	4.73	4.69	4.66	4.77
AUG	3.85	4.10	4.20	4.30	4.37	4.43	4.45	4.54	4.59	4.60	4.57	4.59	4.77
SEP	4.03	4.35	4.30	4.36	4.41	4.45	4.49	4.63	4.64	4.60	4.57	4.59	4.71
OCT	5.11	5.09	5.06	5.02	4.98	4.96	4.97	5.01	5.07	4.83	4.91	4.85	4.81
NOV	5.20	5.14	5.31	5.33	5.31	5.45	5.18	5.17	5.25	5.00	5.06	5.11	4.78
DEC	5.28	5.35	5.19	5.18	5.12	5.10	5.05	5.15	5.20	5.02	5.02	5.01	4.68
1934 JAN	5.20	5.17	5.17	5.11	5.06	5.05	5.11	5.06	5.08	4.86	4.93	4.87	4.83
FEB	5.16	5.14	5.14	5.08	5.02	5.01	5.02	5.04	5.08	4.95	4.97	4.92	4.83
MAR	5.23	5.20	5.14	5.07	4.98	4.98	4.98	5.04	5.09	5.03	4.97	4.93	4.83
APR	4.96	4.92	4.90	4.88	4.86	4.86	4.86	4.89	4.85	4.98	4.82	4.82	4.83
MAY	4.96	4.89	4.85	4.84	4.83	4.83	4.83	4.87	4.85	4.93	4.78	4.74	4.83
JUN	5.04	4.85	4.79	4.75	4.74	4.76	4.79	4.77	4.71	4.73	4.71	4.71	4.80
JUL	4.64	4.58	4.58	4.60	4.61	4.59	4.57	4.63	4.66	4.67	4.63	4.65	4.77
AUG	4.39	4.44	4.49	4.53	4.56	4.54	4.56	4.60	4.61	4.68	4.62	4.67	4.77
SEP	4.48	4.57	4.62	4.65	4.64	4.63	4.64	4.65	4.61	4.70	4.66	4.68	4.70
OCT	4.39	4.51	4.57	4.61	4.63	4.62	4.62	4.65	4.70	4.68	4.65	4.66	4.70
NOV	4.43	4.41	4.45	4.49	4.50	4.48	4.47	4.49	4.45	4.51	4.52		4.58
DEC	4.25	4.16	4.21	4.29	4.32	4.33	4.31	4.29	4.25	4.44	4.45		4.55
1935 JAN	3.72	3.73	3.85	3.99	4.05	4.06	4.05	4.02	4.01	4.19	4.36		4.47
FEB	4.15	4.19	4.22	4.26	4.31	4.30	4.29	4.22	4.19	4.23	4.26		4.52
MAR	3.76	3.79	3.91	4.06	4.07	4.05	4.02	4.08	4.11	4.15	4.18		4.47
APR	3.36	3.46	3.64	3.84	3.86	3.85	3.83	3.93	3.97	4.09	4.18		4.45
MAY	3.37	3.60	3.75	3.91	3.91	3.93	3.90	3.94	3.96	4.09	4.19		4.47
JUN	3.54	3.85	3.99	4.07	4.08	4.08	4.08	4.11	4.11	4.15	4.17	4.19	4.47
JUL	3.45	3.74	3.90	4.01	4.03	4.04	4.04	4.12	4.14	4.16	4.17	4.19	4.46
AUG	4.19	4.32	4.34	4.35	4.38	4.38	4.39	4.44	4.46	4.37	4.30	4.27	4.54
SEP	4.21	4.32	4.35	4.37	4.36	4.36	4.37	4.44	4.45	4.39	4.34	4.43	4.57
OCT	4.39	4.44	4.48	4.51	4.53	4.54	4.45	4.51	4.49	4.41	4.34	4.37	4.56
NOV	4.10	4.15	4.22	4.27	4.32	4.37	4.34	4.46	4.48	4.38	4.28	4.31	4.56
DEC	4.13	4.20	4.24	4.29	4.31	4.35	4.30	4.43	4.45	4.40	4.34	4.32	4.55
1936 JAN	3.84	3.98	4.10	4.17	4.18	4.22	4.17	4.32	4.33	4.27	4.20	4.24	4.52
FEB	4.09	4.23	4.28	4.33	4.38	4.44	4.41	4.54	4.56	4.44	4.31	4.28	4.54
MAR	4.01	4.20	4.25	4.32	4.34	4.39	4.37	4.51	4.53	4.43	4.32	4.30	4.52
APR	4.04	4.19	4.26	4.32	4.36	4.40	4.39	4.51	4.53	4.43	4.33	4.31	4.53

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	H	K
Maturity	2	3	4	5	6	7	8	10	10-15	15-20	20-60	20-60	20-60
MAY	4.25	4.32	4.32	4.35	4.38	4.45	4.47	4.53	4.54	4.46	4.39	4.35	4.56
JUN	4.12	4.34	4.51	4.55	4.55	4.61	4.62	4.62	4.65	4.61	4.56	4.53	4.60
JUL	4.49	4.66	4.80	4.79	4.65	4.82	4.84	4.82	4.84	4.78	4.72	4.68	4.73
AUG	4.41	4.51	4.59	4.69	4.76	4.75	4.75	4.77	4.76	4.70	4.65	4.63	4.69
SEP	4.35	4.52	4.63	4.69	4.77	4.74	4.74	4.76	4.78	4.72	4.66	4.63	4.70
OCT	4.16	4.25	4.33	4.38	4.42	4.31	4.34	4.42	4.43	4.33	4.23	4.29	4.63
NOV	4.48	4.48	4.50	4.53	4.64	4.56	4.56	4.60	4.59	4.54	4.50	4.47	4.62
DEC	4.42	4.42	4.46	4.52	4.61	4.56	4.56	4.58	4.59	4.56	4.54	4.53	4.62
1937 JAN	4.35	4.37	4.41	4.46	4.55	4.49	4.51	4.60	4.63	4.54	4.44	4.41	4.63
FEB	4.05	4.17	4.29	4.39	4.46	4.40	4.43	4.62	4.68	4.54	4.40	4.41	4.61
MAR	4.24	4.30	4.40	4.48	4.51	4.51	4.54	4.72	4.77	4.61	4.44	4.38	4.63
APR	4.43	4.32	4.44	4.45	4.48	4.48	4.50	4.49	4.47	4.47	4.46	4.48	4.64
MAY	4.44	4.29	4.41	4.41	4.50	4.49	4.52	4.51	4.48	4.47	4.45	4.41	4.63
JUN	4.41	4.29	4.39	4.39	4.49	4.47	4.49	4.48	4.46	4.42	4.39	4.34	4.64
JUL	4.35	4.29	4.34	4.44	4.51	4.46	4.48	4.47	4.44	4.41	4.37	4.33	4.63
AUG	3.70	3.95	4.05	4.14	4.13	4.13	4.15	4.23	4.23	4.18	4.12	4.20	4.54
SEP	3.47	3.84	3.90	4.03	3.99	3.97	3.98	4.13	4.14	4.10	4.07	4.18	4.54
OCT	3.32	3.69	3.73	3.87	3.85	3.80	3.81	3.95	3.95	3.97	3.98	4.14	4.50
NOV	3.28	3.59	3.65	3.83	3.75	3.78	3.81	3.93	3.93	3.96	3.97	4.08	4.44
DEC	3.51	3.73	3.81	3.99	3.95	3.99	4.02	4.05	4.07	4.06	4.05	4.10	4.47
1938 JAN	3.23	3.45	3.55	3.74	3.71	3.80	3.85	3.78	3.78	3.84	3.89	3.93	4.03
FEB	3.20	3.36	3.49	3.75	3.64	3.72	3.76	3.70	3.68	3.77	3.86	3.94	4.03
MAR	3.13	3.32	3.51	3.67	3.66	3.70	3.73	3.67	3.64	3.77	3.88	3.92	4.02
APR	3.18	3.41	3.62	3.75	3.70	3.76	3.74	3.74	3.72	3.98	3.92	4.01	4.03
MAY	3.09	3.33	3.55	3.72	3.71	3.76	3.75	3.75	3.74	3.94	3.90	3.98	4.03
JUN	3.09	3.31	3.53	3.67	3.67	3.69	3.65	3.64	3.61	3.94	3.87	3.98	4.03
JUL	3.10	3.30	3.51	3.71	3.68	3.73	3.72	3.73	3.74	3.90	3.90	3.94	4.02
AUG	2.86	3.04	3.27	3.43	3.44	3.49	3.45	3.47	3.48	3.81	3.74	3.91	4.00
SEP	3.08	3.28	3.40	3.47	3.53	3.59	3.54	3.54	3.55	3.85	3.76	3.98	4.01
OCT	2.87	3.10	3.38	3.49	3.60	3.60	3.58	3.58	3.59	3.65	3.69	3.96	4.02
NOV	3.19	3.36	3.52	3.56	3.65	3.64	3.69	3.70	3.73	3.75	3.76	3.96	4.03
DEC	3.21	3.40	3.54	3.63	3.65	3.61	3.68	3.68	3.69	3.75	3.78	3.98	4.03
1939 JAN	3.23	3.35	3.55	3.64	3.70	3.61	3.70	3.69	3.70	3.70	3.67		4.06
FEB	3.21	3.30	3.52	3.59	3.69	3.57	3.62	3.61	3.61	3.67	3.70		4.05
MAR	3.56	3.62	3.83	3.82	3.90	3.82	3.82	3.78	3.76	3.79	3.80		4.06
APR	4.27	4.22	4.29	4.26	4.30	4.31	4.22	4.15	4.13	4.11	4.09	4.12	4.14
MAY	4.17	4.10	4.19	4.08	3.99	4.56	4.56	4.21	4.14	4.11	4.07	4.15	4.19
JUN	4.23	4.27	4.31	4.34	4.41	4.24	4.22	4.19	4.19	4.18	4.18	4.21	4.23
JUL	3.75	3.88	3.98	4.07	4.02	4.01	4.01	4.03	4.04	4.07	4.08	4.18	4.23
AUG	4.41	4.47	4.43	4.49	4.35	4.30	4.31	4.32	4.31	4.30	4.29	4.34	4.38
SEP	5.68	5.54	5.41	5.27	5.13	4.99	5.01	5.00	4.96	4.90	4.86	4.91	4.86
OCT	5.59	5.85	5.80	5.55	5.38	5.33	5.27	5.07	5.02	4.99	4.99	5.04	5.06
NOV		5.84	5.78	5.72	5.59	5.44	5.28	4.99	4.89	4.90	4.94	4.99	4.89
DEC	6.02	6.63	6.73	6.59	6.29	6.14	5.94	5.81	5.76	5.50	5.32	5.26	5.24
1940 JAN		7.33	6.96	6.35	5.95	6.07	6.06	5.85	5.82	5.70	5.62	5.50	5.39
FEB		7.14	7.00	6.87	6.72	6.76	6.73	6.40	6.05	5.88	5.77	5.62	5.54

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**H**	**K**
Maturity	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**10-15**	**15-20**	**20-60**	**20-60**	**20-60**
MAR	6.55	6.90	6.85	6.23	5.88	6.10	6.10	5.90	5.81	5.46	5.20	5.18	4.89
APR	6.44	6.94	6.85	6.36	5.94	6.08	6.05	5.99	5.78	5.41	5.13	5.14	4.93
MAY		9.80	8.84	7.67	7.59	7.19	6.95	6.69	6.53	6.31	6.17	6.63	5.59
JUN		8.84	7.99	9.32	7.52	7.25	6.91	6.69	6.60	5.76	5.12	4.92	4.92
JUL	6.59	6.36	6.05	5.75	5.93	6.01	6.08	5.98	5.85	5.33	4.91	4.79	4.57
AUG	6.83	6.90	6.30	6.05	5.74	5.60	5.93	5.80	5.78	5.18	4.71	4.55	4.41
SEP	6.25	6.54	5.89	5.47	5.36	5.26	5.43	5.32	5.31	4.90	4.58	4.35	4.28
OCT	5.21	5.47	5.08	4.90	4.79	4.76	5.04	4.98	4.97	4.55	4.21	4.09	4.10
NOV	4.83	5.12	4.73	4.45	4.39	4.42	4.79	4.75	4.80	4.50	4.24	4.06	4.12
DEC	4.69	4.94	4.65	4.49	4.44	4.53	4.79	4.68	4.67	4.46	4.28	4.02	3.97
1941 JAN	3.99	4.25	4.17	4.19	4.13	4.16	4.36	4.36	4.44	4.31	4.19		3.80
FEB	3.80	3.82	3.91	3.98	3.92	3.93	4.18	4.35	4.23	4.20	4.15		3.77
MAR	3.63	3.63	3.69	3.80	3.73	3.77	4.02	3.88	3.88	3.89	3.90		3.59
APR	3.36	3.38	3.51	3.59	3.56	3.57	3.57	3.55	3.62	3.66	3.70		3.54
MAY	2.42	3.13	3.17	3.25	3.30	3.34	3.35	3.40	3.45	3.50	3.53	3.51	3.53
JUN	2.31	2.97	3.15	3.26	3.35	3.41	3.42	3.50	3.52	3.57	3.59	3.55	3.55
JUL	2.33	2.90	2.99	3.07	3.19	3.27	3.27	3.26	3.29	3.63	3.55	3.53	3.53
AUG	2.15	2.71	2.93	3.06	3.26	3.25	3.25	3.27	3.29	3.65	3.56	3.54	3.54
SEP	2.14	2.67	2.89	2.98	3.15	3.26	3.27	3.36	3.51	3.62	3.56	3.47	3.50
OCT	2.09	2.57	2.80	2.96	3.08	3.19	3.21	3.35	3.49	3.54	3.46	3.40	3.46
NOV	2.02	2.55	2.78	2.94	3.06	3.15	3.19	3.34	3.47	3.47	3.43	3.42	3.44
DEC	2.23	2.71	2.83	3.04	3.10	3.15	3.18	3.24	3.30	3.43	3.52	3.48	3.51
1942 JAN	2.12	2.69	2.84	2.96	3.05	3.14	3.21	3.37	3.52	3.47	3.48	3.47	3.48
FEB	2.05	2.59	2.76	2.91	3.02	3.12	3.16	3.32	3.46	3.48	3.39	3.41	3.49
MAR	2.09	2.66	2.83	2.98	3.07	3.16	3.22	3.37	3.50	3.49	3.39	3.42	3.47
APR	2.02	2.55	2.74	2.91	3.03	3.14	3.18	3.36	3.49	3.48	3.47	3.43	3.48
MAY	1.97	2.49	2.74	2.89	3.02	3.11	3.17	3.33	3.46	3.48	3.46	3.42	3.47
JUN	1.95	2.45	2.70	2.86	2.99	3.05	3.11	3.26	3.36	3.45	3.52	3.42	3.46
JUL	1.89	2.36	2.62	2.84	2.96	3.02	3.06	3.21	3.31	3.47	3.49	3.37	3.42
AUG	2.01	2.42	2.70	2.89	2.98	3.04	3.09	3.23	3.32	3.49	3.52		3.41
SEP	1.88	2.29	2.62	2.86	2.98	3.03	3.08	3.28	3.31	3.48	3.51	3.34	3.40
OCT	1.77	2.18	2.55	2.83	2.95	3.00	3.03	3.25	3.27	3.44	3.49	3.30	3.40
NOV	1.96	2.37	2.79	2.94	3.07	3.18	3.24	3.40	3.48	3.48	3.51	3.41	3.47
DEC	1.75	2.22	2.62	2.88	3.05	3.09	3.12	3.35	3.37	3.51	3.55	3.36	3.45
1943 JAN	1.72	2.11	2.55	2.73	2.90	2.96	3.05	3.27	3.34	3.50	3.53	3.37	3.45
FEB	1.76	2.19	2.59	2.77	2.94	2.98	3.07	3.28	3.33	3.51	3.53	3.40	3.46
MAR	1.74	2.15	2.55	2.72	2.88	2.93	3.01	3.22	3.28	3.46	3.52	3.37	3.43
APR	1.78	2.17	2.48	2.68	2.86	2.89	2.99	3.24	3.30	3.45	3.52	3.35	3.42
MAY	1.75	2.17	2.54	2.69	2.87	2.90	2.99	3.21	3.27	3.44	3.51	3.33	3.40
JUN	1.61	2.05	2.37	2.42	2.70	2.75	2.85	3.13	3.21	3.43	3.51	3.29	3.39
JUL	1.90	2.39	2.65	2.60	2.86	2.90	3.01	3.26	3.36	3.44	3.53	3.29	3.43
AUG	1.76	2.33	2.58	2.54	2.82	2.88	3.02	3.30	3.42	3.49	3.54	3.37	3.40
SEP	1.65	2.20	2.48	2.48	2.77	2.78	2.89	3.14	3.22	3.42	3.51	3.30	3.39
OCT	1.62	2.09	2.40	2.38	2.67	2.69	2.81	3.06	3.15	3.36	3.49	3.21	3.37
NOV	1.48	2.03	2.36	2.37	2.66	2.70	2.82	3.08	3.17	3.35	3.49	3.23	3.36
DEC	1.38	1.93	2.26	2.32	2.66	2.68	2.81	3.07	3.17	3.34	3.47	3.21	3.35

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. H=Kongeriket Norges Hypotekbank. K=Private credit entrprises.

Issuer	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**H**	**K**
Maturity	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**10-15**	**15-20**	**20-60**	**20-60**	**20-60**
1944 JAN	1.42	1.89	2.16	2.24	2.64	2.63	2.77	3.05	3.14	3.33	3.48	3.20	3.33
FEB	1.50	2.04	2.19	2.23	2.64	2.64	2.79	3.08	3.19	3.36	3.48	3.17	3.33
MAR	1.44	1.89	2.13	2.31	2.60	2.59	2.74	3.03	3.12	3.32	3.45	3.15	3.32
APR	1.47	1.91	2.16	2.19	2.44	2.59	2.74	3.05	3.12	3.38	3.48	3.18	3.31
MAY	1.52	1.91	2.18	2.21	2.22	2.63	2.77	3.07	3.20	3.28	3.48	3.18	3.33
JUN	1.70	2.15	2.39	2.35	2.68	2.84	2.99	3.30	3.36	3.49	3.53	3.27	3.43
JUL	1.76	2.21	2.41	2.40	2.73	2.87	2.99	3.30	3.38	3.44	3.53	3.36	3.42
AUG	1.72	2.24	2.45	2.37	2.72	2.85	2.95	3.25	3.34	3.48	3.53	3.33	3.42
SEP	1.70	2.12	2.34	2.37	2.66	2.81	2.93	3.23	3.32	3.46	3.52	3.30	3.40
OCT	1.63	2.09	2.32	2.34	2.62	2.77	2.88	3.16	3.25	3.43	3.50	3.22	3.36
NOV	1.44	1.95	2.24	2.28	2.60	2.73	2.84	3.11	3.18	3.41	3.48	3.20	3.34
DEC	1.33	1.83	2.17	2.24	2.56	2.71	2.87	3.18	3.23	3.38	3.49	3.14	3.32

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	S	K
Maturity	2	3	4	5	6	7	8	9	10	10-15	15-20	20-60	10-60
1945 JAN	1.59	1.97	2.21	2.29	2.40	2.54	2.66	2.94	3.11	3.23	3.35	3.51	3.34
FEB	1.38	1.79	2.05	2.16	2.27	2.40	2.53	2.81	2.97	3.14	3.32	3.47	3.31
MAR	1.41	1.77	2.05	2.15	2.26	2.39	2.52	2.82	2.88	3.25	3.36	3.45	3.29
APR	1.63	1.96	2.11	2.19	2.29	2.42	2.54	2.88	2.91	3.26	3.35	3.46	3.29
MAY	1.89	2.30	2.40	2.43	2.48	2.57	2.66	3.01	3.02	3.35	3.43	3.46	3.38
JUN	1.75	2.25	2.32	2.34	2.39	2.47	2.56	2.88	2.90	3.22	3.35	3.41	3.36
JUL	1.64	2.14	2.25	2.27	2.34	2.43	2.56	2.91	2.91	3.26	3.30	3.36	3.33
AUG	1.79	2.20	2.18	2.25	2.31	2.41	2.55	2.85	2.86	3.22	3.23	3.29	3.34
SEP	2.05	2.34	2.24	2.32	2.37	2.45	2.61	2.93	2.91	3.25	3.27	3.33	3.37
OCT	2.00	2.40	2.20	2.29	2.32	2.34	2.37	2.74	2.94	3.09	3.23	3.34	3.39
NOV	2.11	2.60	2.16	2.29	2.31	2.31	2.33	2.40	2.66	2.95	3.34	3.35	3.35
DEC	2.18	2.63	2.15	2.31	2.30	2.27	2.29	2.38	2.66	3.37	3.39	3.37	3.36
1946 JAN	1.87	1.97	2.00	2.10	2.18	2.26	2.35	2.41	2.45	2.52			3.32
FEB	1.72	1.90	1.99	2.10	2.18	2.26	2.33	2.37	2.41	2.47			3.32
MAR	1.50	1.86	2.05	2.13	2.18	2.24	2.27	2.30	2.34	2.39	2.46	2.52	3.30
APR	1.50	2.02	2.28	2.33	2.33	2.34	2.30	2.31	2.32	2.34	2.43	2.52	3.32
MAY	1.44	1.99	2.23	2.29	2.31	2.32	2.28	2.28	2.28	2.28	2.41	2.52	2.47
JUN	1.55	2.21	2.39	2.41	2.40	2.43	2.34	2.35	2.37	2.38	2.46	2.52	2.48
JUL	0.97	1.31	1.54	1.69	1.79	1.86	2.13	2.19	2.28	2.38	2.50	2.50	2.51
AUG	1.00	1.35	1.59	1.74	1.84	1.91	2.17	2.24	2.31	2.40	2.51	2.51	2.52
SEP	1.37	1.66	1.83	1.93	1.98	2.02	2.17	2.24	2.32	2.41	2.47	2.52	2.57
OCT	1.05	1.43	1.66	1.81	1.89	2.17	2.18	2.24	2.31	2.38	2.52	2.50	2.53
NOV	1.29	1.63	1.82	1.93	2.00	2.20	2.21	2.28	2.36	2.41	2.52	2.50	2.54
DEC	1.35	1.60	1.76	1.87	1.99	2.09	2.18	2.27	2.36	2.41	2.47	2.51	2.54
1947 JAN	1.43	1.60	1.75	1.65	1.76	1.88	2.02	2.14	2.27	2.35	2.52	2.50	2.56
FEB	1.26	1.51	1.67	1.59	1.71	1.84	1.99	2.13	2.27	2.35	2.50	2.48	2.53
MAR	1.39	1.44	1.67	1.60	1.72	1.85	1.99	2.11	2.25	2.32	2.48	2.49	2.52
APR	1.42	1.44	1.65	1.61	1.74	1.87	1.99	2.11	2.24	2.31	2.47	2.48	2.50
MAY	1.74	1.48	1.68	1.67	1.79	1.86	1.90	1.92	2.25	2.37	2.46	2.48	2.50
JUN	1.65	1.47	1.64	1.63	1.72	1.81	1.96	2.13	2.31	2.34	2.47	2.48	2.51
JUL	1.87	1.49	1.63	1.66	1.74	1.84	2.01	2.18	2.38	2.40	2.47	2.48	2.52
AUG	1.79	1.48	1.58	1.65	1.75	1.85	2.04	2.23	2.44	2.46	2.47	2.53	2.55
SEP	1.23	1.46	1.51	1.63	1.74	1.85	2.05	2.25	2.46	2.47	2.49	2.54	2.59
OCT	1.20	1.42	1.43	1.60	1.70	1.82	2.02	2.23	2.46	2.42	2.49	2.56	2.62
NOV	1.19	1.38	1.34	1.56	1.68	1.81	2.05	2.26	2.47	2.43	2.52	2.55	2.61
DEC	1.23	1.43	1.29	1.60	1.70	1.91	2.03	2.22	2.40	2.39	2.49	2.53	2.62
1948 JAN	1.17	1.36	1.37	1.54	1.66	1.81	2.02	2.22	2.40	2.38	2.48	2.53	2.60
FEB	1.12	1.29	1.36	1.49	1.61	1.78	1.97	2.18	2.35	2.35	2.48	2.52	2.57
MAR	1.09	1.23	1.30	1.43	1.57	1.71	1.95	2.17	2.34	2.34	2.49	2.50	2.56
APR	1.06	1.18	1.25	1.40	1.54	1.70	1.90	2.09	2.20	2.26	2.48	2.48	2.53
MAY	1.05	1.17	1.24	1.38	1.52	1.68	1.90	2.10	2.21	2.23	2.45	2.45	2.51
JUN	1.12	1.30	1.40	1.52	1.64	1.80	1.97	2.14	2.25	2.26	2.48	2.48	2.52
JUL	1.09	1.25	1.35	1.48	1.60	1.76	1.93	2.11	2.21	2.22	2.46	2.47	2.52
AUG	1.08	1.23	1.35	1.50	1.66	1.81	1.96	2.12	2.23	2.23	2.45	2.47	2.50
SEP	1.07	1.22	1.34	1.48	1.62	1.78	1.95	2.11	2.23	2.27	2.46	2.46	2.51
OCT	1.13	1.33	1.43	1.55	1.67	1.82	1.98	2.13	2.23	2.29	2.48	2.48	2.52

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	S	K
Maturity	2	3	4	5	6	7	8	9	10	10-15	15-20	20-60	10-60
NOV	1.12	1.30	1.43	1.55	1.69	1.86	2.01	2.17	2.26	2.30	2.48	2.48	2.53
DEC	1.12	1.31	1.44	1.57	1.73	1.88	2.04	2.20	2.27	2.31	2.48	2.48	2.54
1949 JAN	1.16	1.37	1.48	1.60	1.74	1.88	2.04	2.19	2.25	2.30	2.48	2.48	2.54
FEB	1.26	1.56	1.63	1.70	1.86	1.97	2.04	2.12	1.87	1.77	2.49	2.50	2.55
MAR	1.29	1.60	1.70	1.80	1.85	1.90	1.91	2.35	2.42	2.41	2.49	2.53	2.59
APR	1.32	1.64	1.73	1.81	1.85	1.90	1.91	2.12	1.86	1.78	2.49	2.52	2.60
MAY	1.36	1.71	1.79	1.85	1.89	1.93	1.96	2.16	1.87	1.81	2.51	2.54	2.67
JUN	1.28	1.56	1.70	1.80	1.89	1.94	1.98	2.20	1.88	1.82	2.60	2.61	2.71
JUL	1.04	1.17	1.40	1.58	1.90	2.00	2.21	2.42	2.33	2.36	2.52	2.54	2.66
AUG	0.99	1.18	1.34	1.50	1.81	1.89	2.08	2.18	2.23	2.31	2.52	2.53	2.64
SEP	1.08	1.28	1.42	1.57	1.88	1.94	2.12	2.18	2.22	2.32	2.57	2.56	2.66
OCT	0.97	1.12	1.30	1.50	1.71	1.89	2.07	2.14	2.17	2.25	2.47	2.47	2.57
NOV	0.98	1.17	1.37	1.57	1.78	1.95	2.12	2.18	2.20	2.27	2.48	2.47	2.59
DEC	1.11	1.33	1.47	1.63	1.83	2.01	2.18	2.21	2.25	2.31	2.50	2.50	2.60
1950 JAN	0.96	1.30	1.43	1.69	2.24	2.16	2.14	2.16	2.18	2.27	2.50	2.47	2.61
FEB	1.01	1.32	1.46	1.71	2.14	2.11	2.12	2.14	2.18	2.27	2.50		2.63
MAR	1.10	1.36	1.47	1.74	2.18	2.14	2.15	2.17	2.20	2.29	2.52		2.65
APR	1.10	1.31	1.44	1.77	2.24	2.18	2.17	2.20	2.23	2.33	2.56		2.69
MAY	1.18	1.34	1.47	1.90	2.33	2.25	2.24	2.26	2.29	2.38	2.62		2.74
JUN	1.44	1.56	1.64	2.02	2.37	2.33	2.34	2.36	2.39	2.47	2.68		2.77
JUL	1.86	1.96	2.04	2.06	2.04	1.88	2.25	2.45	2.57	2.68	2.88		2.88
AUG	1.66	1.75	1.84	2.23	2.52	2.50	2.52	2.54	2.58	2.65	2.85		2.87
SEP	1.57	1.70	1.92	1.93	1.93	1.80	2.15	2.35	2.47	2.60	2.85		2.87
OCT	1.70	1.82	2.03	1.99	1.95	1.84	2.19	2.39	2.51	2.63	2.86		2.87
NOV	1.96	2.00	2.04	2.07	2.10	2.20	2.32	2.44	2.56	2.60	3.00		3.01
DEC	2.26	2.34	2.41	2.37	2.31	2.36	2.44	2.52	2.61	2.63	3.08		3.07
1951 JAN	1.69	1.76	2.08	2.11	2.15	2.27	2.38	2.49	2.61	2.63	2.92		3.01
FEB	1.94	1.78	2.01	2.06	2.08	2.21	2.34	2.46	2.59	2.60	2.93		2.99
MAR	1.88	1.71	2.01	2.08	2.13	2.26	2.38	2.51	2.63	2.63	2.95		3.02
APR	1.88	1.71	2.05	2.15	2.22	2.23	2.44	2.58	2.67	2.79	3.04		3.11
MAY	2.02	1.85	2.17	2.30	2.29	2.50	2.65	2.75	2.82	2.93	3.17		3.32
JUN	1.88	1.69	2.05	2.20	2.18	2.47	2.71	2.95	3.12	3.12	3.26		3.42
JUL	1.87	1.71	2.03	2.16	2.12	2.41	2.63	2.85	3.00	3.06	3.26		3.31
AUG	2.01	1.81	2.06	2.11	2.07	2.38	2.60	2.82	2.94	3.05	3.30		3.38
SEP	1.94	1.79	2.12	2.24	2.23	2.50	2.68	2.86	2.95	3.06	3.30		3.37
OCT	2.02	1.85	2.15	2.23	2.33	2.51	2.69	2.87	2.95	3.09	3.37		3.39
NOV	2.02	1.87	2.19	2.29	2.38	2.53	2.68	2.84	2.89	3.07	3.39		3.38
DEC	2.01	1.87	1.82	2.19	2.30	2.46	2.62	2.79	2.83	2.98	3.26		3.35
1952 JAN	1.77	1.90	2.06	2.06	2.18	2.34	2.51	2.68	2.70	2.87	3.18		3.31
FEB	1.90	2.01	1.96	1.92	2.07	2.26	2.46	2.66	2.67	2.85	3.15		3.32
MAR	1.87	2.01	2.02	2.02	2.17	2.34	2.51	2.68	2.68	2.88	3.22		3.29
APR	1.84	1.96	1.97	1.97	2.12	2.28	2.44	2.58	2.76	2.93	3.23		3.29
MAY	1.91	1.96	1.98	2.00	2.15	2.29	2.43	2.55	2.75	2.92	3.23		3.25
JUN	1.96	2.00	2.01	2.00	2.16	2.30	2.44	2.55	2.75	2.92	3.21		3.29
JUL	1.88	1.91	1.94	1.95	2.14	2.29	2.45	2.55	2.73	2.89	3.18		3.24
AUG	1.85	1.88	1.90	2.01	2.26	2.39	2.48	2.53	2.73	2.89	3.14		3.29

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	S	K
Maturity	2	3	4	5	6	7	8	9	10	10-15	15-20	20-60	10-60
SEP	1.85	1.87	1.88	2.03	2.32	2.43	2.52	2.55	2.74	2.89	3.14		3.29
OCT	1.87	1.90	1.92	2.09	2.34	2.44	2.52	2.55	2.74	2.89	3.13		3.28
NOV	1.92	1.95	1.98	2.17	2.39	2.48	2.53	2.55	2.73	2.87	3.10		3.25
DEC	1.94	1.96	1.99	2.19	2.41	2.49	2.54	2.55	2.75	2.89	3.13		3.24
1953 JAN	1.89	1.89	1.92	2.17	2.44	2.48	2.54	2.55	2.74	2.89	3.13		3.25
FEB	1.99	2.01	2.04	2.24	2.49	2.60	2.74	2.83	2.89	2.96	3.12		3.26
MAR	1.99	1.97	1.97	2.23	2.48	2.49	2.53	2.53	2.74	2.89	3.14		3.26
APR	1.99	1.97	1.97	2.23	2.49	2.49	2.53	2.74	2.86	2.97	3.17		3.27
MAY	1.97	2.00	2.10	2.29	2.55	2.63	2.77	2.85	2.91	2.99	3.15		3.26
JUN	1.97	1.99	2.06	2.30	2.53	2.52	2.53	2.75	2.87	2.99	3.20		3.27
JUL	1.95	1.97	2.06	2.35	2.49	2.52	2.53	2.73	2.85	2.95	3.16		3.26
AUG	1.85	1.93	2.10	2.39	2.67	2.75	2.81	2.86	2.89	2.96	3.13		3.26
SEP	1.89	1.95	2.13	2.40	2.65	2.76	2.83	2.89	2.93	3.01	3.18		3.27
OCT	1.89	1.93	2.11	2.36	2.59	2.69	2.77	2.82	2.87	2.94	3.10		3.25
NOV	1.90	1.98	2.17	2.39	2.56	2.68	2.75	2.81	2.85	2.92	3.09		3.22
DEC	1.94	1.98	2.18	2.41	2.59	2.70	2.78	2.83	2.87	2.94	3.09		3.23
1954 JAN	1.92	1.95	2.19	2.48	2.61	2.71	2.79	2.84	2.88	2.94	3.10		3.21
FEB	1.93	1.99	2.24	2.49	2.56	2.68	2.75	2.80	2.84	2.91	3.05		3.18
MAR	1.92	2.00	2.27	2.49	2.54	2.67	2.75	2.81	2.85	2.91	3.05		3.17
APR	1.93	2.01	2.31	2.54	2.59	2.70	2.77	2.82	2.85	2.92	3.05		3.17
MAY	1.94	2.06	2.36	2.58	2.62	2.72	2.78	2.83	2.86	2.92	3.05		3.17
JUN	1.98	2.16	2.46	2.69	2.73	2.83	2.90	2.97	2.96	2.97	3.05		3.17
JUL	1.96	2.17	2.49	2.70	2.65	2.84	2.90	2.97	2.97	2.99	3.09		3.11
AUG	1.92	2.13	2.47	2.71	2.65	2.85	2.92	2.98	2.98	2.99	3.07		3.15
SEP	1.85	2.09	2.48	2.74	2.67	2.87	2.93	2.99	3.00	3.01	3.10		3.15
OCT	1.90	2.20	2.56	2.80	2.73	2.91	2.97	3.02	3.03	3.04	3.13		3.26
NOV	1.92	2.41	2.72	2.80	2.62	2.95	3.01	3.07	3.07	3.11	3.22		3.27
DEC	1.90	2.33	2.71	2.82	2.61	2.95	2.98	3.03	3.08	3.14	3.30		3.30
1955 JAN	1.96	2.58	3.00	3.11	3.05	3.04	3.05	3.06	3.26	3.30	3.40		3.39
FEB	2.27	3.10	3.43	3.42	3.41	3.73	3.84	3.97	3.98	3.90	3.90		3.81
MAR	2.49	3.39	4.02	4.01	3.87	4.00	3.99	3.98	3.97	3.91	3.92		3.85
APR	2.21	3.18	3.68	3.88	3.75	3.95	3.97	3.99	4.00	4.02	3.93		3.94
MAY	2.41	3.53	4.02	4.15	4.02	4.11	4.09	4.07	4.06	4.06	4.04		3.98
JUN	3.84	3.97	4.14	4.18	4.20	4.15	4.13	4.11	4.19	4.06	4.06		4.01
JUL	4.01	4.07	4.21	4.21	4.13	4.13	4.10	4.07	4.00	4.07	4.05		4.12
AUG	3.99	4.12	4.20	4.19	4.29	4.20	4.17	4.13	4.29	4.10	4.14		4.23
SEP	3.69	3.97	4.20	4.22	4.32	4.22	4.19	4.16	4.31	4.15	4.42		4.28
OCT	3.60	3.92	4.17	4.18	4.11	4.15	4.13	4.10	4.07	4.14	4.35		4.28
NOV	3.90	4.23	4.44	4.43	4.40	4.28	4.22	4.14	4.06	4.16			4.31
DEC	4.08	4.39	4.59	4.51	4.68	4.48	4.40	4.32	4.46	4.38	4.50		4.37
1956 JAN	3.68	4.03	4.18	4.09	4.31	4.28	4.27	4.29	4.36	4.45	4.58		4.39
FEB	3.40	3.87	4.05	4.05	4.18	4.19	4.19	4.22	4.28	4.41	4.50		4.38
MAR	3.01	4.03	4.34	4.24	4.36	4.31	4.28	4.39	4.30	4.34	4.35		4.58
APR	3.42	4.04	4.26	4.26	4.46	4.42	4.43	4.45	4.47	4.62	4.50		4.61
MAY	3.62	4.19	4.37	4.37	4.57	4.51	4.51	4.68	4.54	4.86	4.75		4.79
JUN	3.88	4.30	4.42	4.34	4.31	4.54	4.54	4.61	4.63	5.20	5.04		5.03

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises.

Issuer	S	S	S	S	S	S	S	S	S	S	S	S	K
Maturity	2	3	4	5	6	7	8	9	10	10-15	15-20	20-60	10-60
JUL	3.92	4.39	4.43	4.34	4.31	4.51	4.54	4.58	4.61	5.22			5.03
AUG	3.93	4.34	4.32	4.34	4.59	4.43	4.45	4.79	4.49	5.03	4.93		4.98
SEP	3.49	4.14	4.28	4.23	4.54	4.40	4.42	4.74	4.46	4.98	4.82		4.96
OCT	3.64	4.30	4.32	4.25	4.45	4.44	4.47	4.71	4.53	4.91	4.79		4.94
NOV	3.90	4.42	4.44	4.40	4.53	4.50	4.51	4.70	4.56	4.90	4.83		5.02
DEC	3.96	4.39	4.42	4.38	4.48	4.45	4.45	4.68	4.49	4.91	4.81		4.99
1957 JAN	3.88	4.15	4.18	4.16	4.30	4.33	4.36	4.57	4.43	4.77	4.72		4.93
FEB	3.85	4.14	4.15	4.14	4.31	4.34	4.38	4.57	4.45	4.68	4.67		4.97
MAR	3.75	4.21	4.22	4.20	4.36	4.37	4.40	4.56	4.45	4.63	4.60		4.97
APR	3.78	4.23	4.27	4.24	4.39	4.41	4.43	4.46	4.48	4.63	4.60		4.95
MAY	4.02	4.39	4.40	4.41	4.46	4.45	4.45	4.46	4.47	4.56	4.57		4.95
JUN	4.03	4.64	4.66	4.64	4.63	4.56	4.53	4.49	4.49	4.54	4.55		4.95
JUL	4.34	4.82	4.85	4.88	4.84	4.83	4.81	4.80	4.77	4.68	4.63		4.92
AUG	4.32	4.78	4.81	4.87	4.95	4.99	5.04	5.07	4.99	4.72	4.53		5.05
SEP	4.41	4.85	4.87	4.91	4.99	5.02	5.11	5.06	5.00	4.80	4.84		5.16
OCT	4.37	4.51	4.47	4.54	4.69	4.77	4.89	4.90	4.84	4.83	4.85		5.17
NOV	4.37	4.62	4.61	4.64	4.75	4.80	4.88	4.86	4.86	4.85	5.21		5.11
DEC	4.47	4.76	4.80	4.79	4.83	4.85	4.86	4.87	4.87	4.87	5.11		5.32
1958 JAN	4.70	4.73	4.90	5.04	4.88	4.87	4.86	4.85	4.84	4.80	4.77		5.27
FEB	4.50	4.75	4.86	4.98	4.92	4.95	4.97	4.96	4.93	4.77			5.26
MAR	4.61	4.87	4.90	5.08	5.00	5.04	5.08	5.07	5.01	4.77			5.31
APR	4.54	4.67	4.76	4.82	4.81	4.84	4.87	4.87	4.85	4.77	5.09		5.27
MAY	4.58	4.70	4.79	4.83	4.78	4.78	4.77	4.77	4.76	4.74	5.06		5.29
JUN	4.62	4.66	4.73	4.75	4.72	4.73	4.74	4.74	4.74	4.74	5.10		5.29
JUL	4.70	4.67	4.77	4.78	4.82	4.86	4.90	4.89	4.86	4.73	5.10		5.35
AUG	4.67	4.62	4.82	4.89	4.93	5.00	5.08	5.04	4.97	4.69	5.18		5.35
SEP	4.67	4.57	4.76	4.78	4.85	4.91	4.97	4.94	4.89	4.68	5.19		5.32
OCT	4.66	4.57	4.74	4.77	4.78	4.82	4.85	4.82	4.78	4.62	5.16		5.27
NOV	4.54	4.60	4.79	4.75	4.78	4.80	4.83	4.79	4.75	4.57	5.13		5.27
DEC	4.47	4.30	4.64	4.67	4.70	4.77	4.79	4.77	4.73	4.57	5.14		5.26
1959 JAN	4.34	4.30	4.60	4.66	4.72	4.79	4.84	4.81	4.76	4.63	5.12		5.25
FEB	4.35	4.32	4.63	4.68	4.72	4.79	4.82	4.78	4.73	4.55	5.11		5.25
MAR	4.32	4.39	4.67	4.68	4.72	4.77	4.80	4.76	4.72	4.56	5.12		5.26
APR	4.36	4.40	4.63	4.65	4.69	4.75	4.77	4.73	4.70	4.56	5.09		5.23
MAY	4.32	4.46	4.68	4.64	4.66	4.69	4.69	4.67	4.65	4.57	5.09		5.20
JUN	4.43	4.43	4.34	4.54	4.62	4.70	4.76	4.74	4.71	4.63	5.10		5.21
JUL	4.25	4.51	4.62	4.63	4.68	4.70	4.71	4.69	4.66	4.58	5.10		5.21
AUG	4.22	4.38	4.31	4.52	4.60	4.67	4.71	4.69	4.66	4.55	5.10		5.17
SEP	4.32	4.44	4.29	4.55	4.62	4.69	4.72	4.70	4.67	4.56	5.10		5.16
OCT	4.34	4.49	4.55	4.56	4.61	4.66	4.67	4.64	4.62	4.52	5.05		5.13
NOV	4.31	4.50	4.01	4.55	4.62	4.68	4.69	4.65	4.60	4.47	5.05		5.16
DEC	4.10	4.27	3.73	4.59	4.64	4.60	4.72	4.68	4.65	4.55	5.05		5.12

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	I	I
Maturity	2	3	4	5	6	7	10	10-15	5	10	10-30	5	10
1960 JAN	4.19	4.19	4.44	4.55	4.61	4.59	4.64	4.61	5.51	5.28	5.27	5.83	
FEB	4.21	4.09	4.39	4.52	4.59	4.59	4.64	4.60	5.50	5.23	5.27	5.87	
MAR	4.29	3.99	4.47	4.59	4.65	4.61	4.63	4.58	5.31	5.23	5.27	5.66	
APR	4.33	4.47	4.43	4.55	4.61	4.62	4.60	4.53	5.27	5.18	5.27	5.60	
MAY	4.44	4.47	4.42	4.54	4.60	4.75	4.60	4.54	5.23	5.18	5.24	5.58	
JUN	4.50	4.47	4.41	4.57	4.63	4.79	4.66	4.62	5.21	5.18	5.23	5.62	
JUL	4.58	4.49	4.35	4.57	4.62	4.78	4.64	4.59	5.23	5.10	5.23	5.73	5.51
AUG	4.46	4.52	4.49	4.63	4.67	4.80	4.71	4.68	5.17	5.15	5.23	5.77	5.61
SEP	4.33	4.49	4.52	4.59	4.62	4.75	4.69	4.69	5.17	5.15	5.21	5.77	5.67
OCT	4.29	4.45	4.49	4.56	4.62	4.75	4.66	4.63	5.14	5.14	5.22	5.60	5.67
NOV	4.39	4.53	4.64	4.62	4.66	4.76	4.72	4.73	5.25	5.17	5.22	5.65	5.66
DEC	4.41	4.53	4.56	4.59	4.61	4.73	4.68	4.69	5.25	5.20	5.22	5.72	5.67
1961 JAN	4.32	4.38	4.48	4.49	4.57	4.65	4.63	4.59	5.27	5.14	5.22	5.69	5.67
FEB	4.29	4.39	4.42	4.50	4.56	4.63	4.61	4.56	5.27	5.15	5.21	5.65	5.64
MAR	4.34	4.43	4.47	4.49	4.54	4.56	4.63	4.61	5.24	5.17	5.19	5.62	5.52
APR	4.31	4.43	4.46	4.48	4.52	4.53	4.62	4.60	5.19	5.15	5.18	5.46	5.54
MAY	4.48	4.55	4.55	4.60	4.63	4.66	4.76	4.77	5.27	5.30	5.24	5.55	5.58
JUN	4.49	4.56	4.54	4.67	4.71	4.79	4.78	4.75	5.27	5.32	5.25	5.64	5.59
JUL	4.49	4.64	4.69	4.80	4.93	5.00	4.84	4.72	5.28	5.30	5.26	5.67	5.65
AUG	4.59	4.74	4.80	4.93	5.03	5.10	5.11	5.08	5.34	5.30	5.24	5.94	5.74
SEP	4.50	4.63	4.74	4.82	4.91	4.98	4.97	4.94	5.33	5.43	5.26	5.73	5.70
OCT	4.32	4.52	4.64	4.66	4.78	4.83	4.92	4.94	5.27	5.39	5.27	5.63	5.71
NOV	4.09	4.34	4.52	4.57	4.73	4.80	4.91	4.92	5.38	5.47	5.26	5.63	5.70
DEC	4.17	4.38	4.55	4.67	4.75	4.82	4.91	4.90	5.41	5.47	5.27	5.66	5.72
1962 JAN	4.09	4.35	4.53	4.66	4.72	4.78	4.85	4.85	5.30	5.43	5.26	5.60	5.67
FEB	4.11	4.33	4.51	4.61	4.66	4.71	4.80	4.80	5.31	5.38	5.27	5.58	5.64
MAR	4.14	4.31	4.49	4.58	4.65	4.72	4.79	4.77	5.41	5.43	5.31	5.65	5.72
APR	4.11	4.31	4.42	4.58	4.65	4.71	4.78	4.77	5.43	5.46	5.32	5.56	5.73
MAY	4.15	4.32	4.43	4.57	4.72	4.70	4.75	4.74	5.42	5.53	5.35	5.55	5.81
JUN	4.21	4.35	4.48	4.62	4.78	4.79	4.79	4.75	5.40	5.55	5.35	5.58	5.81
JUL	4.21	4.40	4.55	4.72	4.94	4.90	4.84	4.77	5.39	5.57	5.35	5.67	5.85
AUG	4.23	4.38	4.54	4.69	4.90	4.87	4.85	4.76	5.38	5.63	5.37	5.77	5.86
SEP	4.28	4.42	4.58	4.72	4.92	4.89	4.86	4.78	5.36	5.84	5.43	5.89	5.87
OCT	4.24	4.38	4.56	4.70	4.91	4.89	4.85	4.76	5.36	5.86	5.42	5.81	5.86
NOV	4.28	4.40	4.56	4.68	4.88	4.84	4.83	4.76	5.23	5.87	5.41	5.76	5.84
DEC	4.27	4.40	4.55	4.69	4.90	4.87	4.86	4.77	5.31	5.90	5.44	5.80	5.87
1963 JAN	4.18	4.32	4.47	4.59	4.73	4.76	4.73	4.65	5.23	5.86	5.37	5.65	5.73
FEB	4.31	4.34	4.40	4.53	4.68	4.70	4.67	4.59	5.16	5.81	5.37	5.62	5.71
MAR	4.20	4.24	4.33	4.45	4.62	4.63	4.58	4.51	5.08	5.77	5.32	5.66	5.64
APR	4.25	4.27	4.34	4.46	4.56	4.62	4.57	4.51	5.06	5.69	5.32	5.57	5.64
MAY	4.22	4.25	4.32	4.44	4.58	4.60	4.55	4.51	5.04	5.67	5.35	5.57	5.76
JUN	4.30	4.33	4.40	4.53	4.65	4.67	4.59	4.53	5.11	5.78	5.36	5.67	5.78
JUL	4.35	4.36	4.42	4.55	4.63	4.64	4.57	4.54	5.35	5.79	5.34	5.70	5.78
AUG	4.33	4.37	4.46	4.58	4.66	4.68	4.60	4.55	5.58	5.80	5.36	5.68	5.74
SEP	4.23	4.30	4.41	4.54	4.62	4.64	4.57	4.51	5.59	5.87	5.36	5.72	5.80
OCT	4.20	4.29	4.41	4.53	4.60	4.62	4.56	4.51	5.61	5.81	5.34	5.64	5.74

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	I	I
Maturity	2	3	4	5	6	7	10	10-15	5	10	10-30	5	10
NOV	4.22	4.33	4.44	4.52	4.59	4.65	4.63	4.62	5.63	5.80	5.33	5.65	5.67
DEC	4.39	4.41	4.45	4.54	4.60	4.64	4.62	4.59	5.65	5.82	5.34	5.69	5.67
1964 JAN	4.37	4.42	4.45	4.56	4.60	4.64	4.61	4.56	5.66	5.79	5.32	5.72	5.66
FEB	4.36	4.42	4.45	4.56	4.58	4.65	4.60	4.55	5.70	5.77	5.33	5.65	5.62
MAR	4.55	4.45	4.45	4.59	4.70	4.65	4.62	4.56	5.67	5.78	5.34	5.69	5.63
APR	4.60	4.44	4.45	4.56	4.65	4.62	4.61	4.57	5.67	5.80	5.33	5.58	5.63
MAY	4.50	4.41	4.43	4.54	4.59	4.60	4.58	4.56	5.66	5.79	5.36	5.49	5.66
JUN	4.51	4.39	4.43	4.55	4.61	4.65	4.69	4.64	5.67	5.79	5.35	5.54	5.68
JUL	4.38	4.37	4.40	4.53	4.60	4.64	4.71	4.65	5.65	5.78	5.34	5.56	5.62
AUG	4.49	4.40	4.45	4.59	4.64	4.69	4.72	4.66	5.65	5.78	5.32	5.49	5.66
SEP	4.48	4.40	4.46	4.61	4.66	4.70	4.74	4.67	5.62	5.75	5.32	5.50	5.64
OCT	4.54	4.43	4.48	4.61	4.65	4.68	4.73	4.68	5.63	5.72	5.34	5.45	5.64
NOV	4.61	4.44	4.47	4.60	4.64	4.66	4.71	4.67	5.63	5.70	5.34	5.49	5.66
DEC	4.49	4.39	4.46	4.63	4.65	4.68	4.72	4.68	5.63	5.72	5.42	5.52	5.67
1965 JAN	4.38	4.37	4.45	4.62	4.65	4.68	4.72	4.67	5.63	5.70	5.35	5.48	5.68
FEB	4.40	4.38	4.47	4.66	4.68	4.71	4.73	4.67	5.63	5.68	5.33	5.52	5.63
MAR	4.40	4.40	4.47	4.68	4.66	4.71	4.75	4.68	5.65	5.71	5.32	5.55	5.77
APR	4.41	4.42	4.48	4.58	4.69	4.73	4.78	4.73	5.67	5.63	5.32	5.51	5.78
MAY	4.46	4.44	4.49	4.61	4.72	4.81	4.96	4.89	5.70	5.63	5.42	5.54	5.72
JUN	4.43	4.44	4.52	4.65	4.78	4.86	4.99	4.94	5.74	5.66	5.64	5.59	5.84
JUL	4.48	4.46	4.55	4.67	4.81	4.89	5.02	4.95	5.77	5.65	5.58	5.67	5.88
AUG	4.48	4.45	4.50	4.61	4.75	4.83	4.95	4.88	5.71	5.63	5.45	5.64	5.72
SEP	4.47	4.44	4.50	4.61	4.75	4.82	4.89	4.83	5.72	5.67	5.42	5.71	5.74
OCT	4.49	4.45	4.49	4.56	4.71	4.81	4.96	4.89	5.64	5.62	5.47	5.63	5.87
NOV	4.46	4.40	4.47	4.54	4.68	4.77	4.90	4.86	5.65	5.61	5.43	5.68	5.87
DEC	4.48	4.42	4.50	4.58	4.71	4.78	4.88	4.83	5.68	5.61	5.39	5.72	5.87
1966 JAN	4.26	4.21	4.48	4.56	4.69	4.73	4.76	4.72	5.71	5.88	5.36	5.77	5.76
FEB	4.58	4.41	4.43	4.54	4.65	4.70	4.74	4.66	5.69	5.84	5.39	5.78	5.85
MAR	4.45	4.37	4.44	4.55	4.67	4.71	4.77	4.73	5.66	5.69	5.41	5.79	5.85
APR	4.48	4.37	4.43	4.54	4.63	4.67	4.75	4.71	5.68	5.52	5.39	5.79	5.85
MAY	4.44	4.36	4.44	4.56	4.64	4.68	4.76	4.73	5.69	5.53	5.39	5.79	5.85
JUN	4.48	4.42	4.47	4.55	4.66	4.70	4.79	4.79	5.73	5.55	5.48	5.79	5.86
JUL	4.45	4.42	4.49	4.57	4.69	4.72	4.81	4.85	5.74	5.55	5.55	5.80	5.86
AUG	4.45	4.42	4.50	4.58	4.71	4.74	4.81	4.85	5.73	5.56	5.60	5.80	5.88
SEP	4.41	4.39	4.50	4.53	4.71	4.73	4.81	4.86	5.76	5.58	5.64	5.80	5.89
OCT	4.44	4.42	4.49	4.53	4.69	4.73	4.85	4.91	5.75	5.51	5.56	5.85	5.85
NOV	4.39	4.39	4.43	4.55	4.66	4.73	4.83	4.86	5.77	5.52	5.54	5.86	5.86
DEC	4.47	4.44	4.48	4.59	4.72	4.78	4.89	4.93	5.81	5.46	5.64	5.85	5.87
1967 JAN	4.49	4.44	4.46	4.60	4.74	4.85	4.93	4.94	5.89	5.47	5.71	5.86	5.97
FEB	4.51	4.46	4.45	4.63	4.82	4.94	5.01	4.98	5.84	5.49	5.77	5.83	6.02
MAR	4.52	4.46	4.47	4.74	4.83	4.94	4.98	4.98	5.75	5.50	5.92	5.87	6.05
APR	4.51	4.47	4.45	4.71	4.83	4.94	5.02	4.98	5.80	5.53	5.86	5.90	6.01
MAY	4.51	4.46	4.45	4.66	4.76	4.85	4.93	4.95	5.79	5.64	5.83	5.88	5.97
JUN	4.51	4.47	4.45	4.67	4.74	4.85	4.93	4.96	5.84	5.54	5.76	5.84	5.95
JUL	4.49	4.44	4.41	4.60	4.71	4.81	4.90	4.91	5.79	5.70	5.63	5.82	5.92
AUG	4.50	4.45	4.40	4.61	4.71	4.81	4.88	4.90	5.75	5.72	5.68	5.85	5.97

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	I	I
Maturity	2	3	4	5	6	7	10	10-15	5	10	10-30	5	10
SEP	4.44	4.40	4.35	4.57	4.65	4.75	4.80	4.82	5.74	5.71	5.73	5.79	5.90
OCT	4.36	4.34	4.30	4.50	4.58	4.68	4.77	4.81	5.81	5.67	5.70	5.77	5.92
NOV	4.32	4.31	4.30	4.48	4.57	4.67	4.77	4.82	5.69	5.65	5.65	5.79	5.90
DEC	4.33	4.32	4.30	4.46	4.57	4.67	4.76	4.79	5.82	5.82	5.53	5.80	5.98
1968 JAN	4.35	4.34	4.32	4.49	4.59	4.69	4.79	4.84	5.71	5.77	5.53	5.80	5.90
FEB	4.38	4.35	4.32	4.52	4.63	4.74	4.82	4.86	5.77	5.80	5.54	5.79	5.91
MAR	4.37	4.33	4.31	4.52	4.64	4.76	4.85	4.86	5.81	5.82	5.45	5.80	5.90
APR	4.38	4.36	4.33	4.54	4.67	4.78	4.87	4.87	5.78	5.72	5.39	5.81	5.91
MAY	4.37	4.35	4.32	4.54	4.66	4.77	4.85	4.85	5.74	5.62	5.40	5.82	5.95
JUN	4.40	4.38	4.33	4.57	4.68	4.79	4.89	4.91	5.76	5.65	5.39	5.83	5.95
JUL	4.40	4.36	4.32	4.58	4.68	4.77	4.85	4.89	5.74	5.64	5.35	5.81	5.92
AUG	4.39	4.35	4.32	4.57	4.65	4.74	4.81	4.86	5.74	5.69	5.35	5.82	5.95
SEP	4.38	4.34	4.33	4.56	4.63	4.71	4.79	4.84	5.75	5.63	5.35	5.83	5.94
OCT	4.34	4.30	4.33	4.55	4.62	4.70	4.76	4.79	5.71	5.61	5.35	5.82	5.93
NOV	4.30	4.27	4.29	4.48	4.57	4.67	4.73	4.75	5.71	5.59	5.36	5.80	5.94
DEC	4.32	4.28	4.31	4.48	4.58	4.67	4.72	4.72	5.73	5.62	5.36	5.81	5.94
1969 JAN	4.30	4.28	4.31	4.50	4.59	4.72	4.72	4.73	5.73	5.62	5.36	5.80	5.96
FEB	4.33	4.29	4.33	4.51	4.60	4.72	4.72	4.73	5.78	5.65	5.36	5.81	5.97
MAR	4.34	4.31	4.33	4.53	4.63	4.75	4.75	4.76	5.81	5.64	5.38	5.84	5.98
APR	4.33	4.28	4.32	4.51	4.59	4.71	4.70	4.71	5.82	5.63	5.38	5.85	6.00
MAY	4.33	4.29	4.35	4.52	4.60	4.70	4.70	4.71	5.87	5.68	5.39	5.90	6.00
JUN	4.36	4.32	4.36	4.54	4.63	4.74	4.75	4.78	5.89	5.70	5.40	5.92	6.00
JUL	4.34	4.31	4.35	4.51	4.61	4.71	4.74	4.77	5.92	5.64	5.39	6.03	6.00
AUG	4.33	4.30	4.34	4.49	4.59	4.67	4.71	4.75	5.92	5.64	5.39	6.09	6.05
SEP	6.05	6.04	5.90	6.05	6.05	6.01	5.99	5.88	6.93	6.72	6.63	7.24	6.90
OCT	5.96	5.71	5.69	5.90	6.02	6.10	5.82	5.54	6.66	7.12	6.56	7.14	6.99
NOV	5.80	5.66	5.60	5.77	5.87	5.95	5.89	5.77	6.75	7.71	7.13	7.46	7.07
DEC	5.91	5.68	5.61	5.78	5.90	5.98	5.92	5.78	6.81	6.98	6.83	7.25	7.16
1970 JAN	5.88	5.68	5.59	5.74	5.91	5.97	5.92	5.82	6.81	6.73	6.50	6.78	6.81
FEB	6.06	5.86	5.73	5.87	5.99	6.01	5.94	5.83	6.85	6.66	6.53	6.81	6.86
MAR	6.10	5.89	5.75	5.91	6.03	6.05	5.99	5.89	6.89	6.75	6.53	6.76	6.85
APR	5.63	5.57	5.48	5.78	5.95	6.01	5.98	5.89	6.96	6.76	6.54	6.77	6.86
MAY	5.64	5.56	5.48	5.79	5.96	6.01	5.96	5.85	7.04	6.80	6.56	6.79	6.86
JUN	5.71	5.59	5.51	5.82	5.99	6.06	6.02	5.91	7.10	6.83	6.57	6.81	6.90
JUL	5.76	5.63	5.57	5.89	6.05	6.07	5.94	5.78	7.11	6.84	6.56	6.81	6.95
AUG	5.74	5.56	5.57	5.88	6.05	6.06	5.91	5.75	7.06	6.84	6.57	6.77	6.92
SEP	5.75	5.57	5.54	5.90	6.09	6.08	5.84	5.63	6.91	6.90	6.57	6.79	6.85
OCT	5.56	5.50	5.52	5.87	6.08	6.09	5.91	5.73	6.92	6.87	6.59	6.79	6.86
NOV	5.38	5.44	5.52	5.83	6.01	6.01	5.81	5.61	6.88	6.82	6.58	6.81	6.87
DEC	5.42	5.47	5.63	5.83	6.00	6.02	5.95	5.87	6.88	6.88	6.59	6.81	6.92
1971 JAN	5.46	5.48	5.44	5.79	5.94	5.95	5.88	5.81	6.88	6.91	6.60	6.79	6.92
FEB	5.51	5.51	5.46	5.81	5.95	5.93	5.86	5.76	6.86	6.92	6.60	6.83	6.89
MAR	5.56	5.53	5.66	5.85	5.99	5.96	5.87	5.76	6.89	6.90	6.60	6.80	6.94
APR	5.66	5.55	5.68	5.86	5.99	5.96	5.85	5.74	6.87	6.91	6.60	6.81	6.95
MAY	5.74	5.60	5.75	5.91	6.04	6.02	6.00	6.01	6.86	6.89	6.61	6.83	6.96
JUN	5.70	5.55	5.74	5.93	6.08	6.06	6.04	6.04	6.91	6.85	6.58	6.79	7.02

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**K**	**K**	**K**	**I**	**I**
Maturity	**2**	**3**	**4**	**5**	**6**	**7**	**10**	**10-15**	**5**	**10**	**10-30**	**5**	**10**
JUL	5.74	5.52	5.74	5.92	6.05	6.00	5.85	5.73	6.91	6.89	6.55	6.79	6.93
AUG	5.80	5.51	5.78	5.93	6.04	5.97	5.90	5.84	6.84	6.85	6.53	6.78	6.87
SEP	5.81	5.55	5.86	6.00	6.11	6.05	6.02	5.98	6.87	6.84	6.53	6.79	6.90
OCT	5.75	5.48	5.86	6.03	6.15	6.10	6.02	5.98	6.78	6.84	6.56	6.88	6.91
NOV	5.16	5.23	5.60	5.85	6.00	5.96	5.80	5.75	6.67	6.83	6.51	6.79	6.92
DEC	4.81	5.22	5.45	5.79	5.92	5.98	6.06	6.14	6.60	6.77	6.54	6.84	

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	S	K	K	K	I
Maturity	2	3	4	5	6	7	8	10	10-15	5	10	10-30	5
1972 JAN	5.36	5.40	5.47	5.79	5.89	5.98	6.03	6.10	6.18	6.54	6.76	6.61	6.92
FEB	4.93	5.26	5.46	5.79	5.85	5.93	5.97	6.04	6.14	6.42	6.71	6.62	6.90
MAR	4.92	5.28	5.48	5.81	5.88	5.93	5.97	6.04	6.13	6.42	6.60	6.62	6.76
APR	4.90	5.30	5.48	5.81	5.87	5.93	5.97	6.04	6.14	6.36	6.58	6.62	6.72
MAY	4.92	5.33	5.50	5.83	5.90	5.89	5.92	5.98	6.07	6.37	6.58	6.60	6.59
JUN	4.86	5.35	5.48	5.84	5.91	5.89	5.92	5.98	6.07	6.30	6.55	6.55	6.48
JUL	4.90	5.33	5.43	5.80	5.85	5.83	5.87	5.93	6.02	6.31	6.53	6.46	6.41
AUG	5.12	5.40	5.46	5.77	5.88	5.86	5.90	5.96	6.05	6.29	6.53	6.45	6.42
SEP	5.23	5.41	5.48	5.81	5.91	5.88	5.92	5.98	6.06	6.29	6.47	6.48	6.44
OCT	5.30	5.41	5.47	5.79	5.90	5.87	5.90	5.95	6.01	6.23	6.46	6.40	6.36
NOV	5.11	5.33	5.44	5.78	5.92	5.86	5.87	5.91	5.98	6.23	6.47	6.43	6.38
DEC	5.10	5.32	5.41	5.69	5.85	5.82	5.84	5.88	5.95	6.21	6.43	6.44	6.35
1973 JAN	5.18	5.33	5.44	5.68	5.80	5.82	5.83	5.88	5.94	6.18	6.37	6.41	6.33
FEB	5.21	5.34	5.47	5.74	5.84	5.88	5.93	6.03	6.12	6.20	6.37	6.53	6.36
MAR	5.32	5.40	5.54	5.78	5.90	5.96	6.03	6.12	6.19	6.18	6.37	6.54	6.33
APR	5.47	5.52	5.65	5.84	5.98	6.04	6.12	6.20	6.26	6.20	6.37	6.52	6.36
MAY	5.45	5.47	5.57	5.72	5.84	5.93	6.01	6.10	6.19	6.21	6.37	6.55	6.37
JUN	5.51	5.52	5.68	5.86	6.01	6.05	6.10	6.18	6.23	6.21	6.37	6.56	6.34
JUL	5.53	5.48	5.67	5.85	6.01	6.04	6.09	6.17	6.23	6.22	6.37	6.54	6.35
AUG	5.44	5.44	5.67	5.82	5.91	6.00	6.06	6.14	6.21	6.22	6.38	6.51	6.36
SEP	5.43	5.40	5.67	5.83	5.92	6.00	6.05	6.12	6.19	6.23	6.37	6.51	6.36
OCT	5.47	5.46	5.73	5.90	6.00	6.06	6.11	6.18	6.23	6.19	6.37	6.51	6.37
NOV	5.47	5.47	5.74	5.92	6.01	6.04	6.11	6.17	6.23	6.20	6.37	6.52	6.39
DEC	5.37	5.44	5.76	5.92	5.99	6.03	6.08	6.14	6.22	6.21	6.37	6.52	6.37
1974 JAN	5.36	5.46	5.69	5.77	5.91	5.97	6.03	6.11	6.21	6.16	6.37	6.52	6.38
FEB	5.39	5.49	5.72	5.78	5.91	5.97	6.02	6.12	6.26	6.17	6.37	6.53	6.39
MAR	5.28	5.49	5.70	5.77	5.89	5.92	5.97	6.05	6.21	6.18	6.37	6.53	6.46
APR	6.81	6.95	7.34	7.45	7.39	7.39	7.46	7.51	7.60	7.46	7.51	7.65	7.72
MAY	6.61	6.91	7.17	7.32	7.36	7.41	7.47	7.51	7.59	7.45	7.53	7.66	7.72
JUN	6.83	7.02	7.28	7.43	7.42	7.49	7.55	7.59	7.68	7.49	7.54	7.60	7.75
JUL	6.85	7.04	7.25	7.41	7.37	7.41	7.46	7.53	7.67	7.50	7.63	7.85	7.75
AUG	6.78	7.00	7.23	7.39	7.33	7.40	7.42	7.48	7.66	7.54	7.59	7.87	7.76
SEP	6.52	6.90	7.23	7.45	7.35	7.37	7.38	7.46	7.69	7.57	7.69	7.71	7.82
OCT	6.30	6.57	6.83	7.07	7.08	7.12	7.15	7.25	7.44	7.55	7.63	7.77	7.89
NOV	6.29	6.59	6.84	7.05	7.09	7.12	7.14	7.24	7.46	7.54	7.62	7.80	7.91
DEC	6.34	6.69	6.96	7.15	7.13	7.25	7.33	7.41	7.51	7.53	7.64	7.80	7.80
1975 JAN	6.35	6.73	6.99	7.11	7.13	7.26	7.36	7.44	7.55	7.56	7.62	8.26	7.82
FEB	6.36	6.69	6.88	6.93	6.98	7.11	7.20	7.33	7.53	7.57	7.63	8.30	7.84
MAR	6.45	6.75	6.91	6.95	7.00	7.14	7.21	7.34	7.52	7.60	7.67	8.30	7.86
APR	6.73	7.03	7.22	7.30	7.27	7.38	7.45	7.48	7.62	7.61	7.65	8.36	7.86
MAY	6.77	6.99	7.16	7.23	7.23	7.33	7.40	7.46	7.62	7.59	7.65	8.34	7.88
JUN	6.85	7.00	7.15	7.19	7.23	7.33	7.41	7.46	7.58	7.60	7.67	8.38	7.88
JUL	6.96	7.07	7.19	7.22	7.26	7.35	7.44	7.48	7.60	7.67	7.68	8.46	7.87
AUG	7.07	7.13	7.22	7.21	7.24	7.35	7.42	7.48	7.61	7.70	7.71	8.52	7.89
SEP	7.08	7.11	7.15	7.23	7.23	7.35	7.42	7.47	7.61	7.71	7.72	8.54	7.89
OCT	7.12	7.15	7.24	7.30	7.31	7.43	7.51	7.52	7.60	7.65	7.67	8.49	7.84

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	S	K	K	K	I
Maturity	2	3	4	5	6	7	8	10	10-15	5	10	10-30	5
NOV	7.22	7.16	7.23	7.30	7.31	7.43	7.50	7.51	7.62	7.63	7.68	8.51	7.87
DEC	6.71	6.96	7.16	7.24	7.31	7.43	7.50	7.51	7.55	7.60	7.68	8.48	7.83
1976 JAN	6.71	7.00	7.18	7.19	7.34	7.49	7.60	7.56	7.54	7.60	7.60	8.46	7.82
FEB	6.78	7.03	7.14	7.14	7.30	7.45	7.55	7.54	7.56	7.65	7.62	8.40	7.83
MAR	6.87	7.14	7.16	7.23	7.35	7.50	7.59	7.58	7.56	7.67	7.64	8.37	7.84
APR	6.83	7.18	7.19	7.26	7.37	7.50	7.60	7.58	7.56	7.64	7.64	8.39	7.84
MAY	6.92	7.23	7.21	7.30	7.40	7.53	7.63	7.60	7.56	7.67	7.66	8.43	7.85
JUN	6.86	7.02	7.05	7.18	7.29	7.41	7.51	7.49	7.48	7.63	7.65	8.34	7.83
JUL	6.99	7.08	7.07	7.19	7.29	7.44	7.54	7.50	7.49	7.64	7.67	8.34	7.83
AUG	6.87	7.09	7.05	7.09	7.24	7.39	7.49	7.48	7.50	7.66	7.71	8.45	7.85
SEP	6.99	6.95	7.01	7.10	7.21	7.37	7.47	7.47	7.50	7.68	7.76	8.44	7.86
OCT	6.95	6.93	7.07	7.15	7.24	7.41	7.52	7.49	7.50	7.67	7.74	8.46	7.80
NOV	6.87	6.88	7.02	7.10	7.20	7.34	7.45	7.45	7.48	7.68	7.75	8.48	7.79
DEC	6.86	6.83	6.98	7.06	7.15	7.33	7.45	7.44	7.47	7.67	7.75	8.46	7.77
1977 JAN	7.00	6.87	6.93	7.04	7.23	7.38	7.52	7.45	7.48	7.67	7.74	8.40	7.77
FEB	7.08	6.92	6.92	7.05	7.25	7.37	7.48	7.46	7.49	7.69	7.75	8.39	7.79
MAR	7.15	6.96	6.91	7.06	7.26	7.38	7.51	7.49	7.49	7.69	7.75	8.30	7.81
APR	7.19	6.96	6.91	7.07	7.25	7.39	7.51	7.49	7.50	7.69	7.75	8.27	7.81
MAY	7.10	6.91	6.89	7.06	7.26	7.39	7.51	7.51	7.50	7.69	7.76	8.29	7.80
JUN	7.04	7.06	7.03	7.21	7.41	7.54	7.65	7.58	7.49	7.69	7.76	8.30	7.82
JUL	7.05	7.06	7.01	7.21	7.39	7.56	7.67	7.59	7.50	7.70	7.77	8.29	7.83
AUG	7.09	7.09	7.02	7.22	7.41	7.54	7.65	7.59	7.52	7.69	7.77	8.27	7.84
SEP	6.79	6.96	6.95	7.14	7.33	7.47	7.58	7.53	7.48	7.68	7.74	8.11	7.79
OCT	6.82	6.98	6.96	7.16	7.36	7.50	7.61	7.54	7.48	7.67	7.73	8.11	7.78
NOV	6.79	6.90	6.95	7.10	7.33	7.47	7.58	7.52	7.48	7.65	7.72	8.12	7.79
DEC	7.50	7.78	7.88	7.99	8.16	8.29	8.39	8.67	9.02	8.74	8.85	9.39	8.77
1978 JAN	7.57	7.82	7.90	8.02	8.19	8.32	8.42	8.68	9.00	8.73	8.83	9.28	8.79
FEB	7.59	7.83	7.87	7.99	8.17	8.28	8.32	8.67	9.02	8.73	8.78	9.15	8.82
MAR	7.60	7.78	7.77	7.85	8.07	8.21	8.28	8.66	9.02	8.72	8.79	9.12	8.81
APR	7.63	7.79	7.76	7.83	8.04	8.20	8.68	8.67	9.02	8.70	8.81	9.14	8.80
MAY	7.57	7.76	7.73	7.79	7.98	8.16	8.50	8.65	9.03	8.70	8.83	9.17	8.81
JUN	7.60	7.76	7.73	7.79	7.99	8.16	8.49	8.64	9.00	8.71	8.84	9.19	8.84
JUL	7.68	7.77	7.70	7.79	7.99	8.15	8.49	8.66	9.02	8.68	8.83	9.17	8.83
AUG	7.70	7.76	7.70	7.90	7.97	8.10	8.45	8.66	9.05	8.67	8.77	9.12	8.86
SEP	7.79	7.79	7.71	7.94	8.01	8.15	8.44	8.65	8.99	8.68	8.80	9.08	8.87
OCT	7.64	7.72	7.66	7.86	7.99	8.15	8.45	8.66	8.99	8.60	8.76	8.99	8.78
NOV	7.64	7.73	7.68	7.88	7.99	8.16	8.42	8.67	8.99	8.57	8.73	8.87	8.79
DEC	7.64	7.70	7.67	7.84	7.96	8.12	8.34	8.58	8.89	8.52	8.71	8.84	8.75
1979 JAN	7.70	7.68	7.66	7.83	7.90	8.01	8.03	8.52	8.91	8.53	8.76	8.83	8.76
FEB	7.66	7.62	7.66	7.83	7.89	7.99	8.03	8.52	8.93	8.54	8.74	8.75	8.78
MAR	7.64	7.67	7.70	7.87	7.94	8.03	8.06	8.55	8.93	8.55	8.74	8.72	8.79
APR	7.67	7.69	7.71	7.88	7.96	8.04	8.07	8.56	8.94	8.54	8.73	8.74	8.74
MAY	7.59	7.61	7.69	7.84	7.91	8.02	8.06	8.56	8.94	8.52	8.73	8.77	8.74
JUN	7.71	7.70	7.72	7.89	7.98	8.08	8.34	8.59	8.93	8.51	8.75	8.78	8.77
JUL	7.77	7.72	7.73	7.90	8.00	8.10	8.37	8.62	8.96	8.49	8.66	8.77	8.78
AUG	7.73	7.66	7.72	7.87	7.97	8.07	8.37	8.63	8.98	8.50	8.66	8.74	8.80

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**K**	**K**	**K**	**I**
Maturity	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**10-15**	**5**	**10**	**10-30**	**5**
SEP	7.88	7.77	7.79	7.97	8.05	8.12	8.35	8.63	8.93	8.51	8.65	8.73	8.79
OCT	7.91	7.81	7.84	7.99	8.07	8.13	8.35	8.63	8.93	8.50	8.64	8.72	8.77
NOV	7.85	7.76	7.81	7.96	8.05	8.12	8.35	8.65	8.94	8.51	8.68	8.75	8.76
DEC	9.82	9.78	9.76	9.85	9.96	10.10	10.34	10.60	10.91	10.72	10.78	10.84	11.00

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	K	I
Maturity	2	3	4	5	7	8	9	10	2	5	7	10	5
1980 JAN	9.92	9.80	9.79	9.89	10.12	10.38	10.47	10.64	10.58	10.77	10.86	10.83	11.01
FEB	9.86	9.82	9.81	9.95	10.11	10.44	10.53	10.69	10.67	10.79	10.86	10.85	11.03
MAR	9.93	9.80	9.83	10.00	10.14	10.42	10.57	10.72	10.79	10.85	10.89	10.82	11.06
APR	10.01	9.79	9.83	9.95	10.14	10.39	10.54	10.70	10.85	10.86	10.87	10.84	11.05
MAY	9.94	9.85	9.88	9.99	10.15	10.41	10.56	10.71	10.92	10.86	10.88	10.89	11.02
JUN	10.04	9.90	9.90	10.00	10.33	10.45	10.60	10.75	11.06	10.90	10.91	10.93	11.08
JUL	9.96	9.83	9.75	9.93	10.34	10.45	10.61	10.78	11.13	10.92	10.92	11.05	11.11
AUG	10.29	10.02	10.30	10.33	10.66	10.76	10.86	10.95	11.93	11.59	11.79	11.37	11.43
SEP	10.39	10.41	10.24	10.41	10.58	10.73	10.83	10.95	11.68	11.81	11.86	11.71	11.94
OCT	9.81	9.84	9.84	10.07	10.42	10.60	10.78	10.93	11.39	11.03	11.09	11.18	11.49
NOV	9.91	9.88	9.85	10.05	10.43	10.62	10.80	10.95	10.99	11.00	11.08	11.23	11.40
DEC	10.03	9.92	9.88	10.11	10.50	10.54	10.70	10.84	11.13	11.02	11.09	11.20	11.44
1981 JAN	10.51	10.56	10.68	10.82	10.82	10.91	11.40	11.53	12.89	12.31	12.38	12.44	12.87
FEB	10.68	10.60	10.72	10.87	10.88	10.96	11.47	11.61	13.09	12.24	12.22	12.40	12.59
MAR	10.78	10.70	10.80	10.98	10.94	11.01	11.52	11.60	12.68	12.28	12.31	12.41	12.53
APR	10.87	10.79	10.87	11.15	11.00	11.24	12.19	12.25	12.82	12.26	12.25	12.40	12.49
MAY	11.50	11.67	11.74	11.90	11.94	12.03	12.88	12.93	14.08	13.68	13.65	13.51	13.75
JUN	11.91	11.91	11.95	11.99	12.00	12.05	12.80	12.96	14.33	13.66	13.62	13.91	13.80
JUL	12.07	11.99	12.00	12.03	12.01	12.58	12.86	13.02	14.27	13.66	13.57	13.89	13.85
AUG	12.19	12.04	12.01	12.02	11.96	12.62	12.92	13.07	14.45	13.61	13.52	13.93	13.88
SEP	12.39	12.14	12.14	12.16	12.08	12.75	13.04	13.18	14.40	13.61	13.51	13.80	13.89
OCT	12.41	12.16	12.26	12.25	12.28	12.86	13.15	13.25	14.32	13.55	13.43	13.86	13.91
NOV	12.45	12.13	12.31	12.51	12.33	13.05	13.25	13.24	14.38	13.59	13.53	14.02	13.80
DEC	12.16	12.16	12.14	12.51	12.80	13.41	13.77	14.00	13.77	13.53	13.55	13.86	13.50
1982 JAN	12.88	12.87	12.70	12.95	12.92	12.73	12.69	14.02	14.71	14.36	14.27	14.03	14.52
FEB	13.11	13.00	12.94	13.10	13.13	13.08	13.12	14.19	15.15	14.60	14.44	15.01	14.63
MAR	12.92	12.93	12.90	13.06	12.98	13.06	13.10	13.73	15.07	14.59	14.43	15.07	14.62
APR	13.13	13.05	13.01	13.20	13.14	13.23	13.28	13.84	15.25	14.53	14.38	15.12	14.70
MAY	13.33	13.17	13.19	13.31	13.08	13.66	13.83	14.00	15.52	14.58	14.44	14.71	14.67
JUN	13.41	13.25	13.30	13.34	13.21	13.69	13.87	14.05	15.32	14.56	14.44	14.74	14.71
JUL	13.60	13.33	13.27	13.36	13.32	13.31	13.56	13.60	15.47	14.63	14.48	14.70	14.69
AUG	13.77	13.43	13.42	13.47	13.41	13.39	13.59	13.65	15.31	14.70	14.53	14.76	14.71
SEP	13.64	13.35	13.28	13.35	13.17	13.10	13.34	13.39	15.35	14.74	14.56	14.64	14.74
OCT	14.23	13.74	13.65	13.78	13.83	13.86	14.09	14.07	15.23	14.82	14.64	14.40	14.82
NOV	13.58	13.41	13.40	13.59	13.50	13.46	13.63	13.68	15.00	14.77	14.59	14.33	14.75
DEC	13.21	13.31	13.44	13.56	13.60	13.68	13.80	13.82	14.26	14.42	14.39	14.20	14.73
1983 JAN	13.44	13.43	13.56	13.65	13.68	13.72	13.80	13.85	14.42	14.50	14.44	14.16	14.70
FEB	13.40	13.34	13.36	13.46	13.47	13.49	13.62	13.68	14.65	14.59	14.46	14.16	14.71
MAR	13.22	13.13	13.12	13.25	13.26	13.29	13.47	13.58	14.61	14.60	14.45	14.14	14.67
APR	13.27	13.10	13.07	13.24	13.27	13.36	13.30	13.32	14.65	14.52	14.38	13.96	14.67
MAY	13.25	13.08	13.07	13.23	13.26	13.37	13.26	13.24	14.76	14.53	14.37	13.97	14.66
JUN	13.08	12.94	12.92	12.96	13.06	13.15	13.09	13.09	14.62	14.53	14.31	13.88	14.64
JUL	13.03	12.90	12.91	12.94	12.97	13.13	13.00	13.01	14.12	14.19	14.02	13.78	14.50
AUG	13.05	12.90	12.89	12.94	12.95	12.96	12.98	12.99	14.17	14.27	14.03	13.75	14.53
SEP	13.11	12.91	12.87	12.93	12.95	12.97	12.98	12.99	14.21	14.27	14.01	13.74	14.54
OCT	12.89	12.85	12.93	13.04	13.04	13.05	13.02	13.01	13.82	13.96	13.83	13.66	14.22

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	K	I
Maturity	2	3	4	5	7	8	9	10	2	5	7	10	5
NOV	12.78	12.81	12.83	12.94	12.84	12.84	12.82	12.81	13.83	13.74	13.59	13.53	14.17
DEC	12.82	12.78	12.74	12.74	12.82	12.86	12.83	12.82	13.74	13.53	13.39	13.44	13.80
1984 JAN	13.00	12.83	12.75	12.76	12.81	12.83	12.82	12.81	13.59	13.49	13.30	13.35	13.68
FEB	12.59	12.59	12.62	12.65	12.67	12.70	12.69	12.68	13.59	13.52	13.30	13.35	13.70
MAR	12.58	12.55	12.58	12.59	12.66	12.69	12.68	12.67	13.59	13.53	13.30	13.38	13.71
APR	12.58	12.45	12.54	12.58	12.60	12.62	12.62	12.61	13.71	13.53	13.31	13.33	13.71
MAY	12.83	12.67	12.72	12.82	12.64	12.52	12.48	12.46	13.47	13.33	13.24	13.23	13.68
JUN	12.62	12.44	12.38	12.47	12.50	12.52	12.50	12.48	13.52	13.36	13.25	13.21	13.72
JUL	12.61	12.50	12.49	12.54	12.52	12.47	12.46	12.45	13.53	13.34	13.22	13.21	13.71
AUG	12.61	12.67	12.58	12.53	12.50	12.47	12.44	12.42	13.47	13.33	13.18	13.25	13.60
SEP	12.51	12.58	12.47	12.43	12.49	12.51	12.49	12.46	13.41	13.35	13.19	13.16	13.62
OCT	12.55	12.51	12.45	12.49	12.54	12.56	12.53	12.50	13.48	13.29	13.15	13.16	13.57
NOV	12.78	12.71	12.57	12.59	12.59	12.58	12.55	12.52	13.18	13.29	13.18	13.21	13.58
DEC	12.62	12.57	12.53	12.55	12.55	12.55	12.53	12.50	13.13	13.24	13.14	13.15	13.54
1985 JAN	12.70	12.60	12.49	12.52	12.59	12.61	12.57	12.53	13.29	13.21	13.13	13.15	13.55
FEB	12.76	12.66	12.55	12.62	12.76	12.82	12.74	12.65	13.33	13.22	13.16	13.40	13.43
MAR	13.22	13.20	13.08	13.04	13.03	12.99	12.93	12.87	13.51	13.40	13.33	13.40	13.63
APR	13.23	13.17	13.10	13.08	13.03	12.99	12.91	12.85	13.56	13.47	13.37	13.65	13.64
MAY	13.24	13.21	13.13	13.10	13.04	12.99	12.91	12.85	13.72	13.49	13.43	13.76	13.65
JUN	13.09	13.04	12.99	12.98	13.06	13.07	13.01	12.94	13.92	13.67	13.59	13.97	13.79
JUL	13.07	13.06	12.97	12.94	13.05	13.08	13.01	12.94	14.04	13.75	13.68	14.12	13.85
AUG	13.05	13.03	12.95	12.92	13.04	13.07	13.00	12.94	14.12	13.79	13.73	14.08	13.86
SEP	12.93	12.92	12.89	12.90	13.02	13.07	13.00	12.93	14.21	13.81	13.75	14.16	13.91
OCT	12.83	12.81	12.87	12.89	13.01	13.05	12.97	12.90	14.25	13.83	13.73	14.22	13.98
NOV	12.79	12.77	12.82	12.87	13.01	13.08	12.98	12.90	14.25	13.90	13.78	14.03	14.01
DEC	13.47	13.49	13.60	13.59	13.62	13.59	13.54	13.49	14.83	14.45	14.34	14.49	14.66
1986 JAN	13.35	13.34	13.46	13.55	13.56	13.57	13.50	13.44	14.94	14.78	14.60	14.73	15.07
FEB	13.60	13.54	13.62	13.58	13.56	13.54	13.45	13.36	15.08	14.88	14.90	14.64	15.04
MAR	13.57	13.63	13.59	13.53	13.48	13.45	13.37	13.28	15.12	14.88	14.96	14.71	15.10
APR	13.48	13.64	13.55	13.42	13.15	13.00	12.92	12.85	15.14	14.83	14.72	14.48	15.11
MAY	13.76	13.71	13.52	13.46	13.38	13.31	13.18	13.06	15.25	14.87	14.66	14.51	15.05
JUN	13.82	13.80	13.60	13.54	13.45	13.40	13.27	13.14	15.29	14.91	14.67	14.50	15.07
JUL	13.75	13.63	13.63	13.58	13.48	13.40	13.28	13.17	15.36	14.86	14.52	14.52	15.07
AUG	13.77	13.59	13.60	13.55	13.46	13.40	13.26	13.15	15.47	14.91	14.57	14.52	15.08
SEP	13.63	13.41	13.41	13.36	13.23	13.13	12.99	12.86	15.52	14.90	14.48	14.50	15.12
OCT	13.57	13.40	13.45	13.40	13.32	13.24	13.07	12.95	15.56	14.91	14.52	14.60	15.20
NOV	13.95	13.74	13.54	13.48	13.42	13.34	13.16	13.02	15.86	15.02	14.62	15.02	15.35
DEC	14.20	14.04	13.89	13.81	13.63	13.52	13.42	13.37	16.67	15.68	15.25	14.69	15.70
1987 JAN	14.27	13.94	13.73	13.66	13.53	13.44	13.35	13.26	16.66	15.73	15.20	15.01	15.74
FEB	14.25	13.87	13.70	13.64	13.53	13.40	13.27	13.14	16.53	15.49	15.01	14.93	15.71
MAR	14.00	13.80	13.68	13.62	13.52	13.40	13.27	13.12	16.43	15.50	15.01	15.20	15.75
APR	14.11	13.85	13.70	13.63	13.50	13.36	13.22	13.10	16.33	15.49	14.94	15.22	15.74
MAY	13.99	13.87	13.71	13.66	13.55	13.40	13.25	13.14	16.31	15.49	14.88	15.21	15.78
JUN	13.93	13.91	13.73	13.67	13.56	13.41	13.26	13.14	16.33	15.51	14.81	15.01	15.77
JUL	14.05	13.83	13.67	13.63	13.52	13.39	13.25	13.14	16.34	15.46	14.72	14.93	15.79
AUG	13.76	13.69	13.61	13.52	13.33	13.19	13.05	12.89	15.94	15.29	14.61	14.71	15.77

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	K	I
Maturity	2	3	4	5	7	8	9	10	2	5	7	10	5
SEP	13.31	13.25	13.20	13.10	12.88	12.78	12.67	12.51	15.40	14.78	14.17	14.48	15.51
OCT	13.62	13.58	13.54	13.48	13.28	13.11	12.96	12.80	15.14	14.51	14.12	14.34	15.53
NOV	13.78	13.67	13.62	13.58	13.47	13.33	13.17	13.01	15.53	14.82	14.55	14.90	15.54
DEC	13.97	13.77	13.72	13.67	13.51	13.40	13.21	13.03	15.56	15.05	14.65	14.55	15.38
1988 JAN	13.94	13.73	13.68	13.65	13.52	13.41	13.24	13.09	15.74	15.10	14.71	14.73	15.71
FEB	13.95	13.70	13.64	13.57	13.42	13.32	13.13	12.97	15.72	15.09	14.67	14.73	15.75
MAR	13.88	13.68	13.61	13.52	13.34	13.26	13.12	13.02	15.62	15.08	14.67	14.80	15.74
APR	13.90	13.70	13.61	13.52	13.29	13.21	13.09	13.01	15.62	15.09	14.72	14.71	15.82
MAY	13.08	13.11	13.08	13.06	12.92	12.86	12.73	12.62	15.48	15.07	14.70	14.87	15.91
JUN	12.87	13.01	12.92	12.85	12.75	12.69	12.54	12.43	15.02	14.73	14.33	14.29	15.89
JUL	12.90	12.96	12.94	12.93	12.86	12.76	12.67	12.59	14.71	14.39	14.04	14.00	15.15
AUG	13.00	13.07	13.06	13.03	13.04	12.98	12.81	12.69	15.14	14.98	14.56	14.22	15.12
SEP	13.02	13.00	12.96	12.92	12.99	12.95	12.84	12.79	15.57	15.07	14.40	14.23	15.67
OCT	12.67	12.76	12.75	12.72	12.64	12.56	12.43	12.36	15.49	14.95	14.60	14.38	15.98
NOV	12.69	12.67	12.60	12.51	12.40	12.35	12.23	12.12	15.52	14.92	14.57	14.35	15.63
DEC	12.26	12.18	12.10	12.01	11.81	11.74	11.66	11.59	15.18	14.81	14.48	14.27	15.04
1989 JAN	11.23	11.19	11.16	11.11	11.03	11.01	10.98	10.97	13.40	13.23	13.42	14.62	14.92
FEB	10.86	10.82	10.84	10.85	10.83	10.81	10.78		13.87	13.68	13.76	14.28	14.89
MAR	10.89	10.84	10.83	10.85	10.87	10.83	10.79		13.00	13.36	13.33	14.40	13.75
APR	10.94	10.86	10.78	10.73	10.68	10.62	10.56		12.78	13.04	12.98	13.96	13.35
MAY	10.77	10.71	10.66	10.66	10.67	10.65	10.63		12.65	12.80	12.39	14.08	13.32
JUN	10.89	10.80	10.73	10.75	10.81	10.83	10.85		12.34	12.45	12.09	12.19	13.24
JUL	10.78	10.79	10.78	10.82	10.87	10.89	10.91		12.51	12.19	11.92	11.43	13.27
AUG	10.76	10.73	10.71	10.79	10.86	10.88	10.89		12.19	12.28	12.07		13.21
SEP	10.67	10.67	10.62	10.59	10.57	10.56	10.57		12.12	11.82	11.68		13.20
OCT	10.75	10.75	10.75	10.76	10.76	10.75	10.73		11.69	11.69	11.76		11.44
NOV	11.30	11.22	11.20	11.21	11.20	11.17	11.15		12.36	12.04	11.83	12.31	11.85
DEC	11.21	11.06	11.01	10.98	10.93	10.90	10.89		12.12	11.92	11.83	12.25	11.66
1990 JAN	11.06	10.86	10.78	10.72	10.67	10.64	10.62		11.77	11.74	11.97	11.61	11.55
FEB	10.92	10.73	10.65	10.63	10.62	10.59			11.63	11.74	11.71	11.79	11.18
MAR	11.13	10.96	10.91	10.90	10.88	10.85			11.96	11.94	11.74	11.73	11.48
APR	11.18	11.14	11.09	11.04	11.04	11.01			12.27	12.25	12.84		11.80
MAY	11.01	10.85	10.81	10.79	10.76	10.72			11.91	11.37			11.48
JUN	10.98	10.91	10.83	10.76	10.70	10.66			11.93	11.50			11.48
JUL	10.79	10.77	10.74	10.70	10.63	10.61			11.71	11.11			11.43
AUG	10.67	10.68	10.67	10.65	10.61	10.62			11.61	11.18			11.55
SEP	10.70	10.72	10.68	10.65	10.63	10.65			11.73	11.32			11.57
OCT	10.69	10.68	10.65	10.62	10.62	10.64			11.75	11.34			11.62
NOV	10.64	10.73	10.69	10.65	10.65	10.63			11.77	11.31			11.61
DEC	10.63	10.70	10.66	10.62	10.60	10.62			11.82	11.33			11.68
1991 JAN	10.59	10.58	10.59	10.59	10.55	10.56			11.90	11.54			11.87
FEB	10.45	10.48	10.46	10.45	10.39	10.39			11.61	11.34			11.64
MAR	10.38	10.36	10.30	10.24	10.38	10.42			11.63	11.39			11.36
APR	10.00	9.95	9.91	9.88	9.98	9.99			11.12	10.93			11.05
MAY	9.91	9.81	9.72	9.66	9.73	9.72			10.88	10.76			10.74
JUN	9.98	9.86	9.76	9.72	9.78	9.77			11.11	11.06			10.85

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	K	I
Maturity	2	3	4	5	7	8	9	10	2	5	7	10	5
JUL	9.85	9.80	9.75	9.75	9.77	9.74			11.01	10.97			10.73
AUG	9.76	9.72	9.67	9.70	9.76	9.75			10.99	10.92			10.64
SEP	9.88	9.82	9.77	9.80	9.88	9.88			11.26	11.08			10.71
OCT	9.91	9.88	9.81	9.83	9.91	9.92			11.29	11.17			10.69
NOV	9.93	9.82	9.73	9.75	9.83	9.81			12.22	12.01			10.80
DEC	9.92	9.83	9.75	9.79	9.81	9.77			11.61	11.48	11.11	10.97	10.90
1992 JAN	9.71	9.63	9.45	9.50	9.45	9.40			11.41	11.59	10.87	10.63	10.68
FEB	9.73	9.59	9.31	9.44	9.42				11.41	11.58	10.77	10.49	10.66
MAR	9.76	9.66	9.46	9.49	9.51				11.12	11.00	10.70	10.46	10.66
APR	9.98	9.75	9.52	9.49	9.52				11.13	11.01	10.70	10.46	10.63
MAY	9.87	9.64	9.45	9.46	9.48				11.12	10.62	10.31	10.26	10.57
JUN	9.98	9.78	9.62	9.59	9.60				11.01	10.63	10.42	10.23	10.61
JUL	10.31	10.13	10.01	9.93	9.85				11.26	10.88	10.70	10.55	10.75
AUG	10.66	10.27	10.36	10.30	10.21				12.41	11.52	11.31	11.28	11.37
SEP	11.25	10.78	10.84	10.77	10.62				14.23	12.65	12.25	12.10	
OCT	10.29	9.77	9.94	9.94	10.09				12.22	11.63	11.57	11.65	11.97
NOV	11.15	10.09	10.21	10.11	9.88	9.72	9.62	9.51	13.22	12.12	11.92	12.11	12.07
DEC	9.80	9.09	9.32	9.32	9.27	9.18	9.13	9.08	11.64	11.15	11.18	11.41	11.64
1993 JAN	9.27	9.00	9.27	9.26	9.09	8.96	8.86	8.78	10.70	10.39	10.37	10.47	10.63
FEB	8.29	8.00	8.32	8.27	8.13	8.08	8.02	7.99	9.44	9.20	9.24	9.37	10.70
MAR	7.85	7.54	7.68	7.73	7.72	7.69	7.66	7.65	8.72	8.60	8.65	8.78	8.98
APR	7.09	7.01	7.14	7.08	7.16	7.20	7.25	7.27	7.89	7.80	7.95	8.18	8.55
MAY	6.90	6.83	6.88	6.90	6.99	7.03	7.07		7.41	7.38	7.57	7.78	7.97
JUN	6.22	6.26	6.35	6.31	6.39	6.45	6.50		6.71	6.79	7.04		7.54
JUL	6.27	6.37	6.47	6.38	6.43	6.48	6.54		6.79	6.83	7.06		7.54
AUG	5.79	5.96	6.07	5.98	6.05	6.08	6.11		6.28	6.33	6.58		7.20
SEP	5.95	5.96	6.04	5.98	6.07	6.10	6.13		6.46	6.44	6.64	6.82	6.99
OCT	5.36	5.44	5.46	5.44	5.63	5.71	5.78		5.99	5.97	6.17	6.36	6.53
NOV	5.19	5.30	5.36	5.35	5.57	5.65	5.73	5.75	5.71	5.83	6.10	6.30	6.35
DEC	5.25	5.30	5.28	5.26	5.43	5.50	5.56	5.58	5.74	5.73	5.95	6.14	6.16
1994 JAN	4.97	5.17	5.17	5.07	5.30	5.38	5.46	5.50	5.38	5.49	5.73	5.95	6.01
FEB	4.93	5.11	5.20	5.23	5.45	5.54	5.61	5.65	5.30	5.61	5.87	6.11	5.98
MAR	5.61	5.78	5.93	6.02	6.27	6.38	6.47	6.48	6.09	6.66	6.96	7.23	7.00
APR	5.41	5.73	6.04	6.32	6.65	6.80	6.92	6.96	6.04	6.98	7.38	7.87	7.18
MAY	6.01	6.53	7.04	7.41	7.69	7.81	7.91	7.95	6.64	8.07	8.42	8.98	7.14
JUN	6.50	6.92	7.31	7.57	7.80	7.90	7.98	8.00	7.18	8.22	8.49	8.61	8.98
JUL	6.48	6.84	7.17	7.39	7.61	7.70	7.75	7.76	7.25	8.16	8.43	8.62	8.39
AUG	7.06	7.41	7.74	7.93	8.12	8.20	8.25	8.28	7.86	8.76	8.97	9.19	9.19
SEP	7.88	8.22	8.55	8.69	8.86	8.94	9.00	9.04	8.67	9.54	9.77	9.95	9.80
OCT	7.59	7.93	8.27	8.40	8.57	8.65	8.69	8.71	8.21	9.07	9.29	9.47	9.48
NOV	7.06	7.44	7.81	7.94	8.10	8.18	8.19	8.19	7.70	8.62	8.80	8.91	9.16
DEC	6.83	7.25	7.67	7.77	7.91	7.99	8.00	8.01	7.36	8.31	8.50	8.60	8.60
1995 JAN	6.77	7.18	7.57	7.68	7.89	7.98	8.02	8.06	7.28	8.23	8.47	8.65	8.49
FEB	6.33	6.84	7.30	7.45	7.71	7.83	7.90	7.93	6.85	7.99	8.31	8.53	8.36
MAR	6.34	6.89	7.24	7.42	7.71	7.83	7.92	7.97	6.82	7.94	8.28	8.55	8.29
APR	6.05	6.50	6.88	7.06	7.39	7.52	7.61	7.66	6.50	7.53	7.92	8.20	7.87

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	S	S	S	S	S	S	S	S	K	K	K	K	I
Maturity	2	3	4	5	7	8	9	10	2	5	7	10	5
MAY	6.06	6.37	6.66	6.87	7.18	7.25	7.32	7.34	6.53	7.41	7.79	8.02	7.77
JUN	6.21	6.60	6.98	7.22	7.58	7.65	7.73	7.75	6.66	7.73	8.12		7.84
JUL	6.10	6.47	6.78	7.00	7.36	7.44	7.53	7.55	6.54	7.51	7.91		7.75
AUG	5.77	6.13	6.42	6.67	7.08	7.19	7.29	7.31	6.19	7.13	7.55		7.39
SEP	5.75	6.05	6.33	6.56	6.93	7.04	7.13		6.14	7.02	7.40		7.41
OCT	5.60	5.87	6.10	6.32	6.68	6.80	6.91		5.93	6.71	7.11		7.08
NOV	5.33	5.53	5.72	5.91	6.24	6.38	6.44		5.68	6.32	6.69		6.66
DEC	5.30	5.43	5.61	5.80	6.13	6.27	6.36		5.59	6.26	6.62		6.59
1996 JAN	5.41	5.61	5.78	5.94	6.24	6.37	6.48	6.57	5.74	6.40	6.74		6.68
FEB	5.26	5.46	5.73	6.00	6.46	6.63	6.76	6.88	5.57	6.46	6.98		6.64
MAR	4.91	5.26	5.58	5.88	6.35	6.53	6.66	6.78	5.23	6.29	6.84		6.60
APR	4.85	5.17	5.47	5.76	6.20	6.39	6.54	6.68	5.12	6.11	6.66	7.14	6.41
MAY	5.13	5.44	5.76	6.06	6.51	6.69	6.83	6.96	5.43	6.42	6.95	7.41	6.48
JUN	5.39	5.73	6.00	6.26	6.65	6.80	6.92	7.02	5.71	6.69	7.12	7.51	6.83
JUL	5.56	5.83	6.06	6.29	6.64	6.79	6.91	7.02	5.89	6.74	7.14	7.53	6.85
AUG	5.71	5.97	6.19	6.41	6.75	6.90	7.00	7.11	6.03	6.85	7.23	7.58	7.11
SEP	5.57	5.81	6.02	6.22	6.53	6.65	6.75	6.84	5.88	6.66	7.00	7.32	6.91
OCT	5.40	5.65	5.87	6.10	6.44	6.59	6.70	6.81	5.68	6.49	6.89	7.26	6.78
NOV	4.63	4.91	5.18	5.43	5.83	6.00	6.15	6.29	4.93	5.83	6.26	6.74	6.26
DEC	4.54	4.82	5.08	5.32	5.75	5.94	6.09	6.24	4.81	5.74	6.17	6.67	6.09
1997 JAN	3.93	4.23	4.52	4.81	5.33	5.54	5.71	5.88	4.14	5.14	5.66	6.20	5.38
FEB	3.86	4.15	4.43	4.68	5.14	5.33	5.49	5.63	4.14	5.03	5.50	5.97	5.20
MAR	4.16	4.51	4.84	5.14	5.61	5.80	5.96	6.09	4.41	5.48	5.97	6.40	5.59
APR	4.15	4.49	4.82	5.13	5.64	5.84	6.00	6.12	4.37	5.47	5.99	6.43	5.83
MAY	4.18	4.52	4.84	5.14	5.63	5.81	5.98	6.08	4.42	5.47	5.97	6.41	5.64
JUN	4.28	4.56	4.83	5.10	5.54	5.71	5.87	5.96	4.49	5.42	5.88	6.33	5.49
JUL	4.73	4.94	5.14	5.32	5.61	5.74	5.86		4.97	5.64	5.98	6.33	5.90
AUG	4.74	5.00	5.23	5.42	5.76	5.88	6.01		5.00	5.75	6.12	6.47	6.00
SEP	4.47	4.71	4.95	5.18	5.52	5.63	5.75		4.75	5.52	5.89	6.21	5.82
OCT	4.76	4.98	5.18	5.35	5.61	5.70	5.79		5.00	5.64	5.94	6.23	5.84
NOV	4.66	4.88	5.05	5.19	5.42	5.50	5.59		4.92	5.50	5.78	6.04	5.87
DEC	4.73	4.91	5.06	5.16	5.34	5.42	5.50		4.98	5.50	5.72	5.92	5.70
1998 JAN	4.57	4.72	4.86	4.98	5.16	5.25	5.35	5.47	4.79	5.32	5.55	5.76	5.53
FEB	4.55	4.75	4.88	4.97	5.12	5.20	5.31	5.43	4.86	5.35	5.55	5.72	5.50
MAR	4.54	4.73	4.87	4.97	5.14	5.22	5.33	5.45	4.86	5.43	5.64		5.59
APR	4.81	5.01	5.12	5.20	5.33	5.41	5.51	5.63	5.11	5.62	5.82	6.01	5.77
MAY	5.19	5.29	5.36	5.40	5.46	5.48	5.48	5.47	5.48	5.84	5.98	6.11	5.95
JUN	5.35	5.43	5.50	5.52	5.54	5.54	5.53	5.51	5.70	6.00	6.10		6.03
JUL	5.40	5.33	5.34	5.34	5.32	5.31	5.28	5.25	5.75	5.92	5.99		6.12
AUG	6.57	6.21	6.17	6.12	6.01	5.96	5.88	5.80	7.05	6.79	6.80	6.77	6.28
SEP	6.24	5.86	5.69	5.56	5.40	5.36	5.30	5.22	6.76	6.33	6.33	6.31	6.59
OCT	6.05	5.67	5.56	5.54	5.52	5.52	5.49	5.45	6.57	6.30	6.40	6.49	6.63
NOV	5.96	5.58	5.41	5.33	5.28	5.27	5.25	5.21	6.50	6.10	6.11	6.17	6.38
DEC	6.08	5.77	5.64	5.53	5.40	5.35	5.30	5.24	6.65	6.30	6.28	6.29	6.53
1999 JAN	5.03	4.76	4.70	4.65	4.63	4.65	4.67	4.68	5.74	5.52	5.58	5.61	6.17
FEB	5.24	5.02	4.96	4.92	4.91	4.92	4.91	4.89	6.05	5.87	5.91	5.97	5.94

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**K**	**K**	**K**	**K**	**I**
Maturity	**2**	**3**	**4**	**5**	**7**	**8**	**9**	**10**	**2**	**5**	**7**	**10**	**5**
MAR	4.94	4.84	4.82	4.82	4.86	4.88	4.86	4.84	5.76	5.77	5.87	5.95	5.99
APR	4.83	4.70	4.66	4.64	4.66	4.68	4.70	4.71	5.63	5.56	5.64	5.78	5.82
MAY	5.19	5.16	5.14	5.13	5.14	5.14	5.14	5.13	5.96	6.01	6.10	6.13	6.07
JUN	5.48	5.52	5.55	5.57	5.62	5.64	5.65	5.65	6.16	6.40	6.52	6.63	6.56
JUL	5.69	5.69	5.74	5.79	5.88	5.90	5.92	5.93	6.28	6.60	6.72	6.93	6.71
AUG	5.70	5.70	5.71	5.74	5.84	5.87	5.89	5.90	6.37	6.65	6.79	6.94	6.91
SEP	5.73	5.85	5.86	5.91	6.06	6.12	6.16	6.18	6.40	6.75	6.95	7.18	6.83
OCT	5.87	5.91	5.91	5.93	6.05	6.11	6.15	6.17	6.50	6.75	6.90	6.97	7.02
NOV	5.83	5.84	5.87	5.91	6.05	6.10	6.13		6.32	6.59	6.79	6.88	6.75
DEC	5.94	5.94	5.97	6.02	6.12	6.15	6.17		6.51	6.76	6.89	7.04	6.94
2000 JAN	6.11	6.17	6.20	6.23	6.32	6.36	6.39		6.62	6.88	7.03	7.17	7.16
FEB	6.27	6.30	6.31	6.31	6.33	6.34	6.34		6.79	7.07	7.17	7.28	7.21
MAR	6.47	6.42	6.33	6.26	6.18	6.16	6.14		7.03	7.14	7.16	7.13	7.37
APR	6.67	6.57	6.48	6.41	6.30	6.26	6.22		7.23	7.32	7.33	7.33	7.48
MAY	6.66	6.56	6.45	6.37	6.26	6.23	6.19		7.25	7.28	7.26	7.26	7.63
JUN	7.10	6.93	6.71	6.56	6.35	6.27	6.21	6.16	7.67	7.49	7.40		7.63
JUL	7.19	6.97	6.74	6.56	6.33	6.26	6.23	6.20	7.69	7.47	7.37		7.73
AUG	7.22	7.01	6.80	6.65	6.45	6.39	6.35	6.32	7.64	7.40	7.36		7.70
SEP	7.22	6.97	6.74	6.59	6.42	6.36	6.34	6.31	7.68	7.53	7.52		7.95
OCT	7.14	6.93	6.74	6.62	6.47	6.41	6.39	6.37	7.84	7.56	7.51		8.05
NOV	6.70	6.47	6.29	6.22	6.14	6.11	6.10	6.09	7.31	7.05	7.08		7.32
DEC	6.67	6.49	6.32	6.21	6.08	6.04	6.01	5.98	7.21	6.99	7.06		7.39
2001 JAN	6.55	6.36	6.19	6.13	6.04	5.99	5.97	5.95	7.09	6.93	6.95		7.38
FEB	6.67	6.48	6.30	6.20	6.06	6.00	5.98	5.97	7.22	6.99	7.00		7.37
MAR	6.89	6.65	6.47	6.35	6.20	6.13	6.10	6.08	7.28	7.04	7.07	7.07	7.26
APR	6.96	6.75	6.62	6.55	6.47	6.42	6.40	6.38	7.39	7.17	7.22	7.28	7.49
MAY	7.19	7.04	6.94	6.88	6.77	6.73	6.71	6.69	7.66	7.54	7.55	7.49	7.92
JUN	7.16	6.99	6.88	6.82	6.74	6.72	6.69	6.68	7.57	7.42	7.43	7.42	8.00
JUL	7.04	6.84	6.71	6.64	6.57	6.55	6.55	6.54	7.43	7.30	7.33	7.32	
AUG	6.82	6.63	6.53	6.47	6.44	6.42	6.42	6.42	7.14	7.13	7.20	7.19	7.68
SEP	6.34	6.20	6.19	6.21	6.25	6.26	6.28	6.30	6.74	6.88	7.02	7.05	7.72
OCT	6.08	5.87	5.83	5.82	5.84	5.85	5.86	5.87	6.51	6.48	6.57	6.53	7.41
NOV	6.04	5.84	5.86	5.88	5.91	5.91	5.92		6.55	6.60	6.67	6.69	7.20
DEC	5.84	5.91	5.99	6.09	6.22	6.26	6.30		6.33	6.73	6.91	6.98	7.34
2002 JAN	6.33	6.34	6.35	6.36	6.34	6.33	6.32		6.81	6.98	7.03	7.02	7.68
FEB	6.61	6.59	6.50	6.46	6.43	6.43	6.43		7.03	7.03	7.08	7.07	7.87
MAR	6.59	6.57	6.57	6.57	6.61	6.63	6.66		7.04	7.10	7.19	7.33	7.61
APR	6.77	6.71	6.71	6.71	6.72	6.71	6.71		7.24	7.27	7.30	7.29	8.05
MAY	7.17	7.11	7.04	7.00	6.99	7.02	6.99	6.91	7.58	7.52	7.47	7.41	8.22
JUN	6.93	6.87	6.79	6.72	6.64	6.63	6.61	6.59	7.35	7.21	7.16	7.16	8.18
JUL	6.85	6.72	6.63	6.54	6.45	6.46	6.47	6.48	7.30	7.07	7.00		7.76
AUG	6.55	6.42	6.34	6.28	6.21	6.21	6.21	6.20	7.03	6.83	6.77	6.77	7.51
SEP	6.27	6.13	6.05	6.02	5.99	5.99	5.99	5.99	6.79	6.58	6.56	6.71	7.63
OCT	6.15	6.10	6.09	6.11	6.16	6.18	6.19	6.19	6.72	6.65	6.70	6.82	7.94
NOV	6.03	6.01	6.00	6.01	6.08	6.11	6.12	6.14	6.68	6.62	6.63	6.74	7.44
DEC	5.36	5.40	5.47	5.55	5.68	5.73	5.76	5.79	6.03	6.23	6.30	6.43	7.09

Table A3. Norwegian bond yields by maturity (average life)

Annualized yield computed from end-of-month quotations of domestic bonds at Oslo Børs
S=Kingdom of Norway. K=Private credit enterprises. I=Industrial companies

Issuer	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**K**	**K**	**K**	**K**	**I**
Maturity	**2**	**3**	**4**	**5**	**7**	**8**	**9**	**10**	**2**	**5**	**7**	**10**	**5**
2003 JAN	5.14	5.13	5.14	5.18	5.32	5.39	5.44	5.48	5.60	5.80	5.87	6.04	6.63
FEB	4.89	4.89	4.90	4.96	5.08	5.14	5.20	5.24	5.26	5.49	5.58	5.65	6.15
MAR	5.04	5.06	5.09	5.12	5.19	5.23	5.26	5.29	5.40	5.77	5.84	5.97	6.46
APR	4.72	4.78	4.85	4.94	5.12	5.20	5.25	5.30	5.10	5.55	5.67	5.86	6.59
MAY	4.14	4.14	4.19	4.29	4.49	4.57	4.64	4.69	4.45	4.91	5.02		5.53
JUN	3.54	3.74	3.92	4.11	4.43	4.53	4.62	4.68	3.82	4.67	4.84		5.08
JUL	3.57	3.93	4.20	4.40	4.74	4.86	4.95	5.01	3.99	4.95	5.19		5.20
AUG	3.51	3.88	4.16	4.40	4.73	4.85	4.93	4.98	3.93	4.98	5.21		5.58
SEP	3.29	3.66	3.94	4.16	4.47	4.58	4.66	4.71	3.62	4.67	4.90		5.27
OCT	3.42	3.87	4.14	4.37	4.72	4.83	4.91	4.95	3.78	4.85	5.08		5.29
NOV	3.43	3.85	4.12	4.37	4.73	4.84	4.91		3.74	4.86	5.11		5.27
DEC	2.77	3.27	3.56	3.86	4.30	4.43	4.52		3.10	4.37	4.73		5.03

Table A4. Yields on most actively traded maturities of long-term government bonds 1822 - 2003.

Averages of most representative quotations abroad through December 1914; thereafter Oslo Bourse.
Data for 1843 and 1844 are interpolated and marked by †.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1822			6.41	6.40	6.54	6.46	6.44	6.34	6.31	6.19	6.09	6.35	6.35∗
1823	6.33	6.36	6.33	6.52	6.52	6.43	6.31	6.28	6.22	6.18	6.18	6.11	6.31
1824	5.74	5.45	5.08	5.15	5.21	5.28	5.42	5.34	5.41	5.29	5.32	5.20	5.32
1825	5.17	5.24	5.20	4.89	4.92	4.89	4.87	4.95	4.95	5.20	5.50	5.87	5.14
1826	5.91	5.71	6.12	5.84	5.88	5.61	5.48	5.52	5.52	5.36	5.28	5.28	5.63
1827	5.01	5.01	5.06	5.12	5.07	4.94	4.72	4.58	4.41	4.42	4.46	4.37	4.77
1828	4.38	4.28	4.42	4.43	4.33	4.38	4.36	4.39	4.40	4.46	4.49	4.46	4.40
1829	4.42	4.41	4.34	4.37	4.44	4.51	4.47	4.48	4.44	4.27	4.21	4.06	4.37
1830	4.06	4.06	4.04	4.04	3.99	3.99	3.97	3.97	4.15	4.15	4.15	4.34	4.08
1831	4.25	4.22	4.25	4.27	4.27	4.25	4.09	4.11	4.08	4.09	4.08	4.13	4.17
1832	4.06	4.06	4.09	4.09	4.06	4.06	4.11	4.26	4.31	4.18	4.16	4.23	4.14
1833	4.18	4.13	4.09	4.09	4.06	4.06	4.11	4.09	4.06	4.06	4.06	4.06	4.09
1834	4.06	4.01	4.01	3.99	4.01	4.15	4.06	4.06	4.06	4.03	3.95	3.92	4.03
1835	3.89	3.85	3.84	3.84	3.80	3.84	3.87	3.87	3.87	3.95	3.95	3.87	3.87
1836	3.87	3.84	3.84	3.84	3.84	3.87	3.83	3.79	3.76	3.79	3.77	3.87	3.83
1837	3.86	3.82	3.82	3.82	3.75	3.79	3.81	3.85	3.83	3.82	3.81	3.79	3.81
1838	3.77	3.76	3.77	3.77	3.79	3.77	3.77	3.76	3.79	3.78	3.78	3.78	3.77
1839	3.78	3.72	3.72	3.72	3.77	3.79	3.85	3.84	3.84	3.84	3.84	4.06	3.82
1840	3.83	3.72	3.72	3.71	3.71	3.77	3.76	3.76	3.76	3.82	3.88	3.75	3.77
1841	3.75	3.62	3.62	3.68	3.67	3.67	3.67	3.66	3.73	3.79	3.78	3.72	3.70
1842	3.78	3.78	3.78	3.92	4.07	4.06					4.07	4.06	3.94∗
1843													4.00†
1844													4.00†
1845											4.06	4.06	4.06∗
1846	4.06	4.06	4.06	4.06	4.11	4.06	4.06	4.11	4.06	4.26	4.25	4.06	4.10
1847	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06
1848	4.06	4.06	4.17							4.56	4.51	4.51	4.31∗
1849	4.42	4.33	4.33	4.28	4.22	4.15	4.10	4.13	4.13	4.10	4.11	4.15	4.20
1850	4.15	4.11	4.13	4.08	4.08	4.08	4.06	4.06	4.06	4.06	4.06	4.06	4.08
1851	3.85	3.87	3.86	4.04	4.06	4.06	4.06	4.11	4.11	4.11	4.20	4.28	4.05
1852	4.25	4.27	4.27	4.25	4.27	4.25	4.15	4.18	4.13	4.15	4.16	4.16	4.21
1853	4.06	4.04	4.04	4.01	4.04	4.06	4.06	4.06	4.09	4.28	4.18	4.23	4.10
1854	4.18	4.81	4.68	4.36	4.29	4.36	4.26	4.24	4.29	4.31	4.24	4.29	4.36
1855	4.26	4.24	4.19	4.14	4.16	4.11	4.06	4.09	4.06	4.09	4.24	4.30	4.16
1856	4.30	4.27	4.30	4.35	4.49	4.50	4.44	4.33	4.42	4.41	4.42	4.42	4.39
1857	4.33	4.42	4.42	4.28	4.31	4.31	4.45	4.66	4.49	4.66	5.16	5.01	4.54
1858	4.58	4.67	4.74	4.64	4.56	4.62	4.67	4.68	4.71	4.73	4.73	4.77	4.68
1859	4.73	4.72	4.66	4.68	4.81	4.87	4.63	4.63	4.59	4.63	4.66	4.62	4.69
1860	4.52	4.51	4.48	4.52	4.51	4.51	4.47	4.50	4.50	4.45	4.47	4.47	4.49
1861	4.47	4.46	4.46	4.46	4.48	4.48	4.47	4.50	4.46	4.44	4.45	4.54	4.47
1862	4.53	4.47	4.48	4.47	4.48	4.57	4.45	4.43	4.41	4.51	4.51	4.50	4.48
1863	4.46	4.48	4.48	4.55	4.53	4.55	4.50	4.57	4.60	4.65	4.69	4.97	4.59
1864	4.84	4.80	4.86	4.91	4.93	4.93	4.91	4.96	4.97	5.10	4.99	5.05	4.94
1865	5.08	5.08	5.11	5.10	5.10	5.12	5.10	5.10	5.11	5.23	5.21	5.22	5.13
1866	5.21	5.22	5.24	5.27	5.36	5.61	5.25	5.30	5.28	5.34	5.32	5.32	5.31
1867	5.28	5.29	5.29	5.36	5.27	5.25	5.10	5.15	5.21	5.22	5.16	5.17	5.23

Table A4. Yields on most actively traded maturities of long-term government bonds 1822 - 2003.

Averages of most representative quotations abroad through December 1914; thereafter Oslo Bourse.
Data for 1843 and 1844 are interpolated and marked by †.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1868	5.13	5.13	5.14	5.12	5.11	5.10	5.05	5.08	5.05	5.06	5.06	5.07	5.09
1869	5.09	5.09	5.09	5.10	5.36	5.40	5.26	5.28	5.37	5.37	5.31	5.28	5.25
1870	5.21	5.24	5.32	5.35	5.33	5.33	5.88	5.67	5.47	5.24	5.27	5.32	5.39
1871	5.17	5.19	5.19	5.20	5.19	5.07	4.91	4.85	4.82	4.82	4.82	4.69	4.99
1872	4.62	4.68	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.63
1873	4.62	4.66	4.73	4.78	4.77	4.77	4.69	4.69	4.73	4.66	4.74	4.70	4.71
1874	4.62	4.59	4.55	4.55	4.55	4.63	4.59	4.60	4.60	4.62	4.59	4.59	4.59
1875	4.61	4.61	4.61	4.61	4.61	4.61	4.62	4.61	4.63	4.65	4.66	4.63	4.62
1876	4.71	4.71	4.71	4.75	4.74	4.75	4.75	4.74	4.75	4.76	4.75	4.78	4.74
1877	4.77	4.75	4.75	4.80	4.81	4.78	4.76	4.78	4.79	4.77	4.78	4.80	4.78
1878	4.81	4.81	4.80	4.83	4.84	4.84	4.79	4.82	4.82	4.87	4.84	4.87	4.83
1879	4.81	4.80	4.72	4.62	4.57	4.58	4.51	4.53	4.54	4.54	4.54	4.48	4.60
1880	4.36	4.31	4.41	4.38	4.36	4.30	4.27	4.27	4.30	4.29	4.29	4.27	4.32
1881	4.19	4.18	4.18	4.16	4.08	4.05	4.04	4.08	4.08	4.08	4.03	4.07	4.10
1882	4.10	4.08	4.10	4.07	4.07	4.05	4.07	4.09	4.12	4.14	4.15	4.17	4.10
1883	4.18	4.11	4.09	4.07	4.10	4.08	4.09	4.09	4.12	4.12	4.15	4.13	4.11
1884	4.11	4.10	4.09	4.09	4.06	4.08	4.08	4.07	4.05	4.04	4.03	4.01	4.07
1885	4.02	4.02	4.00	4.06	4.00	3.96	3.96	3.96	3.98	3.96	3.98	3.99	3.99
1886	3.95	3.92	3.93	3.88	3.87	3.83	3.80	3.83	3.85	3.84	3.84	3.89	3.87
1887	3.92	3.86	3.82	3.76	3.73	3.72	3.73	3.74	3.75	3.74	3.73	3.72	3.77
1888	3.70	3.69	3.67	3.65	3.63	3.63	3.50	3.51	3.44	3.51	3.50	3.52	3.58
1889	3.50	3.51	3.52	3.48	3.37	3.42	3.39	3.41	3.42	3.44	3.45	3.44	3.45
1890	3.43	3.44	3.42	3.43	3.42	3.42	3.42	3.43	3.44	3.48	3.52	3.52	3.45
1891	3.46	3.49	3.49	3.54	3.61	3.61	3.59	3.56	3.57	3.66	3.70	3.67	3.58
1892	3.62	3.65	3.66	3.65	3.57	3.51	3.46	3.48	3.51	3.50	3.51	3.51	3.55
1893	3.42	3.42	3.46	3.47	3.48	3.49	3.53	3.60	3.65	3.64	3.61	3.58	3.53
1894	3.48	3.50	3.48	3.47	3.49	3.45	3.45	3.42	3.35	3.35	3.25	3.22	3.41
1895	3.17	3.14	3.12	3.24	3.21	3.18	3.15	3.14	3.16	3.18	3.16	3.20	3.17
1896	3.16	3.12	3.10	3.08	3.06	3.06	3.04	3.03	3.05	3.07	3.11	3.12	3.08
1897	3.09	3.09	3.10	3.09	3.07	3.04	3.05	3.04	3.04	3.05	3.05	3.09	3.07
1898	3.08	3.09	3.11	3.14	3.16	3.10	3.12	3.14	3.18	3.17	3.18	3.23	3.14
1899	3.23	3.25	3.29	3.34	3.44	3.48	3.47	3.49	3.52	3.58	3.55	3.62	3.44
1900	3.63	3.60	3.61	3.67	3.72	3.73	3.74	3.75	3.75	3.76	3.73	3.72	3.70
1901	3.65	3.63	3.58	3.53	3.60	3.61	3.52	3.51	3.52	3.55	3.51	3.49	3.56
1902	3.43	3.38	3.43	3.41	3.39	3.34	3.24	3.27	3.30	3.30	3.31	3.31	3.34
1903	3.27	3.28	3.28	3.29	3.27	3.27	3.27	3.30	3.32	3.35	3.41	3.43	3.31
1904	3.43	3.49	3.49	3.53	3.64	3.56	3.56	3.54	3.48	3.54	3.53	3.56	3.53
1905	3.54	3.49	3.53	3.54	3.54	3.66	3.67	3.70	3.66	3.67	3.65	3.62	3.60
1906	3.60	3.59	3.57	3.58	3.53	3.53	3.49	3.47	3.49	3.56	3.58	3.56	3.55
1907	3.54	3.59	3.65	3.66	3.67	3.71	3.70	3.69	3.75	3.76	3.77	3.82	3.69
1908	3.76	3.77	3.77	3.79	3.77	3.78	3.79	3.77	3.78	3.71	3.70	3.70	3.76
1909	3.69	3.66	3.63	3.62	3.62	3.65	3.61	3.61	3.61	3.60	3.60	3.61	3.63
1910	3.61	3.63	3.63	3.64	3.66	3.68	3.74	3.73	3.74	3.72	3.77	3.76	3.69
1911	3.75	3.74	3.75	3.74	3.73	3.75	3.81	3.81	3.87	3.89	3.87	3.87	3.80
1912	3.93	3.91	3.95	3.95	3.98	4.02	4.04	4.01	4.06	4.12	4.14	4.13	4.02
1913	4.18	4.17	4.22	4.23	4.32	4.33	4.27	4.20	4.15	4.12	4.16	4.20	4.21

Table A4. Yields on most actively traded maturities of long-term government bonds 1822 - 2003.

Averages of most representative quotations abroad through December 1914; thereafter Oslo Bourse.
Data for 1843 and 1844 are interpolated and marked by †.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1914	4.15	4.14	4.16	4.24	4.20	4.21	4.25	4.67		4.58	4.32	4.33	4.29∗
1915	5.05	5.05	5.05	5.05	5.06	5.06	5.06	5.06	5.06	5.06	5.06	5.09	5.06
1916	5.18	5.33	5.40	5.36	5.24	5.06	5.12	5.06	5.06	5.07	5.06	5.06	5.17
1917	5.06	5.09	5.12	5.12	5.08	5.09	5.11	5.09	5.08	5.15	5.19	5.21	5.12
1918	5.30	5.36	5.45	5.45	5.49	5.69	5.76	5.68	5.70	5.69	5.69	5.70	5.58
1919	5.62	5.77	5.78	5.80	5.74	5.81	5.69	5.65	5.66	5.76	6.08	5.98	5.78
1920	6.01	6.18	6.28	6.28	6.42	6.65	7.50	7.53	7.19	7.23	7.11	6.84	6.77
1921	6.50	6.32	6.51	6.34	6.22	6.15	5.56	5.57	5.65	5.98	5.68	5.72	6.02
1922	5.60	5.41	5.12	4.75	4.77	4.85	4.99	4.71	5.20	5.05	5.05	5.07	5.05
1923	5.06	5.03	5.06	5.09	5.19	5.20	5.42	5.54	5.48	5.82	5.75	5.57	5.35
1924	5.67	5.68	5.61	5.53	5.77	5.96	6.01	5.99	5.97	6.10	6.09	5.85	5.85
1925	5.92	5.99	6.04	5.94	5.86	5.44	5.50	5.29	5.42	5.48	5.65	5.67	5.68
1926	5.73	5.58	5.50	5.52	5.57	5.49	5.33	5.19	5.04	4.88	5.07	5.13	5.34
1927	5.16	5.05	5.10	5.08	5.15	5.18	5.16	5.21	5.34	5.49	5.55	5.58	5.25
1928	5.50	5.39	5.32	5.24	5.22	5.23	5.20	5.17	5.17	5.18	5.26	5.22	5.26
1929	5.20	5.28	5.37	5.39	5.29	5.38	5.43	5.45	5.48	5.47	5.38	5.24	5.36
1930	5.20	5.18	5.13	5.15	5.21	5.17	5.05	5.09	5.04	4.77	4.75	4.83	5.05
1931	4.73	4.71	4.71	4.68	4.62	4.65	4.76	4.68	5.41	5.15	5.31	5.44	4.90
1932	5.25	5.07	5.09	5.10	5.00	4.94	4.89	4.82	4.76	4.70	4.73	4.73	4.92
1933	4.70	4.72	4.70	4.69	4.60	4.65	4.69	4.57	4.57	4.91	5.06	5.02	4.74
1934	4.93	4.97	4.97	4.82	4.78	4.71	4.63	4.62	4.66	4.65	4.52	4.45	4.73
1935	4.36	4.26	4.18	4.18	4.19	4.17	4.16	4.30	4.34	4.34	4.26	4.34	4.26
1936	4.18	4.29	4.29	4.33	4.39	4.56	4.72	4.65	4.66	4.23	4.50	4.54	4.44
1937	4.44	4.40	4.44	4.46	4.45	4.39	4.37	4.12	4.07	3.98	3.97	4.05	4.26
1938	3.91	3.84	3.89	3.93	3.90	3.88	3.89	3.73	3.76	3.62	3.69	3.73	3.81
1939	3.67	3.70	3.80	4.09	4.09	4.18	4.08	4.31	4.86	4.99	4.94	5.33	4.34
1940	5.62	5.77	5.20	5.13	6.17	5.14	4.91	4.71	4.58	4.21	4.24	4.28	5.00
1941	4.19	4.15	3.90	3.70	3.54	3.59	3.56	3.57	3.57	3.47	3.44	3.53	3.68
1942	3.49	3.40	3.40	3.47	3.48	3.53	3.51	3.52	3.53	3.51	3.52	3.57	3.49
1943	3.53	3.53	3.53	3.54	3.53	3.54	3.55	3.54	3.54	3.54	3.54	3.53	3.54
1944	3.50	3.48	3.45	3.53	3.52	3.53	3.53	3.53	3.52	3.50	3.48	3.49	3.51
1945	3.52	3.48	3.46	3.48	3.46	3.42	3.36	3.30	3.34	3.35	3.36	3.38	3.41
1946	3.02	2.88	2.52	2.52	2.52	2.52	2.50	2.51	2.52	2.50	2.50	2.51	2.58
1947	2.50	2.48	2.49	2.48	2.48	2.48	2.48	2.53	2.54	2.55	2.54	2.53	2.51
1948	2.53	2.52	2.50	2.48	2.45	2.48	2.47	2.47	2.46	2.47	2.48	2.48	2.48
1949	2.47	2.50	2.53	2.52	2.54	2.61	2.54	2.53	2.56	2.47	2.47	2.50	2.52
1950	2.50	2.50	2.52	2.56	2.62	2.68	2.88	2.84	2.85	2.86	2.98	3.06	2.74
1951	2.90	2.91	2.93	3.04	3.17	3.26	3.26	3.30	3.30	3.36	3.39	3.25	3.17
1952	3.18	3.14	3.22	3.23	3.22	3.21	3.18	3.14	3.14	3.13	3.10	3.13	3.17
1953	3.12	3.12	3.14	3.17	3.15	3.19	3.15	3.13	3.18	3.10	3.09	3.09	3.14
1954	3.10	3.05	3.05	3.05	3.05	3.05	3.09	3.07	3.10	3.13	3.22	3.30	3.10
1955	3.40	3.90	3.92	3.96	4.05	4.06	4.06	4.12	4.24	4.23	4.16	4.37	4.04
1956	4.51	4.45	4.35	4.58	4.80	5.11	5.22	4.97	4.88	4.83	4.86	4.84	4.78
1957	4.74	4.67	4.61	4.61	4.56	4.55	4.65	4.64	4.82	4.85	4.97	4.95	4.72
1958	4.79	4.77	4.77	4.83	4.80	4.80	4.80	4.78	4.77	4.72	4.67	4.67	4.76
1959	4.79	4.65	4.66	4.66	4.66	4.78	4.67	4.65	4.66	4.61	4.57	4.64	4.67

Table A4. Yields on most actively traded maturities of long-term government bonds 1822 - 2003.

Averages of most representative quotations abroad through December 1914; thereafter Oslo Bourse.
Data for 1843 and 1844 are interpolated and marked by †.
Annual averages based on less than 12 monthly observations are marked by ∗.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVR
1960	4.65	4.65	4.63	4.59	4.60	4.67	4.65	4.70	4.73	4.68	4.77	4.71	4.67
1961	4.64	4.61	4.67	4.66	4.80	4.78	4.76	5.07	4.93	4.93	4.91	4.90	4.81
1962	4.86	4.81	4.77	4.78	4.74	4.74	4.77	4.76	4.78	4.75	4.75	4.76	4.77
1963	4.65	4.61	4.54	4.54	4.54	4.56	4.57	4.58	4.54	4.55	4.69	4.62	4.58
1964	4.60	4.59	4.60	4.61	4.62	4.68	4.69	4.70	4.71	4.72	4.71	4.71	4.66
1965	4.70	4.70	4.71	4.75	4.91	4.95	4.97	4.90	4.86	4.91	4.89	4.87	4.84
1966	4.78	4.77	4.75	4.73	4.75	4.81	4.88	4.90	4.91	4.96	4.91	4.99	4.84
1967	5.00	5.02	5.02	5.02	4.99	4.98	4.95	4.94	4.88	4.88	4.90	4.87	4.96
1968	4.91	4.92	4.92	4.93	4.91	5.08	5.08	5.06	5.05	5.03	4.98	4.94	4.98
1969	4.79	4.79	4.82	4.79	4.80	4.84	4.87	4.85	6.03	5.70	5.91	5.94	5.18
1970	5.93	5.81	5.87	5.93	5.89	5.95	5.83	5.80	5.73	5.82	5.73	6.00	5.86
1971	5.91	5.84	5.83	5.82	6.04	6.08	5.82	5.92	6.01	5.99	5.80	6.09	5.93
1972	6.11	6.10	6.10	6.09	6.05	6.05	6.01	6.04	6.04	6.00	5.99	5.98	6.05
1973	5.96	6.16	6.18	6.23	6.19	6.22	6.22	6.21	6.20	6.22	6.22	6.22	6.19
1974	6.22	6.25	6.23	7.54	7.54	7.60	7.60	7.59	7.61	7.48	7.49	7.52	7.22
1975	7.57	7.52	7.52	7.62	7.62	7.58	7.60	7.61	7.60	7.60	7.61	7.55	7.58
1976	7.54	7.55	7.56	7.56	7.56	7.47	7.48	7.49	7.50	7.50	7.47	7.47	7.51
1977	7.48	7.49	7.49	7.49	7.50	7.49	7.50	7.51	7.47	7.47	7.48	9.01	7.62
1978	9.00	9.02	9.02	9.02	9.03	9.00	9.02	9.04	8.98	8.99	8.99	8.89	9.00
1979	8.91	8.93	8.93	8.93	8.94	8.93	8.95	8.97	8.93	8.93	8.93	10.91	9.10
1980	10.64	10.69	10.72	10.70	10.71	10.75	10.78	10.95	10.95	10.93	10.95	10.84	10.80
1981	11.53	11.61	11.60	12.25	12.93	12.96	13.02	13.07	13.18	13.25	13.24	14.00	12.72
1982	14.02	14.19	13.73	13.84	14.00	14.05	13.60	13.65	13.39	14.07	13.68	13.82	13.84
1983	13.85	13.68	13.58	13.32	13.24	13.09	13.01	12.99	12.99	13.01	12.81	12.82	13.20
1984	12.81	12.68	12.67	12.61	12.46	12.48	12.45	12.42	12.46	12.50	12.52	12.50	12.55
1985	12.53	12.65	12.87	12.85	12.85	12.94	12.94	12.94	12.93	12.90	12.90	13.49	12.90
1986	13.44	13.36	13.28	12.85	13.06	13.14	13.17	13.15	12.86	12.95	13.02	13.37	13.14
1987	13.26	13.14	13.12	13.10	13.14	13.14	13.14	12.89	12.51	12.80	13.01	13.03	13.02
1988	13.09	12.97	13.02	13.01	12.62	12.43	12.59	12.69	12.79	12.36	12.12	11.59	12.61
1989	10.97	10.78	10.79	10.56	10.63	10.85	10.91	10.89	10.57	10.73	11.15	10.89	10.81
1990	10.62	10.59	10.85	11.01	10.72	10.66	10.61	10.62	10.65	10.64	10.63	10.62	10.69
1991	10.56	10.39	10.42	9.99	9.72	9.77	9.74	9.75	9.88	9.92	9.81	9.77	9.98
1992	9.40	9.42	9.51	9.52	9.48	9.60	9.85	10.21	10.62	10.09	9.51	9.08	9.69
1993	8.78	7.99	7.65	7.27	7.07	6.50	6.54	6.11	6.13	5.78	5.75	5.58	6.76
1994	5.50	5.65	6.48	6.96	7.95	8.00	7.76	8.28	9.04	8.71	8.19	8.01	7.55
1995	8.06	7.93	7.97	7.66	7.34	7.75	7.55	7.31	7.13	6.91	6.44	6.36	7.37
1996	6.57	6.88	6.78	6.68	6.96	7.02	7.02	7.11	6.84	6.81	6.29	6.24	6.77
1997	5.88	5.63	6.09	6.12	6.08	5.96	5.86	6.01	5.75	5.79	5.59	5.50	5.85
1998	5.47	5.43	5.45	5.63	5.47	5.51	5.25	5.80	5.22	5.45	5.21	5.24	5.43
1999	4.68	4.89	4.84	4.71	5.13	5.65	5.93	5.90	6.18	6.17	6.13	6.17	5.53
2000	6.39	6.34	6.14	6.22	6.19	6.16	6.20	6.32	6.31	6.37	6.09	5.98	6.23
2001	5.95	5.97	6.08	6.38	6.69	6.68	6.54	6.42	6.30	5.87	5.92	6.30	6.26
2002	6.32	6.43	6.66	6.71	6.91	6.59	6.48	6.20	5.99	6.19	6.14	5.79	6.37
2003	5.48	5.24	5.29	5.30	4.69	4.68	5.01	4.98	4.71	4.95	4.91	4.52	4.98