



Trends in EU Capital Markets

ECMI Statistical Package for 2006

Compiled and annotated by
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Preface

This initiative by the European Capital Markets Institute (ECMI) to create an annual Statistical Package represents an important step towards overcoming the existing fragmentation in data on the evolution of European capital markets by offering a 'one-stop shop' where market participants, regulators, academics and students alike can immediately obtain a snapshot of evolutions over time at a very affordable price.

The ECMI Statistical Package presents a comprehensive collection of relevant data on the dynamics of various segments of the European capital market, complete with graphical representations and explanatory comments. It enables users to trace trends in European capital markets, so as to highlight their ongoing transformation through structural changes brought about by competitive forces, innovation, regulation or policy initiatives such as economic and monetary union (EMU).

Charles Gottlieb has worked diligently to put together a coherent, user-friendly package that presents reliable information drawn from official statistical sources, ensuring methodological consistency and comparability. The way the data are presented allows both an overview of broad trends in European capital markets using aggregated data, or a more detailed look into market growth, integration and convergence across instruments, asset classes, market segments and countries.

In order to facilitate the Statistical Package's use as a reference tool, each set of tables and graphs is self-contained. As a result, the analysis that accompanies each graph may be repetitive, meaning that the Statistical Package is not meant to be read as a text from end to end.

Our inaugural Statistical Package is a first attempt at a product we hope to perfect over time. To this effect, we welcome ECMI members' comments on how they believe future versions of the package can be improved.

Jean-Pierre Casey
Head of Research
European Capital Markets Institute

The ECMI Statistical Package is distributed free of charge to ECMI members as a benefit of membership. It is available for purchase on the ECMI website (<http://www.eurocapitalmarkets.org>) and the CEPS online bookshop (<http://shop.ceps.be>). For further information, please contact info@eurocapitalmarkets.org

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ISBN 92-9079-677-4

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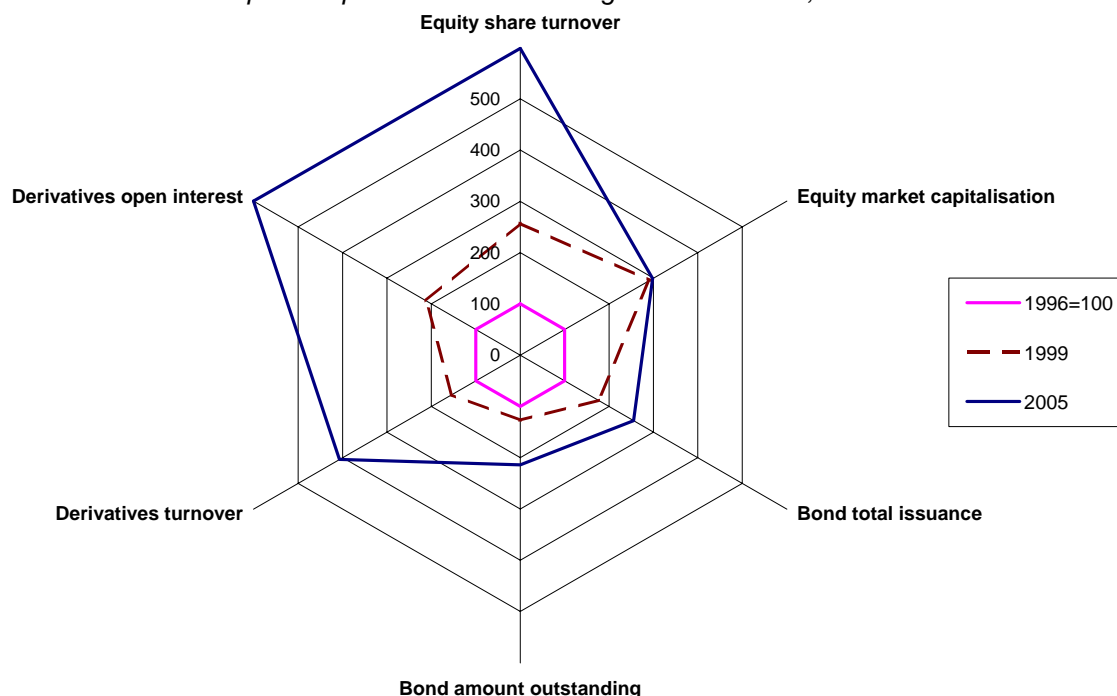
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1. Overview of European Capital Markets

1.1 Trends in European capital markets

Figure 1.1 Trends in European capital markets according to six indicators, 1996-2005



Sources: BIS, OECD, FESE, WFE & derivatives exchanges.

Comment

Growth in the various sectors of European capital markets has proceeded at differentiated paces. The most striking developments have been the growth of derivatives markets in Europe and the sharp increase in equity share turnover, both of which have been particularly pronounced since the introduction of the euro.

Developments have been steadier but more contained for the bond market than for derivatives. The amount of outstanding bonds on the European market has more than doubled since 1996. This fact testifies to the benefits of European monetary union and the subsequent 1999 Financial Services Action Plan.

European equity markets were severely hit by the bursting of the equity bubble in 2000, which has inhibited the development of European market capitalisation over the time period considered. By the end of 2005, EU market capitalisation had recovered to the levels it had reached before the equity bubble burst. Nevertheless, European equity markets have made considerable gains in terms of efficiency. Equity share turnover has risen ten-fold over the past decade, reflecting better price discovery, increased activity and efficiency.

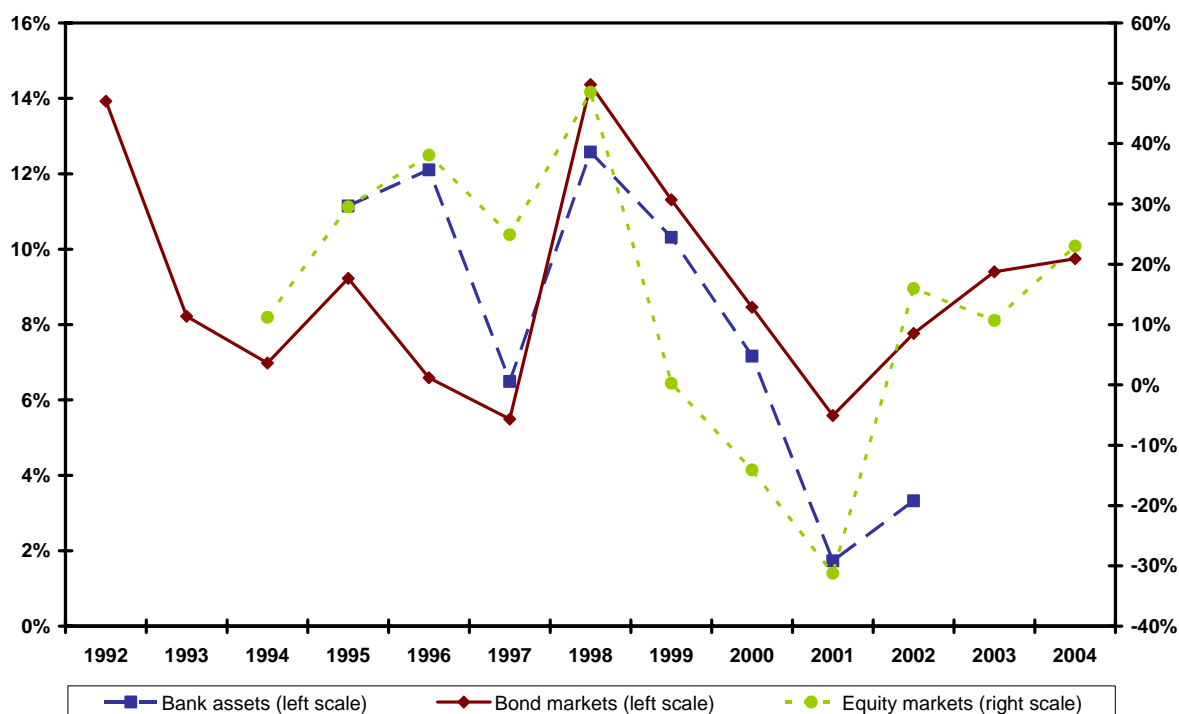
1.2 Growth rates of EU-15 capital markets

Table 1.1 Growth in bank assets, bond markets and equity markets in the EU-15, 1992-2005

Volume € billions	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bank assets				11,881	13,205	14,804	15,764	17,747	19,578	20,979	21,343	22,053		
Bond markets	4,822	5,494	5,945	6,360	6,947	7,405	7,812	8,934	9,945	10,786	11,388	12,273	13,427	14,736
Equity markets			2,443	2,717	3,519	4,859	6,068	9,013	9,038	7,763	5,338	6,192	6,853	8,431
Annual growth	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bank assets (left scale)					11.1%	12.1%	6.5%	12.6%	10.3%	7.2%	1.7%	3.3%		
Bond markets (left scale)		13.9%	8.2%	7.0%	9.2%	6.6%	5.5%	14.4%	11.3%	8.5%	5.6%	7.8%	9.4%	9.7%
Equity markets (right scale)				11.2%	29.5%	38.1%	24.9%	48.5%	0.3%	-14.1%	-31.2%	16.0%	10.7%	23.0%

Sources: BIS, OECD, FESE & European Commission.

Figure 1.2 Growth in bank assets, bond markets and equity markets in the EU-15, 1992-2005



Sources: BIS, OECD, FESE & European Commission.

Comment

For much of the 1990s, EU equity markets have been highly volatile. There was a period of strong growth at rates above 10% from 1997 to 1999, followed by a phase of consolidation between 1999 and 2001, which can be mainly attributed to the bursting of the equity bubble. Nevertheless, this consolidation phase was short-lived as evidenced by the fact that EU-15 equity markets growth had returned to the 10% level by 2002. The trend is also clearly on an upward curve, assisted by the continued process of financial disintermediation in Europe.

Growth in the EU-15 bond market has fluctuated between 6% and 14%. This underlines the considerable benefits of European monetary integration in fostering bond markets. Together, equity market expansion and bond market growth are gradually substituting bank intermediation with market-based financial intermediation. This has strengthened the disintermediation process in Europe's financial markets.

The European banking sector has expanded over the period from 1995 to 2002. Positive growth rates have been maintained, but the trend is clearly downward. Growth in EU-15 bank assets has been slowing down, reaching 3.3% in 2002. This fact underlines the reduced reliance of European capital markets on bank-based financing.

Undoubtedly, the new economy has greatly benefited the financial sector but so has European economic and monetary integration. The establishment of the single currency has reduced the risk of exchange rate fluctuations and has also triggered a wave of mergers and acquisitions, which have enabled capital providers to grow further.

1.3 Bank-based vs. market-based finance

Table 1.2 Size of equity markets, bond markets and bank assets, 2003 (€ billions)

	Bond markets	Equity markets	Bank assets
Eurozone	10,641	3,919	18,883
EU-15	12,839	6,192	22,053
US	16,136	11,295	7,070
Japan	6,403	2,338	5,529

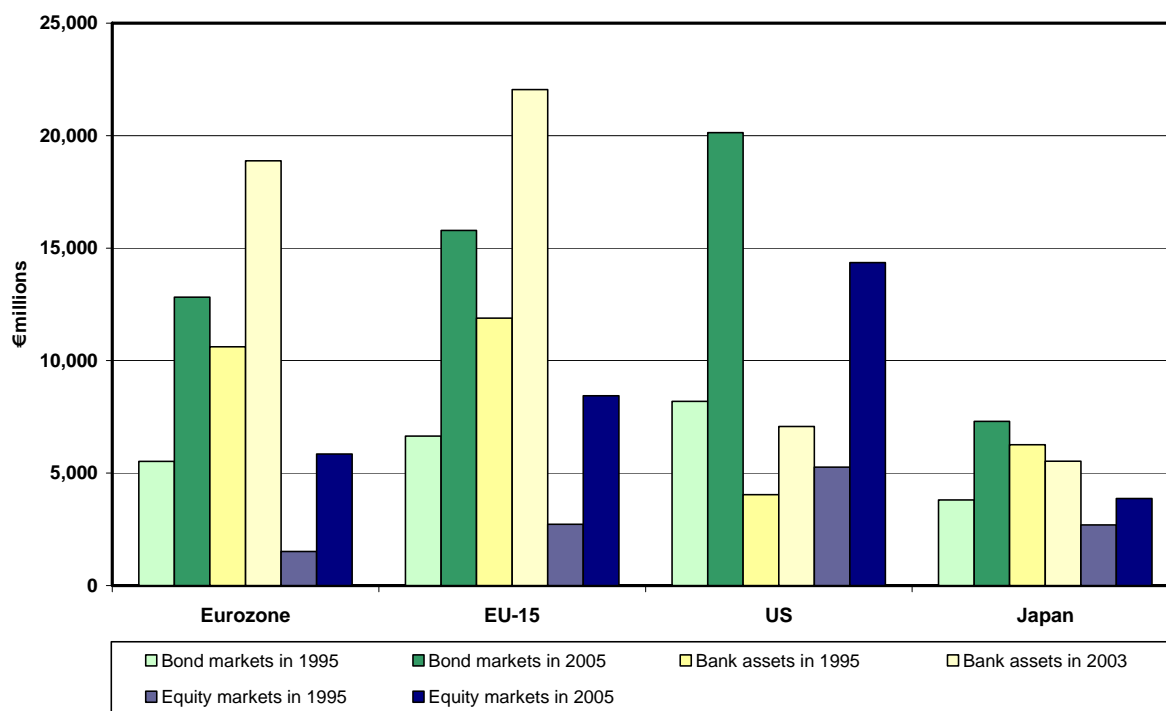
Sources: OECD, FESE & BIS.

Table 1.3 Size of equity markets, bond markets and bank assets, 2003 (% of GDP)

	Bond markets	Equity markets	Bank assets
Eurozone	145.9%	49.8%	259.8%
EU-15	141.7%	59.9%	236.8%
US	168.8%	116.1%	72.7%
Japan	168.6%	61.6%	145.6%

Sources: OECD, FESE & BIS.

Figure 1.3 Bank assets, bond markets and equity markets in EU-15, 1995 & 2005 (€ millions)



Sources: BIS, OECD & FESE.

Comment

Figure 1.3 provides a snapshot of the structure of financing in the triad entities (Japan, US and the EU-15) between 1995 and 2005. Essentially, it shows that the aggregate picture has changed little over the sample period, with bank-based finance remaining prominent in Europe and Japan while market-based asset allocation prevails in the United States.

Although European capital markets have embarked on a sustained disintermediation process since the introduction of the euro in 1999, bank loans still account for a disproportionate amount of

investment financing compared to the United States. Bank assets in the EU amount to nearly four times the combined value of equity capitalisation across EU stock exchanges and to more than twice the value of government- and private sector-issued debt securities combined. The situation is the reverse in the United States, where the value of debt securities outstanding is more than three times, and total equity more than twice, the value of total bank assets. In absolute terms, the value of bank assets in the EU-15 is more than triple that in the United States today.

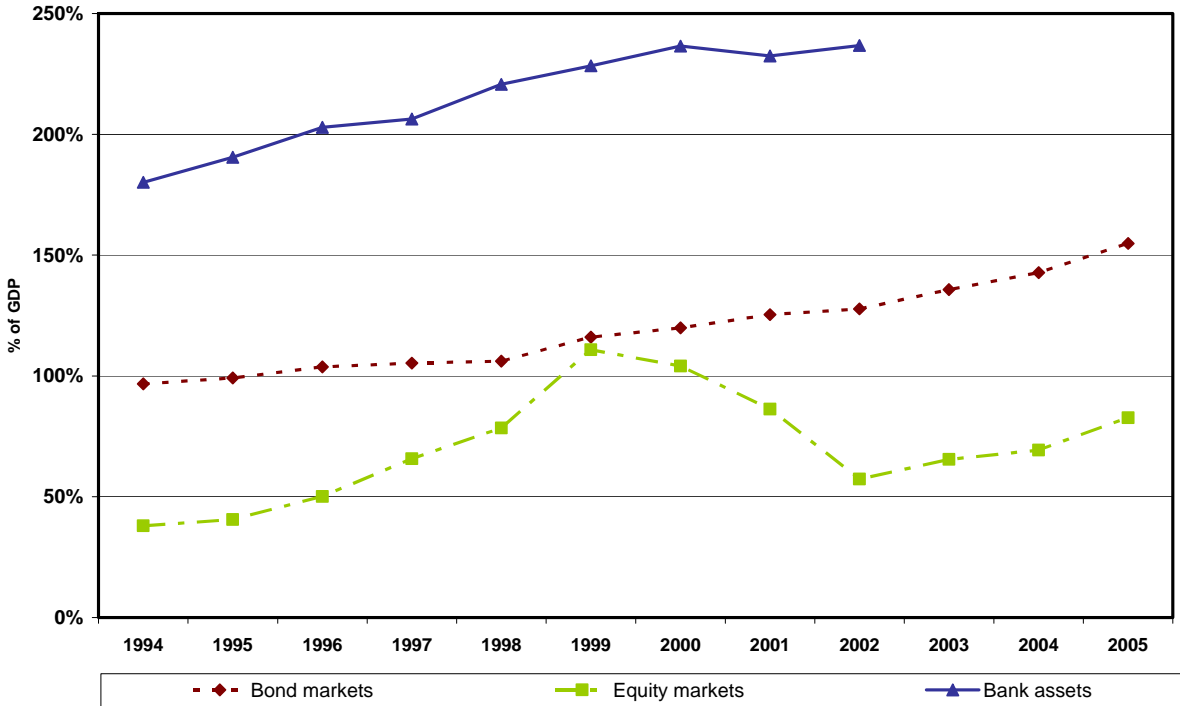
1.4 Evolution of EU-15 bond markets, equity markets and bank assets

Table 1.4 Evolution of EU-15 bond markets, equity markets, and bank assets, 1992-2005 (% of GDP)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bond markets	97%	99%	104%	105%	106%	116%	120%	125%	128%	136%	143%	155%
Equity markets	38%	41%	50%	66%	78%	111%	104%	86%	57%	65%	69%	83%
Bank assets	180%	191%	203%	206%	221%	228%	237%	232%	237%	n/a	n/a	n/a

Sources: BIS, OECD & FESE.

Figure 1.4 Evolution of EU-15 bond markets, equity markets and bank assets, 1992-2005 (% of GDP)



Sources: BIS, OECD & FESE.

Comment

EU-15 bank assets, bond markets and equity markets expanded considerably between 1994 and 2005. Despite the bursting of the equity bubble, EU-15 equity markets have doubled their share relative to GDP over the time period considered.

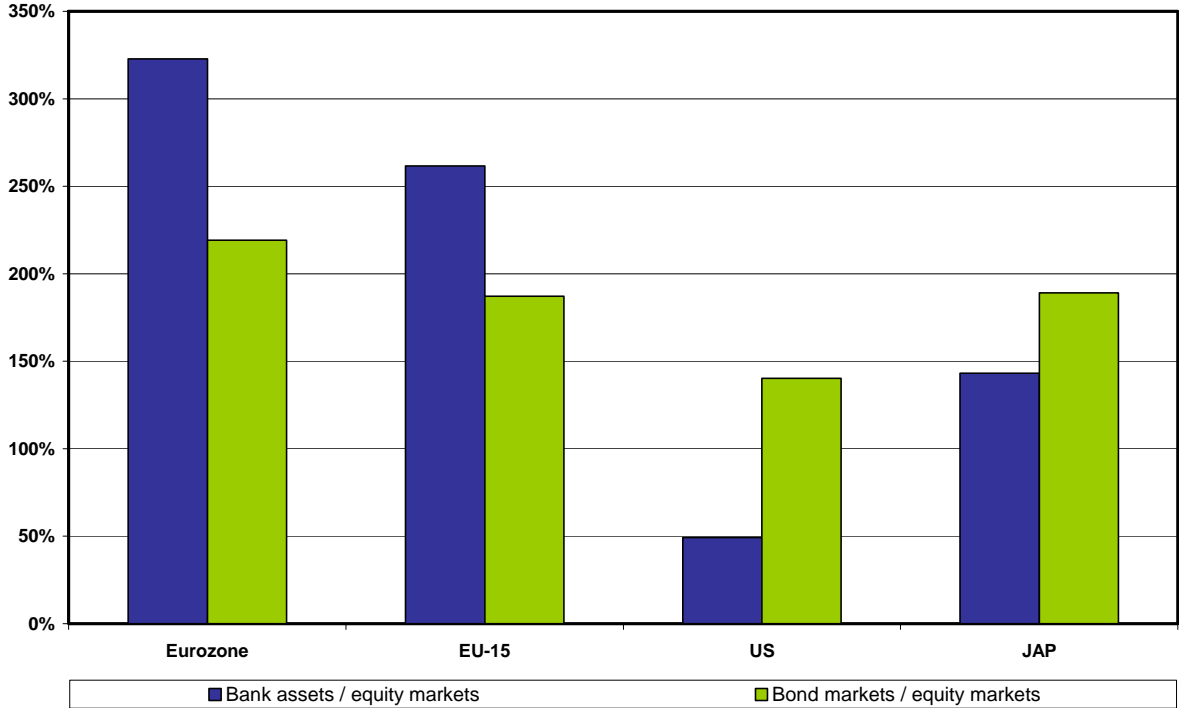
EU-15 bond markets have also deepened but at a slower and steadier pace. The growth of bond markets relative to GDP has increased particularly after 1998. This is due to the benefits of monetary integration and the emergence of a single European yield curve.

Growth in bank assets has outstripped growth in GDP over the period from 1994 to 2000. Since then, however, the growth in bank assets as a percent of share in GDP has remained constant, indicating a move towards further financial disintermediation.

In the EU-15, banking remains the dominant capital market. A recent break in the upward trend of bank assets relative to GDP, however, hints at further intermediation, although bank assets are expected to remain the dominant capital intermediation market for some time to come.

1.5 Size of bond markets and bank assets relative to equity markets in EU-15, the US and Japan

Figure 1.5 Bond markets and bank assets, 2003 (% of equity markets)



Sources: OECD, FESE & BIS.

Comment

Figure 1.5 summarises the characteristics underlined throughout this statistical package. It illustrates the relative importance of equity financing in the United States compared to Japan and Europe. Nevertheless, in absolute terms, bond market financing remains the primary funding tool in the United States. The figure also illustrates the strong banking orientation of the European financial system. Europe's bond market has gained momentum relative to Japan and the United States, especially if only the EU-15 is considered. Finally, a strong reliance on bond markets is also a crucial feature of the financial structure of Japan, as shown in the figure. This phenomenon can largely be explained through the low level of market capitalisation in Japan and its greater reliance on relation-based finance.

1.6 Technical notes and sources

The data presented in this section are not the most up-to-date, but this is due to the limited availability of data for the banking sector. In fact, data on the banking sector are now available for 2004 at the European Central Bank. Nevertheless, the Bank Profitability Study by the OECD on which many of these statistics are based, is expected to be published in the second half of 2006. Thus we arbitrated in our data choices for consistency to the detriment of additional data points. Such lack of data reinforces the above-mentioned need for more readily available statistics, especially in the banking sector, a field where statistics remain particularly opaque.

Methodology. The statistics in this section are provided in current euro terms. Data retrieved from the World Federation of Exchanges (WFE) were converted from dollars into euro, whereas the data from the Federation of Exchanges (FESE) and from the OECD are denominated in euro.

Sources

Bank for International Settlements (BIS) (<http://www.bis.org/statistics/secstats.htm>).

Federation of European Stock Exchanges (FESE) (www.fese.org).

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2. Equity Markets

2.1 Domestic market capitalisation

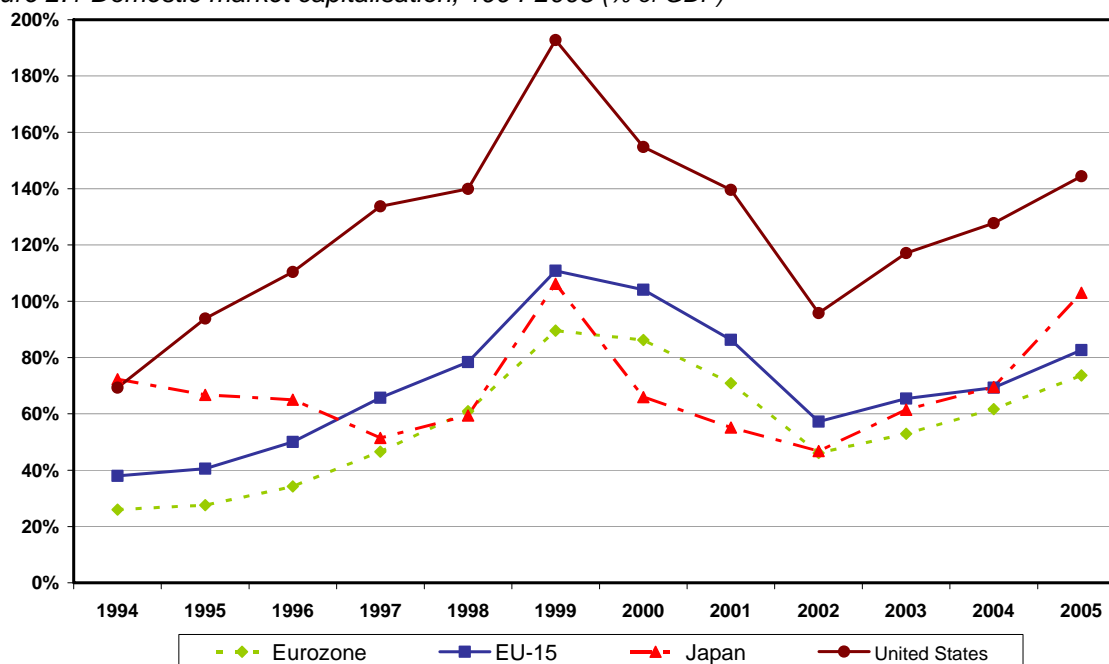
Table 2.1 Domestic market capitalisation, 1994-2005 (% of GDP)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Greece	12.4%	14.0%	19.2%	28.6%	63.0%	166.2%	93.8%	71.9%	44.2%	53.3%	53.5%	68.3%
Italy	17.5%	19.0%	21.1%	30.3%	45.4%	65.4%	70.8%	49.1%	36.1%	37.4%	42.9%	48.6%
Denmark	30.6%	31.6%	39.0%	56.5%	54.6%	64.2%	66.7%	53.9%	39.9%	49.6%	-	-
Germany	22.4%	22.8%	27.6%	39.2%	47.7%	70.9%	66.2%	57.5%	30.5%	39.5%	39.6%	45.9%
Euronext countries	35.5%	37.6%	46.7%	62.2%	80.9%	115.3%	109.2%	91.9%	60.7%	66.5%	69.8%	86.6%
Ireland	-	38.3%	47.5%	62.3%	72.4%	75.6%	84.3%	73.0%	43.8%	48.4%	56.4%	60.2%
UK	106.2%	118.2%	139.7%	154.4%	159.9%	206.8%	179.4%	153.2%	106.2%	121.9%	122.7%	146.0%
Luxembourg	179.0%	167.5%	180.9%	199.1%	192.5%	190.9%	171.8%	122.6%	102.7%	123.4%	143.4%	159.3%
Finland	36.6%	33.5%	49.3%	60.9%	113.0%	287.5%	241.2%	158.4%	94.0%	93.8%	-	-
OMX countries	-	-	-	-	-	-	-	-	-	-	85.6%	105.3%
Sweden	59.1%	69.2%	90.0%	109.8%	108.0%	157.6%	135.8%	109.5%	66.5%	86.8%	-	-
Spain	23.1%	25.2%	39.2%	52.0%	63.8%	74.1%	86.0%	78.1%	60.4%	73.7%	82.5%	89.8%
Austria	14.6%	13.5%	14.4%	18.3%	15.9%	16.4%	15.3%	13.2%	14.5%	19.7%	27.2%	43.5%
Eurozone	26.0%	27.6%	34.2%	46.6%	61.0%	89.6%	86.2%	70.9%	46.1%	52.9%	61.7%	73.7%
EU-15	38.0%	40.6%	50.1%	65.7%	78.4%	110.8%	104.1%	86.3%	57.3%	65.5%	69.3%	82.7%
United States	69.3%	93.9%	110.4%	133.7%	139.9%	192.8%	154.8%	139.6%	95.8%	117.1%	127.7%	144.4%
Japan	72.3%	66.8%	65.1%	51.5%	59.5%	106.2%	65.9%	55.2%	46.8%	61.5%	69.5%	103.0%

Note: From 2004 onwards, the OMX data are included in the eurozone data.

Sources: WFE, Federal Reserve Bank of Saint-Louis & European Commission.

Figure 2.1 Domestic market capitalisation, 1994-2005 (% of GDP)



Sources: WFE, Federal Reserve Bank of Saint-Louis & European Commission.

Comment

Plotting the weight of domestic market capitalisation as a percentage of gross domestic product (GDP) facilitates cross-entity comparisons as to the relative weight of equity financing against other types of financing. It also makes it possible to track how equity markets have expanded compared to the real economy (an indicator of financial deepening). This ratio can also be considered as an indicator of possible asset price bubbles, i.e. when there are large and sudden deviations from trend growth, as occurred from 1998 to 1999 (see Figure 2.2). In fact, over the period from 1995 to 1999, market capitalisation in the United States grew twice as fast as the US real economy did. This was an unsustainable pattern, which was also observed in the EU, where market capitalisation relative to GDP nearly tripled over the same period. Furthermore, standard deviations of the ratio show that equity markets suffered the most in the United States from subsequent collapse of the equity bubble, whereas Japan's equity market suffered the least.

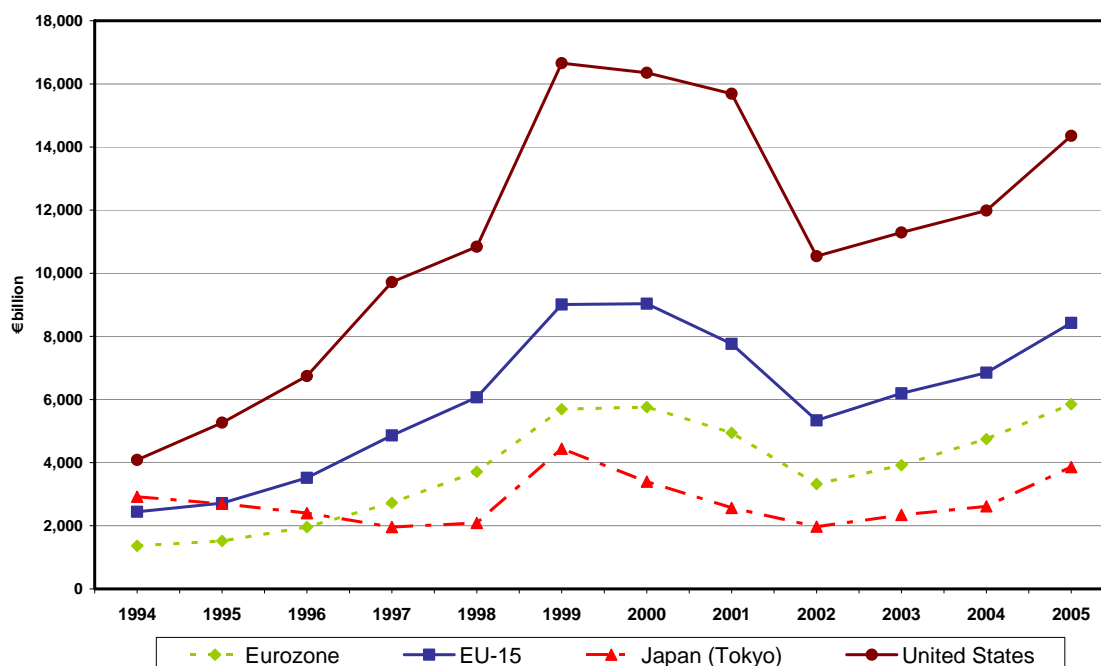
Finally, strong growth was recorded in European equity markets between 1995 and 2004 with the ratio of market capitalisation to GDP nearly doubling in the EU-15 and more than doubling in the eurozone.

Table 2.2 Domestic market capitalisation, 1995-2004 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Athens Stock Exchange	10	13	19	31	69	196	116	95	63	82	90	123
Borsa Italiana	151	159	205	312	485	725	826	599	455	487	580	674
Budapest Stock Exchange	-	-	-	-	-	-	13	12	12	15	21	28
Copenhagen Stock Exchange	40	44	57	85	85	105	116	97	73	94	-	-
Deutsche Börse	406	439	531	747	931	1,426	1,365	1,216	654	854	877	1,031
Euronext	619	690	882	1,198	1,631	2,433	2,441	2,144	1,467	1,644	1,792	2,286
Irish Stock Exchange	-	20	28	45	57	68	88	85	57	67	84	96
Ljubljana Stock Exchange	0	0	1	2	3	3	3	4	5	6	7	7
London Stock Exchange	931	1,025	1,311	1,808	2,034	2,842	2,807	2,456	1,770	1,948	2,104	2,582
Luxembourg Stock Exchange	23	23	26	31	33	36	37	27	23	30	37	43
Malta Stock Exchange	0	0	0	0	1	4	2	2	1	1	2	3
Helsinki Stock Exchange	31	34	50	66	132	348	316	216	132	135	-	-
OMX	0	0	0	0	0	0	0	0	0	0	535	678
Stockholm Stock Exchange	106	131	192	240	239	372	353	268	171	232	-	-
Spanish Exchanges (BME)	100	115	192	263	343	430	542	531	440	575	691	811
Oslo Bors	30	34	45	60	40	63	70	79	65	76	104	161
Swiss Exchange	231	303	319	521	601	690	851	710	522	576	606	790
Warsaw Stock Exchange	2	3	7	11	18	29	34	30	28	30	53	79
Wiener Börse	25	25	27	34	30	33	32	29	32	45	64	107
Eurozone	1,366	1,517	1,959	2,726	3,711	5,694	5,762	4,942	3,324	3,919	4,749	5,848
EU-15	2,443	2,717	3,519	4,859	6,068	9,013	9,038	7,763	5,338	6,192	6,853	8,431
Japan (Tokyo)	2,920	2,698	2,403	1,957	2,091	4,443	3,393	2,570	1,973	2,338	2,612	3,862
Amex	70	78	78	113	108	90	89	68	44	74	61	73
Nasdaq	645	883	1,207	1,563	1,923	5,181	3,866	3,109	1,902	2,252	2,594	3,043
NYSE	3,372	4,303	5,461	8,042	8,809	11,385	12,396	12,512	8,597	8,970	9,329	11,240
United States	4,087	5,264	6,745	9,718	10,840	16,656	16,351	15,689	10,542	11,295	11,984	14,356

Sources: WFE & Federal Reserve Bank of Saint-Louis.

Figure 2.2 Domestic market capitalisation, 1995-2004 (€ billions)



Sources: WFE & Federal Reserve Bank of Saint-Louis.

Comment

The total domestic market capitalisation of EU stock exchanges nearly quadrupled over the period from 1995 to 2005 and stands at over €8 trillion today. While European capital markets are slowly moving towards a more equity-based culture, the position of European equity markets relative to the US equity market has hardly changed in the past decade. This indicates that, despite being of similar economic size, the two regions continue to have different financial models. Domestic market capitalisation in the US, the EU and Japan reached a peak in the period around 1999 when the boom in US equity markets spilled over into foreign equity markets. As can be seen in Figure 2.2, market capitalisation levels declined thereafter to the 1998 level before recovering to pre-bubble levels in 2005.

2.2 Market capitalisation by exchange

Table 2.3 Market capitalisation by exchange, 2000-2005 (€ billions)

	2000	2001	2002	2003	2004	2005
Athens Exchange	117,956	96,949	65,760	84,547	92,140	123,033
Borsa Italiana	818,384	592,319	457,992	487,446	580,881	676,606
Bratislava Stock Exchange	-	-	-	2,204	3,239	3,729
Budapest Stock Exchange	12,810	11,565	12,493	13,228	21,039	27,586
Cyprus Stock Exchange	-	6,572	4,505	3,807	3,588	5,580
Deutsche Börse	1,352,936	1,203,681	658,573	855,452	878,806	1,035,254
Euronext	2,483,040	2,122,048	1,477,108	1,646,178	1,796,036	2,294,828
Iceland Stock Exchange	5,001	4,718	6,266	7,361	12,999	24,266
Irish Stock Exchange	87,213	84,567	57,540	67,444	83,933	96,722
Ljubljana Stock Exchange	3,335	3,839	5,355	5,660	7,115	6,697
London Stock Exchange	2,744,691	2,413,272	1,708,260	1,923,168	2,071,775	2,592,623
Luxembourg Stock Exchange	36,231	26,711	23,569	29,598	36,891	43,448
Malta Stock Exchange	2,169	1,528	1,319	1,467	2,089	3,474
OMX	781,478	575,732	378,981	460,839	529,291	680,412
Helsinki SE (incl in OMX)	312,750	213,901	133,279	135,001	159,460	203,121
Stockholm SE (incl in OMX)	349,615	266,227	170,627	229,355	277,992	371,440
Copenhagen SE (incl in OMX)	111,349	95,604	73,681	93,701	111,349	156,206
Oslo Børs	70,477	78,372	65,271	75,779	104,051	161,934
Prague Stock Exchange	-	8,999	9,796	12,288	21,720	31,059
Spanish Exchanges (BME)	537,044	525,840	443,097	575,766	692,053	813,812
SWX Swiss Exchange	845,865	591,961	521,560	576,462	609,929	793,019
Warsaw Stock Exchange	33,761	28,846	27,055	29,350	51,888	79,353
Wiener Börse	31,884	28,307	32,235	44,811	64,577	107,085
Eurozone	5,464,688	4,680,422	3,215,874	3,791,242	4,225,317	5,393,910
EU-15	8,670,343	7,455,525	5,168,442	6,037,465	6,686,432	8,514,180

Sources: FESE & NOREX for 2005 data on Stockholm and Copenhagen Stock Exchanges.

2.3 Number of companies listed

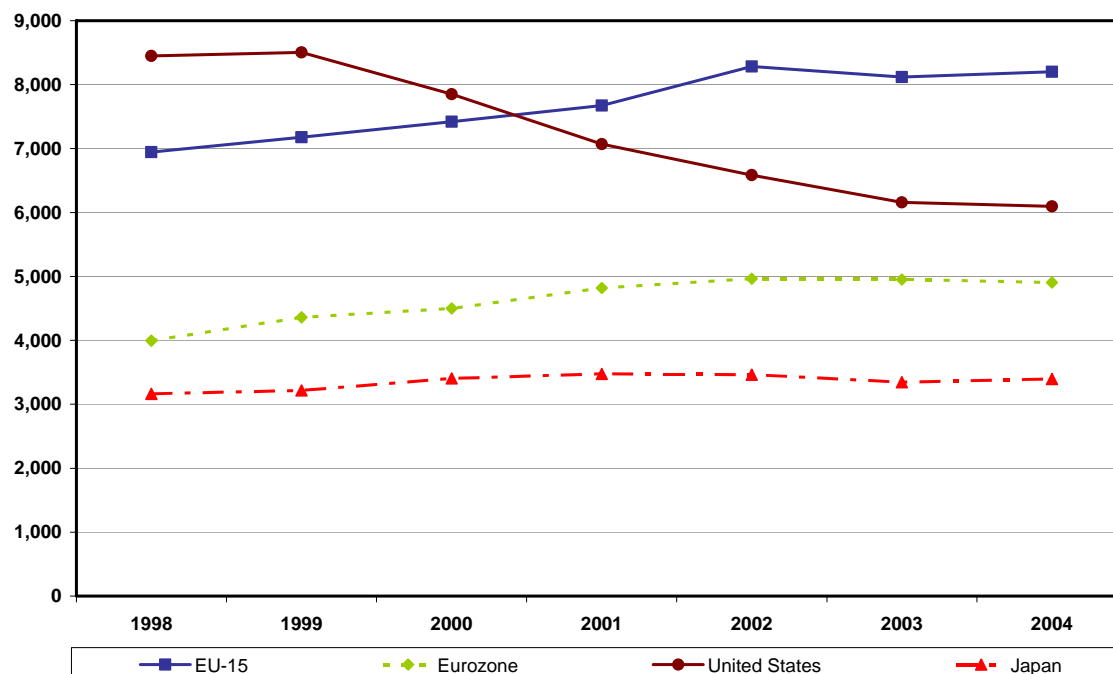
Table 2.4 Total number of companies listed, 1998-2005

	1998	1999	2000	2001	2002	2003	2004	2005
Athens Exchange	229	262	310	314	324	332	341	304
Borsa Italiana	243	270	297	294	295	279	278	282
Deutsche Börse	662	851	983	983	934	866	819	764
Euronext	-	-	1,286	1,194	1,114	1,047	999	966
Paris Stock Exchange	1,097	969	-	-	-	-	-	-
Amsterdam Stock Exchange	371	387	-	-	-	-	-	-
Brussels Stock Exchange	268	278	-	-	-	-	-	-
Lisbon Stock Exchange	135	125	110	99	-	-	-	-
Irish Stock Exchange	100	101	96	87	76	66	65	66
Ljubljana Stock Exchange	90	130	149	151	135	134	140	116
London Stock Exchange	2,423	2,274	2,374	2,332	2,824	2,692	2,837	3,091
Luxembourg Stock Exchange	276	277	270	257	245	242	234	245
OMX Copenhagen Stock Exchange	254	242	235	217	201	194	183	-
OMX Helsinki Stock Exchange	131	150	158	155	149	145	137	669
OMX Stockholm Stock Exchange	276	300	311	305	297	282	276	-
Spanish Exchanges (BME) Madrid	484	727	1,036	1,480	1,846	1,995	2,049	n/d
Wiener Börse	128	114	111	111	129	125	120	111
Eurozone	3,993	4,361	4,499	4,819	4,963	4,952	4,905	3,407
EU-15	6,946	7,177	7,419	7,673	8,285	8,120	8,201	6,498
American Stock Exchanges	711	650	649	606	571	557	575	595
Nasdaq	5,068	4,829	4,734	4,063	3,649	3,294	3,229	3164
NYSE	2,670	3,025	2,468	2,400	2,366	2,308	2,293	2270
United States	8,449	8,504	7,851	7,069	6,586	6,159	6,097	6,029
Osaka	1,272	1,281	1,310	1,335	1,312	1,140	1,090	1064
Tokyo	1,890	1,935	2,096	2,141	2,153	2,206	2,306	2351
Japan	3,162	3,216	3,406	3,476	3,465	3,346	3,396	3,415

Note: Data exclude investment funds.

Sources: WFE & FESE.

Figure 2.3 Total number of companies listed, 1998-2005



Note: OMX data is included in the eurozone figures.

Sources: WFE & FESE.

Comment

There has been a relatively small change in the number of companies listed in Japan and the US. Meanwhile, Europe's equity market has overtaken the US market in terms of total listings for the first time (in 2000) and has far more listings than the US today. This is due to the aftermath of the bursting of the equity bubble in the US, when many companies disappeared from the market, and to the trend towards de-listing brought about by the Sarbanes-Oxley Act.¹

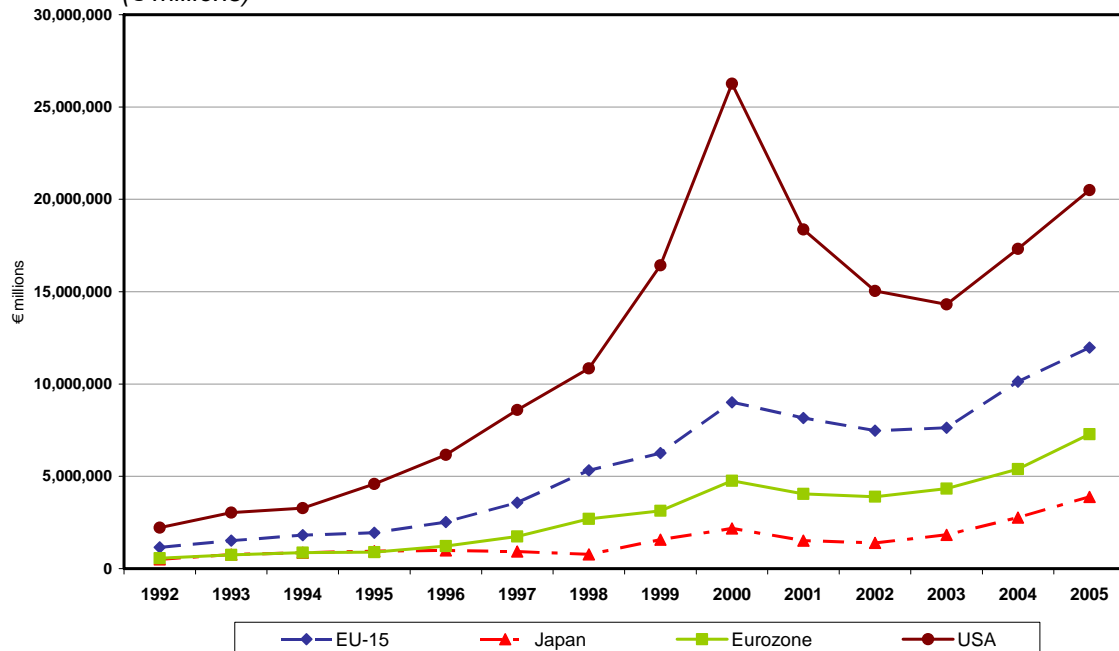
2.4 Value of share trading

Table 2.5 Total value of domestic & foreign share trading, including investment funds, 1992-2005 (€ millions)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Amex SE	34,880	34,880	48,320	60,052	75,423	118,284	237,781	394,600	780,734	674,739	530,334	465,302	487,779	502,181
Nasdaq	735,862	1,114,959	1,196,879	1,980,521	2,726,712	3,701,117	4,557,723	8,644,289	16,350,483	9,030,120	5,991,076	5,837,157	7,240,169	8,329,953
NYSE	1,441,462	1,885,696	2,026,791	2,545,971	3,355,896	4,771,328	6,043,396	7,387,237	9,133,740	8,662,177	8,514,374	8,003,415	9,594,641	11,665,119
USA	2,212,204	3,035,535	3,271,990	4,586,544	6,158,032	8,590,729	10,838,900	16,426,126	26,264,957	18,367,037	15,035,784	14,305,873	17,322,590	20,497,253
Osaka SE	99,873	109,009	157,885	216,413	209,034	183,326	150,378	178,403	268,863	144,116	102,418	92,324	110,960	178,734
Tokyo SE	393,903	654,865	710,130	730,036	775,309	739,991	620,055	1,383,798	1,912,216	1,370,806	1,291,803	1,741,459	2,657,621	3,701,149
Japan	493,776	763,874	868,015	946,448	984,343	923,317	770,434	1,562,201	2,181,079	1,514,921	1,394,220	1,834,383	2,768,581	3,879,884
Athens SE	1,331	2,295	4,283	5,018	6,800	17,455	41,308	156,313	77,763	31,226	19,375	32,763	36,653	53,788
Borsa Italiana	22,842	54,538	98,596	71,944	84,704	167,875	401,773	445,494	842,039	523,525	523,987	677,712	800,425	1,068,364
Deutsche Börse	375,097	465,737	488,978	490,492	670,267	881,731	1,231,973	1,281,251	1,750,586	1,175,465	1,001,157	1,073,026	1,272,708	1,581,720
Euronext	148,947	209,042	254,870	297,356	417,686	618,288	915,335	1,106,953	1,521,441	1,728,087	1,630,303	1,599,284	2,041,566	2,400,040
Euronext Amsterdam	37,763	54,809	70,413	102,671	157,818	230,975	338,195	389,154	560,545					
Euronext Brussels	8,055	11,529	13,306	15,148	20,988	27,969	50,317	48,417	36,161					
Euronext Lisbon		2,014	4,275	3,502	5,983	17,184	41,355	33,429	45,335	22,794				
Euronext Paris	103,129	140,690	166,876	176,035	232,897	342,159	485,468	635,953	879,400					
OMX														785,714
Helsinki SE	1,802	6,490	10,982	15,861	18,136	29,938	50,472	90,760	172,042	149,415	147,165	136,776	184,728	
Copenhagen SE	18,628	19,551	22,632	23,401	30,093	38,592	53,641	55,005	84,760	58,445	43,986	56,123	87,586	
Stockholmsbörsen	23,660	35,301	71,093	77,802	112,925	145,199	189,909	259,045	400,767	317,447	231,186	250,468	381,948	
Irish SE					9,740	14,288	32,922	39,319	11,876	18,820	27,476	36,397	37,281	55,680
London SE	547,519	715,093	850,011	952,367	1,167,096	1,642,984	2,384,994	2,807,318	3,784,690	3,732,912	3,304,435	2,981,021	4,268,745	4,688,844
Luxembourg SE	241	909	851	402	649	866	1,381	1,174	1,372	580	409	342	533	273
Spanish Exchanges (BME)									371,624	412,916	539,451	770,551	993,773	1,293,341
Wiener Börse	4,257	6,026	7,219	11,031	8,830	10,508	15,424	10,516	7,962	6,353	5,045	9,196	19,951	38,375
Eurozone	554,518	745,038	865,780	892,105	1,216,812	1,740,948	2,690,588	3,131,781	4,756,706	4,046,387	3,894,369	4,336,047	5,387,618	7,277,294
EU-15	1,144,226	1,514,984	1,809,516	1,945,675	2,526,926	3,567,724	5,319,133	6,253,149	9,006,923	8,155,192	7,473,975	7,623,658	10,125,898	11,966,138

Sources: FESE, WFE & Federal Reserve Bank of Saint-Louis.

Figure 2.4 Total value of domestic & foreign share trading, including investment funds, 1992-2005 (€ millions)



Sources: FESE, WFE & Federal Reserve Bank of Saint-Louis.

¹ Passed by the US Congress in 2002, the Sarbanes and Oxley Act is a United States federal law which was implemented in response to corporate and accounting scandals. The legislation is wide-ranging and has established new standards for all US public company boards, management and public accounting firms.

Comment

Trading activity has followed a similar pattern to market capitalisation across all markets. Share trading in the United States increased exponentially between 1992 and 1999, probably as a result of aggressive speculation and active daily trading by millions of investors. Consequently, there were very high levels of equity market activity in the period from 1999 to 2000. After the bubble burst, the amount of share trading fell sharply until 2003. Although US market capitalisation was only 1.8 times higher than market capitalisation in Europe in 2000, there was 2.5 times as much share trading. The gap has narrowed considerably since then.

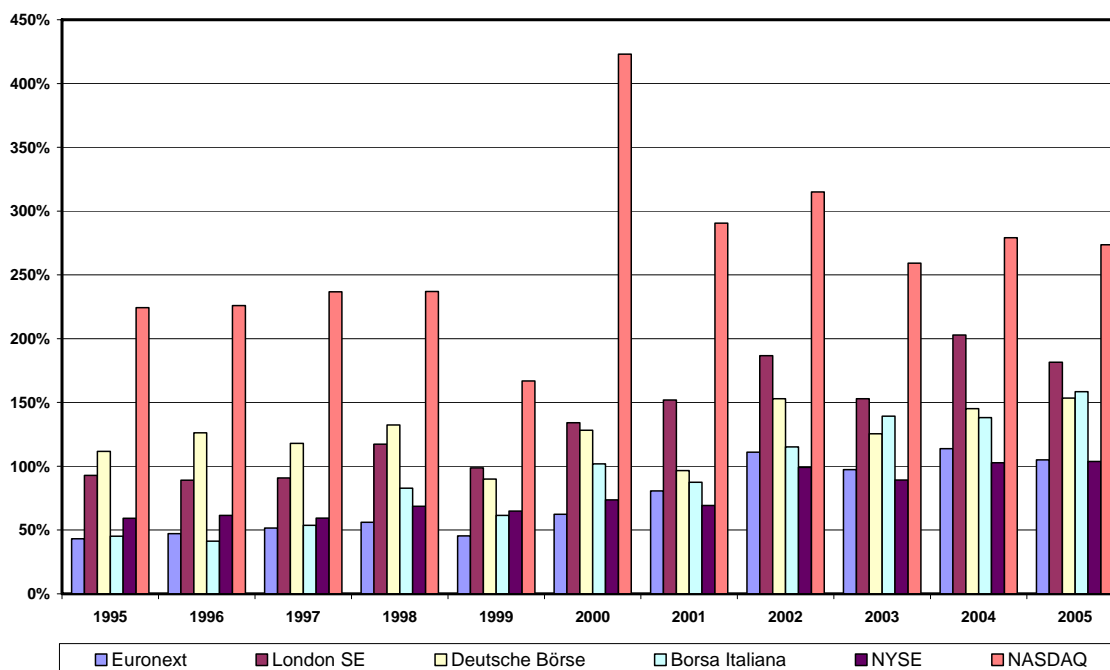
2.5 Share trading relative to market capitalisation

Table 2.6 Share trading as a % of market capitalisation, 1995-2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Euronext	43.1%	47.3%	51.6%	56.1%	45.5%	62.3%	80.6%	111.1%	97.3%	113.9%	105.0%
London SE	92.9%	89.0%	90.9%	117.3%	98.8%	134.1%	152.0%	186.7%	153.0%	202.9%	181.6%
Deutsche Börse	111.6%	126.3%	118.0%	132.3%	89.9%	128.2%	96.7%	153.0%	125.6%	145.1%	153.4%
Borsa Italiana	45.1%	41.4%	53.8%	82.8%	61.5%	102.0%	87.5%	115.2%	139.2%	138.1%	158.5%
NYSE	59.2%	61.5%	59.3%	68.6%	64.9%	73.7%	69.2%	99.0%	89.2%	102.8%	103.8%
NASDAQ	224.4%	226.0%	236.7%	237.0%	166.9%	423.0%	290.5%	315.0%	259.2%	279.1%	273.7%

Sources: FESE, World Federation of Exchanges & FRED II.

Figure 2.5 Share trading as a % of market capitalisation, 1995-2005



Note: Total share trading includes investment funds.

Sources: FESE, WFE & Federal Reserve Bank of Saint-Louis.

Comment

Evaluating the ratio of share trading to market capitalisation allows comparisons to be made as to the relative importance of trading in particular stock exchanges. Total volumes are not very meaningful for cross-country comparisons because large exchanges with more listings will inevitably have larger trading volumes. As can be seen in Figure 2.5, there is a clear trend for the level of share trading per unit of capital on the market to be increasing steadily. This reflects the increased use of electronic trading and automated trading systems, which lower transaction costs and increase the efficiency of trading. Although the volume of share trading on the New York Stock Exchange (NYSE) is considerably higher than that carried out on the London Stock Exchange (LSE) in absolute terms, the latter is dominant in relative terms. This reflects the inefficient trading methods on the NYSE floor, which still uses the 'open-outcry' system relying on specialists rather than a fully automated and consolidated limit order book. Figure 2.5 also shows a sharp increase in volume relative to market capitalisation at the Borsa Italiana. The latter has now overtaken the continent's traditional leader in this category, the Deutsche Börse.

2.6 Technical notes and sources

Note on currencies used. The statistics in this section are provided in current euro denominations. Data retrieved from the World Federation of Exchanges (WFE) were converted from dollars into euro whereas the data from the Federation of Exchanges (FESE) is available in euro. All values are end-of-year values.

Market capitalisation. The market capitalisation of a company listed on a given stock exchange is calculated by multiplying its current share price by the number of shares that have been issued. Consequently, the market capitalisation of a stock exchange is the sum of all market capitalisations of all companies listed on that particular exchange.

Domestic market capitalisation. The domestic market capitalisation series excludes the capitalisation of foreign held companies (companies whose registered office is located in a foreign country) traded on the stock exchange. Thus only domestic companies' market capitalisation is aggregated in this series.

Share trading value. The share trading value is the total number of shares traded multiplied by their respective prices. Figures are single counted; i.e. only one side of the transaction is considered.

Sources

FESE (Federation of European Stock Exchanges) (<http://www.fese.org/statistics/index.php>). Every month, European securities exchanges that are members of the Federation of European Securities Exchanges (see <http://www.fese.org/federation/members.htm> for list of members) supply data concerning the performance of their equity, bond and derivatives markets to the Federation.

Federal Reserve Bank of Saint-Louis (<http://research.stlouisfed.org/fred2/>). FRED II (Federal Reserve Economic Data) is a database of US economic data.

European Commission's AMECO database (http://ec.europa.eu/economy_finance/indicators/annual_macro_economic_database/ameco_en.htm).

The AMECO database is the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs (DG ECFIN).

NOREX (Nordic Exchanges) (<http://www.norex.com/rules.asp?lank=5>). This monthly publication gives a brief summary of the month's development in prices and trading volumes from the exchanges in the NOREX Alliance. NOREX is made up of the Iceland Stock Exchange, the OMX stock exchanges and the Oslo Børs.

OMX (<http://www.baltic.omxgroup.com/index.php?id=2733>). Monthly statistics are produced by the OMX Nordic Exchange, which comprises the Copenhagen Stock Exchange, the Stockholm Stock Exchange, the Helsinki Stock Exchange, the Riga Stock Exchange, the Tallinn Stock Exchange and the Vilnius Stock Exchange.

WFE (World Federation of Exchanges) (<http://www.world-exchanges.org/WFE/home.asp?action=document&menu=27>). The Annual Statistics are the most comprehensive series of data presented here, covering a large range of exchanges' activities, including an overview of the various market segments from the Share and Debt markets to the Parallel, "New" markets, as well as the Derivatives markets (see <http://www.world-exchanges.org/WFE/home.asp?action=document&menu=54> for a list of WFE members).

3. Bond Markets

3.1 Bond markets in the EU, the US and Japan: An overview

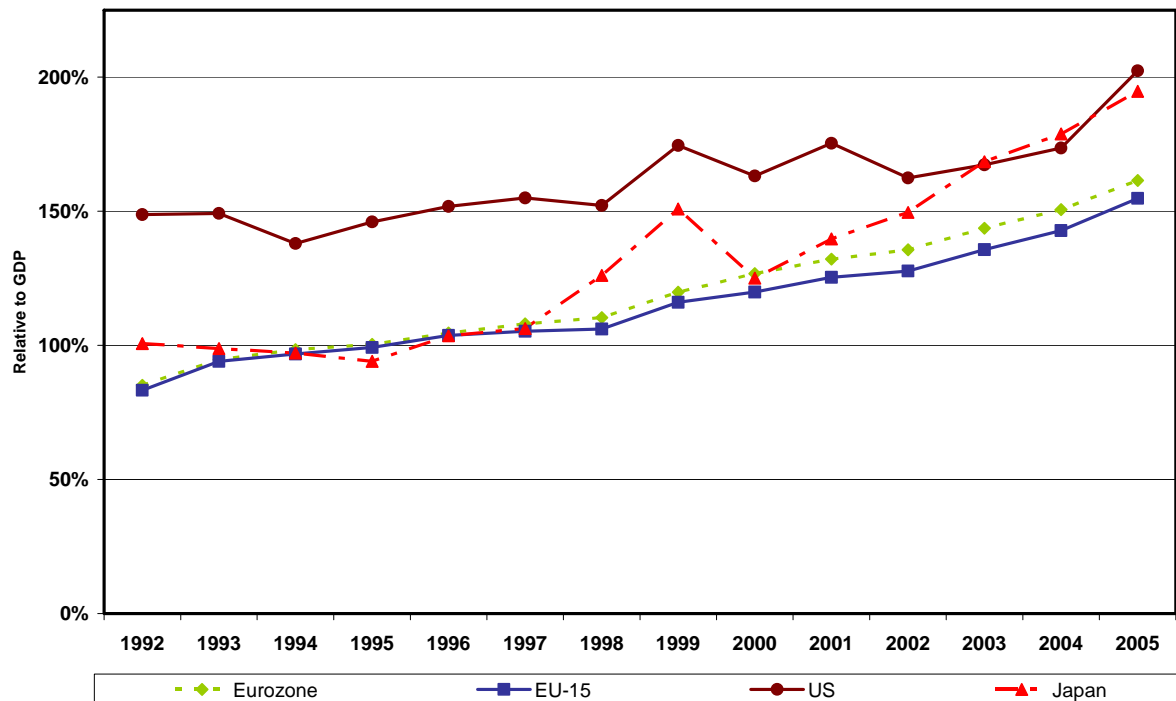
3.1.1 Bond markets: An aggregate perspective

Table 3.1 Aggregate size of bond markets, amount outstanding, 1992-2005 (% of GDP)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	74%	80%	83%	85%	85%	94%	95%	106%	113%	119%	124%	129%	133%	145%
Belgium	180%	176%	181%	185%	191%	191%	182%	191%	194%	200%	201%	202%	200%	198%
Denmark	171%	197%	180%	179%	174%	175%	176%	171%	166%	175%	182%	181%	194%	203%
Finland	95%	124%	123%	104%	106%	101%	96%	97%	88%	89%	90%	99%	105%	109%
France	93%	96%	95%	95%	95%	98%	95%	100%	107%	115%	118%	129%	135%	143%
Germany	69%	78%	83%	85%	92%	100%	110%	123%	134%	136%	140%	145%	149%	154%
Greece	70%	84%	88%	90%	99%	98%	99%	98%	100%	105%	120%	131%	146%	161%
Ireland	74%	79%	70%	67%	70%	64%	61%	68%	67%	73%	75%	98%	119%	155%
Italy	111%	133%	141%	148%	148%	140%	138%	143%	145%	155%	157%	162%	168%	176%
Luxembourg	33%	10%	14%	23%	37%	44%	43%	47%	60%	92%	112%	126%	132%	154%
Netherlands	84%	87%	94%	99%	104%	115%	124%	147%	165%	176%	180%	194%	209%	240%
Portugal	49%	52%	58%	62%	65%	63%	66%	76%	87%	102%	115%	132%	143%	166%
Spain	47%	65%	69%	72%	77%	82%	85%	97%	98%	100%	102%	113%	128%	152%
Sweden	110%	143%	147%	150%	145%	142%	135%	144%	123%	120%	123%	127%	127%	137%
United Kingdom	53%	65%	64%	68%	78%	76%	72%	87%	85%	91%	89%	95%	104%	122%
Eurozone	85%	95%	98%	100%	105%	108%	110%	120%	127%	132%	136%	144%	151%	161%
EU-15	83%	94%	97%	99%	104%	105%	106%	116%	120%	125%	128%	136%	143%	155%
US	149%	149%	138%	146%	152%	155%	152%	175%	163%	175%	162%	167%	174%	202%
Japan	101%	99%	97%	94%	104%	106%	126%	151%	125%	140%	150%	168%	179%	195%

Sources: Bank for International Settlements & AMECO database.

Figure 3.1 Aggregate size of bond markets, amount outstanding, 1992-2005 (% of GDP)



Sources: Bank for International Settlements & AMECO database.

Comment

Charting total debt outstanding relative to GDP is useful in two respects: it allows a comparison of the pattern of debt issuance with the growth rate of the economy, enabling one to assess whether financial deepening has occurred; and it facilitates cross-country comparisons as to the relative importance of debt capital markets. Figure 3.1 shows that the amount outstanding of debt securities in the US has grown at more or less the same pace as the economy between 1992 and 1998, since the ratio remained roughly constant at 150% of GDP. Since 1998, however, the US debt securities market has deepened, reaching an aggregate size of twice its GDP. This deepening reflects a favourable macroeconomic environment, characterised by low-yields due to record low interest rates and to the excess liquidity in the world financial system, which has pushed down the cost of debt issuance.

On the other hand, the evolution of the amount outstanding of debt securities markets as a percentage of GDP was steadier in Japan and Europe, i.e. over the past decade, debt securities' amount outstanding consistently exceeded the GDP. Japan's stagnant economic growth is consistent with the seeming convergence and market deepening emphasised by this figure.

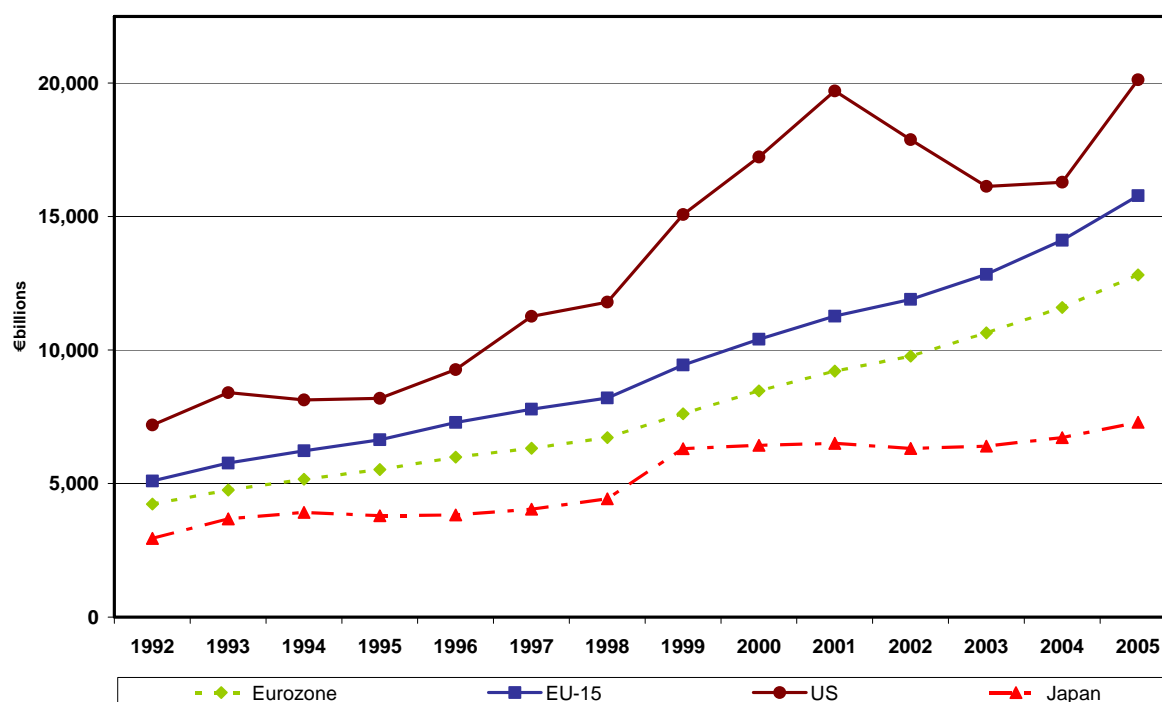
The steady deepening of Europe's debt securities market is especially noteworthy, despite a period of fiscal consolidation in the run-up to EMU. The fact that the ratio of debt securities to GDP is greater for the eurozone than for the EU-15 highlights two diverging models in EU financial intermediation: whereas continental economies exhibit deep bond markets (especially government bond markets) and a heavy reliance on bank intermediation, the Anglo-Saxon economies rely more heavily on equity-based financial intermediation.

Table 3.2 Aggregate size of bond markets, amount outstanding, 1992-2005 (€ billions)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	111.2	129.4	141.8	154.9	159.2	172.7	181.1	212.5	238.0	256.9	273.7	292.3	314.6	355.1
Belgium	322.3	332.8	368.2	401.7	414.8	419.4	413.9	455.8	487.5	516.6	537.4	554.6	576.4	594.8
Czech Republic	2.1	3.4	5.8	8.8	9.5	11.2	19.8	26.5	26.5	31.1	43.6	46.0	51.0	57.7
Denmark	198.2	236.6	233.2	248.7	253.3	262.9	273.5	278.9	287.4	313.1	332.9	342.0	380.7	417.8
Finland	80.3	92.6	104.5	103.7	107.3	109.9	112.0	117.8	115.2	121.1	127.4	142.8	156.6	166.4
France	982.9	1,056.6	1,090.4	1,145.9	1,179.3	1,232.6	1,254.9	1,371.3	1,548.7	1,720.5	1,831.0	2,045.4	2,228.9	2,423.7
Germany	1,105.5	1,341.7	1,506.7	1,647.1	1,761.1	1,913.6	2,139.4	2,468.0	2,772.6	2,868.7	3,000.7	3,145.7	3,295.7	3,458.2
Greece	53.8	66.8	74.4	80.6	97.1	105.0	107.6	115.2	123.4	138.4	170.9	201.9	243.7	289.4
Hungary	10.2	18.0	20.9	20.9	22.7	23.0	24.0	29.0	28.8	33.8	39.2	42.8	50.4	55.5
Iceland	4.7	6.3	6.5	6.8	7.6	8.7	10.5	13.8	17.2	19.9	22.0	29.1	46.0	79.2
Ireland	31.1	34.1	32.5	34.3	40.9	45.7	48.1	61.4	70.0	85.0	98.0	135.9	177.3	248.4
Italy	1,052.2	1,131.0	1,213.4	1,241.6	1,438.6	1,442.5	1,473.8	1,585.2	1,695.1	1,883.2	1,979.7	2,104.1	2,273.0	2,435.4
Liechtenstein	0.3	0.6	0.7	0.8	0.6	0.5	0.5	0.6	0.8	0.8	1.0	1.0	1.2	1.2
Luxembourg	3.4	1.2	1.8	3.2	5.3	6.8	7.3	8.9	12.7	20.2	25.6	30.2	33.9	41.7
Netherlands	226.9	252.1	287.8	326.9	351.7	399.6	455.4	573.5	690.8	786.1	835.2	923.5	1,019.2	1,189.5
Norway	55.2	63.0	62.1	64.2	69.0	78.9	80.3	93.9	106.2	114.6	129.8	126.6	135.8	153.5
Poland	22.2	19.0	21.6	23.6	25.7	29.9	32.2	37.1	44.6	63.2	65.8	67.8	88.5	109.0
Portugal	38.6	40.5	46.7	53.9	60.7	62.8	69.9	87.3	106.5	132.2	155.0	180.8	204.1	241.8
Romania	0.0	0.0	0.0	0.0	0.8	1.4	1.4	1.0	1.2	1.9	2.8	3.2	3.0	3.6
Slovakia	0.0	0.4	1.4	2.0	2.6	3.2	4.1	4.7	5.6	9.3	9.2	10.5	12.1	11.7
Spain	222.8	281.3	298.4	328.9	376.9	412.9	455.5	561.7	614.5	679.0	740.5	883.8	1,074.0	1,372.0
Sweden	223.3	241.6	264.3	284.5	310.1	309.3	299.6	339.1	320.7	294.7	314.8	339.0	354.5	390.4
Switzerland	151.5	170.6	177.5	197.4	181.9	212.1	227.0	248.0	278.6	294.3	313.8	301.7	382.7	414.5
United Kingdom	442.3	532.4	561.9	586.3	731.5	887.1	914.1	1,200.9	1,325.6	1,458.4	1,476.6	1,516.8	1,785.9	2,158.1
Eurozone	4,231	4,760	5,166	5,523	5,993	6,323	6,719	7,619	8,475	9,208	9,775	10,641	11,597	12,816
EU-15	5,095	5,771	6,226	6,642	7,288	7,783	8,206	9,437	10,409	11,274	11,899	12,839	14,119	15,783
US	7,198	8,405	8,131	8,189	9,271	11,265	11,794	15,079	17,236	19,709	17,881	16,136	16,285	20,132
Japan	2,946	3,676	3,924	3,799	3,825	4,042	4,433	6,310	6,434	6,504	6,313	6,403	6,720	7,301

Source: Bank for International Settlements.

Figure 3.2 Aggregate size of bond markets, amount outstanding, 1992-2005 (€ billions)



Source: Bank for International Settlements.

Comment

Table 3.2 and Figure 3.2 on the aggregate size of bond markets sum up the par value of all outstanding debt securities issued (for more details on the issuing entities, see the technical notes in section 3.6). They are meant to give a broad picture of the relative size of the world's largest debt capital markets. Expansion is the clear trend in Europe, where deepening has been very steady and more pronounced in the run up to, and following the creation of monetary union. The trajectory of the combined total of US debt capital markets points in the same direction, albeit its upward growth path has been affected by a recent slowdown in growth, rising interest rates and corporate scandals. The Japanese debt market has undergone a timid expansion that was largely induced by state intervention aimed at recapitalising its bank system, and financed mainly through government debt issuance (see Table 3.12).

All three regions have seen impressive growth rates in the size of their debt capital markets over the 1992-2005 period. Japan's debt securities market grew by 154%, the United States by 172% and the EU-15 by 206%. In absolute terms, the total size of the EU-15 debt securities market represented 78% of the US debt securities market, compared with 71% in 1992, signalling a process of convergence.

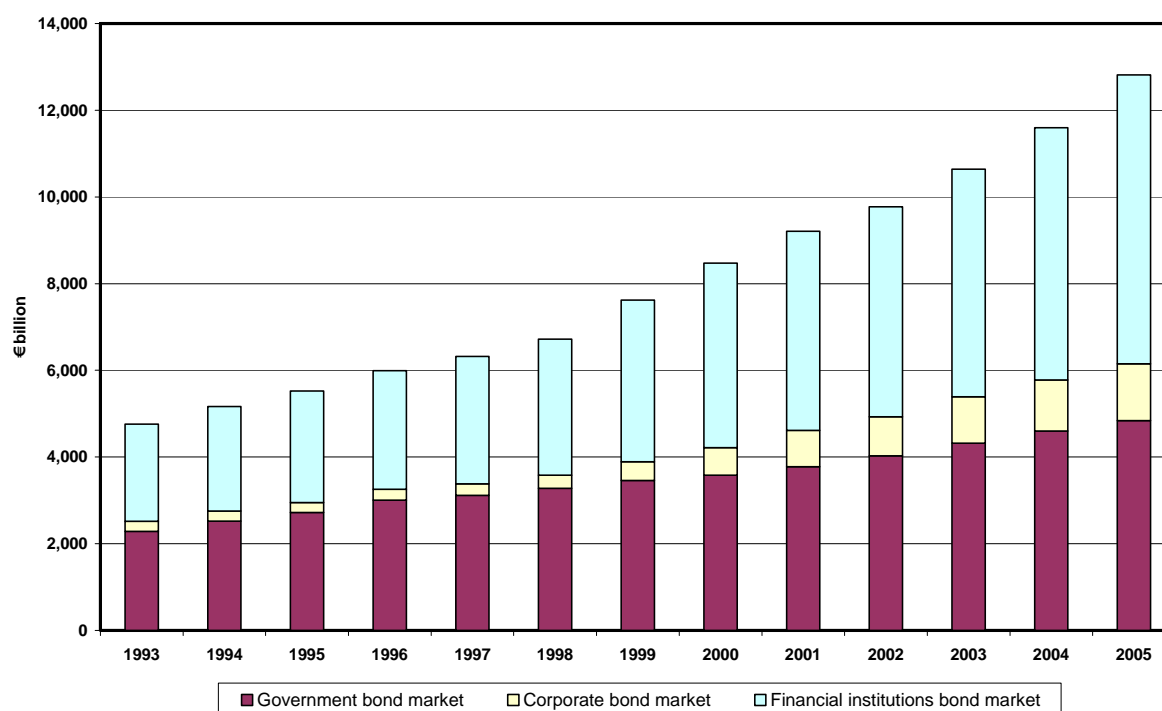
3.1.2 Decomposition of bond markets by market and issuer type

Table 3.3 The eurozone bond market, amount outstanding, 1993-2005 (€ billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond market	532.3	627.5	714.3	867.2	1,061.8	1,247.7	1,833.7	2,455.9	3,085.9	3,456.3	3,988.7	4,579.5	5,427.2
Government bond market	119.6	143.1	152.8	163.8	175.6	180.9	214.1	245.6	310.0	387.1	480.0	568.5	674.0
Corporate bond market	78.1	81.8	81.9	87.0	96.7	113.6	168.4	273.4	371.6	373.3	413.9	432.3	445.8
Financial institutions bond market	334.7	402.6	479.5	616.4	789.5	953.2	1,451.1	1,936.9	2,404.3	2,695.8	3,094.8	3,578.6	4,307.4
Domestic bond market	4,227.5	4,539.0	4,808.4	5,125.7	5,261.5	5,471.1	5,785.0	6,019.0	6,121.9	6,318.7	6,652.8	7,017.8	7,389.0
Government bond market	2,164.3	2,379.8	2,571.2	2,841.2	2,939.6	3,097.4	3,242.3	3,336.9	3,466.9	3,640.0	3,842.8	4,031.8	4,168.6
Corporate bond market	152.9	147.9	145.1	164.8	167.0	188.4	267.1	359.2	464.3	527.7	652.1	744.8	865.6
Financial institutions bond market	1,910.3	2,011.2	2,092.1	2,119.7	2,154.9	2,185.3	2,275.6	2,322.9	2,190.6	2,150.9	2,157.9	2,241.2	2,354.8
Eurozone bond market	4,759.8	5,166.4	5,522.7	5,992.9	6,323.3	6,718.8	7,618.7	8,474.9	9,207.8	9,775.0	10,641.5	11,597.2	12,616.2
Government bond market	2,283.8	2,522.9	2,724.0	3,005.1	3,115.2	3,278.3	3,456.4	3,582.5	3,776.9	4,027.2	4,322.8	4,600.3	4,842.7
Corporate bond market	231.0	229.7	227.1	251.8	263.7	302.0	435.5	632.6	835.9	901.0	1,066.0	1,177.2	1,311.3
Financial institutions bond market	2,245.0	2,413.8	2,571.6	2,736.1	2,944.5	3,138.5	3,726.8	4,259.9	4,594.9	4,846.8	5,252.7	5,819.8	6,662.2

Source: Bank for International Settlements.

Figure 3.3 Aggregate eurozone bond market, amount outstanding, 1993-2005 (€ billions)



Source: Bank for International Settlements.

Comment

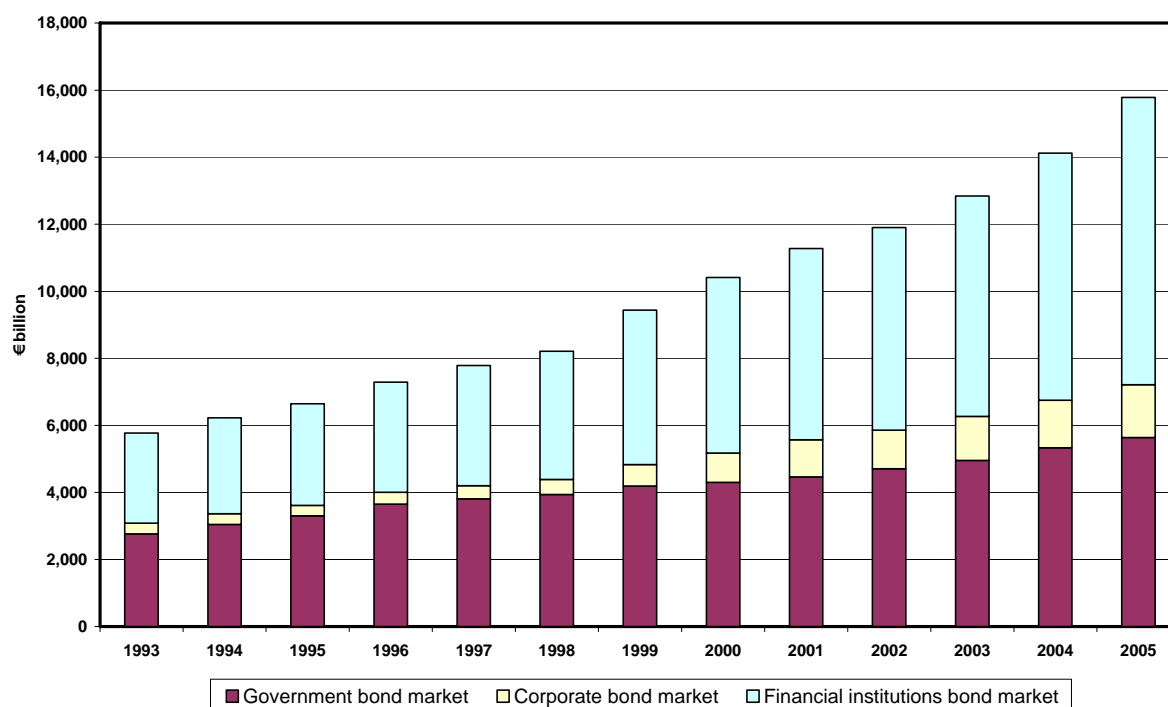
Over the 1993-2005 period, the depth of the bond market in the Eurozone has increased by 270%. This market deepening results from the combination of increasing financial institution and corporate debt issuance, (See Figure 3.9), as well as the harmonisation of government bond product conventions (issuing procedures and practices, the coordination of issuing dates, the setup of pre-announced auction calendars increasing transparency for cross-border bond investors, etc.) after the start of monetary union. Also, homogenisation at the level of market infrastructure through the adoption of e.g. the TARGET settlement system has encouraged cross-border transactions by facilitating inter-bank transfers which underpin secondary market activity. In a nutshell, the establishment of the Eurosystem has delivered a tangible, readily functioning structure that has made economies of scale possible in both the primary and secondary bond markets resulting from the integration of 12 national bond markets. The outcome of these policy measures aimed at integration has been an increase in the average issue size, increased competition between national treasuries and innovation in credit market products. A vibrant growth has also been visible in the EU's nascent but rapidly developing corporate bond market.

Table 3.4 The EU-15 bond market, amount outstanding, 1993-2005 (€ billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond market	782.4	888.7	972.7	1,166.6	1,429.4	1,639.7	2,404.9	3,177.4	3,927.4	4,350.6	5,004.4	5,768.2	6,944.3
Government bond market	181.0	212.5	222.9	236.8	246.1	244.4	275.7	301.2	352.8	421.8	512.4	601.4	709.4
Corporate bond market	122.3	125.8	127.7	140.1	169.1	202.2	304.3	453.1	568.4	565.2	599.4	618.4	648.2
Financial institutions bond market	479.1	550.4	622.0	789.6	1,014.3	1,193.1	1,824.9	2,423.1	3,006.2	3,363.7	3,892.6	4,548.4	5,586.6
Domestic bond market	4,988.2	5,337.1	5,669.6	6,121.4	6,353.2	6,566.3	7,032.8	7,231.2	7,346.6	7,548.7	7,834.8	8,350.3	8,838.1
Government bond market	2,585.1	2,837.1	3,076.2	3,414.5	3,560.3	3,695.3	3,918.1	3,997.2	4,114.1	4,284.1	4,442.5	4,728.7	4,929.2
Corporate bond market	194.0	187.8	188.3	213.5	222.6	245.5	331.9	424.1	535.9	589.8	711.2	803.3	922.6
Financial institutions bond market	2,209.2	2,312.2	2,405.0	2,493.4	2,570.3	2,625.5	2,782.9	2,809.9	2,696.6	2,674.8	2,681.1	2,818.4	2,986.4
EU-15 Bond market	5,770.6	6,225.8	6,642.2	7,287.9	7,782.7	8,206.0	9,437.8	10,408.6	11,274.0	11,899.3	12,839.2	14,118.5	15,782.4
Government bond market	2,766.1	3,049.7	3,299.2	3,651.3	3,806.3	3,939.7	4,193.8	4,298.4	4,466.9	4,705.8	4,954.9	5,330.0	5,638.6
Corporate bond market	316.3	313.6	316.0	353.6	391.7	447.7	636.2	877.2	1,104.3	1,155.0	1,310.5	1,421.7	1,570.8
Financial institutions bond market	2,688.3	2,862.6	3,027.1	3,283.0	3,584.6	3,818.6	4,607.8	5,233.0	5,702.8	6,038.5	6,573.7	7,366.8	8,573.0

Source: Bank for International Settlements.

Figure 3.4 The EU-15 bond market, amount outstanding, 1993-2005 (€ billions)



Source: Bank for International Settlements.

Comment

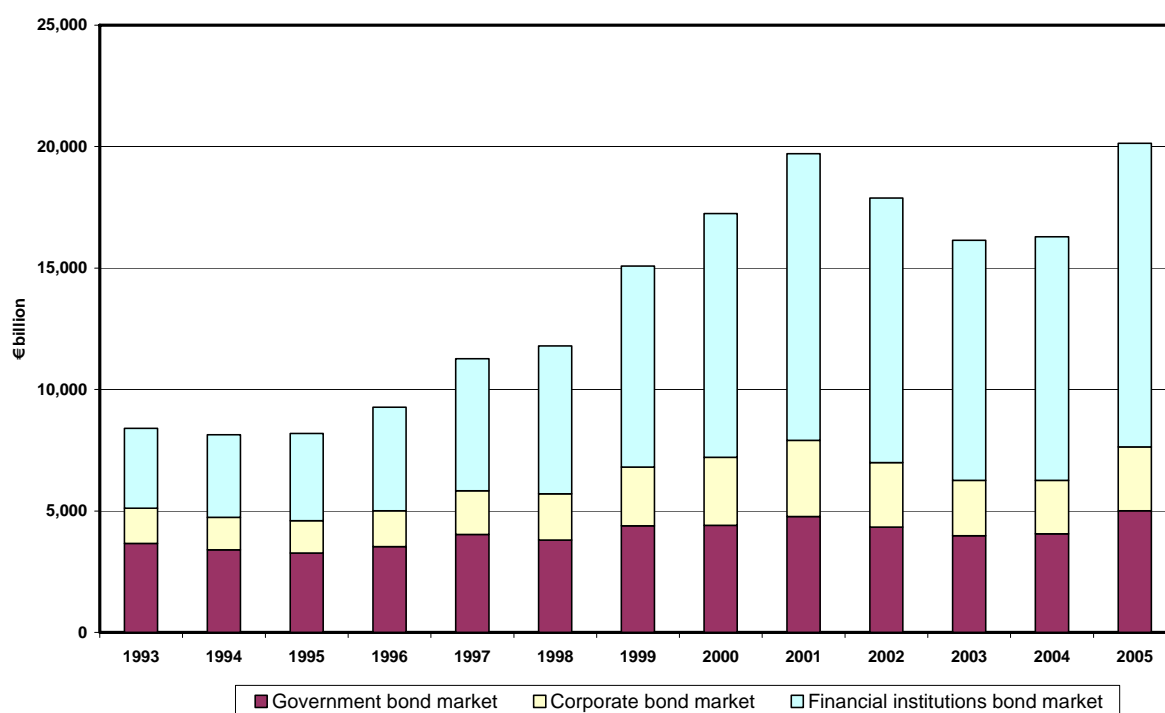
The amount outstanding of debt securities on the EU-15 market is 23% larger than its eurozone counterpart. Furthermore the eurozone amount outstanding of debt securities represents in both 1993 as well as in 2005 about 80% of the EU-15 amount outstanding. Thus, both regions have undergone very similar overall evolutions.

Table 3.5 The US bond market, amount outstanding, 1993-2005 (€ billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond market	154.6	164.1	198.7	305.6	490.7	710.8	1,277.4	1,860.0	2,618.7	2,577.4	2,422.1	2,458.3	2,981.1
Government bond market	0.2	0.2	0.2	0.9	3.7	3.4	3.8	3.9	3.7	3.0	2.4	2.3	2.7
Corporate bond market	40.2	39.5	40.1	50.0	79.1	95.8	175.5	239.4	354.4	333.8	305.8	295.5	347.7
Financial institutions bond market	114.2	124.5	158.5	254.8	407.9	611.5	1,098.1	1,616.7	2,260.6	2,240.6	2,113.9	2,160.5	2,630.7
Domestic bond market	8,250.7	7,967.0	7,990.5	8,964.8	10,774.3	11,082.8	13,802.0	15,376.2	17,090.5	15,303.3	13,713.8	13,827.0	17,151.2
Government bond market	3,660.0	3,394.8	3,267.5	3,530.3	4,031.8	3,797.3	4,380.4	4,408.3	4,765.6	4,329.7	3,975.4	4,059.1	5,003.1
Corporate bond market	1,409.4	1,300.9	1,292.5	1,424.3	1,712.6	1,812.0	2,246.7	2,550.9	2,786.9	2,323.3	1,980.0	1,901.3	2,287.6
Financial institutions bond market	3,181.3	3,271.2	3,430.5	4,010.2	5,029.8	5,473.6	7,175.0	8,417.1	9,538.1	8,650.3	7,758.4	7,866.5	9,860.5
US Bond market	8,405.4	8,131.1	8,189.3	9,270.4	11,265.0	11,793.6	15,079.4	17,236.2	19,709.3	17,880.7	16,135.9	16,285.2	20,132.3
Government bond market	3,660.2	3,395.0	3,267.7	3,531.2	4,035.6	3,800.7	4,384.1	4,412.1	4,769.3	4,332.7	3,977.8	4,061.4	5,005.8
Corporate bond market	1,449.6	1,340.4	1,332.6	1,474.2	1,791.7	1,907.8	2,422.2	2,790.3	3,141.3	2,657.1	2,285.8	2,196.8	2,635.3
Financial institutions bond market	3,295.5	3,395.7	3,589.0	4,265.0	5,437.7	6,085.1	8,273.1	10,033.7	11,798.7	10,890.9	9,872.3	10,027.0	12,491.2

Source: Bank for International Settlements.

Figure 3.5 The US bond market, amount outstanding, 1993-2005 (€ billions)



Source: Bank for International Settlements

Comment

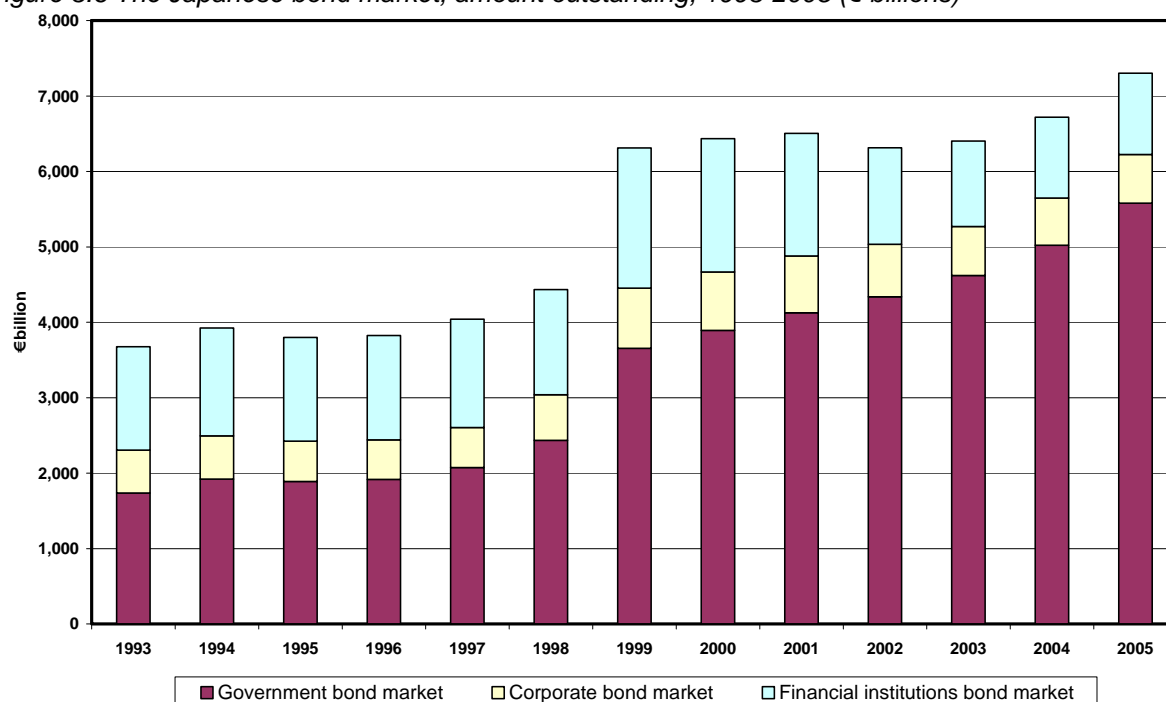
Overall, the depth of the US bond market has more than doubled over the sample period. The market deepening has mainly been driven by bond issuance by financial institutions. In fact, the government bond segment increased slightly with continued fiscal deficits, and the corporate bond expanded, but at a more measured pace.

Table 3.6 The Japanese bond market, amount outstanding, 1993-2005 (€ billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond market	300.4	282.7	261.7	269.1	284.6	272.0	333.4	306.1	287.1	236.1	213.1	216.9	232.2
Government bond market	4.1	4.1	4.3	4.9	5.6	5.1	5.9	5.7	5.4	4.2	3.1	2.4	2.7
Corporate bond market	205.3	181.3	152.0	132.6	113.5	87.3	88.5	68.1	56.6	47.0	41.1	46.5	49.7
Financial institutions bond market	91.0	97.3	105.5	131.6	165.5	179.6	239.0	232.2	225.0	184.9	168.9	168.0	179.8
Domestic bond market	3,375.7	3,641.7	3,537.0	3,556.0	3,757.0	4,161.1	5,976.7	6,127.8	6,216.8	6,076.6	6,190.1	6,503.1	7,068.7
Government bond market	1,731.4	1,918.3	1,886.6	1,910.3	2,068.7	2,427.9	3,647.9	3,888.3	4,119.6	4,332.7	4,616.9	5,019.2	5,577.4
Corporate bond market	365.9	391.0	380.8	393.7	415.6	519.5	711.1	704.8	696.5	651.3	609.4	578.0	595.8
Financial institutions bond market	1,278.4	1,332.4	1,269.6	1,252.0	1,272.7	1,213.8	1,617.7	1,534.7	1,400.8	1,092.6	963.7	905.9	895.5
Japan Bond market	3,676.1	3,924.3	3,798.8	3,825.1	4,041.6	4,433.1	6,310.1	6,433.9	6,503.9	6,312.7	6,403.2	6,720.1	7,300.9
Government bond market	1,735.5	1,922.4	1,891.0	1,915.3	2,074.3	2,432.9	3,653.8	3,894.0	4,125.0	4,336.9	4,620.0	5,021.7	5,580.1
Corporate bond market	571.1	572.3	532.7	526.3	529.1	606.7	799.6	772.9	753.1	698.3	650.5	624.5	645.6
Financial institutions bond market	1,369.4	1,429.7	1,375.1	1,383.6	1,438.2	1,393.4	1,856.7	1,766.9	1,625.8	1,277.5	1,132.6	1,073.9	1,075.2

Source: Bank for International Settlements

Figure 3.6 The Japanese bond market, amount outstanding, 1993-2005 (€ billions)



Source: Bank for International Settlements.

Comment

The deepening of the Japanese bond market was led by its government bond segment, which tripled over the 1993-2005 period. The recapitalisation of Japanese banks is the main driver behind this process. After a surge in 1999, Japan's financial institutional debt began to decline owing to the long financial crisis. The Japanese corporate bond market segment underwent a similar evolution and has returned in 2004-2005 to levels close to those that prevailed in the 1990s, which is nonetheless small relative to the US or the EU.

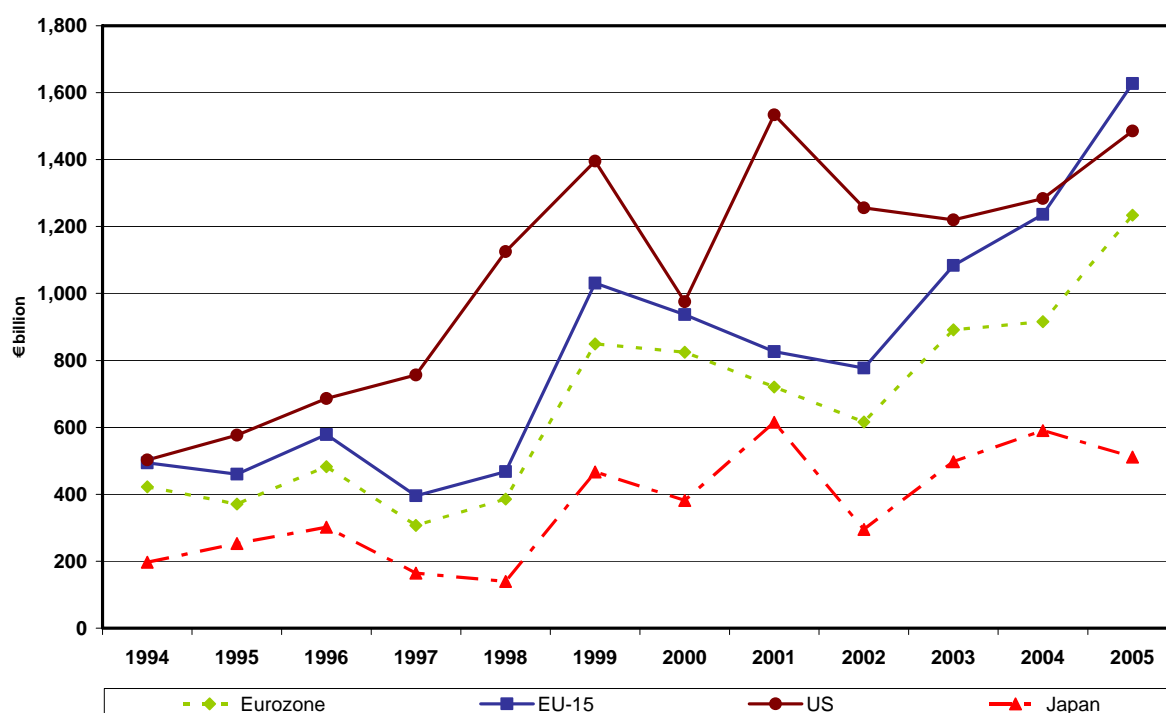
3.1.3 Aggregate bond issuance

Table 3.7 Aggregate bond issuance in the EU, the US and Japan, 1994-2003 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	12.9	13.4	6.1	12.2	8.1	29.2	24.3	18.4	18.2	22.0	21.5	41.4
Belgium	37.0	33.9	14.0	2.8	-5.3	40.6	31.6	28.7	22.3	20.0	21.1	18.0
Czech Republic	2.5	3.3	0.4	2.7	7.2	7.3	-0.6	1.6	10.3	2.1	1.8	4.6
Denmark	-5.1	10.7	9.9	11.6	7.0	3.5	9.3	23.9	20.2	14.3	34.1	36.6
Finland	13.0	0.8	3.7	0.8	2.7	2.5	-2.1	5.9	7.3	15.3	12.8	9.3
France	38.3	55.2	34.6	49.6	20.9	111.7	169.0	172.8	111.7	204.0	175.6	198.4
Germany	167.5	141.2	118.8	149.2	219.4	311.7	295.5	88.4	162.1	175.5	151.7	148.2
Greece	8.0	7.4	17.4	7.3	2.4	5.3	8.7	16.0	29.1	27.6	38.2	49.8
Hungary	4.5	3.3	3.7	1.2	2.4	3.7	0.6	3.5	4.4	6.3	4.8	6.6
Iceland	0.4	0.4	0.8	0.7	1.8	2.2	3.9	3.7	2.0	8.0	14.2	30.5
Ireland	-1.2	2.2	6.3	3.8	2.7	11.3	7.4	14.3	15.1	37.4	39.6	70.8
Italy	85.2	36.8	198.1	-0.9	31.5	104.6	108.0	189.2	92.4	121.0	157.0	176.0
Liechtenstein	0.1	0.2	-0.1	-0.2	-0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0
Luxembourg	0.6	1.4	2.2	1.2	0.5	0.7	3.7	7.6	5.6	5.3	3.9	7.2
Netherlands	35.7	39.0	26.7	47.2	54.3	113.9	111.4	91.3	62.2	98.8	95.1	164.2
Norway	-0.7	2.6	3.4	9.3	7.1	4.8	11.7	5.0	12.5	11.4	8.3	12.6
Poland	6.6	3.7	4.1	5.4	3.9	4.7	4.7	14.5	9.5	10.1	10.6	16.8
Portugal	6.1	7.5	7.2	2.0	6.9	17.5	19.0	25.8	21.9	24.9	21.9	39.0
Romania	0.0	0.0	0.9	0.6	0.0	-0.7	0.2	0.8	0.7	0.5	-0.1	0.6
Slovakia	0.9	0.7	0.6	0.5	1.3	0.4	1.0	3.7	-0.1	1.1	1.0	-0.7
Spain	19.3	32.3	47.8	32.1	41.8	100.5	48.1	62.0	67.9	139.6	177.4	311.6
Sweden	23.8	14.9	22.6	-2.9	8.3	7.0	-13.3	-14.8	22.4	23.7	14.8	44.0
Switzerland	4.1	9.8	1.9	20.3	15.6	14.2	17.4	7.8	25.6	13.2	76.3	23.6
United Kingdom	53.1	63.8	63.2	79.5	66.9	171.3	116.5	97.1	118.9	154.3	271.3	312.5
Eurozone	422	371	483	307	386	849	825	720	616	891	916	1,234
EU-15	494	460	578	395	468	1,031	937	827	777	1,084	1,236	1,627
US	503	577	686	757	1,125	1,396	976	1,534	1,256	1,220	1,283	1,486
Japan	197	253	301	165	140	467	382	615	295	498	590	511
World	1,656	1,554	1,917	1,744	2,126	3,335	2,737	3,498	2,724	3,260	3,644	4,254

Source: Bank for International Settlements.

Figure 3.7 Aggregate bond issuance in the EU, the US and Japan, 1994-2003 (€ billions)



Source: Bank for International Settlements.

Comment

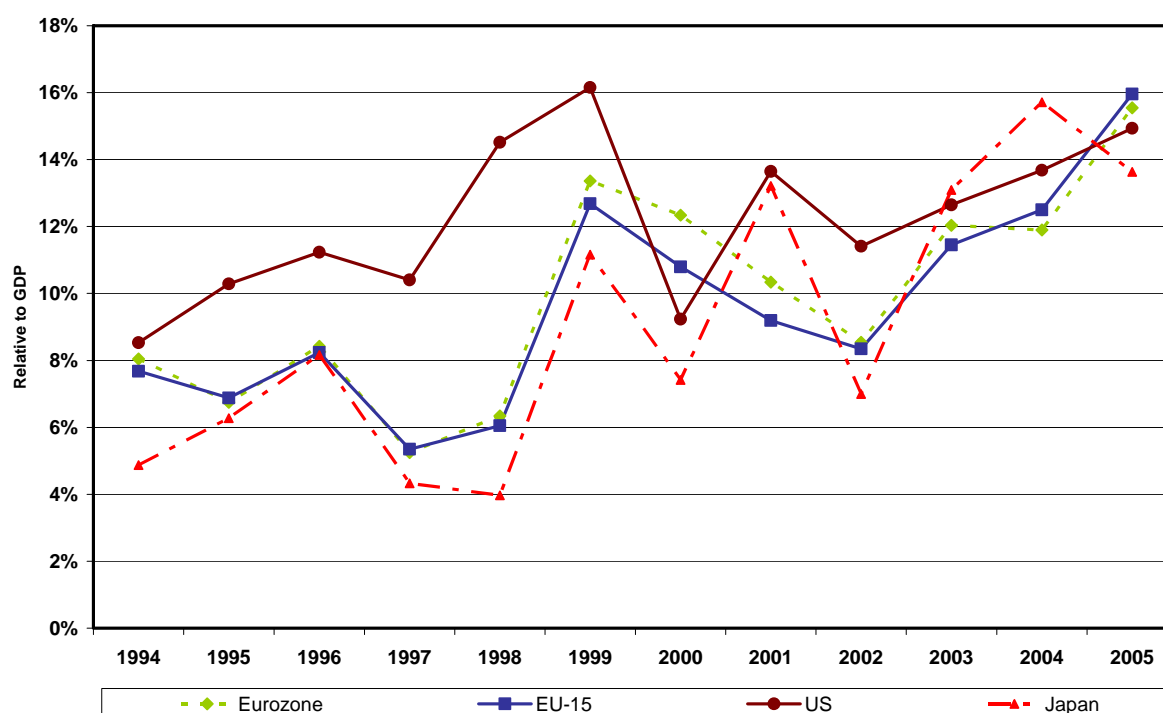
The total issuance of debt securities on global bond markets has been most pronounced in the United States over the sample period. After a period of relatively constant issuance, aggregate bond issuance in Europe surged in 1998, and has ignited an expansion similar to that experienced in the US bond market ever since. In 2005, for the first time in recent memory, the EU-15 taken as a whole surpassed the United States. As in the US, the dynamism behind the EU bond market is largely attributable to financial institutions, which account for the lion's share of issuance and for most of the value of debt securities outstanding over the past decade. This fact reflects banks' special role in debt markets, but it also reflects the wave of financial liberalisation and regulatory developments in the banking sector. Most crucially, however, the disappearance of foreign exchange risk in Europe and the much larger domestic market that materialised following the introduction of a single currency delivered a fertile soil for primary market activity. Furthermore the low-yield environment fuelled bond issuance from 2002 onwards, as repayment conditions are still very favourable due to low interest rates.

Table 3.8 Aggregate bond issuance in the EU, the US and Japan, 1994-2005 (% of GDP)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	8%	7%	3%	7%	4%	15%	12%	9%	8%	10%	9%	17%
Belgium	18%	16%	6%	1%	-2%	17%	13%	11%	8%	7%	7%	6%
Denmark	-4%	8%	7%	8%	5%	2%	5%	13%	11%	8%	17%	18%
Finland	15%	1%	4%	1%	2%	2%	-2%	4%	5%	11%	9%	6%
France	3%	5%	3%	4%	2%	8%	12%	12%	7%	13%	11%	12%
Germany	9%	7%	6%	8%	11%	15%	14%	4%	8%	8%	7%	7%
Greece	10%	8%	18%	7%	2%	4%	7%	12%	20%	18%	23%	28%
Ireland	-3%	4%	11%	5%	3%	13%	7%	12%	12%	27%	27%	44%
Italy	10%	4%	20%	0%	3%	9%	9%	16%	7%	9%	12%	13%
Luxembourg	4%	10%	15%	8%	3%	4%	17%	35%	25%	22%	15%	26%
Netherlands	12%	12%	8%	14%	15%	29%	27%	20%	13%	21%	19%	33%
Portugal	8%	9%	8%	2%	6%	15%	16%	20%	16%	18%	15%	27%
Spain	4%	7%	10%	6%	8%	17%	8%	9%	9%	18%	21%	35%
Sweden	13%	8%	11%	-1%	4%	3%	-5%	-6%	9%	9%	5%	15%
United Kingdom	6%	7%	7%	7%	5%	12%	7%	6%	7%	10%	16%	18%
Eurozone	8%	7%	8%	5%	6%	13%	12%	10%	9%	12%	12%	16%
EU-15	8%	7%	8%	5%	6%	13%	11%	9%	8%	11%	12%	16%
US	9%	10%	11%	10%	15%	16%	9%	14%	11%	13%	14%	15%
Japan	5%	6%	8%	4%	4%	11%	7%	13%	7%	13%	16%	14%

Sources: Bank for International Settlements and AMECO database.

Figure 3.8 Aggregate bond issuance in the EU, the US and Japan, 1994-2003 (€ billions)



Sources: Bank for International Settlements and AMECO database.

Comment

Figure 3.8 displays an interesting pattern, which is the surprising convergence in aggregate debt issuance relative to GDP in the three regions. The trend of increased issuance of debt securities relative to GDP is a stylised fact across all the countries considered over the past decade, suggesting the universal deepening of debt markets. This convergence can most likely be attributable to financial globalisation, in the form of increasing and accelerating financial exchanges across countries, financial liberalisation within countries enabling greater global competition for capital, and the generalised decline in inflation in developed economies over the past 20 years, which favours financial investment and exchanges.

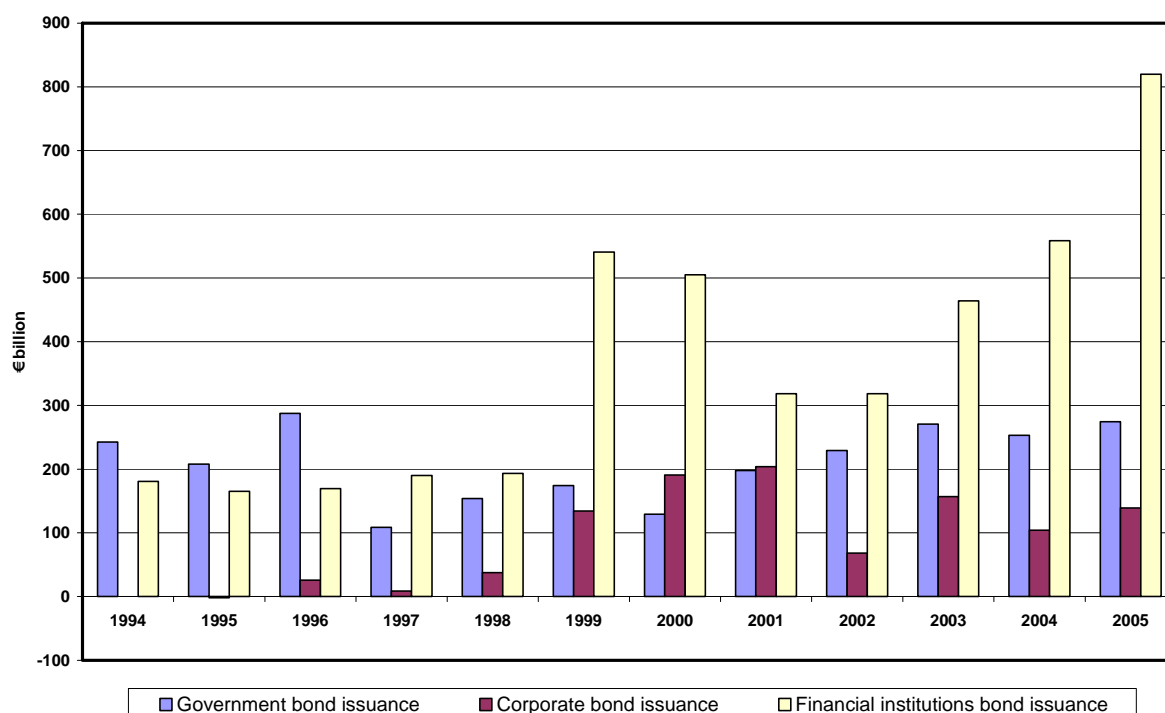
3.1.4 Decomposition of bond issuance by market (international or domestic bond market) and issuer type

Table 3.9 Bond issuance on the eurozone bond market, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond issued	106.1	101.6	160.3	166.2	188.7	512.1	592.0	615.6	445.7	600.6	586.2	804.6
Government bond issuance	25.9	15.4	14.1	6.1	4.9	16.7	30.1	65.2	78.8	94.7	85.2	106.3
Corporate bond issuance	5.2	0.8	5.7	6.7	17.6	50.5	101.0	97.4	10.7	46.6	19.5	8.8
Financial institutions bond issuance	75.0	85.4	140.5	153.4	166.3	445.0	460.9	453.0	356.3	459.3	481.5	689.5
Domestic bond issued	317.0	269.7	322.3	141.3	196.4	337.0	233.4	104.3	169.4	290.8	329.7	428.6
Government bond issuance	216.6	192.6	273.3	102.5	149.0	157.5	99.3	132.4	150.2	175.9	167.9	168.1
Corporate bond issuance	-5.0	-2.5	20.1	2.2	20.2	83.7	90.0	106.5	57.3	110.3	84.7	130.1
Financial institutions bond issuance	105.4	79.7	28.8	36.6	27.2	95.8	44.2	-134.7	-38.0	4.6	77.1	130.4
Eurozone Bond issued	423.1	371.3	482.6	307.5	385.1	849.1	825.5	719.8	615.1	891.4	915.9	1,233.2
Government bond issuance	242.4	208.0	287.5	108.6	153.8	174.2	129.4	197.7	229.0	270.6	253.1	274.4
Corporate bond issuance	0.2	-1.7	25.9	8.9	37.8	134.2	191.0	203.9	68.0	156.9	104.3	138.9
Financial institutions bond issuance	180.5	165.0	169.3	190.0	193.4	540.7	505.1	318.3	318.2	463.9	558.5	819.9

Source: Bank for International Settlements.

Figure 3.9 Bond issuance on the eurozone bond market, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

Figure 3.9 delivers a clear picture of the effect of EMU on bond issuance by issuer type. In the government bond market, issuance has been the least volatile, reflecting a stable increase in issuance over time since 1999. Nevertheless, one can clearly see that in the run-up to the euro's introduction, government bond issuance was significantly reduced, reflecting the period of fiscal consolidation that was mandated by the Maastricht criteria.¹ Following monetary union, this trend has partially been reversed, as governments have had difficulty respecting the 3% budget deficit rule enshrined in the Stability and Growth Pact.²

The issuance of debt by financial institutions in the EU has been dramatically affected by the euro, growing by a factor of 2.5 between 1998 and 1999. Dynamism in issuance has also been seen in the EU corporate bond segment, which was virtually non-existent prior to 1996 and significantly underdeveloped traditionally, when compared to the US (see Figure 3.19). Through the integration of national financial markets and the availability of a wider investor base, the latter itself made possible by the disappearance of the exchange rate risk after the euro, bond market financing became more attractive for EU corporates. Corporate debt issuance even outpaced government bond issuance in 2000 and 2001.

¹ The Maastricht criteria are the convergence criteria defined by the European Central Bank as prerequisites for accession to the eurozone. Some specific criteria (inflation rate, government finance, exchange rate and long-term interest rates) need to be met before EU members may enter the eurozone.

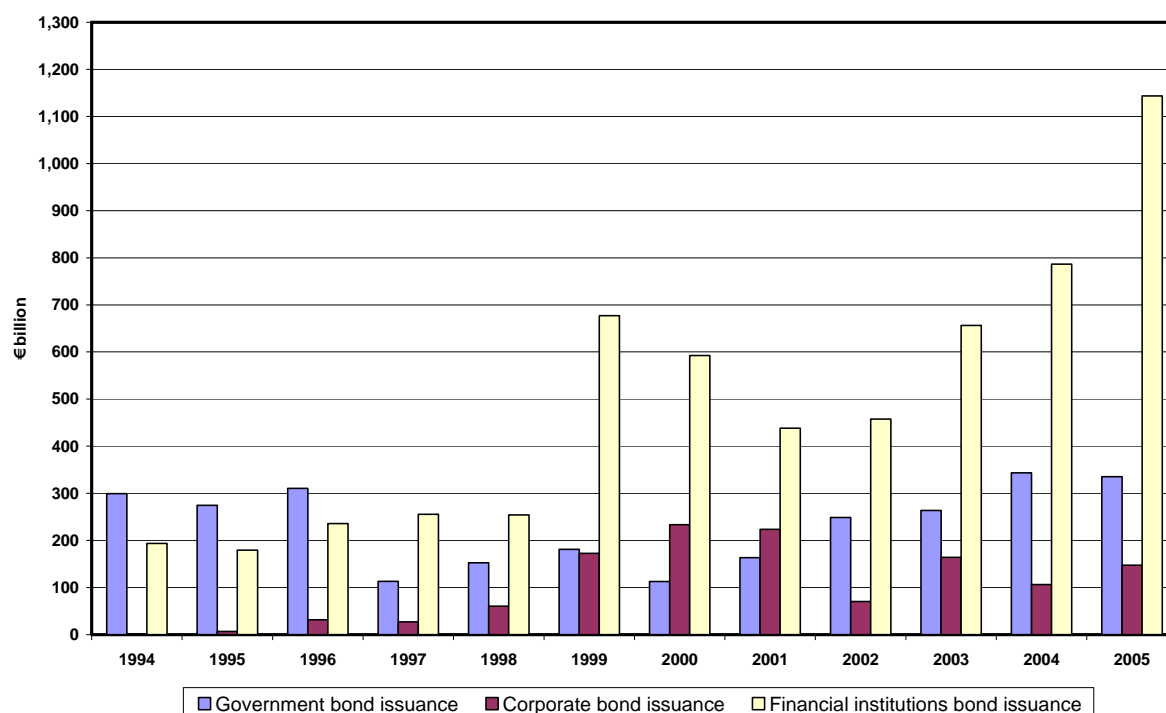
² The Stability and Growth Pact (SGP) is a political agreement laying out the rules for the budgetary discipline of the EU member states. Its aim is to ensure the fiscal prudence that underpins the success, and is critical for the survival of EMU.

Table 3.10 Bond issuance on the EU-15 bond market, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond issued	129.3	113.2	187.4	210.4	224.6	643.2	730.5	718.0	558.1	782.7	769.5	1,086.1
Government bond issuance	36.6	19.5	16.9	0.0	-1.1	8.2	22.9	51.6	74.0	95.1	86.3	107.6
Corporate bond issuance	7.2	5.2	9.3	20.6	36.8	86.3	142.1	109.6	20.2	54.6	22.4	18.4
Financial institutions bond issuance	85.5	88.6	161.2	189.7	188.9	548.8	565.5	556.8	463.9	633.0	660.8	960.1
International bond issued	365.2	347.7	390.9	185.5	243.0	387.9	207.6	107.2	218.2	301.3	466.7	540.3
Government bond issuance	262.5	255.0	293.9	113.0	153.7	173.1	89.6	111.9	174.8	168.4	257.2	227.7
Corporate bond issuance	-5.4	1.8	22.3	6.7	23.8	86.6	91.0	113.8	49.8	109.3	83.8	129.3
Financial institutions bond issuance	108.1	90.9	74.8	65.7	65.5	128.2	27.0	-118.5	-6.4	23.6	125.7	183.3
EU-15 Bond market issued	494.5	460.9	578.3	395.8	467.5	1,031.2	938.1	825.3	776.3	1,084.1	1,236.3	1,626.4
Government bond issuance	299.1	274.5	310.8	113.0	152.6	181.3	112.5	163.5	248.8	263.5	343.5	335.2
Corporate bond issuance	1.8	6.9	31.5	27.3	60.6	172.9	233.1	223.4	70.0	164.0	106.2	147.7
Financial institutions bond issuance	193.7	179.5	236.0	255.5	254.4	677.0	592.5	438.3	457.5	656.6	786.5	1,143.5

Source: Bank for International Settlements.

Figure 3.10 Bond issuance on the EU-15 bond market, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

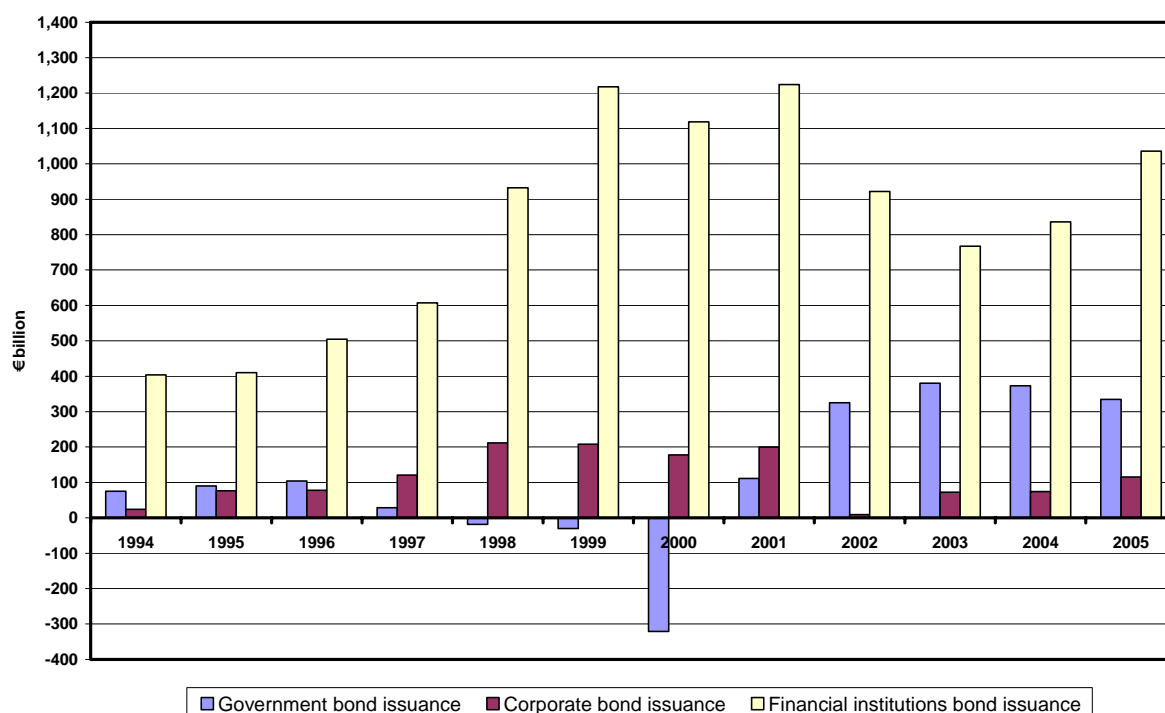
The remarks entered for the previous figure are equally valid for this figure. It should be further noted that when the EU-15 perspective is adopted, the corporate bond financing channel is even more pronounced, owing to the more regular recourse to market-based financing that prevails in the UK. Likewise, the increase in financial institutions' debt financing when adding non-euro countries reflects the importance in EU capital markets of banks based in the City of London.

Table 3.11 Bond issuance on the US bond market, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond issued	19.3	42.9	102.4	155.0	238.9	465.2	500.2	678.2	314.7	212.6	172.5	238.2
Government bond issuance	0.0	0.0	0.8	2.7	-0.1	-0.2	-0.3	-0.2	-0.3	-0.1	0.0	0.0
Corporate bond issuance	1.5	1.8	9.3	24.3	20.0	65.5	52.6	105.6	27.9	21.2	8.9	14.5
Financial institutions bond issuance	17.9	41.1	92.3	128.1	219.0	399.9	447.9	572.8	287.0	191.4	163.6	223.7
Domestic bond issued	483.5	533.9	583.6	601.5	886.2	930.3	475.1	856.1	940.9	1,007.0	1,110.9	1,247.1
Government bond issuance	75.0	90.2	103.0	26.0	-18.3	-29.9	-320.9	111.4	325.0	380.3	373.0	334.3
Corporate bond issuance	22.7	74.9	68.5	96.4	191.1	142.2	125.3	93.7	-18.9	50.9	65.3	100.6
Financial institutions bond issuance	385.8	368.9	412.1	479.2	713.4	817.9	670.7	651.0	634.8	575.8	672.6	812.2
US Bond market issued	502.8	576.8	686.0	756.6	1,125.1	1,395.5	975.3	1,534.3	1,255.6	1,219.6	1,283.5	1,485.3
Government bond issuance	75.0	90.2	103.8	28.7	-18.4	-30.1	-321.2	111.2	324.7	380.2	373.0	334.3
Corporate bond issuance	24.1	76.7	77.7	120.6	211.1	207.7	177.9	199.4	9.1	72.1	74.2	115.1
Financial institutions bond issuance	403.6	410.0	504.5	607.2	932.4	1,217.8	1,118.6	1,223.8	921.8	767.2	836.3	1,035.9

Source: Bank for International Settlements.

Figure 3.11 Bond issuance on the US bond market, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

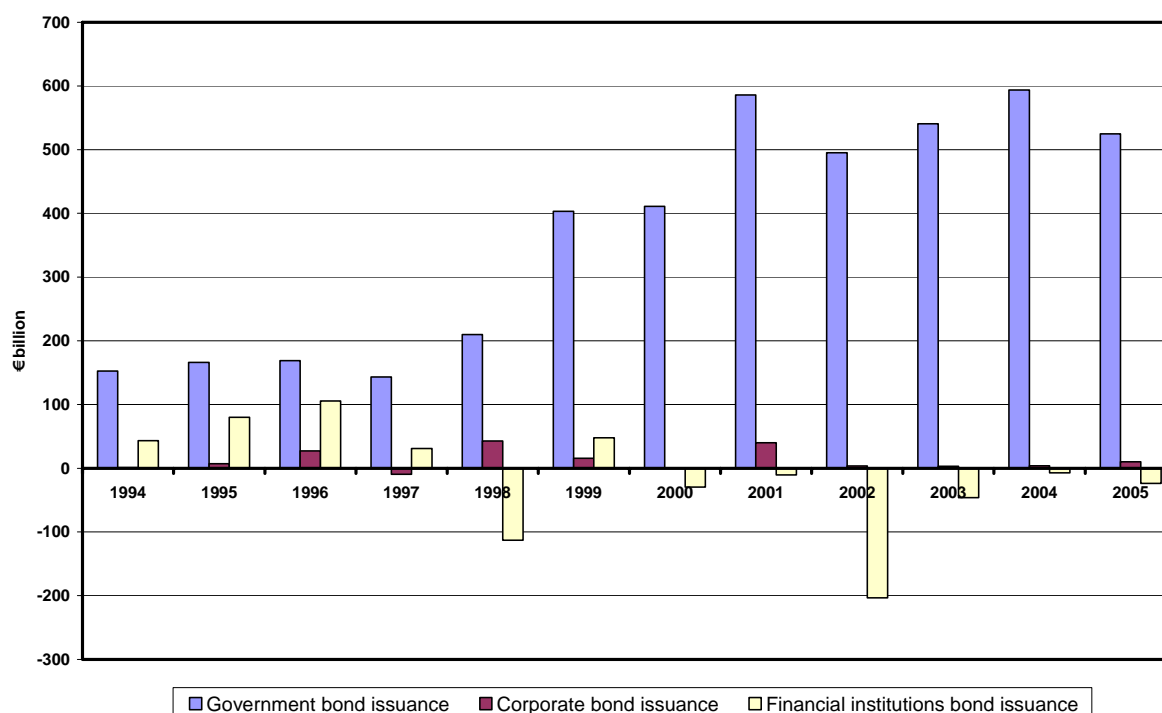
Over the past decade, bond issuance in the United States was dominated by financial institutions. Their role has gained in significance, considering that in 1994, two-thirds of overall bond issuance was by financial institutions, whereas by 2005 that share had grown closer to three-quarters. Furthermore, Figure 3.11 emphasises the strong linkage between government debt issuance and the US business cycle, and the counter-cyclical pattern that prevailed over the last decade. Finally, corporate bond issuance rose in tandem with the stock market euphoria over the 1997-2001 period, but issuance bottomed out in 2002 and is now recovering slowly but surely.

Table 3.12 Bond issuance on the Japanese bond market, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
International bond issued	-6.3	-4.0	15.0	0.5	-14.1	1.8	-30.2	-13.2	-21.6	-0.9	12.4	5.4
Government bond issuance	0.2	0.5	0.6	0.1	-0.3	0.0	-0.4	-0.3	-0.6	-0.5	-0.6	0.0
Corporate bond issuance	-18.0	-20.8	-14.3	-27.3	-25.4	-15.4	-22.0	-11.2	-4.2	-1.3	6.8	1.8
Financial institutions bond issuance	11.5	16.3	28.7	27.7	11.6	17.2	-7.7	-1.6	-16.9	1.0	6.2	3.6
Domestic bond issued	203.2	257.4	286.6	164.1	153.8	465.1	411.9	628.5	316.9	498.6	577.9	505.7
Government bond issuance	152.3	165.6	168.3	143.1	210.2	403.2	411.5	586.2	495.7	541.2	594.3	524.8
Corporate bond issuance	19.2	27.9	41.6	17.8	68.2	31.3	22.2	51.1	7.7	4.4	-2.9	8.3
Financial institutions bond issuance	31.8	63.9	76.7	3.2	-124.5	30.6	-21.8	-8.7	-186.5	-47.0	-13.4	-27.4
Japan Bond market	197.0	253.4	301.6	164.6	139.7	466.9	381.7	615.3	295.2	497.7	590.3	511.1
Government bond issuance	152.5	166.0	168.9	143.2	209.8	403.2	411.1	585.8	495.1	540.7	593.7	524.8
Corporate bond issuance	1.1	7.2	27.3	-9.5	42.9	15.8	0.2	39.8	3.5	3.0	3.8	10.0
Financial institutions bond issuance	43.3	80.2	105.4	30.9	-113.0	47.8	-29.6	-10.3	-203.4	-46.0	-7.2	-23.8

Source: Bank for International Settlements.

Figure 3.12 Bond issuance on the Japanese bond market, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

Japanese bond issuance followed a pattern very similar to that of the EU-15 up to 1999 (see Figure 3.12). However, since 1999, the year Japan entered into a deflationary period, bond issuance has been dominated by government debt. Private actors played a minor role, and the market for corporate and financial institution debt even contracted over this period.

3.2 Bond markets by segment

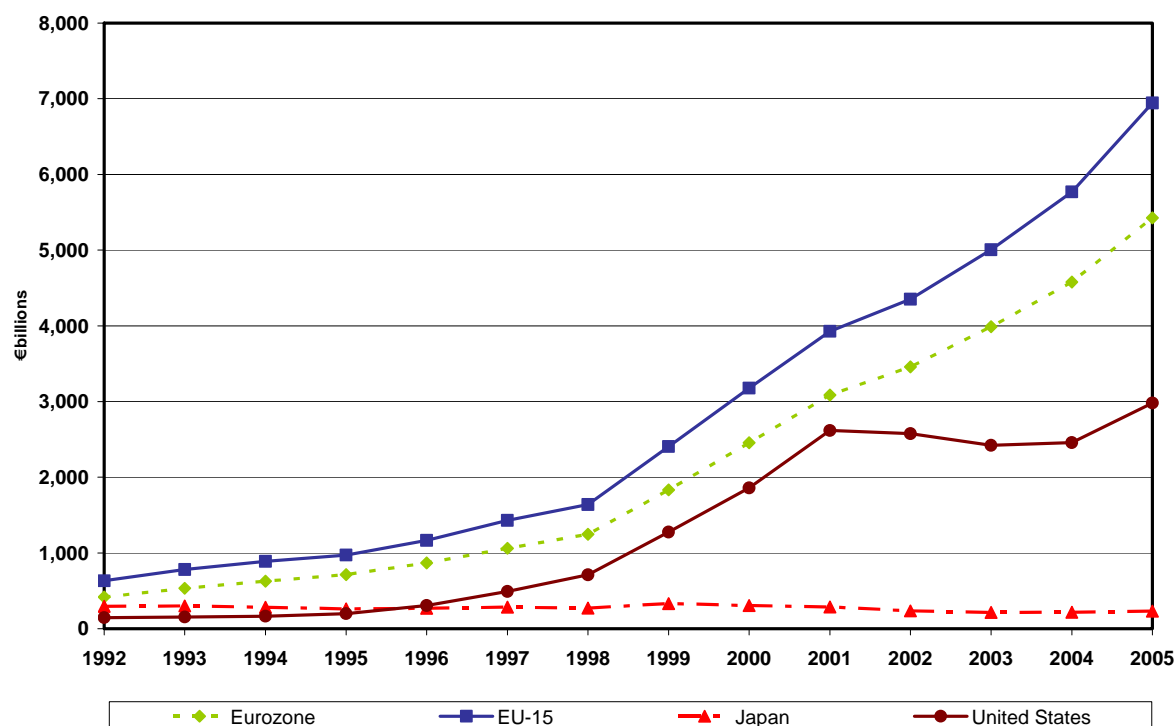
3.2.1 The international debt securities³ market

Table 3.13 The international debt securities market, amount outstanding, 1992-2005 (€ billions)

€ billions	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	34.9	40.9	43.7	47.3	48.3	53.0	59.2	71.5	87.0	102.5	114.5	131.5	148.4	180.2
Belgium	35.1	45.7	51.0	61.7	74.9	87.8	86.1	116.2	140.9	164.9	179.1	199.0	222.0	244.9
Czech Republic	0.0	0.5	0.9	0.8	1.0	1.4	2.1	2.3	2.0	1.8	1.8	1.6	3.7	5.2
Denmark	21.1	27.8	24.5	23.0	23.1	24.5	21.9	25.1	26.8	30.4	28.6	35.2	41.2	56.7
Finland	37.3	42.4	46.5	43.0	42.8	42.1	37.5	40.8	42.0	46.4	50.1	58.6	66.4	74.6
France	101.7	118.0	126.3	127.8	139.7	163.6	189.2	264.3	339.5	446.7	492.8	590.4	684.4	832.1
Germany	72.3	102.6	141.9	184.3	254.3	335.0	415.3	663.9	929.3	1,168.3	1,335.0	1,484.6	1,655.5	1,843.9
Greece	7.8	12.2	14.7	14.7	16.9	19.1	21.4	25.8	29.9	34.6	47.3	62.7	84.0	114.3
Hungary	5.5	9.1	11.1	11.9	10.6	10.3	10.5	12.4	11.1	11.5	9.8	9.4	11.6	15.6
Iceland	2.7	3.9	3.8	3.9	4.1	4.3	5.0	6.9	9.1	11.5	11.2	13.5	21.7	36.3
Ireland	11.1	13.2	11.6	12.9	16.4	19.0	21.5	30.0	36.6	52.6	61.7	81.5	110.6	159.8
Italy	50.1	65.4	75.5	82.3	91.9	110.8	122.7	192.9	267.7	363.4	399.7	459.7	539.3	607.8
Liechtenstein	0.3	0.6	0.7	0.8	0.6	0.5	0.5	0.6	0.8	0.8	1.0	1.0	1.2	1.2
Luxembourg	3.4	1.2	1.8	3.2	5.3	6.8	7.3	8.9	12.7	20.2	25.6	30.2	33.9	41.7
Netherlands	42.7	49.2	64.6	76.6	95.1	123.7	160.0	226.5	316.5	376.9	410.8	459.9	516.0	619.2
Norway	17.8	18.2	16.2	14.8	15.6	20.1	25.5	32.7	43.3	47.2	47.2	50.6	56.8	67.3
Poland	0.0	0.0	4.8	4.6	5.2	7.2	7.4	10.0	10.1	13.0	13.1	15.7	18.1	28.2
Portugal	2.2	4.3	6.4	8.6	10.1	13.0	14.4	24.1	36.9	54.4	63.7	80.8	93.1	116.0
Romania	0.0	0.0	0.0	0.0	0.8	1.4	1.4	1.0	1.2	1.9	2.8	3.2	3.0	3.6
Slovakia	0.0	0.0	0.2	0.2	0.5	0.5	1.5	2.2	3.0	3.0	2.8	2.6	3.1	2.4
Spain	20.6	37.3	43.5	52.0	71.4	88.1	113.0	168.9	216.9	255.1	276.1	349.6	426.1	593.0
Sweden	44.3	66.5	78.9	78.7	86.0	91.2	85.5	102.4	108.9	112.8	117.7	118.2	125.7	149.0
Switzerland	12.9	17.9	20.7	26.1	32.8	58.0	68.2	84.7	109.1	119.8	121.7	125.0	192.3	237.7
United Kingdom	148.1	155.7	157.8	156.7	190.2	251.9	284.6	443.8	585.9	698.2	748.0	862.4	1,021.8	1,311.3
Eurozone	419.3	532.4	627.6	714.3	867.0	1,061.8	1,247.8	1,833.7	2,455.9	3,086.0	3,456.3	3,988.5	4,579.7	5,427.5
EU-15	632.8	782.4	888.8	972.7	1,166.3	1,429.4	1,639.7	2,404.9	3,177.4	3,927.4	4,350.5	5,004.4	5,768.4	6,944.5
Japan	294.5	300.4	282.7	261.7	269.0	284.6	271.9	333.3	306.1	287.2	236.1	213.1	216.9	232.2
United States	147.2	154.6	164.1	198.7	305.7	490.7	710.9	1,277.4	1,859.9	2,618.9	2,577.3	2,422.2	2,458.3	2,981.1
World	1,586.4	1,888.8	2,056.4	2,166.1	2,600.2	3,286.8	3,781.6	5,443.3	6,975.0	8,616.1	8,838.6	9,268.2	10,238.4	12,358.1

Source: Bank for International Settlements.

Figure 3.13 The international debt securities market, amount outstanding, 1992-2005 (€ billions)



Source: Bank for International Settlements.

³ Includes all foreign currency issues by residents and non-residents in a given geographical entity and all domestic currency issues launched in the domestic market by non-residents (see technical notes in section 3.6).

Comment

Figure 3.13 highlights the dramatic deepening of the international debt securities market over the 1992-2005 period. Overall, the value of international debt securities outstanding on the worldwide international debt market grew by a factor of 7 between 1992 and 2005. The most impressive growth rates of the amount outstanding are recorded on the US market (the amount outstanding was multiplied by 19), followed by the European market (the amount outstanding was multiplied by 12). On the other hand, the value of international debt securities issued by Japanese firms has hardly grown at all over the 1992-2005 period. In fact, its value outstanding even decreased by 20%. This figure reflects the very closed nature of the Japanese bond market.

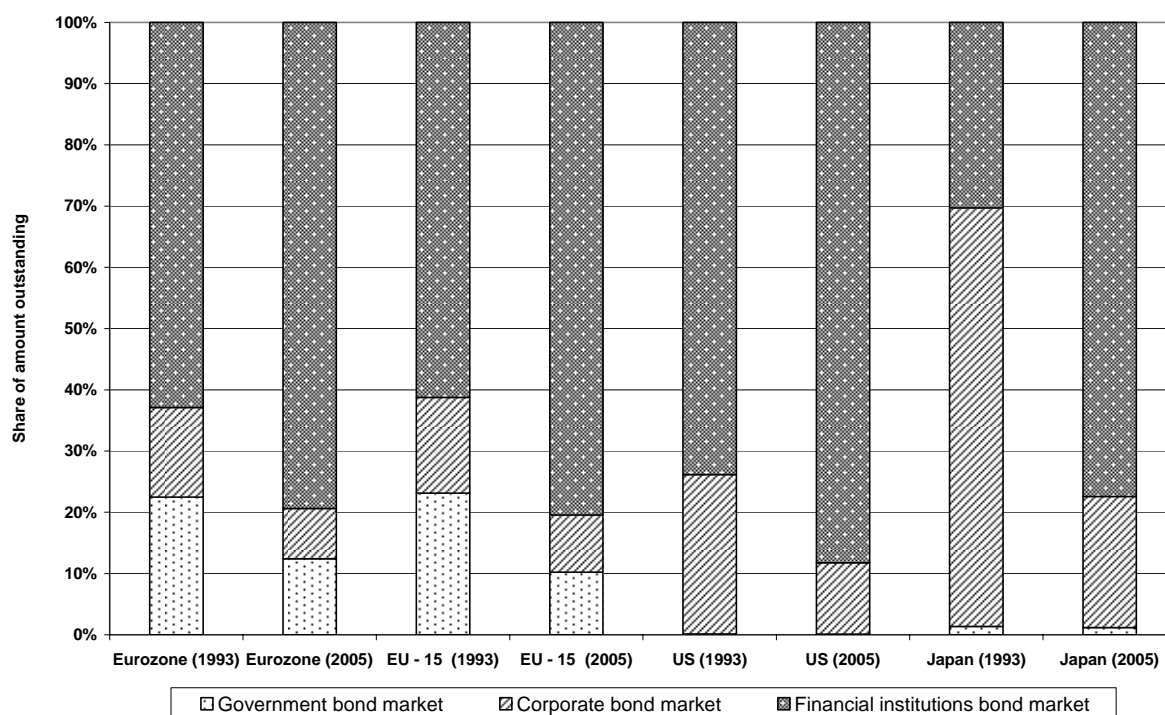
Of the three regions, the EU has the deepest international debt market. Especially since 1998, the issuance of international debt securities exploded, in anticipation of monetary union. Since the risk of exchange rate fluctuations would disappear, issuers would be able to raise debt capital in other member states more cheaply, and liquidity would improve substantially. The slowdown in issuance of international debt in the US market is interesting, as there is a clear trend break in the series since 2001. The fall in issuance can possibly be attributed to massive government spending squeezing out debt issuance by domestic firms, the lack of confidence in financial markets that resulted from corporate scandals and slower economic growth.

Table 3.14 Decomposition of international bond markets by type of issuers, % of amount outstanding, 1993-2005

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Eurozone International debt sec.	532.3	627.5	714.3	867.2	1,061.8	1,247.7	1,833.7	2,455.9	3,085.9	3,456.3	3,988.7	4,579.5	5,427.2
Government bond market	22.5%	22.8%	21.4%	18.9%	16.5%	14.5%	11.7%	10.0%	10.0%	11.2%	12.0%	12.4%	12.4%
Corporate bond market	14.7%	13.0%	11.5%	10.0%	9.1%	9.1%	9.2%	11.1%	12.0%	10.8%	10.4%	9.4%	8.2%
Financial institutions bond market	62.9%	64.2%	67.1%	71.1%	74.4%	76.4%	79.1%	78.9%	77.9%	78.0%	77.6%	78.1%	79.4%
EU-15 International debt sec.	782.4	888.7	972.7	1,166.6	1,429.4	1,639.7	2,404.9	3,177.4	3,927.4	4,350.6	5,004.4	5,768.2	6,944.3
Government bond market	23.1%	23.9%	22.9%	20.3%	17.2%	14.9%	11.5%	9.5%	9.0%	9.7%	10.2%	10.4%	10.2%
Corporate bond market	15.6%	14.2%	13.1%	12.0%	11.8%	12.3%	12.7%	14.3%	14.5%	13.0%	12.0%	10.7%	9.3%
Financial institutions bond market	61.2%	61.9%	64.0%	67.7%	71.0%	72.8%	75.9%	76.3%	76.5%	77.3%	77.8%	78.9%	80.4%
US International debt sec.	154.6	164.1	198.7	305.6	490.7	710.8	1,277.4	1,860.0	2,618.7	2,577.4	2,422.1	2,458.3	2,981.1
Government bond market	0.1%	0.1%	0.1%	0.3%	0.8%	0.5%	0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Corporate bond market	26.0%	24.1%	20.2%	16.3%	16.1%	13.5%	13.7%	12.9%	13.5%	13.0%	12.6%	12.0%	11.7%
Financial institutions bond market	73.9%	75.8%	79.7%	83.4%	83.1%	86.0%	86.0%	86.9%	86.3%	86.9%	87.3%	87.9%	88.2%
Japan International debt sec.	300.4	282.7	261.7	269.1	284.6	272.0	333.4	306.1	287.1	236.1	213.1	216.9	232.2
Government bond market	1.4%	1.4%	1.7%	1.8%	2.0%	1.9%	1.8%	1.9%	1.8%	1.8%	1.4%	1.1%	1.2%
Corporate bond market	68.3%	64.1%	58.1%	49.3%	39.9%	32.1%	26.5%	22.3%	19.7%	19.9%	19.3%	21.4%	21.4%
Financial institutions bond market	30.3%	34.4%	40.3%	48.9%	58.2%	66.1%	71.7%	75.9%	78.4%	78.3%	79.3%	77.5%	77.4%

Source: Bank for International Settlements.

Figure 3.14 Decomposition of international bond markets by type of issuers, % of amount outstanding, 1993-2005



Source: Bank for International Settlements.

Comment

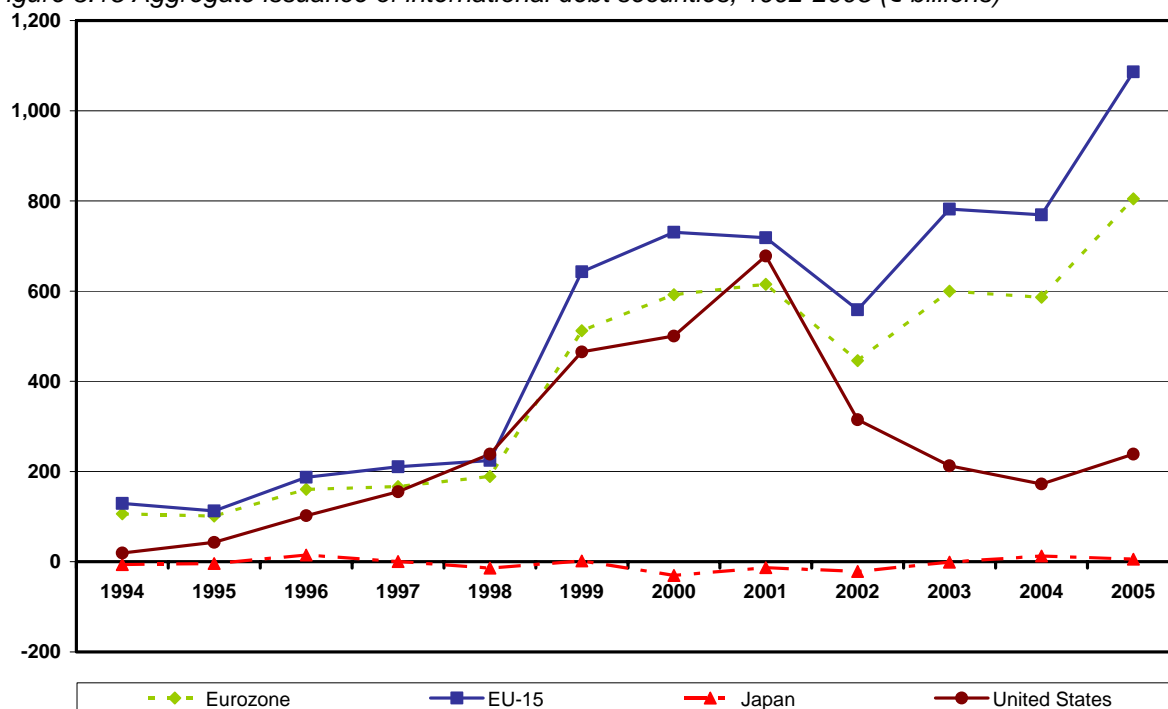
Debt issued by financial institutions accounts for the lion's share of internationally issued debt securities in the EU, the US and Japan. The changing composition of the European international debt securities market underscores the increased relative importance of financial institutions, as their share in the amount outstanding increased from about 60% to 80%. This trend is mirrored by the decreasing relative importance of the international corporate debt and government debt market in the EU over the 1993-2005 period. A similar pattern can be observed in the US international debt securities market, where financial institutions debt securities even account for up to 90% of the market. It is worth noting that the market for internationally issued US government debt is quasi-inexistent, meaning that all US government debt securities fall under a domestic regulatory framework and are issued in US dollars. Interestingly, one can observe how Japan's international debt securities market, which was overwhelmingly in the hands of corporate issuers in the early 1990s, has since been almost completely taken over by financial institutions in a complete reversal of roles.

Table 3.15 Aggregate issuance of international debt securities, 1994-2005 (€ billions)

€ billions	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	3.4	4.1	2.7	3.2	6.2	9.0	14.6	15.0	13.9	20.3	17.0	31.3
Belgium	6.4	11.6	13.9	11.2	-1.4	26.8	23.8	23.5	16.7	22.2	22.5	21.3
Czech Republic	0.4	0.0	0.1	0.5	0.7	-0.1	-0.3	-0.3	0.2	-0.1	1.9	1.4
Denmark	-2.2	-0.8	0.2	0.4	-2.4	1.1	1.3	3.4	0.1	7.5	5.9	15.6
Finland	5.2	-1.9	-0.2	-2.8	-3.9	-0.4	1.0	4.2	4.7	8.9	7.4	7.8
France	10.3	2.4	12.5	19.4	26.4	66.2	71.4	106.7	55.3	103.6	93.5	141.6
Germany	40.1	44.9	73.9	74.4	79.9	226.3	255.6	234.0	193.7	180.7	171.6	167.0
Greece	2.8	1.1	3.0	1.6	1.9	1.5	4.2	5.2	11.4	13.9	19.9	32.7
Hungary	1.9	1.4	-0.8	-0.5	-0.1	0.6	-1.4	0.5	-1.0	-0.1	2.1	4.2
Iceland	0.1	0.1	0.3	0.0	0.7	1.4	2.1	2.2	0.4	2.9	7.6	14.8
Ireland	-1.2	1.6	3.4	1.4	2.9	6.1	5.7	15.3	11.8	21.4	28.4	47.9
Italy	13.4	10.9	8.6	14.5	13.3	61.3	71.3	95.0	43.4	65.9	77.7	64.9
Liechtenstein	0.1	0.2	-0.1	-0.2	-0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0
Luxembourg	0.6	1.4	2.2	1.2	0.5	0.7	3.7	7.6	5.6	5.3	3.9	7.2
Netherlands	15.5	12.3	20.1	27.3	36.3	58.3	84.3	56.4	49.2	64.1	59.2	89.9
Norway	-1.3	-0.8	0.9	3.4	5.7	3.9	9.0	2.7	4.5	7.3	7.3	7.3
Poland	4.7	0.2	0.3	1.4	0.5	1.5	-0.3	2.6	1.1	3.2	2.5	10.1
Portugal	2.0	2.4	1.7	2.7	1.5	9.1	12.6	17.4	9.4	17.0	11.9	23.2
Romania	0.0	0.0	0.9	0.6	0.0	-0.7	0.2	0.8	0.7	0.5	-0.1	0.6
Slovakia	0.2	0.1	0.2	0.0	1.0	0.5	0.8	-0.1	-0.2	-0.1	0.4	-0.8
Spain	7.5	10.3	18.8	12.4	25.5	47.5	44.2	35.4	31.1	76.5	73.2	170.2
Sweden	15.2	4.1	7.4	0.9	-4.3	5.3	5.1	4.0	11.0	6.3	8.8	20.4
Switzerland	3.7	5.9	6.6	22.6	11.4	9.6	20.4	7.7	12.4	15.4	65.8	36.9
United Kingdom	10.4	8.3	19.3	42.9	42.3	124.5	132.2	95.7	101.5	168.1	168.5	245.4
Eurozone	106.0	101.2	160.5	166.5	189.1	512.2	592.0	615.6	446.3	599.9	586.3	805.0
EU-15	129.4	112.8	187.5	210.6	224.7	643.1	730.6	718.6	558.8	781.9	769.5	1,086.4
Japan	-6.3	-4.0	14.9	0.5	-14.2	1.8	-30.3	-13.2	-21.6	-0.9	12.6	5.6
United States	19.3	42.9	102.4	155.1	238.7	465.4	500.5	678.1	314.8	212.6	172.5	238.4
World	245.7	199.4	419.2	525.4	560.7	1,220.9	1,341.9	1,486.0	949.5	1,131.3	1,179.6	1,578.7

Source: Bank for International Settlements.

Figure 3.15 Aggregate issuance of international debt securities, 1992-2005 (€ billions)



Source: Bank for International Settlements.

Comment

In aggregate terms, the issuance of international debt securities has traditionally been the highest in the EU-15 and in eurozone international debt securities markets, even prior to the introduction of the euro. This observation reflects the close geographical and economic proximity of European countries which is conducive to a vibrant market for international debt securities. Nevertheless, between 1998 and 1999, the year the euro was introduced, there is a structural break in the series, such that international debt securities issuance in the EU/euro countries subsequently remains at a significantly higher level than observed before monetary union. For example, in 2004 issuance was four times higher than the total 1997 issuance. The US market followed a steady upward trend from 1994-2001, but the issuance of international debt securities by US entities subsequently fell off sharply. The Japanese bond market is essentially a domestic one, as issuance remained around zero over the whole sample period.

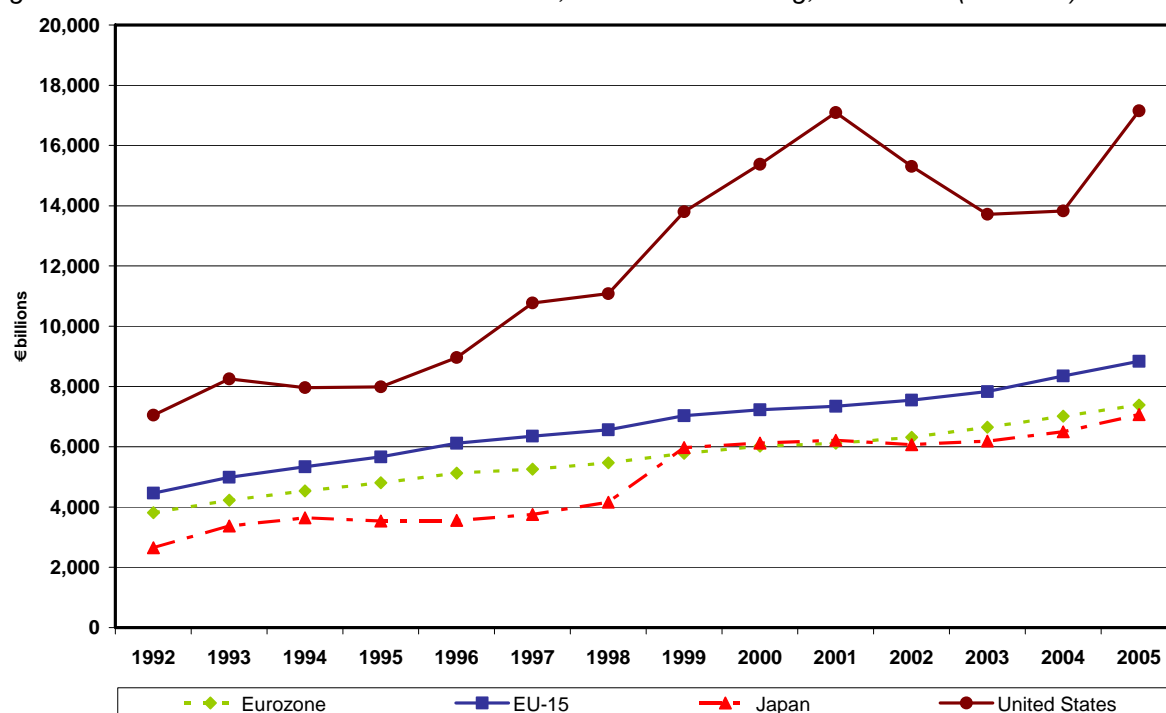
3.2.2 The domestic debt securities market

Table 3.16 The domestic debt securities market, amount outstanding, 1992-2005 (€ billions)

€ billions	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	76.3	88.6	98.1	107.6	110.9	119.7	121.9	141.1	151.0	154.4	159.1	160.8	166.1	174.9
Belgium	287.2	287.1	317.2	340.0	340.0	331.6	327.7	339.6	346.6	351.8	358.3	355.6	354.4	349.9
Czech Republic	2.1	2.9	4.9	8.0	8.5	9.8	17.7	24.2	24.5	29.3	41.8	44.4	47.2	52.5
Denmark	177.1	208.8	208.8	225.8	230.2	238.4	251.6	253.8	260.6	282.7	304.3	306.7	339.5	361.0
Finland	42.9	50.2	58.0	60.7	64.5	67.8	74.5	76.9	73.2	74.7	77.3	84.2	90.2	91.8
France	881.2	938.5	964.0	1,018.2	1,039.6	1,069.0	1,065.6	1,107.0	1,209.2	1,273.8	1,338.2	1,455.0	1,544.5	1,591.5
Germany	1,033.2	1,239.1	1,364.8	1,462.8	1,506.8	1,578.6	1,724.1	1,804.1	1,843.3	1,700.4	1,665.7	1,661.0	1,640.3	1,614.3
Greece	46.0	54.6	59.7	65.9	80.2	85.9	86.1	89.4	93.5	103.8	123.6	139.2	159.7	175.1
Hungary	4.8	8.9	9.8	9.0	12.1	12.7	13.5	16.5	17.7	22.4	29.4	33.3	38.8	39.9
Iceland	2.0	2.4	2.7	2.9	3.5	4.4	5.6	7.0	8.1	8.4	10.9	15.6	24.4	42.9
Ireland	20.1	21.0	20.9	21.5	24.4	26.7	26.6	31.5	33.3	32.3	36.3	54.5	66.7	88.7
Italy	1,002.1	1,065.5	1,137.8	1,159.4	1,346.6	1,331.7	1,351.1	1,392.3	1,427.4	1,519.8	1,580.0	1,644.4	1,733.7	1,827.6
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	184.2	202.9	223.2	250.3	256.7	275.9	295.4	347.0	374.3	409.2	424.4	463.6	503.2	570.3
Norway	37.3	44.8	45.9	49.5	53.3	58.8	54.9	61.1	62.9	67.4	82.6	76.0	79.1	86.2
Poland	22.2	19.0	16.8	18.9	20.5	22.6	24.9	27.2	34.5	50.2	52.7	52.1	70.4	80.8
Portugal	36.4	36.2	40.2	45.3	50.7	49.8	55.5	63.2	69.6	77.8	91.4	100.1	111.0	125.7
Romania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovakia	0.0	0.4	1.1	1.8	2.1	2.7	2.6	2.5	2.6	6.4	6.5	7.8	9.0	9.3
Spain	202.2	244.0	254.9	276.8	305.5	324.8	342.6	392.8	397.6	423.9	464.5	534.2	647.9	779.0
Sweden	179.0	175.1	185.4	205.8	224.0	218.1	214.1	236.7	211.8	181.9	197.1	220.8	228.8	241.3
Switzerland	138.6	152.6	156.7	171.3	149.1	154.1	158.7	163.2	169.5	174.5	192.1	176.6	190.4	176.7
United Kingdom	294.2	376.7	404.1	429.6	541.3	635.2	629.5	757.1	739.7	760.2	728.6	654.4	764.1	846.8
Eurozone	3,811.9	4,227.7	4,538.8	4,808.3	5,125.9	5,261.5	5,471.0	5,784.9	6,019.1	6,122.0	6,318.9	6,652.7	7,017.8	7,388.9
EU-15	4,462.1	4,988.3	5,337.1	5,669.5	6,121.4	6,353.1	6,566.3	7,032.6	7,231.3	7,346.8	7,548.9	7,834.6	8,350.2	8,838.0
Japan	2,651.3	3,375.7	3,641.7	3,537.1	3,556.0	3,757.0	4,161.1	5,976.8	6,127.8	6,216.8	6,076.6	6,190.1	6,503.1	7,068.7
United States	7,051.2	8,250.7	7,967.0	7,990.5	8,964.9	10,774.3	11,082.8	13,802.0	15,376.2	17,090.5	15,303.4	13,713.7	13,827.0	17,151.2
World	15,383.6	16,651.3	18,765.0	20,427.9	21,202.9	20,906.6	23,071.3	24,454.6	24,356.9	24,729.4	27,739.2	32,242.6	36,161.4	36,596.4

Source: Bank for International Settlements.

Figure 3.16 The domestic debt securities market, amount outstanding, 1992-2005 (€ billions)



Source: Bank for International Settlements.

Comment

Domestic debt securities markets have been less dynamic than their international counterpart in terms of the growth rate of issuance, but they remain larger and deeper. In absolute terms, the domestic securities market in the United States has experienced the fastest growth, nearly tripling in value outstanding over the sample period, although fiscal consolidation throughout the 1990s had a belated impact on issuance, which kicked in when expiring issues were replaced. The 30-year Treasury issues were cancelled, as a permanent surplus had been projected in the late 1990s, but it was rapidly re-introduced earlier this year. The growth slowdown and the crisis of confidence in the corporate sector

also contributed to slower issuance in the early part of the new century. However, increasing government deficits have since led to a restoration of debt issuance to pre-2001 levels.

The European domestic debt securities market pursued a steady deepening over the last decade. The small size of domestic markets has rendered the issuance of international debt securities more attractive, particularly in the wake of European monetary integration. The removal of exchange rate risk has led European international debt securities to carry the same level of risk as any European international debt securities for eurozone members.

Over the 1992-2005 period, the Japanese debt market evolved the most in terms of relative size. The deflationary macroeconomic environment and the poor health of the banking sector led Japan to tap domestic capital markets aggressively to recapitalise its banking system. This intervention has been financed mostly by the Japanese state which issued domestic debt securities as illustrated in the jump in 1999 in Figure 3.16.

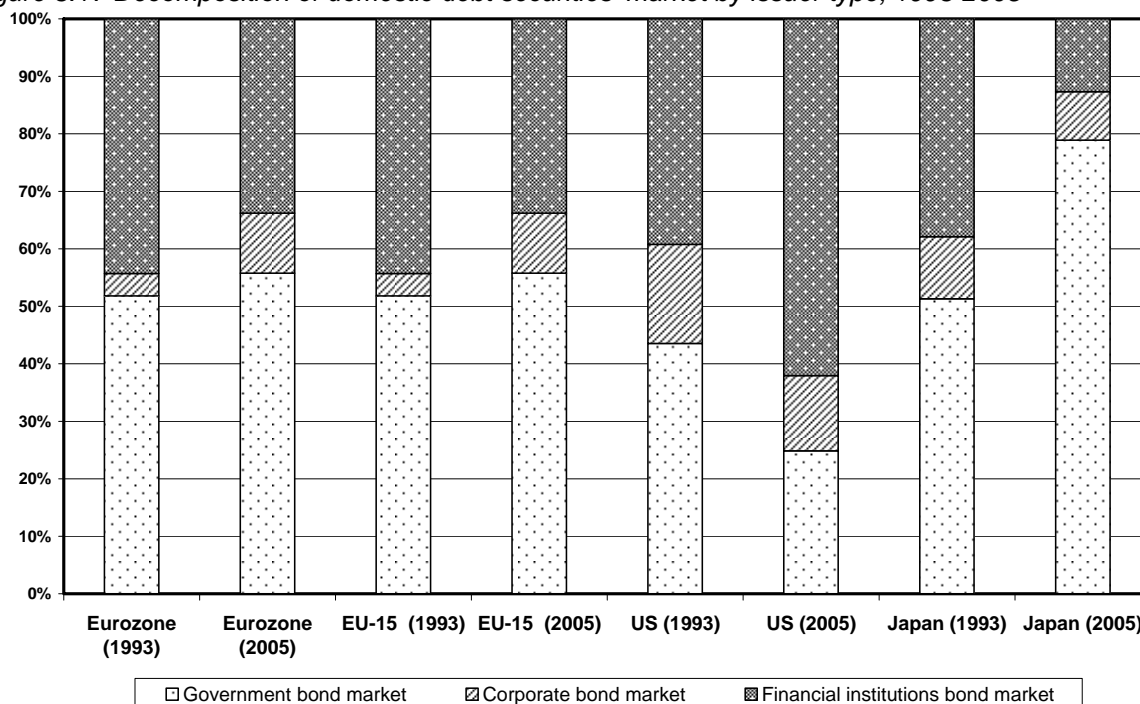
Finally, it is crucial to underline that at the beginning of the 1990s domestic securities markets in any of the three regions dwarfed the international securities market by a factor of about 47 for the United States and 9 for the eurozone. The picture has radically changed as the international securities market is now 5.5 times greater than that of the US and 1.2 times greater than the eurozone. Henceforth, the growth of the international debt securities segment has been buoyant, whereas the domestic segment moved along with the real economy's growth rates. This statistical observation exemplifies the international financial integration that has taken place over the last decade, and testifies to the fact that bond markets are well integrated.

Table 3.17 Decomposition of domestic debt securities market by issuer type, 1993-2005

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Eurozone Domestic debt sec.	2,585.1	2,837.1	3,076.2	3,414.5	3,560.3	3,695.3	3,918.1	3,997.2	4,114.1	4,284.1	4,442.5	4,728.7	4,929.2
Government bond market	51.8%	53.2%	54.3%	55.8%	56.0%	56.3%	55.7%	55.3%	56.0%	56.8%	56.7%	56.6%	55.8%
Corporate bond market	3.9%	3.5%	3.3%	3.5%	3.5%	3.7%	4.7%	5.9%	7.3%	7.8%	9.1%	9.6%	10.4%
Financial institutions bond market	44.3%	43.3%	42.4%	40.7%	40.5%	40.0%	39.6%	38.9%	36.7%	35.4%	34.2%	33.8%	33.8%
EU-15 Domestic debt sec.	4,988.2	5,337.1	5,669.6	6,121.4	6,353.2	6,566.3	7,032.8	7,231.2	7,346.6	7,548.7	7,834.8	8,350.3	8,838.1
Government bond market	51.8%	53.2%	54.3%	55.8%	56.0%	56.3%	55.7%	55.3%	56.0%	56.8%	56.7%	56.6%	55.8%
Corporate bond market	3.9%	3.5%	3.3%	3.5%	3.5%	3.7%	4.7%	5.9%	7.3%	7.8%	9.1%	9.6%	10.4%
Financial institutions bond market	44.3%	43.3%	42.4%	40.7%	40.5%	40.0%	39.6%	38.9%	36.7%	35.4%	34.2%	33.8%	33.8%
US Domestic debt sec.	8,250.7	7,967.0	7,990.5	8,964.8	10,774.3	11,082.8	13,802.0	15,376.2	17,090.5	15,303.3	13,713.8	13,827.0	17,151.2
Government bond market	43.5%	41.8%	39.9%	38.1%	35.8%	32.2%	29.1%	25.6%	24.2%	24.2%	24.7%	24.9%	24.9%
Corporate bond market	17.2%	16.5%	16.3%	15.9%	15.9%	16.2%	16.1%	16.2%	15.9%	14.9%	14.2%	13.5%	13.1%
Financial institutions bond market	39.2%	41.8%	43.8%	46.0%	48.3%	51.6%	54.9%	58.2%	59.9%	60.9%	61.2%	61.6%	62.0%
Japan Domestic debt sec.	3,375.7	3,641.7	3,537.0	3,556.0	3,757.0	4,161.1	5,976.7	6,127.8	6,216.8	6,076.6	6,190.1	6,503.1	7,068.7
Government bond market	51.3%	52.7%	53.3%	53.7%	55.1%	58.3%	61.0%	63.5%	66.3%	71.3%	74.6%	77.2%	78.9%
Corporate bond market	10.8%	10.7%	10.8%	11.1%	11.1%	12.5%	11.9%	11.5%	11.2%	10.7%	9.8%	8.9%	8.4%
Financial institutions bond market	37.9%	36.6%	35.9%	35.2%	33.9%	29.2%	27.1%	25.0%	22.5%	18.0%	15.6%	13.9%	12.7%

Source: Bank for International Settlements.

Figure 3.17 Decomposition of domestic debt securities' market by issuer type, 1993-2005



Source: Bank for International Settlements.

Comment

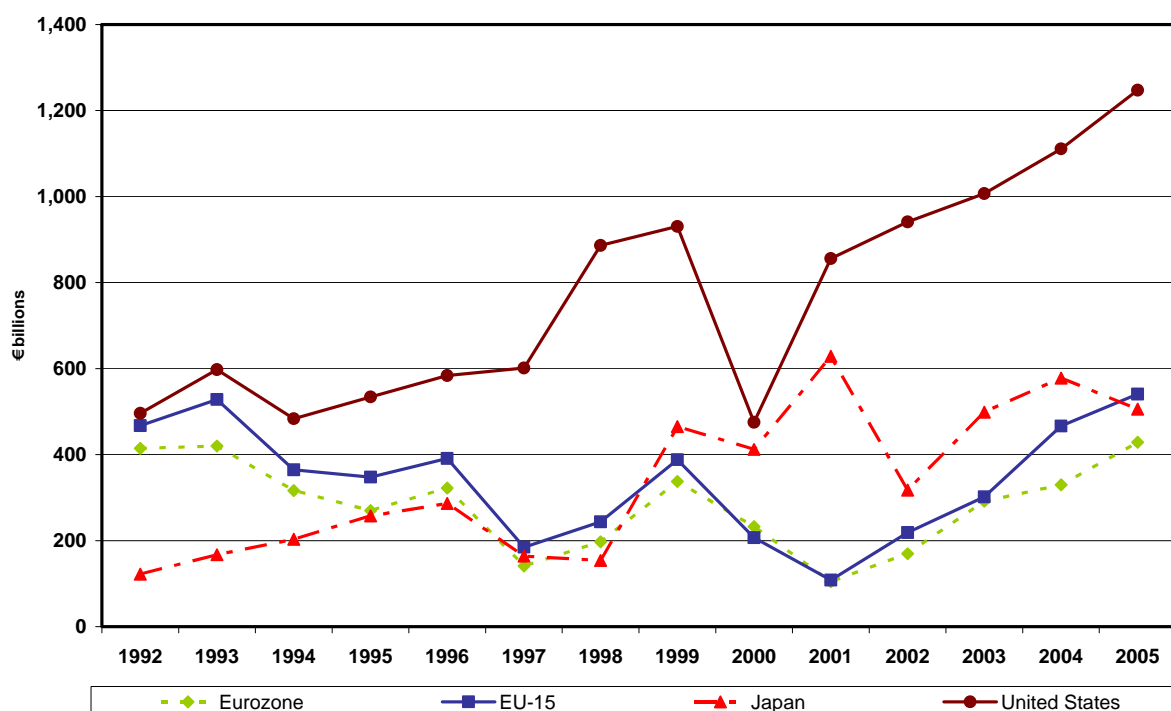
A glance at the decomposition of the amount outstanding of domestic debt securities in the EU, the US and Japan reveals three patterns. European countries' composition by issuer of the domestic debt securities has evolved slightly. Most interesting is the increasing role of corporate issuers, which tripled their share in the amount of debt outstanding over the considered period, reflecting a deepening of the nascent European corporate debt market. Domestic debt securities in the US are increasingly being issued by financial institutions and corporate issuers have maintained a stable share in issuance, but recent and very large government deficits are likely to reverse this trend. Japan, on the other hand, has followed the opposite path: large government deficits have meant that the domestic debt securities market is increasingly accounted for by government debt.

Table 3.18 Issuance of domestic debt securities, 1992-2005 (€ billions)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	6.4	12.5	9.5	9.3	3.4	9.1	2.0	20.2	9.7	3.4	4.3	1.7	4.5	10.0
Belgium	33.3	-1.3	30.6	22.2	0.2	-8.4	-3.9	13.8	7.8	5.2	5.6	-2.3	-1.4	-3.3
Czech Republic	0.4	0.6	2.1	3.3	0.3	2.3	6.5	7.4	-0.3	1.9	10.1	2.2	-0.1	3.2
Denmark	7.3	32.8	-2.9	11.4	9.7	11.2	9.4	2.4	8.1	20.5	20.1	6.8	28.2	21.0
Finland	-0.7	7.4	7.8	2.7	3.8	3.6	6.6	2.9	-3.1	1.7	2.7	6.4	5.4	1.5
France	142.0	56.4	28.0	52.9	22.1	30.2	-5.5	45.5	97.7	66.2	56.4	100.3	82.1	56.7
Germany	204.1	211.2	127.4	96.3	44.9	74.7	139.5	85.4	40.0	-145.6	-31.6	-5.1	-20.0	-18.8
Greece	6.1	8.8	5.3	6.2	14.4	5.7	0.5	3.8	4.5	10.8	17.6	13.6	18.4	17.1
Hungary	3.7	5.0	2.6	1.9	4.5	1.7	2.5	3.1	2.0	3.1	5.3	6.4	2.6	2.4
Iceland	0.4	0.5	0.3	0.3	0.5	0.7	1.1	0.8	1.7	1.6	1.6	5.1	6.7	15.7
Ireland	0.2	0.9	0.0	0.6	2.9	2.4	-0.2	5.3	1.7	-1.0	3.2	16.0	11.2	22.9
Italy	-22.0	62.4	71.8	25.9	189.5	-15.4	18.3	43.3	36.8	94.2	49.0	55.1	79.2	111.0
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	28.1	18.9	20.2	26.6	6.6	19.9	17.9	55.5	27.2	34.9	13.0	34.7	36.0	74.3
Norway	-2.5	8.0	0.7	3.4	2.6	5.9	1.4	0.9	2.7	2.3	8.0	4.1	1.0	5.3
Poland	1.8	1.5	1.9	3.4	3.8	4.0	3.3	3.2	5.1	11.9	8.4	6.9	8.1	6.7
Portugal	2.6	-0.4	4.1	5.1	5.5	-0.7	5.4	8.5	6.4	8.4	12.5	7.9	10.0	15.8
Romania	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovakia	0.0	0.3	0.7	0.6	0.3	0.5	0.3	-0.1	0.2	3.9	0.1	1.2	0.6	0.1
Spain	13.9	42.8	11.8	22.0	29.1	19.7	16.3	53.1	4.0	26.6	36.8	63.1	104.3	141.4
Sweden	13.0	10.9	8.6	10.8	15.2	-3.8	12.6	1.7	-18.4	-18.7	11.4	17.3	5.9	23.6
Switzerland	12.2	4.6	0.4	3.9	-4.7	-2.4	4.2	4.7	-3.0	0.1	13.2	-2.1	10.5	-13.3
United Kingdom	32.8	64.7	42.7	55.5	43.9	36.6	24.5	46.8	-15.7	1.5	17.5	-13.8	102.9	67.1
Eurozone	414.2	419.7	316.3	269.9	322.3	140.8	196.9	337.2	232.7	104.7	169.5	291.4	329.6	428.8
EU-15	467.2	528.1	364.7	347.7	391.0	184.8	243.4	388.1	206.7	108.0	218.6	301.7	466.6	540.6
Japan	122.1	167.3	203.2	257.5	286.5	164.1	153.8	465.1	411.9	628.6	317.1	498.5	577.9	505.7
United States	496.0	597.7	483.4	534.0	583.6	601.4	886.1	930.2	475.2	856.0	941.0	1,007.0	1,110.9	1,247.2
World	1,267.4	1,702.3	1,410.1	1,354.5	1,497.5	1,218.5	1,565.2	2,114.3	1,394.8	2,011.8	1,774.6	2,128.7	2,464.1	2,675.5

Source: Bank for International Settlements.

Figure 3.18 Issuance of domestic debt securities, 1992-2004 (€ billions)



Source: Bank for International Settlements.

Comment

Over the sample period, issuance was most pronounced in the US domestic debt securities market, the largest in the world. At every point in time over the 1992-2005 period, total US domestic debt issuance dominated the issuance on Japanese and European domestic debt securities markets. On the European domestic securities market, the trend is downward sloping over the period 1992-1997, primarily reflecting the fiscal consolidation that prevailed in the run-up to monetary union, as European governments struggled to comply with the Maastricht criteria, which made them eligible for eurozone participation. This trend was just short-lived, however, especially from 2001 onwards. During the subsequent economic downturn in Europe, breaches of the Stability and Growth Pact by the larger economies were routine, resulting in further issuance of government debt securities to finance fiscal deficits. Figure 3.17, which shows that government debt comprises the lion's share of the European domestic debt market, lends credence to this hypothesis. Overall, it is important to emphasise that contrary to the international debt securities segment, the domestic debt securities segment of the European bond market has not deepened over the considered time period. Domestic debt issuance in Japan has been steadily increasing, as it quintupled between 1992 and 2005. As can be ascertained from Figure 3.17, this surge is mainly attributable to the increased state intervention in the banking sector, which has been largely financed by government debts.

3.3 Bond markets by issuer

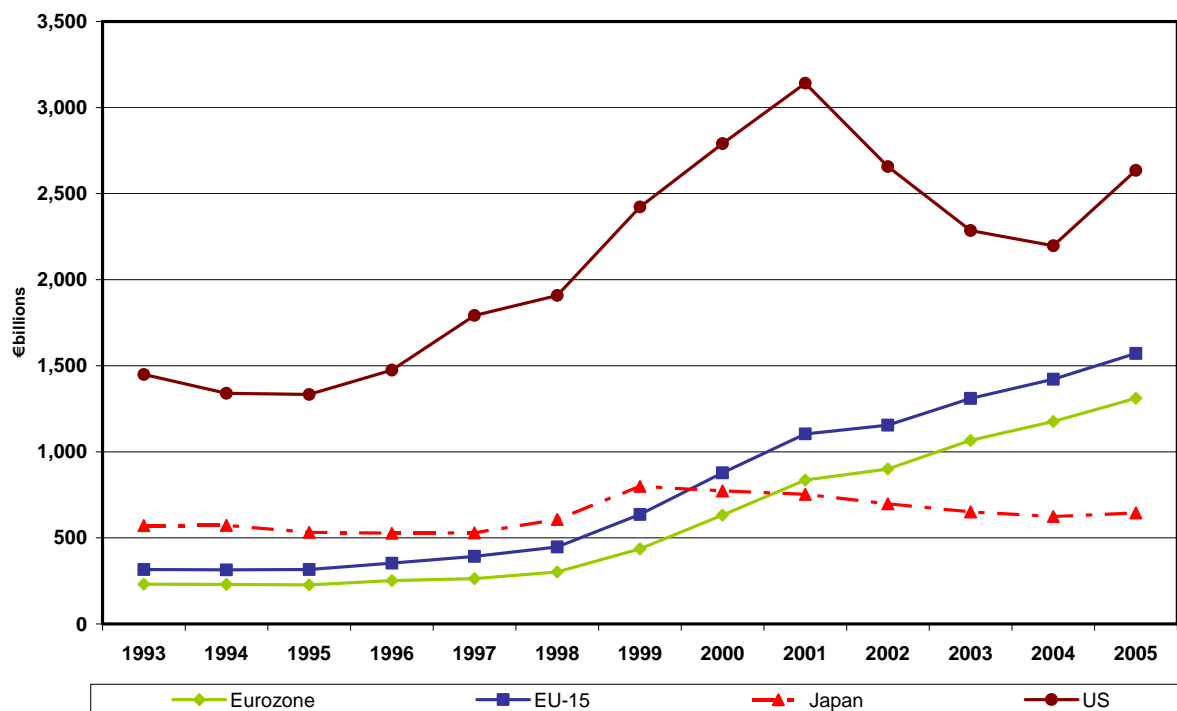
3.3.1 Corporate bond market

Table 3.19 Corporate bond markets, amount outstanding, 1993-2005 (€ billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	5.6	6.5	7.3	5.9	6.1	7.0	10.9	11.2	11.8	12.0	18.4	22.9	28.8
Belgium	13.0	13.9	15.4	15.4	15.7	15.9	14.8	15.0	25.6	26.5	37.1	44.1	42.8
Czech Republic	0.1	0.2	0.3	0.6	0.6	0.9	1.3	2.0	2.4	3.0	2.9	2.3	2.2
Denmark	12.2	13.0	16.2	17.1	18.7	20.5	21.7	22.0	23.7	22.4	24.5	27.5	30.7
Finland	9.9	8.8	7.5	7.2	8.0	8.3	10.2	14.2	17.5	17.6	20.0	20.2	21.2
France	97.1	102.4	103.3	125.1	128.0	146.8	211.7	279.4	350.6	351.5	387.4	390.1	400.7
Germany	13.4	11.2	11.2	11.4	16.0	18.2	32.5	68.4	86.2	107.3	146.6	166.9	173.6
Greece	2.0	2.0	2.1	1.9	1.9	2.0	2.8	3.9	3.9	4.4	6.3	7.0	8.8
Hungary	0.1	0.1	0.2	0.2	0.6	0.4	0.6	0.8	0.9	0.9	0.8	1.0	1.7
Iceland	0.4	0.5	0.5	0.6	0.8	1.5	2.1	1.9	2.2	2.9	3.8	5.7	8.1
Ireland	3.0	2.4	2.1	1.7	4.5	5.1	7.3	11.7	16.8	20.5	33.9	42.1	63.6
Italy	23.6	21.7	18.9	19.7	18.5	19.0	29.9	49.4	109.5	147.7	179.3	218.4	249.5
Liechtenstein	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.6	0.6	0.8	1.6	1.8	1.7	1.8	1.7	2.3	2.3	3.1	3.2	3.0
Netherlands	20.8	22.4	22.4	25.8	27.6	35.8	54.0	113.6	129.4	112.2	105.4	89.1	88.3
Norway	5.4	5.9	5.3	6.7	8.8	11.7	16.1	20.6	21.2	22.5	20.1	20.0	23.2
Poland	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.3	0.3	0.2	0.3	0.3
Portugal	3.6	4.6	6.2	8.1	8.3	9.9	12.1	12.6	15.3	18.3	16.5	18.4	24.1
Romania	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.3	0.6	1.0	0.9	0.7	0.7
Slovakia	0.0	0.0	0.0	0.2	0.2	0.3	0.5	0.8	0.7	0.8	0.7	0.5	0.5
Spain	38.5	33.3	29.8	27.9	27.3	32.2	47.7	51.5	67.1	80.7	112.1	154.8	207.0
Sweden	14.4	10.9	11.7	12.5	14.8	18.3	26.8	30.7	40.1	36.9	32.9	32.9	36.8
Switzerland	19.5	19.5	34.8	29.1	30.7	33.3	34.9	37.1	35.6	31.4	27.2	26.2	16.8
United Kingdom	58.7	60.0	61.0	72.3	94.5	106.8	152.2	191.8	204.6	194.6	187.1	184.2	191.9
Eurozone	231	230	227	252	264	302	435	633	836	901	1,066	1,177	1,311
EU-15	316	314	316	354	392	448	636	877	1,104	1,155	1,311	1,422	1,571
Japan	571	572	533	526	529	607	800	773	753	698	651	624	646
US	1,450	1,340	1,333	1,474	1,792	1,908	2,422	2,790	3,141	2,657	2,286	2,197	2,635

Source: Bank for International Settlements.

Figure 3.19 Corporate bond markets, amount outstanding, 1993-2005 (€ billions)



Source: Bank for International Settlements.

Comment

According to the Figure 3.19, the United States' corporate bond market is the deepest corporate bond market of the three regions in absolute terms, but it faced a period of contraction in the aftermath of the technology bubble before picking up in 2005. The Japanese corporate bond market followed a similar path. In fact, both economies faced corporate credibility crises. The point break is particularly

clear on the American market, as the €1 billion drop between 2001 and 2004 indicates. In Japan the drop is less pronounced, but observable from 1999 onwards, as Japan experienced corporate scandals.

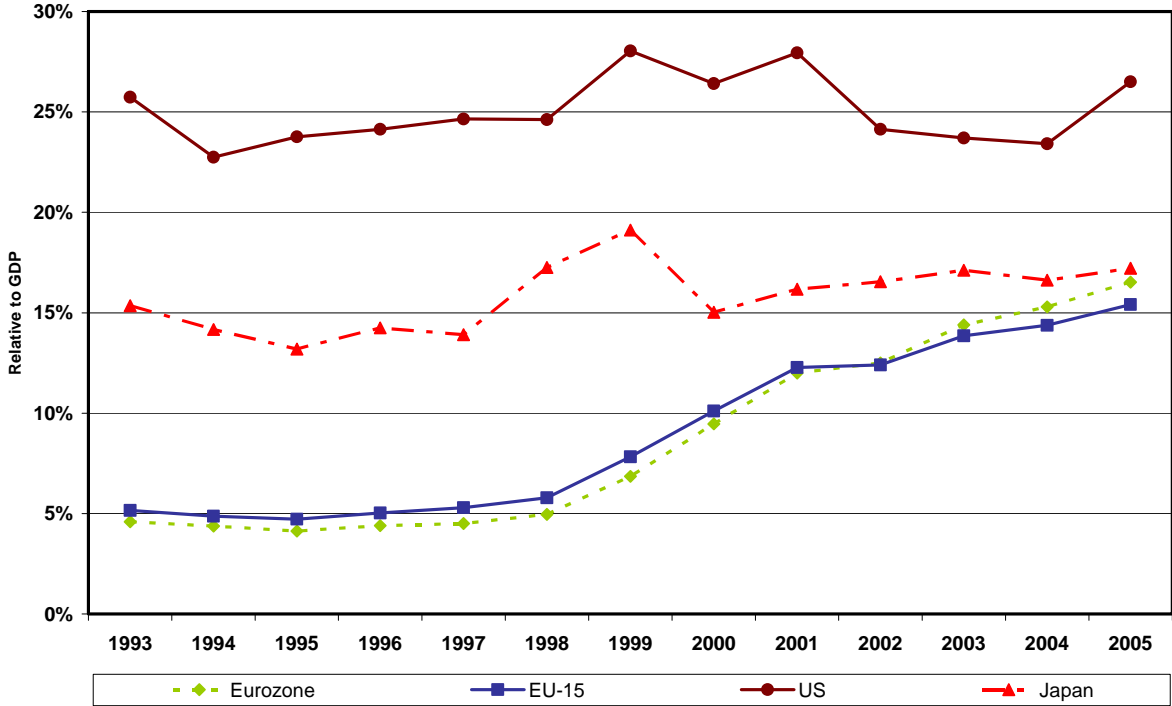
Conversely, Europe’s corporate debt securities market deepened over the considered time frame. The change of pace around 1998 in terms of the deepening of the European corporate debt securities market is striking. Prior to the introduction of the euro, growth was weak (around 5% per year), whereas after monetary union yearly growth tripled between 1998 and 2005. This impressive market deepening is due to several factors. The consolidation of the European corporate sector, exemplified by the merger and acquisition wave of the late 1990s, triggered increased financing needs that were satisfied through corporate debt issuance. The pan-European integration of the corporate bond market with the euro’s introduction itself enabled corporations to target a wider public of investors and increased issuance size, making bond financing even more attractive to corporate treasurers.

Table 3.20 Corporate bond markets, amount outstanding, 1993-2005 (% of GDP)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	3%	4%	4%	3%	3%	4%	5%	5%	5%	5%	8%	10%	12%
Belgium	7%	7%	7%	7%	7%	7%	6%	6%	10%	10%	13%	15%	14%
Denmark	10%	10%	12%	12%	12%	13%	13%	13%	13%	12%	13%	14%	15%
Finland	13%	10%	8%	7%	7%	7%	8%	11%	13%	13%	14%	13%	14%
France	9%	9%	9%	10%	10%	11%	15%	19%	23%	23%	24%	24%	24%
Germany	1%	1%	1%	1%	1%	1%	2%	3%	4%	5%	7%	8%	8%
Greece	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	4%	4%	5%
Ireland	7%	5%	4%	3%	6%	7%	8%	11%	14%	16%	24%	28%	40%
Italy	3%	3%	2%	2%	2%	2%	3%	4%	9%	12%	14%	16%	18%
Luxembourg	5%	4%	6%	11%	12%	10%	10%	8%	10%	10%	13%	13%	11%
Netherlands	7%	7%	7%	8%	8%	10%	14%	27%	29%	24%	22%	18%	18%
Portugal	5%	6%	7%	9%	8%	9%	11%	10%	12%	14%	12%	13%	16%
Spain	9%	8%	7%	6%	5%	6%	8%	8%	10%	11%	14%	18%	23%
Sweden	9%	6%	6%	6%	7%	8%	11%	12%	16%	14%	12%	12%	13%
United Kingdom	7%	7%	7%	8%	8%	8%	11%	12%	13%	12%	12%	11%	11%
Eurozone	5%	4%	4%	4%	5%	5%	7%	9%	12%	12%	14%	15%	17%
EU-15	5%	5%	5%	5%	5%	6%	8%	10%	12%	12%	14%	14%	15%
Japan	15%	14%	13%	14%	14%	17%	19%	15%	16%	17%	17%	17%	17%
US	26%	23%	24%	24%	25%	25%	28%	26%	28%	24%	24%	23%	26%

Source: Bank for International Settlements.

Figure 3.20 Corporate bond markets, amount outstanding, 1994-2005 (% of GDP)



Source: Bank for International Settlements.

Comment

When the amount outstanding of corporate debt issued by the three regions is evaluated in terms of their GDP, two patterns emerge. On the one hand, the United States and Japan seem to have established corporate debt markets whose share in GDP remained constant over the past decade, i.e. it grew at the same pace as the economy. Differences between these two markets nevertheless remain strong, as the US share is on average 25% of GDP, whereas in Japan the corporate debt market accounts for only 16% of GDP. This persistent difference can be attributed to the dominance of a bank-based financial system in Japan as a source of corporate funding.

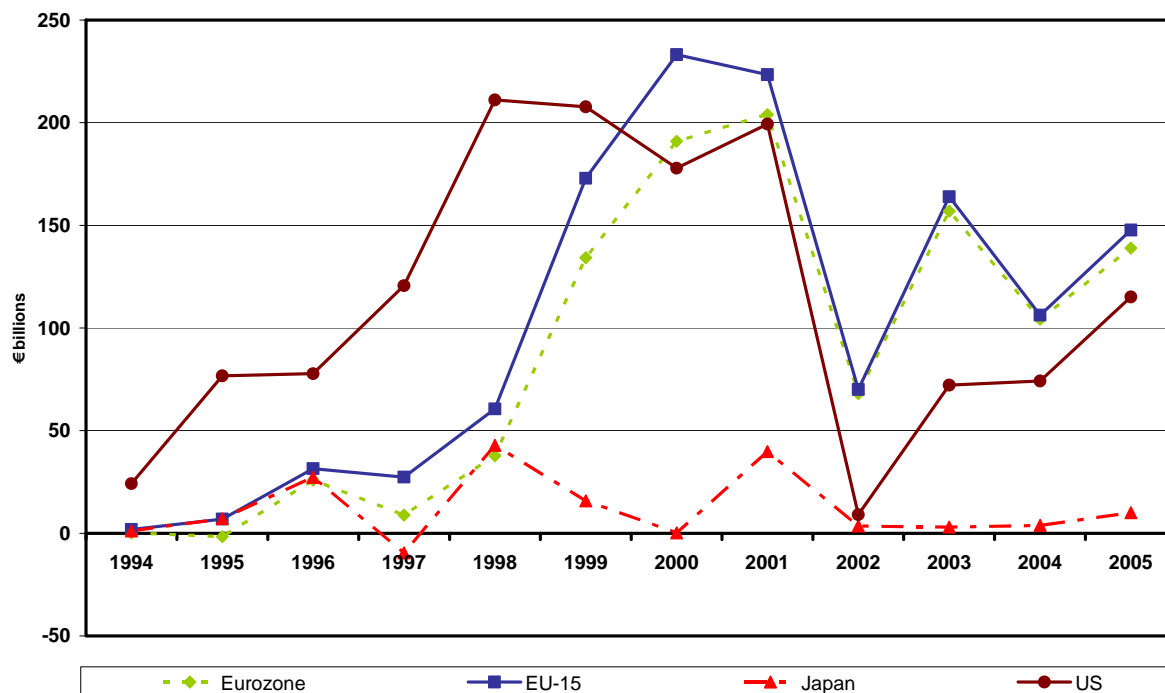
On the other hand, Europe's corporate debt market evolution relative to GDP highlights an impressive market deepening. As emphasised above, the crucial break point occurs in 1997. Until then, the amount outstanding of corporate debt grew at the same rate as the economy. Over the seven years following 1998, however, the European corporate debt market has grown three times faster than its GDP. Interestingly, the share of corporate debt market relative to GDP in the eurozone outpaced the corresponding ratio for EU-15. This evidence points to the beneficial effects of the single currency on financial market deepening.

Table 3.21 Corporate bond issuance, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	1.0	0.5	-1.1	0.1	0.8	4.0	0.4	0.8	-0.1	5.9	4.3	6.1
Belgium	1.0	1.7	0.0	0.2	0.0	-1.7	0.3	10.6	1.0	9.7	6.3	-1.5
Czech Republic	0.0	0.3	0.2	0.3	0.3	0.5	0.6	0.1	0.5	0.0	-0.6	-0.3
Denmark	0.7	2.9	1.4	1.9	1.4	0.7	0.5	1.5	-1.0	2.4	2.4	3.5
Finland	-1.0	-1.2	-0.4	0.7	0.3	1.6	4.1	3.3	0.4	2.5	0.2	0.8
France	5.4	1.0	22.7	1.5	18.4	66.6	65.8	71.9	3.7	34.6	2.9	11.6
Germany	-1.7	0.0	0.2	4.4	2.1	14.2	35.2	18.4	20.2	36.1	18.9	7.2
Greece	0.1	0.2	0.0	-0.3	0.2	0.6	1.0	0.0	0.7	1.7	0.8	1.8
Hungary	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Iceland	0.0	0.0	0.2	0.2	0.6	0.5	0.0	0.5	0.6	1.1	1.5	1.9
Ireland	-0.7	-0.2	-0.5	2.9	0.6	2.3	4.1	5.1	3.2	12.1	7.8	22.1
Italy	-1.5	-2.4	0.3	-1.4	0.7	10.7	18.9	60.4	35.0	28.8	35.8	32.3
Liechtenstein	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.2	0.9	0.1	0.0	-0.1	0.0	0.5	0.2	1.0	0.2	-0.4
Netherlands	1.6	0.3	3.6	1.3	8.2	18.0	57.6	14.6	-13.1	-3.8	-14.1	-1.7
Norway	0.5	-0.5	1.4	1.8	3.3	3.1	4.0	-0.2	2.0	0.2	0.4	1.9
Poland	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.2	0.0	0.0	0.0	0.0
Portugal	1.0	1.5	1.9	0.2	1.6	2.2	0.5	2.8	3.0	-1.5	1.6	6.1
Romania	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.4	0.0	-0.1	0.0
Slovakia	0.0	0.0	0.2	0.0	0.2	0.1	0.2	-0.1	0.1	0.0	-0.2	0.0
Spain	-5.0	-3.3	-1.8	-0.8	4.8	15.8	3.0	15.5	13.7	29.8	39.6	54.6
Sweden	-3.3	0.5	0.6	2.2	4.7	6.7	4.3	10.6	-2.7	-3.5	0.1	5.3
Switzerland	-0.5	13.2	-2.4	-0.2	2.5	1.5	0.3	-2.5	-4.0	-1.8	-1.1	-10.8
United Kingdom	4.2	5.2	3.7	14.4	16.7	31.4	37.3	7.5	5.6	8.2	-0.5	0.0
Eurozone	0.2	-1.7	25.9	8.9	37.8	134.2	191.0	203.9	68.0	156.9	104.3	138.9
EU-15	1.8	6.9	31.5	27.3	60.6	172.9	233.1	223.4	70.0	164.0	106.2	147.7
Japan	1.1	7.2	27.3	-9.5	42.9	15.8	0.2	39.8	3.5	3.0	3.8	10.0
US	24.1	76.7	77.7	120.6	211.1	207.7	177.9	199.4	9.1	72.1	74.2	115.1

Source: Bank for International Settlements.

Figure 3.21 Issuance of bonds by corporations, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

The issuance of corporate debt ballooned after the start of monetary union in the EU, as the common currency eliminated exchange rate risk and enabled corporate debt issuers to target a greater critical mass of investors. In fact, after the introduction of the euro, the eurozone corporate bond market grew fast than the corporate bond market of the wider EU, suggesting a casual effect of the euro on financial deepening. Furthermore the new economy effect has contributed to the increased corporate debt issuance observed over the sample period, at least until the technology bubble burst and corporate scandals lessened demand. In the United States, the issuance of corporate debt benefited positively from the new economy and the economic boom of the mid-1990s. From 1999 onwards, however, corporate scandals severely hit investor confidence and brought the corporate debt financing mechanism close to a halt in 2002. In fact, issuance bottomed in 2002 before timidly regaining momentum as investors were eager to benefit from the very low interest rates prevailing over the past years. On the other hand, European corporate debt issuance activity recovered rather rapidly, and has surpassed that in the US over the past couple of years.

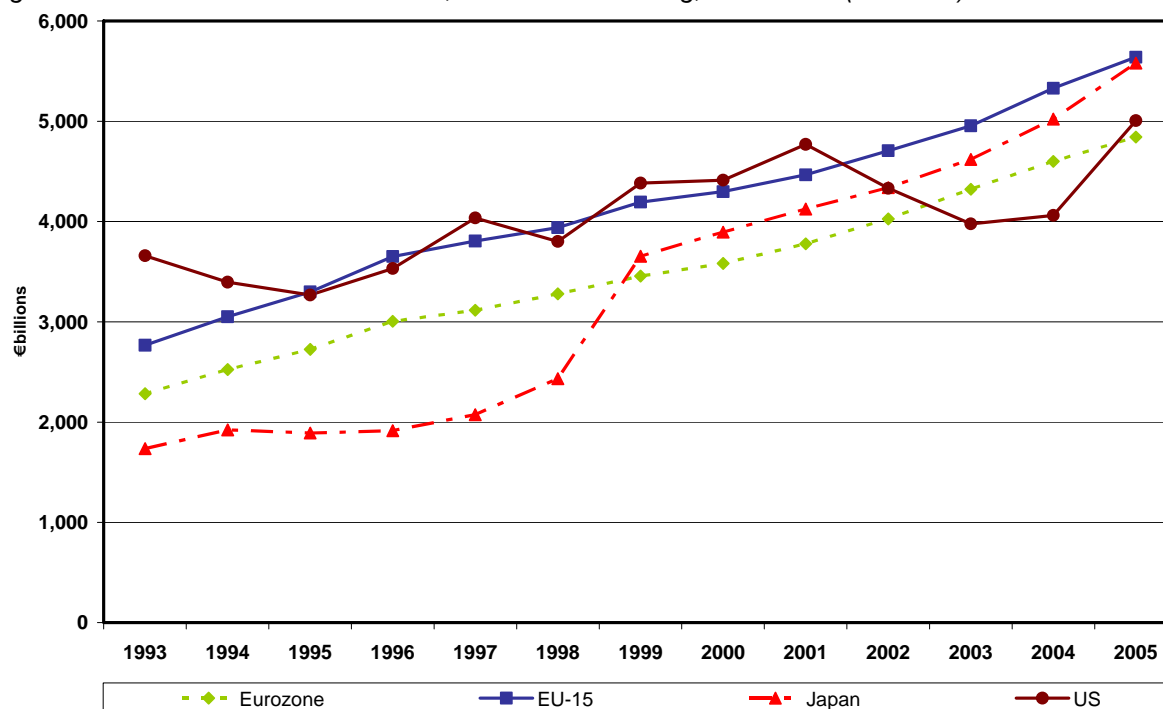
3.3.2 Government bond market

Table 3.22 Government bond markets, amount outstanding, 1993-2005 (€ billions)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	63.6	71.7	77.6	80.1	85.8	92.1	109.2	117.1	122.9	127.8	130.6	132.4	135.5
Belgium	204.8	219.4	238.4	244.0	245.2	235.2	253.4	262.8	280.2	292.3	300.2	308.3	320.4
Czech Republic	3.2	4.6	6.8	6.6	7.6	15.2	20.9	20.0	24.7	36.9	39.5	44.6	48.9
Denmark	92.9	98.2	104.2	104.9	104.1	100.5	105.2	101.5	100.0	101.9	91.4	93.2	81.0
Finland	39.1	52.3	61.4	67.1	67.3	68.5	70.5	69.2	72.6	76.5	87.6	93.4	95.3
France	331.5	383.8	447.8	490.2	525.5	576.8	608.6	644.8	684.9	744.4	828.0	879.5	935.1
Germany	401.6	427.5	447.7	476.4	507.3	564.0	618.8	655.3	720.3	819.0	920.7	1,010.8	1,070.0
Greece	61.2	68.6	76.0	94.3	102.1	104.4	110.5	115.3	128.8	159.1	183.5	213.9	248.9
Hungary	17.7	20.6	20.5	22.3	21.9	23.1	27.7	27.5	31.8	37.2	39.0	45.7	49.2
Iceland	2.1	2.3	2.4	2.6	2.8	2.7	3.0	2.8	3.2	3.3	3.2	3.3	3.0
Ireland	27.9	27.5	28.1	30.0	29.4	27.8	31.3	28.5	29.7	29.3	31.0	32.0	32.7
Italy	808.1	895.1	917.9	1,052.0	1,057.4	1,085.4	1,096.7	1,114.2	1,145.7	1,152.0	1,186.4	1,243.4	1,279.5
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	130.4	138.4	157.0	161.8	162.8	172.6	181.3	177.0	180.6	189.3	204.1	215.8	220.4
Norway	32.8	33.1	34.1	33.7	32.3	26.2	28.3	29.4	29.5	32.4	33.7	33.3	35.0
Poland	19.0	21.5	23.6	25.5	28.6	30.1	33.2	40.4	56.8	60.0	62.3	83.8	104.0
Portugal	32.6	37.6	42.5	44.9	43.7	45.7	50.5	56.4	64.2	76.2	84.7	93.2	112.8
Romania	0.0	0.0	0.0	0.8	1.1	1.1	0.7	1.0	1.4	1.7	2.3	2.3	2.4
Slovakia	0.4	1.4	2.0	2.3	2.9	3.7	4.0	4.6	8.5	8.4	9.6	11.3	10.8
Spain	182.9	201.1	229.6	264.4	288.5	305.9	325.8	341.8	347.0	361.3	365.9	377.6	392.2
Sweden	103.1	128.8	145.9	157.1	156.6	152.6	161.1	144.2	119.6	124.6	134.0	138.8	136.0
Switzerland	36.1	40.2	47.1	45.4	49.7	54.3	60.4	58.2	63.7	76.7	78.6	96.8	92.1
United Kingdom	286.3	299.7	325.1	384.1	430.5	408.2	471.1	470.3	470.4	452.1	406.7	497.6	578.9
Eurozone	2,284	2,523	2,724	3,005	3,115	3,278	3,456	3,582	3,777	4,027	4,323	4,600	4,843
EU-15	2,766	3,050	3,299	3,651	3,806	3,940	4,194	4,298	4,467	4,706	4,955	5,330	5,639
Japan	1,736	1,922	1,891	1,915	2,074	2,433	3,654	3,894	4,125	4,337	4,620	5,022	5,580
US	3,660	3,395	3,268	3,531	4,036	3,801	4,384	4,412	4,769	4,333	3,978	4,061	5,006

Source: Bank for International Settlements.

Figure 3.22 Government bond markets, amount outstanding, 1993-2005 (€ billions)



Source: Bank for International Settlements.

Comment

The most notable feature in Figure 3.22 is the large increase in Japanese government debt, which nearly tripled over the considered timeframe. The 1999 jump in the trend relates to the bank system restructuring and recapitalisation that was undertaken and largely financed by the Japanese government. European governments have steadily accumulated debt over the sample period. The steadiness of the path taken by EU government debt issuance reflects a seeming inability to rein in spending, since the trend is totally invariant to the business cycle. In other words, European governments as a whole have not been able to reduce the stock of government debt, not even in years of a favourable macroeconomic environment. On the other hand, the total government debt in

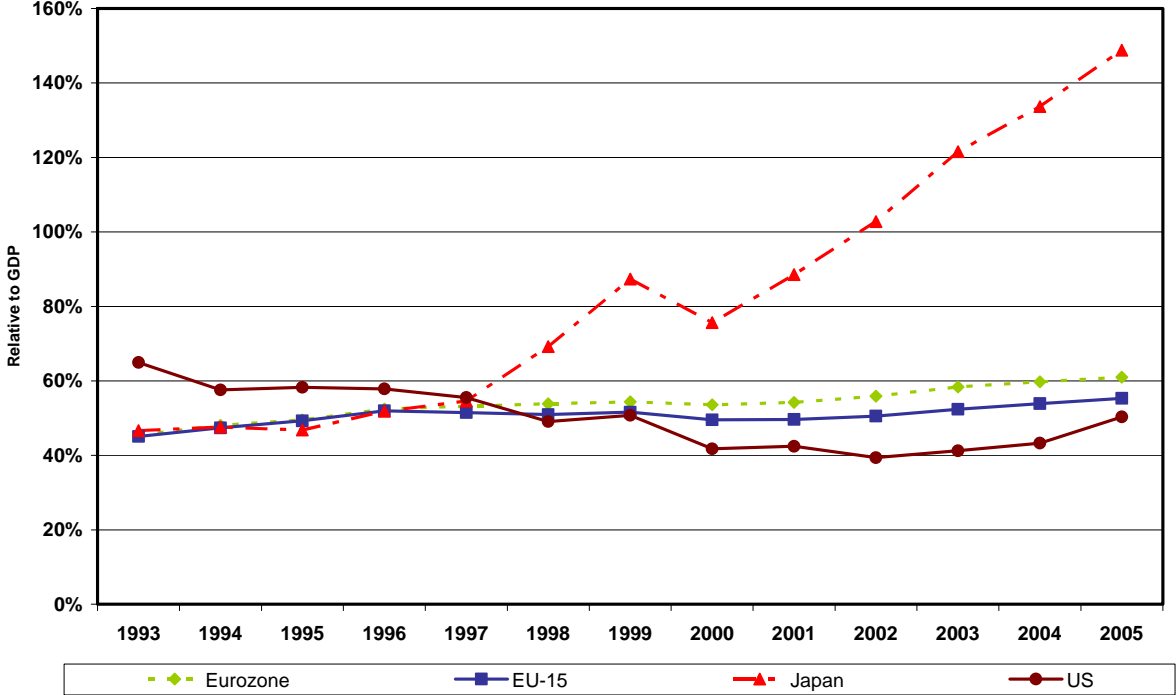
the United States follows a rather erratic path compared to that of Japan and Europe, suggesting that deficits are cyclical rather than permanent. However, a pattern of government over-spending in the US in the past couple of years may suggest the rise of permanent (long-term) deficits.

Table 3.23 Government bond markets, amount outstanding, 1994-2005 (% of GDP)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	39%	42%	42%	43%	47%	48%	55%	56%	57%	58%	58%	56%	55%
Belgium	108%	108%	110%	112%	111%	103%	106%	104%	108%	109%	109%	107%	107%
Denmark	77%	76%	75%	72%	69%	65%	64%	58%	56%	56%	48%	47%	39%
Finland	52%	61%	61%	66%	62%	59%	58%	53%	53%	54%	61%	62%	62%
France	30%	33%	37%	40%	42%	44%	45%	45%	46%	48%	52%	53%	55%
Germany	23%	24%	23%	25%	27%	29%	31%	32%	34%	38%	43%	46%	48%
Greece	77%	81%	85%	96%	95%	96%	94%	94%	98%	112%	119%	128%	139%
Ireland	65%	59%	55%	51%	41%	35%	34%	27%	25%	22%	22%	22%	20%
Italy	95%	104%	109%	108%	103%	102%	99%	96%	94%	91%	91%	92%	92%
Luxembourg	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Netherlands	45%	45%	47%	48%	47%	47%	46%	42%	40%	41%	43%	44%	44%
Portugal	42%	47%	49%	48%	44%	43%	44%	46%	50%	56%	62%	65%	77%
Spain	42%	46%	50%	54%	57%	57%	56%	54%	51%	50%	47%	45%	43%
Sweden	61%	72%	77%	74%	72%	69%	68%	55%	49%	49%	50%	50%	48%
United Kingdom	35%	34%	38%	41%	37%	32%	34%	30%	29%	27%	25%	29%	33%
Eurozone	45%	48%	50%	52%	53%	54%	54%	54%	54%	56%	58%	60%	61%
EU-15	45%	47%	49%	52%	51%	51%	52%	50%	50%	51%	52%	54%	55%
Japan	47%	48%	47%	52%	55%	69%	87%	76%	89%	103%	122%	134%	149%
US	65%	58%	58%	58%	56%	49%	51%	42%	42%	39%	41%	43%	50%

Source: Bank for International Settlements.

Figure 3.23 Government bond markets, amount outstanding, 1994-2005 (% of GDP)



Source: Bank for International Settlements.

Comment

In terms of GDP, the contrast in the budgetary stance taken by the authorities in the EU, the US and Japan is even greater than the impression conveyed by Figure 3.22. In Figure 3.23, the evolution of Japanese debt is the most striking feature: relative to GDP, Japanese government debt rose from around 50% in 1995 to around 150% by 2005.

In Europe, the government bond market has been growing at a slightly higher pace than GDP since 1999, reflecting a deterioration of public finance. As a whole, the eurozone countries comply with the Maastricht criteria’s upper bound of 60% placed on the government debt/GDP ratio, but considerable national differences remain, as is evident from Table 3.24.

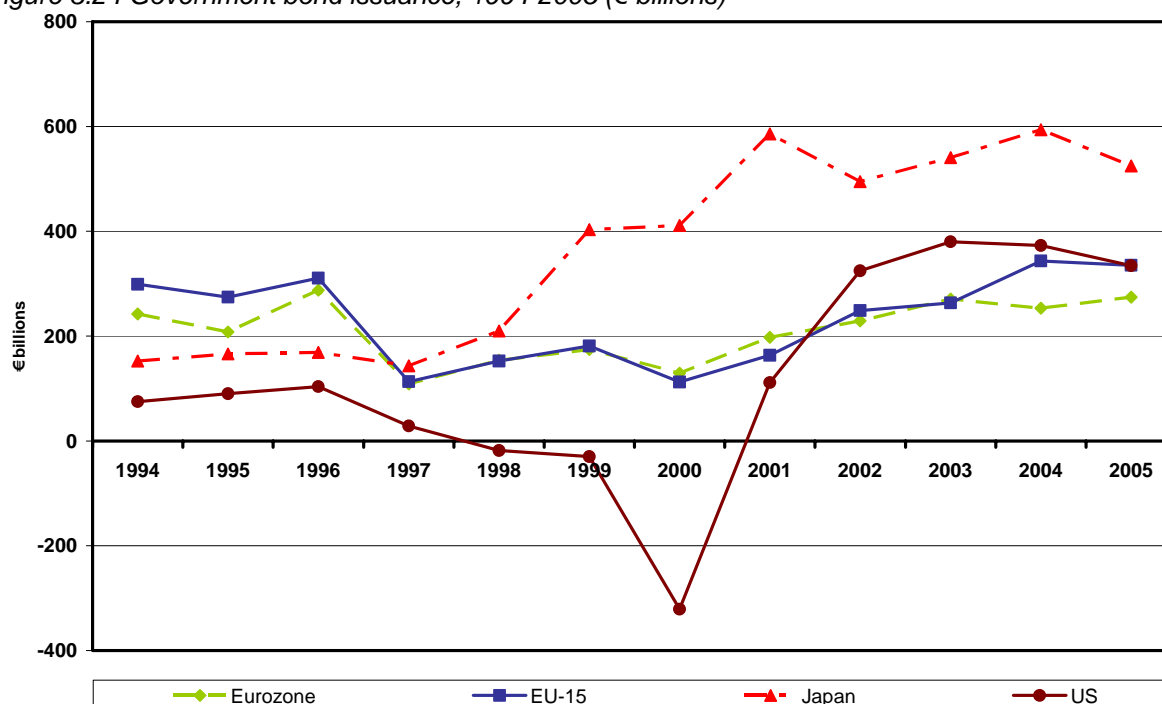
Whereas in 1993, the US government bond market was the largest of the three regions relative to GDP, the ratio has steadily decreased since then, reflecting a combination of strong economic growth and government surpluses. Since 2002, however, this downward trend has reversed due to a major expansion in government spending.

Table 3.24 Government bond issuance, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	8.0	5.9	3.8	5.3	6.1	16.3	8.1	5.7	5.4	4.5	2.0	3.1
Belgium	15.2	18.9	5.7	0.8	-10.4	19.8	10.5	17.7	10.8	7.2	6.9	14.7
Czech Republic	1.6	2.4	-0.4	1.6	6.5	6.3	-1.5	2.4	10.0	2.0	2.3	2.4
Denmark	5.1	4.3	2.7	-0.5	-4.4	3.9	-3.4	-2.4	2.9	-7.9	0.6	-12.2
Finland	13.5	9.9	5.7	-0.9	1.0	0.4	-1.0	3.1	4.6	10.5	5.1	1.4
France	51.4	63.2	43.2	36.9	48.7	34.1	36.4	40.6	53.8	73.2	46.8	64.1
Germany	26.8	19.6	29.1	32.5	54.6	58.3	35.9	66.5	88.3	90.5	81.9	65.9
Greece	7.8	8.4	19.0	7.4	2.1	4.0	5.6	14.4	26.9	21.4	28.0	38.2
Hungary	4.5	3.2	3.5	0.5	2.5	3.2	0.5	3.0	4.5	4.4	4.4	4.6
Iceland	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.0	-0.5
Ireland	-0.1	0.8	2.2	-0.7	-1.7	3.1	-2.9	1.2	0.2	1.9	0.9	0.8
Italy	87.8	28.9	135.8	3.1	26.6	5.6	18.5	31.8	6.5	35.0	52.6	42.8
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	8.1	18.3	4.9	1.1	9.0	9.4	-3.2	3.5	7.4	13.2	10.4	5.9
Norway	0.7	1.3	-1.2	-1.6	-3.3	-0.6	1.5	-0.9	0.5	5.2	-1.2	0.8
Poland	6.6	3.7	3.9	4.3	2.9	3.2	4.4	12.5	9.6	10.1	11.3	16.6
Portugal	4.9	5.3	2.6	-1.2	2.0	4.3	6.0	7.8	11.2	7.8	7.8	21.0
Romania	0.0	0.0	0.9	0.4	0.0	-0.7	0.3	0.5	0.3	0.5	0.0	0.2
Slovakia	0.9	0.7	0.3	0.5	1.1	0.2	0.8	4.0	-0.2	1.1	1.0	-0.7
Spain	18.9	28.8	35.6	24.4	15.9	18.9	15.5	5.3	13.9	5.3	10.7	16.6
Sweden	26.1	14.9	10.0	-1.4	5.0	-7.4	-14.1	-19.2	5.0	8.0	4.5	1.0
Switzerland	2.9	4.3	3.5	2.2	4.2	6.4	-5.5	3.5	11.3	6.7	15.7	-4.1
United Kingdom	25.4	47.3	10.6	6.3	-1.9	10.6	0.6	-12.6	12.0	-7.2	85.4	72.0
Eurozone	242.4	208.0	287.5	108.6	153.8	174.2	129.4	197.7	229.0	270.6	253.1	274.4
EU-15	299.1	274.5	310.8	113.0	152.6	181.3	112.5	163.5	248.8	263.5	343.5	335.2
Japan	152.5	166.0	168.9	143.2	209.8	403.2	411.1	585.8	495.1	540.7	593.7	524.8
US	75.0	90.2	103.8	28.7	-18.4	-30.1	-321.2	111.2	324.7	380.2	373.0	334.3

Source: Bank for International Settlements.

Figure 3.24 Government bond issuance, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

In Figure 3.24, the EU, the US and Japan display three distinct patterns of government debt issuance.

European governments had the steadiest issuance: the standard deviation of the European time series is more than three times less than that of the United States series. This fact probably points to the rigidity of the European real economy, as government deficits compensate for e.g. adjustment in labour markets and other structural changes that may be required for sustained growth to occur. Whereas EU governments made attempts at fiscal consolidation prior to 1999, the expansionary path of government debt issuance since then highlights the recent surge in government deficits as the macroeconomic environment deteriorated. Government debt issuance in Japan dwarfed that in the

United States and Europe from 1997, as government spending soared, essentially to prevent the banking system from totally collapsing, but also to address the deflationary challenge. The drop in 2005 could be interpreted as the end of the quantitative easing policy, a restoration of growth, and a healing of the banking sector as balance sheets improved, reducing the need for government support.

Finally, US government debt issuance is highly responsive to the business cycle and major political events. During the expansionary period that lasted until 2000, the US government managed to balance the budget and even to generate steady fiscal surpluses. From 2000 onwards, the growth slowed and major geo-political events such as the Afghanistan and Iraq wars weighed heavily on the US government budget. Consequently, the issuance of government debt has ballooned over the past five years.

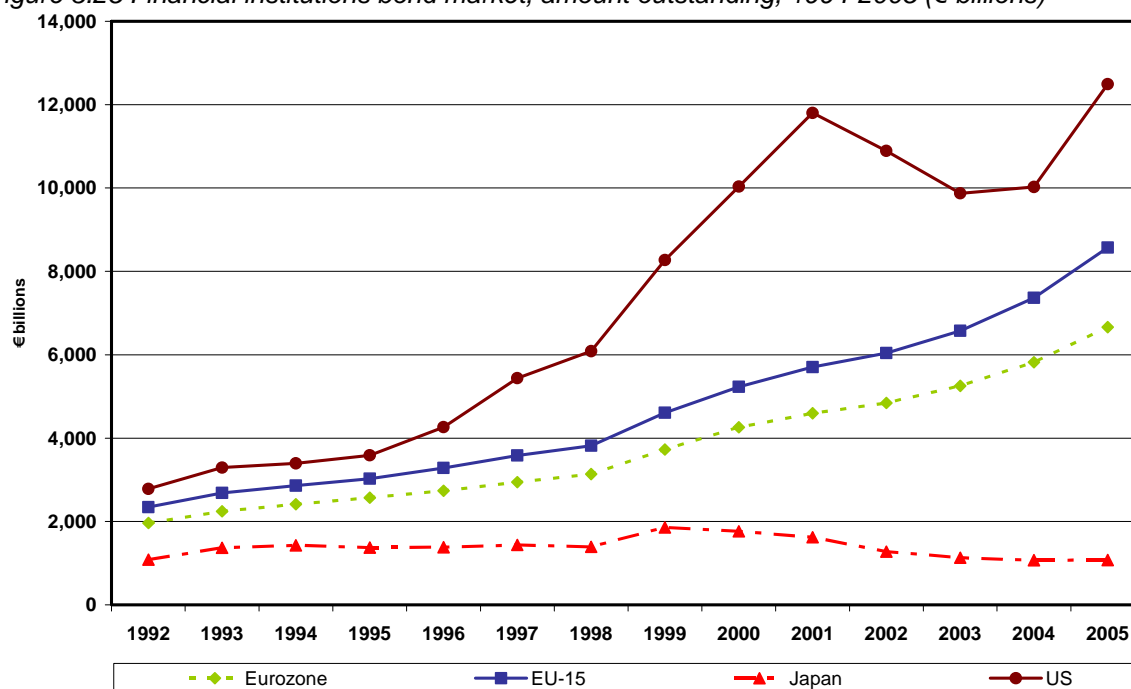
3.3.3 Financial institutions bond market

Table 3.25 Financial institutions bond market, amount outstanding, 1994-2005 (€ billions)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	51.6	60.2	63.5	70.1	73.1	80.9	81.9	92.5	109.6	122.1	134.0	143.3	159.3	190.8
Belgium	107.6	114.9	135.0	147.8	155.5	158.3	162.8	187.5	209.7	210.8	218.5	217.3	223.9	231.6
Czech Repub	0.0	0.2	1.0	1.7	2.3	3.0	3.8	4.2	4.4	4.1	3.7	3.6	3.9	6.6
Denmark	107.7	131.8	122.0	128.4	131.3	140.1	152.5	152.0	163.9	189.4	208.5	225.9	260.0	306.0
Finland	39.9	43.6	43.4	34.8	32.9	34.6	35.2	37.2	31.9	31.1	33.2	35.2	43.0	49.8
France	613.4	628.1	604.2	594.9	563.9	579.1	531.2	551.0	624.5	685.0	735.1	830.0	959.3	1,087.8
Germany	754.4	926.7	1,067.9	1,188.2	1,273.4	1,390.2	1,557.3	1,816.7	2,049.0	2,062.1	2,074.5	2,078.4	2,118.0	2,214.5
Greece	3.7	3.5	3.7	2.4	1.0	1.2	1.2	1.9	4.2	5.7	7.2	12.3	22.8	31.8
Hungary	0.2	0.2	0.2	0.2	0.2	0.5	0.4	0.7	0.5	1.1	1.1	3.1	3.6	4.6
Iceland	2.6	3.8	3.8	3.9	4.4	5.1	6.3	8.9	12.4	14.5	15.8	22.2	37.1	68.1
Ireland	3.0	3.2	2.7	4.1	9.2	11.8	15.3	22.8	29.8	38.5	48.3	71.0	103.2	152.1
Italy	267.9	299.3	296.7	304.7	367.0	366.6	369.3	458.8	531.3	628.0	680.1	738.4	811.2	906.4
Liechtenstein	0.2	0.4	0.5	0.7	0.6	0.5	0.5	0.6	0.8	0.8	1.0	1.0	1.2	1.2
Luxembourg	0.5	0.5	1.1	2.4	3.8	5.0	5.6	7.1	10.9	17.9	23.2	27.1	30.6	38.8
Netherlands	73.9	100.9	127.1	147.5	164.1	209.1	247.0	338.2	400.2	476.0	533.7	614.1	714.2	880.8
Norway	23.8	24.8	23.2	24.7	28.7	37.8	42.3	49.4	56.0	64.0	74.9	72.8	82.5	95.2
Poland	0.0	0.0	0.0	0.0	0.2	1.1	2.0	3.7	4.2	6.1	5.5	5.2	4.3	4.7
Portugal	3.5	4.2	4.5	5.3	7.9	10.7	14.1	24.8	37.5	52.8	60.6	79.7	92.5	104.8
Romania	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4
Slovakia	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4
Spain	46.2	59.9	64.1	69.5	84.6	97.0	117.4	188.2	221.3	264.9	298.6	405.9	541.7	772.9
Sweden	115.2	124.1	124.6	126.9	140.5	138.1	128.7	151.4	145.6	135.0	153.3	172.2	182.8	217.5
Switzerland	107.8	114.8	117.9	115.5	107.3	131.7	139.4	152.7	183.3	195.1	205.7	196.0	259.7	305.4
United Kingdc	156.5	187.4	202.1	200.2	275.2	362.0	399.0	577.6	663.6	783.5	829.9	923.0	1,104.2	1,387.3
Eurozone	1,966	2,245	2,414	2,572	2,736	2,944	3,138	3,727	4,260	4,595	4,847	5,253	5,820	6,662
EU-15	2,345	2,688	2,863	3,027	3,283	3,585	3,819	4,608	5,233	5,703	6,039	6,574	7,367	8,573
Japan	1,084	1,369	1,430	1,375	1,384	1,438	1,393	1,857	1,767	1,626	1,277	1,133	1,074	1,075
US	2,784	3,296	3,396	3,589	4,265	5,438	6,085	8,273	10,034	11,799	10,891	9,872	10,027	12,491

Source: Bank for International Settlements.

Figure 3.25 Financial institutions bond market, amount outstanding, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

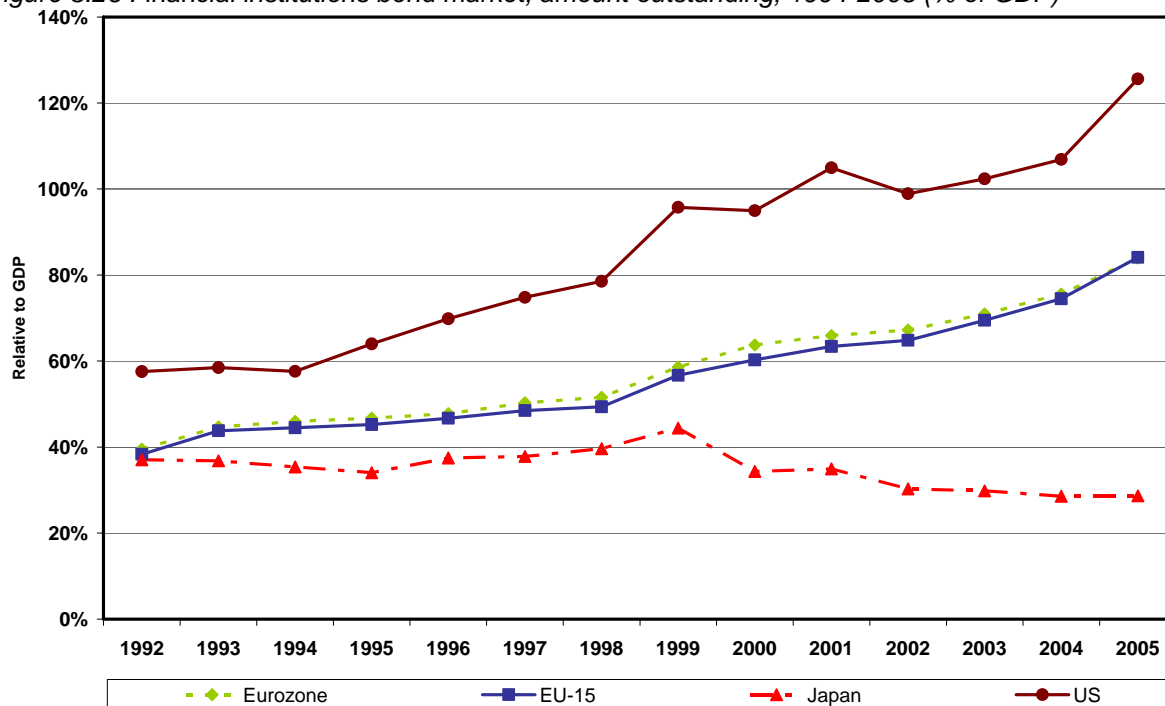
Bond issuance by financial institutions has been the single most important factor explaining the deepening of bond markets mainly in Europe as well as in the United States. In both regions, the total market for bonds issued by financial institutions quadrupled between 1992 and 2005. On the other hand, the ability of Japanese financial institutions to emit debt was severely handicapped over the sample period by their very weak health and the attendant crisis of confidence in the banking sector.

Table 3.26 Financial institutions bond market, amount outstanding, 1994-2005 (% of GDP)

% of GDP	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	34%	37%	37%	38%	39%	44%	43%	46%	52%	57%	61%	63%	67%	78%
Belgium	60%	61%	66%	68%	72%	72%	71%	79%	83%	81%	82%	79%	78%	77%
Denmark	93%	110%	94%	92%	90%	93%	98%	93%	94%	106%	114%	120%	132%	149%
Finland	47%	59%	51%	35%	32%	32%	30%	31%	24%	23%	24%	25%	29%	33%
France	58%	57%	52%	50%	45%	46%	40%	40%	43%	46%	47%	52%	58%	64%
Germany	47%	54%	59%	62%	66%	73%	80%	90%	99%	98%	97%	96%	96%	99%
Greece	5%	4%	4%	3%	1%	1%	1%	2%	3%	4%	5%	8%	14%	18%
Ireland	7%	7%	6%	8%	16%	16%	19%	25%	29%	33%	37%	51%	69%	95%
Italy	28%	35%	34%	36%	38%	36%	35%	41%	46%	52%	54%	57%	60%	65%
Luxembourg	5%	5%	9%	18%	26%	32%	33%	38%	51%	81%	102%	113%	119%	143%
Netherlands	27%	35%	42%	45%	48%	60%	67%	87%	95%	106%	115%	129%	146%	178%
Portugal	4%	5%	6%	6%	8%	11%	13%	22%	31%	41%	45%	58%	65%	72%
Spain	10%	14%	15%	15%	17%	19%	22%	32%	35%	39%	41%	52%	65%	86%
Sweden	57%	73%	69%	67%	66%	63%	58%	64%	56%	55%	60%	64%	66%	77%
United Kingdom	19%	23%	23%	23%	29%	31%	31%	42%	42%	49%	50%	58%	64%	78%
Eurozone	40%	45%	46%	47%	48%	50%	52%	59%	64%	66%	67%	71%	76%	84%
EU-15	38%	44%	44%	45%	47%	48%	49%	57%	60%	63%	65%	69%	74%	84%
Japan	37%	37%	35%	34%	37%	38%	40%	44%	34%	35%	30%	30%	29%	29%
US	58%	58%	58%	64%	70%	75%	79%	96%	95%	105%	99%	102%	107%	126%

Source: Bank for International Settlements.

Figure 3.26 Financial institutions bond market, amount outstanding, 1994-2005 (% of GDP)



Source: Bank for International Settlements.

Comment

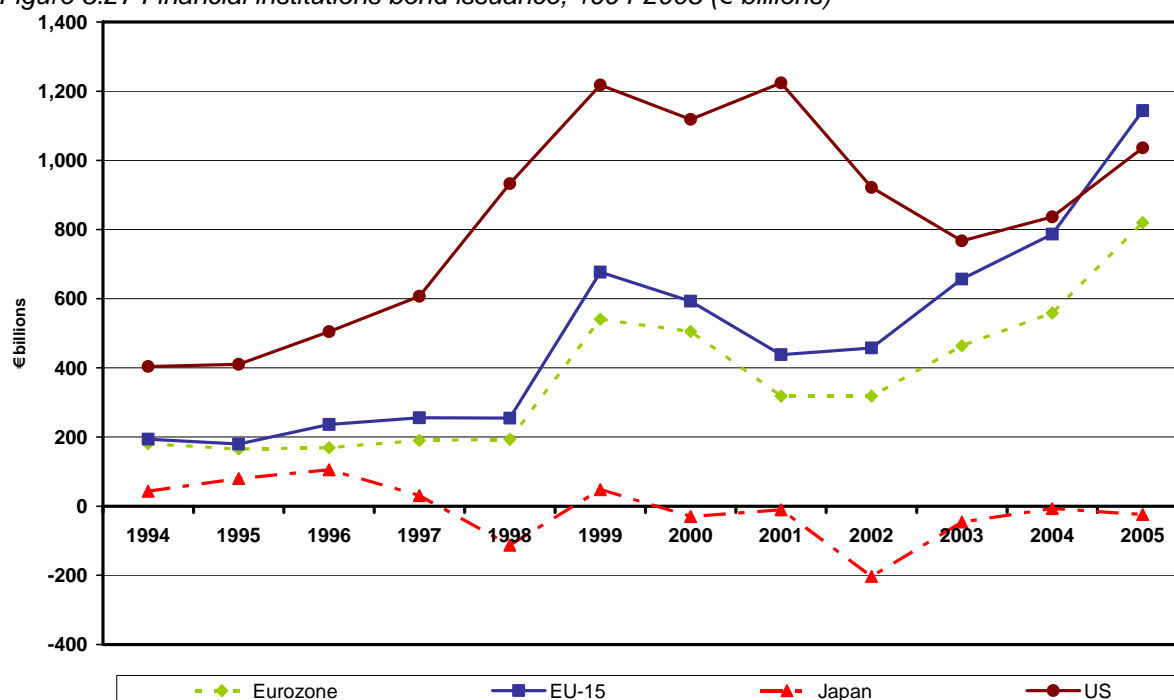
In Europe, the market for debt issued by financial institution bond has easily outpaced the growth rate of the real economy by nearly two times over the entire sample period. An even stronger pattern is observable for the United States, which reflects *inter alia* a wave of M&A activity in the banking sector in the 1990s. Japan has seen the opposite, even with low growth rates. This is due also to the shrinking of the market for debt issued by financial institutions following a prolonged crisis of confidence in the banking sector.

Table 3.27 Financial institutions bond issuance, 1994-2005 (€ billions)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Austria	4.0	6.9	3.7	6.9	1.1	9.0	16.1	12.1	12.9	11.3	15.4	32.2
Belgium	20.8	13.1	8.3	1.7	4.8	22.3	20.7	0.5	10.6	3.0	7.9	4.6
Czech Republic	0.8	0.6	0.7	0.9	0.4	0.5	0.0	-0.8	-0.2	0.2	0.1	2.5
Denmark	-11.0	3.6	5.9	10.2	10.0	-0.8	12.3	24.5	18.2	20.0	31.0	45.3
Finland	0.5	-7.9	-1.9	1.2	0.7	0.3	-5.1	-0.7	2.4	2.1	7.3	7.0
France	-18.5	-8.9	-31.4	11.3	-46.2	11.2	67.2	60.4	53.9	96.4	125.8	122.9
Germany	142.3	121.5	89.4	112.3	162.8	239.0	224.4	3.3	53.5	48.9	51.0	74.8
Greece	0.2	-1.1	-1.5	0.3	0.0	0.7	2.4	1.5	1.5	4.4	9.5	9.8
Hungary	0.0	0.0	0.0	0.4	0.0	0.1	-0.2	0.5	0.0	1.9	0.2	1.2
Iceland	0.2	0.2	0.5	0.5	1.2	1.8	3.9	2.8	1.4	6.7	12.7	29.0
Ireland	-0.3	1.6	4.6	1.7	3.9	6.0	6.1	8.1	11.7	23.4	31.1	48.0
Italy	-1.0	10.3	61.9	-2.5	4.1	88.2	70.6	96.7	50.6	57.1	68.5	100.8
Liechtenstein	0.1	0.2	0.0	-0.1	-0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0
Luxembourg	0.6	1.4	1.3	1.2	0.6	0.8	3.7	7.3	5.4	4.5	3.7	7.6
Netherlands	26.1	20.5	18.2	44.6	36.9	86.4	56.6	73.1	67.8	89.5	98.9	159.9
Norway	-1.7	1.8	3.3	9.0	6.9	2.2	6.3	6.2	10.0	6.3	9.2	9.6
Poland	0.0	0.0	0.2	1.0	0.9	1.5	0.3	1.8	-0.2	-0.1	-0.7	0.2
Portugal	0.2	0.7	2.8	2.8	3.4	10.9	12.7	15.1	7.8	18.5	12.4	12.0
Romania	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.4
Slovakia	0.0	0.0	0.1	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.1	0.0
Spain	5.5	7.0	14.0	8.5	21.3	65.9	29.7	41.1	40.0	104.6	127.1	240.2
Sweden	0.9	-0.5	12.0	-3.6	-1.4	7.6	-3.8	-6.5	20.0	19.2	10.4	37.7
Switzerland	1.8	-7.3	0.9	18.3	8.9	6.5	22.8	6.6	18.6	8.6	61.7	38.3
United Kingdom	23.3	11.4	48.8	58.9	52.3	129.5	78.9	102.0	101.1	153.4	186.6	240.6
Eurozone	180.5	165.0	169.3	190.0	193.4	540.7	505.1	318.3	318.2	463.9	558.5	819.9
EU-15	193.7	179.5	236.0	255.5	254.4	677.0	592.5	438.3	457.5	656.6	786.5	1,143.5
Japan	43.3	80.2	105.4	30.9	-113.0	47.8	-29.6	-10.3	-203.4	-46.0	-7.2	-23.8
US	403.6	410.0	504.5	607.2	932.4	1,217.8	1,118.6	1,223.8	921.8	767.2	836.3	1,035.9

Source: Bank for International Settlements.

Figure 3.27 Financial institutions bond issuance, 1994-2005 (€ billions)



Source: Bank for International Settlements.

Comment

Bond issuance by financial institutions has been tremendous in the EU and the US, especially since 1998. The annual issuance of financial institution bonds has more than doubled in the United States, and been multiplied by a factor of close to six on the EU-15 bond market. The need to finance takeovers/restructuring following the M&A waves in the financial industry that followed liberalisation in the US in the 1990s and which took root in Europe before, but became more pronounced after monetary union, partly explains the increase in debt issued by financial institutions. In contrast, bond issuance by Japanese financial institutions was minimal, even negative in 1998 and over the 2000-2005 period, due in part to the severe financial crisis the country faced.

3.4 Bond listings

3.4.1 Number of bond listings in the EU by stock exchange, 2003-2005

Table 3.28 Number of bond listings in the EU, by stock exchange, 2003-2005

	2003	2004	2005
Athens Exchange	134	126	117
Borsa Italiana	509	457	479
Bratislava Stock Exchange	70	65	75
Budapest Stock Exchange	65	97	99
Cyprus Stock Exchange	66	74	74
Deutsche Börse	7,215	8,240	10,848
Euronext	n/d	3,434	3,503
Iceland Stock Exchange	325	341	359
Irish Stock Exchange	3,716	6,206	9,745
Ljubljana Stock Exchange	92	101	99
London Stock Exchange	9,763	10,243	11,009
Luxembourg Stock Exchange	21,285	24,292	26,782
Malta Stock Exchange	66	72	67
OMX Exchanges	4,035	4,032	4,318
OMX Copenhagen Stock Exchange	2,320	2,232	-
OMX Helsinki Stock Exchange	266	287	-
OMX Stockholm Stock Exchange	1,412	1,480	-
OMX Vilnius Stock Exchange	37	33	-
Oslo Børs	826	861	815
Prague Stock Exchange	47	79	96
Spanish Exchanges (BME)	2,653	2,939	3,285
SWX Swiss Exchange	1,259	1,327	1,214
Warsaw Stock Exchange	70	81	76
Wiener Börse	2,571	2,846	2,724

Source: FESE statistics, end of year data.

Comment

Bond listings in the EU are concentrated on four markets. The Deutsche Börse, the London Stock Exchange, the Irish Stock Exchange and the Luxembourg Stock Exchange account for more than 80% of the overall listings in the EU-15. The Deutsche Börse and the London Stock Exchange, placed in the traditional financial centres of Europe, account for a considerable share of the bonds listed in the EU (approx 15% each). Two seemingly less important exchanges, the Luxembourg and Irish exchanges, are prominent centres for bond listings because of lenient fiscal regimes; however, their share of on-exchange bond trading volumes remains very low compared to the high number of products listed (as can be inferred from Tables 3.28 and 3.29). Over the past three years, most EU stock exchanges saw large increases in the number of listings. However, the number of bonds listed on the Irish stock exchange tripled. The Deutsche Börse and the Luxembourg Stock Exchange have also been dynamic in terms of attracting further listings, with their numbers growing by 50.4% and 25.8%, respectively, over the period 2003-2005. Despite high growth rates in the number of listings, Central European exchanges remain of very minor importance, as all bonds listed on those exchanges account for less than 1% of all bonds listed in the enlarged EU.

3.4.2 Number of bond trades on EU exchanges, 2003-2005

Table 3.29 Number of bond trades on EU exchanges, 2003-2005

Exchange	2003			2004			2005		
	Electronic Order Book Transactions	Negotiated Deals	Total	Electronic Order Book Transactions	Negotiated Deals	Total	Electronic Order Book Transactions	Negotiated Deals	Total
Athens Exchange	0	0	0	0	0	0	n/a	n/a	n/a
Borsa Italiana	3,029,840	0	3,029,840	3,071,806	n/a	3,071,806	2,795,073	n/a	2,795,073
Bratislava Stock Exchange	799	2,368	3,167	648	1,986	2,634	233	2,678	2,911
Budapest Stock Exchange	4,958	31	4,989	10,311	507	10,818	13,394	43	13,437
Cyprus Stock Exchange	385	0	385	610	0	610	431	0	431
Deutsche Börse	2,514	2,715,370	2,717,884	2,582	2,659,090	2,661,672	1,678	2,862,866	2,864,544
Euronext	2,530,674	174,580	2,705,254	1,409,860	112,403	1,522,263	948,891	58,527	1,007,418
Iceland Stock Exchange	10,254	9,896	20,150	10,833	6,364	17,197	7,130	4,205	11,335
Irish Stock Exchange	0	14,822	14,822	//	13,012	13,012	//	11,742	11,742
Ljubljana Stock Exchange	0	0	0	16,935	532	17,467	13,375	1,057	14,432
London Stock Exchange	0	441,602	441,602	0	407,102	407,102	n/a	403,186	403,186
Luxembourg Stock Exchange	9,471	0	9,471	6,363	//	6,363	6,013	//	6,013
Malta Stock Exchange	0	0	0	2,758	n/a	2,758	5,053	n/a	5,053
OMX Stock Exchanges	57,723	1,219,853	1,277,576	51,176	953,676	1,004,852	55,618	n/a	55,618
OMX Copenhagen Stock Exchange	38,367	1,218,292	1,256,659	25,461	952,031	977,492			
OMX Helsinki Stock Exchange	0	45	45	//	40	40			
OMX Stockholm Stock Exchange	19,312	0	19,312	25,679	n/a	25,679			
OMX Vilnius Stock Exchange	44	1,516	1,560	36	1,605	1,641			
Oslo Børs	6,110	25,079	31,189	2,402	19,709	22,111	1,484	18,561	20,045
Prague Stock Exchange	24	17,976	18,000	182	11,560	11,742	220	8,965	220
Spanish Exchanges (BME)	0	0	0	29,901	684,570	714,471	24,520	743,764	768,284
SWX Swiss Exchange	539,903	87,146	627,049	518,396	138,961	657,357	471,534	59,044	530,578
Warsaw Stock Exchange	102,808	1,278	104,086	104,866	113	104,866	52,639	35	52,674
Wiener Börse	51,533	0	51,533	28,238	//	28,238	24,880	//	24,880
TOTAL	6,346,996	4,710,001	11,056,997	5,267,867	5,009,585	10,277,339	4,422,166	4,174,673	8,587,874

Source: FESE statistics.

Comment

The number of on-exchange bond trades in Europe has decreased between 2003 and 2005, both in terms of electronic order book transactions and negotiated deals. In 2003, a total of over 11 million transactions in debt securities were conducted on-exchange in Europe. These figures have to be handled with care, however, since they only relate to published data. Many exchanges do not publish the number of negotiated deals that are struck (meaning that this information underestimates the total number of trades). Bond markets in the EU display considerable heterogeneity. Some are far more reliant on OTC trading, and others rely more on electronic order books. The most active markets for the volume of on-exchange trading are Germany and Italy, which together account for over one-half of the total number of bonds traded on European exchanges. Presumably, this is due to the large size of these countries' debt markets, as well as the wide presence of retail investors in their bond markets.

3.4.3 Value of bond turnover on EU exchanges

Table 3.30 Value of bond turnover on EU exchanges, 2003-2005

Exchange	2003			2004			2005		
	Electronic Order Book Transactions	Negotiated Deals	Total	Electronic Order Book Transactions	Negotiated Deals	Total	Electronic Order Book Transactions	Negotiated Deals	Total
Athens Exchange	49.1	0.0	49.1	80.8	13.4	94.2	40.1	0.0	40.1
Borsa Italiana	147,944.5	0.0	147,944.5	151,171.2	n/a	151,171.2	124,483.9	n/a	124,483.9
Bratislava Stock Exchange	2,883.9	22,947.4	25,831.3	351.2	9,945.2	10,296.4	201.6	25,551.2	25,752.8
Budapest Stock Exchange	1,124.4	87.3	1,211.7	1,064.0	65.0	1,129.0	982.4	138.1	1,120.5
Cyprus Stock Exchange	4.4	0.0	4.4	12.2	0.0	12.2	4.8	0.4	5.2
Deutsche Börse	29.3	404,058.7	404,088.0	33.1	354,960.5	354,993.6	15.5	307,522.6	307,538.1
Euronext	23,456.3	1,497,659.0	1,521,115.3	19,799.1	166,368.4	186,167.5	16,953.0	125,483.0	142,436.0
Iceland Stock Exchange	7,179.0	5,109.5	12,288.5	9,225.3	8,681.6	17,906.9	8,295.1	8,732.3	17,027.4
Irish Stock Exchange	0.0	37,233.7	37,233.7	//	36,217.0	36,217.0	//	25,595.4	25,595.4
Ljubljana Stock Exchange	135.9	341.6	477.5	111.3	364.4	475.7	101.1	1,266.1	1,367.2
London Stock Exchange	0.0	1,913,676.9	1,913,676.9	0.0	2,235,843.2	2,235,843.2	n/a	2,415,246.5	2,415,246.5
Luxembourg Stock Exchange	379.6	0.0	379.6	591.9	//	591.9	1,956.7	//	1,956.7
Malta Stock Exchange	118.5	0.0	118.5	142.1	n/a	142.1	172.0	n/a	172.0
OMX Stock Exchanges	49,261.0	1,973,802.1	2,022,661.7	46,463.0	2,140,457.8	2,186,279.9	6,092.5	2,496,269.0	2,502,361.5
OMX Copenhagen Stock Exchange	48,893.8	876,648.5	925,542.3	46,098.6	902,756.4	948,855.0			
OMX Helsinki Stock Exchange	0.0	41.8	41.8	//	22.5	22.5			
OMX Stockholm Stock Exchange	356.8	1,096,720.8	1,097,077.6	359.8	1,237,042.6	1,237,402.4			
OMX Vilnius Stock Exchange	10.4	391.0	401.4	4.6	636.3	640.9			
Oslo Børs	28,303.9	90,807.7	119,111.6	15,603.6	78,387.8	93,991.4	11,917.4	76,449.6	88,367.0
Prague Stock Exchange	0.0	33,560.3	33,560.3	1.4	21,640.8	21,642.2	1.7	17,905.7	17,907.4
Spanish Exchanges (BME)	750,959.0	2,012,467.0	2,763,426.0	402,137.0	2,457,163.0	2,859,300.0	227,268.0	3,075,582.0	3,302,850.0
SWX Swiss Exchange	40,791.8	116,941.0	157,732.8	35,576.6	102,370.6	137,947.2	29,566.0	90,473.5	120,039.5
Warsaw Stock Exchange	865.8	535.0	1,400.8	881.0	61.7	942.7	629.3	55.1	684.4
Wiener Börse	507.4	0.0	507.4	359.5	//	359.5	343.3	//	343.3
TOTAL	1,103,254.8	10,083,029.3	11,185,882.7	730,067.3	9,752,998.2	10,482,362.9	429,024.4	8,666,270.5	9,095,294.9

Source: FESE statistics.

Comment

According to the statistics in Table 3.30, the value of bond turnover on EU exchanges has declined over the 2003-2005 period in line with the number of bond listings. Not surprisingly, most of the bond turnover on European exchanges is accounted for by negotiated deals, as opposed to electronic limit order book transactions, reflecting the illiquid nature of the instruments and the large ticket sizes. Moreover, between 2004 and 2005, the share of electronic order book transactions was halved, falling from 10% of the total on-exchange bond turnover in 2003 to 4.75% in 2005. In terms of on-exchange bond turnover, four exchanges are dominant players: Euronext, the London Stock Exchange, OMX and the Spanish Exchanges together accounted for more than 95% of the total on-exchange bond turnover in Europe.

3.5 European covered bond markets

3.5.1 Amount outstanding, 2001-2004

Table 3.31 European covered bond market, amount outstanding, 2001-2004 (€ millions)

	2001	2002	2003	2004
Germany	1,104,834	1,088,000	1,056,691	1,010,112
Denmark	199,848	191,373	231,565	232,799
France	64,006	70,909	87,199	100,669
Spain	13,509	25,266	82,500	100,507
Sweden	65,445	70,906	60,507	82,493
Ireland	0	0	13,500	30,946
Switzerland	29,452	31,780	16,864	28,870
Luxembourg	11,012	13,100	16,673	19,482
UK	0	0	7,000	14,959
Netherlands	992	876	690	12,750
Hungary	0	0	3,512	4,964
Austria	10,565	9,379	8,500	3,000
Czech Republic	0	0	171	1,954
Slovakia	0	0	0	1,052
Finland	48	47	65	248
Poland	0	0	0	65
Latvia	0	0	35	57
Others	10,613	9,426	12,283	11,340
Total	1,499,711	1,501,636	1,585,472	1,644,927

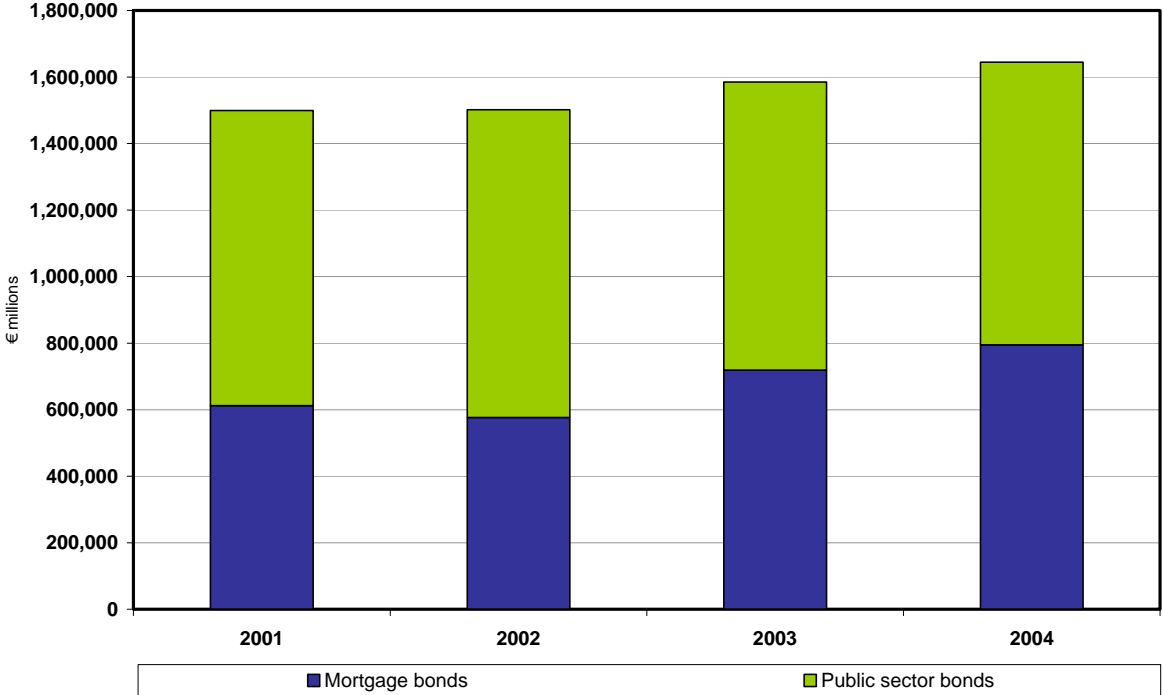
Source: European Covered Bond Council.

Comment

Historically, the European covered bond market was essentially constituted of German products (Pfandbrief). Nevertheless the share of debt issued by German institutions in the overall European covered bond market has been decreasing, a trend that reflects the increasing popularity of the Pfandbrief outside its native land. In addition, favourable legislative initiatives in other European countries, where previously there had been restrictions, has given a tremendous impetus to the rapid growth of this market. As can be seen from Table 3.31, some of these initiatives were very recent, and the subsequent explosion is demonstrative of the strong pent-up demand for these instruments.

3.5.2 Amount outstanding by type of bond, 2001-2004

Figure 3.28 European covered bond market, amount outstanding, by type of bond, 2001-2004 (€ millions)



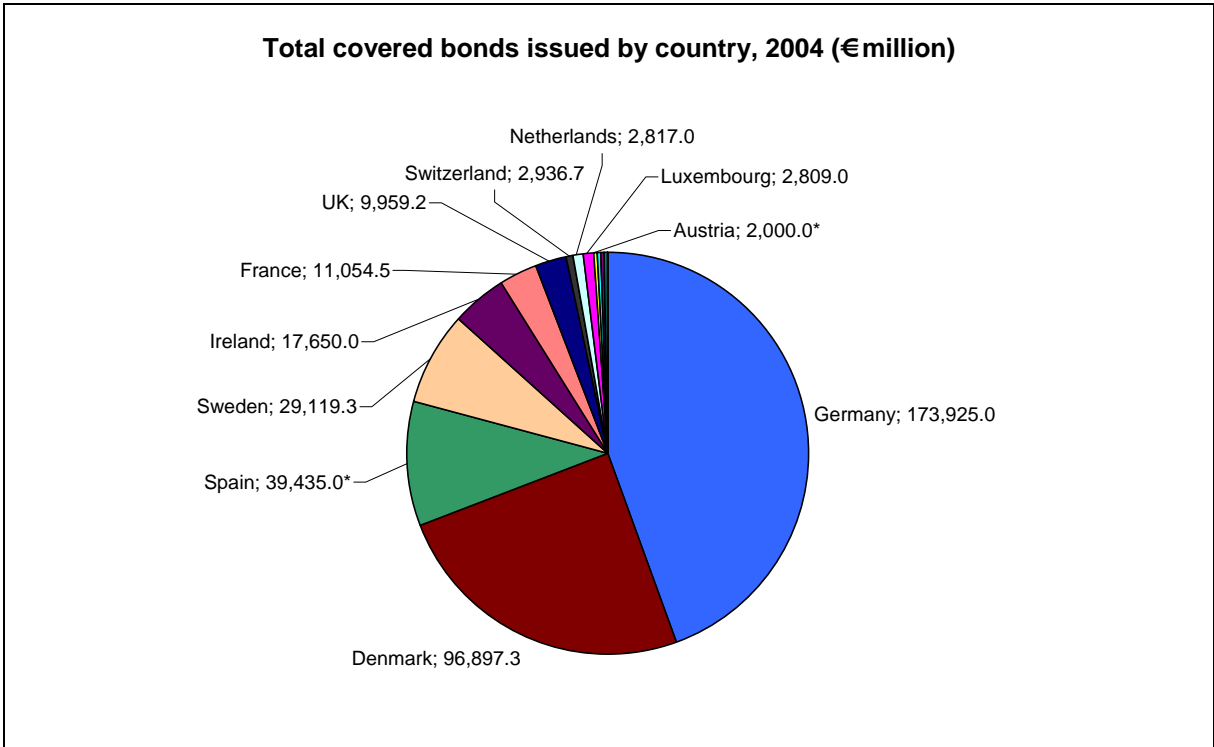
Source: European Covered Bond Council.

Comment

Figure 3.28 displays the composition of the amount outstanding of the European covered bond market by instrument type: mortgage bond or public sector bond. Between 2001-2004, the share of state-backed bonds in the covered bond market has fallen as commercial banks have taken on an increasingly important role – often facilitated by legislation – in backing these securities. Innovation in the securitisation of various kinds of assets lies behind the success of asset-backed bonds. Whereas securitisation is well defined at the national level, considerable uncertainties surround a coherent definition at a pan-European level. The European Commission is currently addressing this issue of pan-European securitisation, and as soon as a level playing field will be achieved, the European covered bond market is sure to grow more rapidly, as these instruments are popular both with issuers and investors.

3.5.3 Covered bond issuance by country, 2004

Figure 3.29 Total covered bonds issued by country, 2004 (€ million)



* = preliminary data.

Source: European Covered Bond Council.

Comment

Although other EU countries have recently revised their national legislation to facilitate growth in the asset-backed securities business, the German market still remained the largest issuer of covered bonds in 2004, accounting for almost one-half of the total value of the EU covered bond market. Denmark has also traditionally had a vibrant and developed mortgage debt market, but other EU countries are seeing very rapid increases in the size of their mortgage markets.

3.6 Technical notes and sources

Overall methodology:

The statistics in this section are provided in current euro terms. The data emanating from the BIS is mainly converted from dollars into euro at the exchange rate prevailing at the end of month of the observed time period. Other datasets were in euros.

The euro/dollar data are retrieved from the FRED II dataset, which is the economic database of the St. Louis Federal Reserve Bank. GDP data have been taken from the AMECO database, the economic database of the European Commission.

ECB definition of a debt security: A promise on the part of the issuer (i.e. the borrower) to make one or more payment(s) to the holder (the lender) at a specified future date or dates. Such securities usually carry a specific rate of interest (the coupon) and/or are sold at a discount to the amount that will be repaid at maturity.

EMF definition of covered bond: Covered bonds are on balance sheet debt instruments secured by a cover pool of *mortgage loans* (property as collateral) or *public-sector debt* to which investors have a preferential claim in the event of the issuer's default. As they remain on the issuer's balance sheet, the bonds benefit from the additional security of the issuing institution's own funds and from restrictive legal regulation of the issuing credit institutions.

EMF definition of mortgage bond: A corporate or other entity's debt security secured by a mortgage lien against certain real property of the issuer (Subcategory of covered bond).

Classification of BIS securities statistics

	Issues by residents	Issues by non-residents
In domestic currency		
- targeted at resident investors	Domestic	International
- targeted at non-residents	International	International
In foreign currency	International	International

Source: BIS paper 14, p. 14.

Domestic debt securities: According to the BIS, the data domestic debt securities dataset covers data on long-term bonds and notes, treasury bills, commercial paper and other short-term notes issued in the domestic markets. The data are coming from various national sources, such as central banks, national statistical offices and securities registers.

Domestic debt securities are securities issued by residents in domestic currency and target resident investors. Efforts are devoted by the BIS to eliminate any overlap between international debt securities and domestic debt securities by an analysis at the individual security level.

International debt securities: As the table above illustrates, the international debt securities series covers debt securities issued in domestic currency by non-residents targeted at resident investors, as well as debt securities issued in domestic currency targeted at non-residents and finally debt securities issued in foreign currency.

Aggregate size of bond markets: The term aggregate size of bond markets refers to the sum of domestic debt securities and international debt securities, as defined in the above paragraphs.

Taken from another perspective, the aggregate time series presented in this section sum up government, corporate and financial institution debts (whether for issuance or amount outstanding).

Amount outstanding: Amount outstanding is defined as the gross nominal value of all deals concluded and not yet settled at the reporting date. It provides a measure of market size.

Sources:

Bureau of International settlements – Securities Statistics (<http://www.bis.org/statistics/secstats.htm>).

Federal Reserve Bank of Saint-Louis – FRED II database (<http://research.stlouisfed.org/fred2/>).

European Commission – AMECO database

(http://ec.europa.eu/economy_finance/indicators/annual_macro_economic_database/ameco_en.htm).

EMF – European Mortgage Federation (www.hypo.org).

ECBC – European Covered Bond Council (<http://ecbc.hypo.org/Content/Default.asp>).

4. Derivatives markets

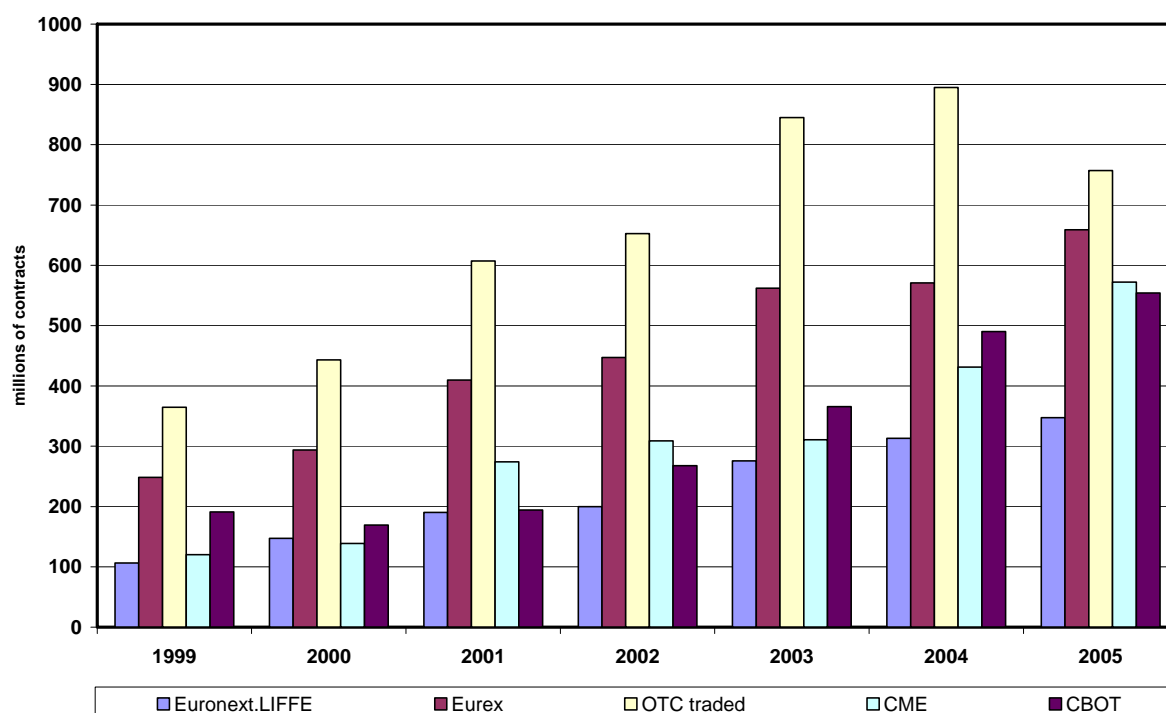
4.1 Derivatives markets: An overview

Table 4.1 Turnover by derivatives exchange, 1999-2005 (in millions of contracts)

Interest rate options	1999	2000	2001	2002	2003	2004	2005
Euronext.LIFFE	12.9	12.8	30.8	42.7	77.9	76.3	79.5
Eurex	29.1	30.7	38.3	31.6	49.5	51.0	58.6
OTC traded	41.8	43.5	69.1	74.4	127.7	128.6	101.5
CME	24.9	28.6	88.2	105.6	100.8	130.6	160.5
CBOT	47.1	31.8	38.3	54.7	67.8	92.9	96.4
Interest rate futures							
Euronext.LIFFE	93.4	134.5	159.6	157.2	198.0	237.0	267.7
Eurex	219.4	263.2	371.3	415.5	512.7	520.0	600.3
OTC traded	322.9	399.7	538.2	578.3	717.4	766.3	655.6
CME	95.3	110.2	185.9	203.5	210.2	300.8	411.7
CBOT	143.9	137.6	156.0	213.3	298.1	397.1	457.7
Total Interest rate derivatives							
Euronext.LIFFE	106.3	147.3	190.5	199.9	275.8	313.3	347.2
Eurex	248.6	293.8	409.6	447.1	562.2	571.0	658.9
OTC traded	364.7	443.2	607.3	652.7	845.1	894.9	757.1
CME	120.2	138.8	274.1	309.0	311.0	431.4	572.2
CBOT	191.0	169.4	194.3	268.0	365.8	490.0	554.1

Sources: BIS and data from various derivatives exchanges.

Figure 4.1 Turnover by derivatives exchange, 1999-2005 (in millions of contracts)



Sources: BIS and data from various derivatives exchanges.

Comment

The derivatives industry has grown rapidly in the last ten years or so. An important trend is the shift towards increasingly higher volumes of derivatives being traded on exchanges according to pre-established rules. The emergence of central clearing houses is removing the counterparty risk prevalent in over-the-counter (OTC) deals. Derivatives instruments are also being standardised, thereby facilitating electronic and exchange-based trading on set contracts. Today, in turnover terms,

a far greater number of interest rate derivatives contracts are traded 'on-exchange' as opposed to over-the-counter. There is far more interest rate futures trading than interest rate options trading on OTC and on-exchange markets. With its near monopoly in the trading of Euro Bund Futures,¹ Eurex is easily the most dominant player in the interest rate futures segment, followed by CBOT, CME and finally LIFFE. This hierarchy remained constant for the whole of the sample period, but CME and CBOT have been rapidly catching up with Eurex and may soon take over the top two positions among futures exchanges by overtaking Eurex in terms of liquidity.

The traded volume of interest rate options over the counter and over the four main exchanges grew by 320% between 1999 and 2005. The emergence of the CME on the interest rate options segment is particularly striking. As shown in Table 4.1, the turnover of interest rate options on the CME has multiplied by a factor of six, making it by far the world's biggest market for interest rate options. In fact, LIFFE and EUREX are struggling to gain further market share as they have not been able to keep up with growth rates in US exchanges when it comes to interest rate options.

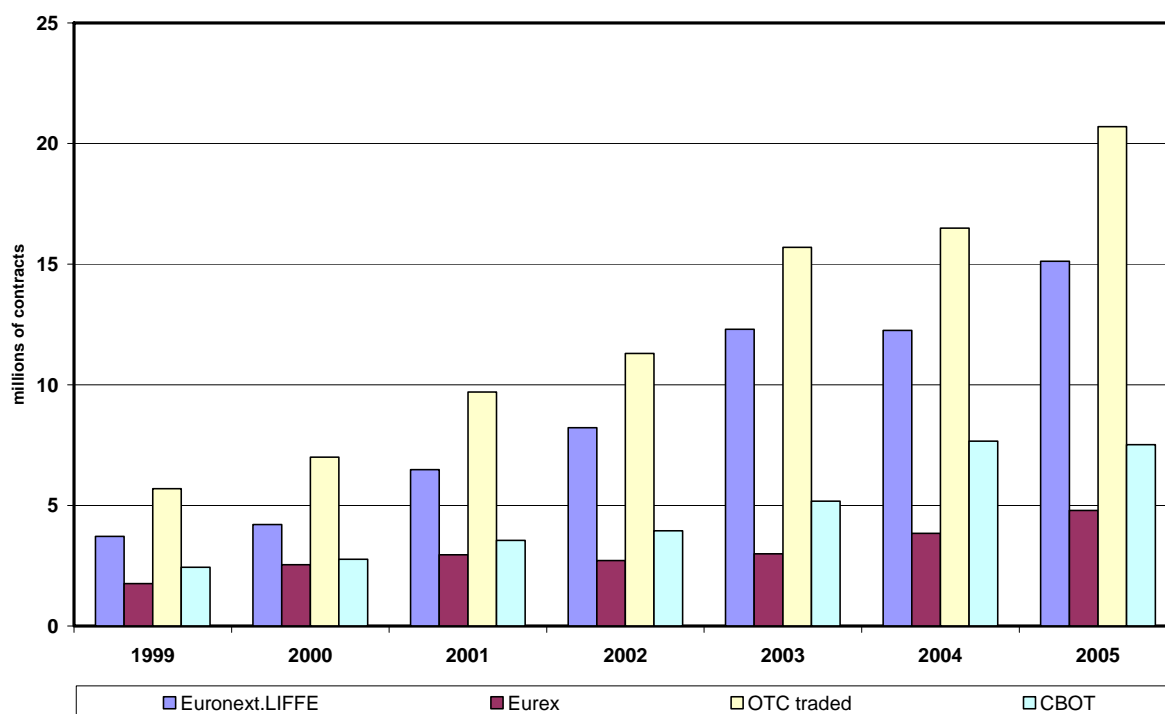
Table 4.2 Open interest by exchange, 1999-2005 (in millions of contracts)

Interest rate options	1999	2000	2001	2002	2003	2004	2005
Euronext.LIFFE	1.4	1.7	3.7	5.0	8.7	7.6	9.6
Eurex	0.7	1.1	1.6	1.0	1.0	1.2	1.4
OTC traded	2.1	2.8	5.2	6.0	9.6	8.8	11.6
CME							
CBOT	1.0	1.3	1.8	1.8	2.5	3.6	3.4
Interest rate futures							
Euronext.LIFFE	2.3	2.5	2.8	3.3	3.7	4.6	5.5
Eurex	1.0	1.4	1.4	1.7	2.0	2.7	3.4
OTC traded	3.6	4.2	4.5	5.3	6.1	7.7	9.1
CME							
CBOT	1.4	1.5	1.8	2.2	2.7	4.1	4.1
Total Interest rate derivatives							
Euronext.LIFFE	3.7	4.2	6.5	8.2	12.3	12.3	15.1
Eurex	1.8	2.5	3.0	2.7	3.0	3.8	4.8
OTC traded	5.7	7.0	9.7	11.3	15.7	16.5	20.7
CME							
CBOT	2.4	2.8	3.6	3.9	5.2	7.7	7.5

Sources: BIS and data from various exchanges.

¹ Euro-Bund Futures are futures contracts based on notional long-term debt instruments issued by the Federal Republic of Germany, with a remaining term of 8.5 to 10.5 years. They bear a notional coupon rate of 6%. The contract value is €100,000 and the minimum price change is 0.01%, equivalent to a value of €10.

Figure 4.2 Open interest by exchange, 1999-2005 (in millions of contracts)



Sources: BIS and data from various exchanges.

Comment

Overall two patterns emerge from Figure 4.2. One trend is the rapid growth in the amount outstanding on the Euronext.LIFFE market and on the OTC-traded derivatives market. The amount outstanding of both markets has multiplied their market depth by a factor of more than 2.5. The other trend is that there was strong growth in open interest on Eurex and CBOT but this was rather moderate when compared to Euronext.LIFFE and the OTC market segment. In fact, the growth in the market depth of Eurex and CBOT between 1999 and 2005 was considerably weaker.

By looking at the breakdown by market instrument, Euronext.LIFFE and the CBOT market have gained an increased share of the open interest in the interest rate options segment. Growth in OTC trades has also been more marked for options rather than futures, as the growth in open interest between 1999 and 2005 for both markets underlines.² On the interest rate futures segment, growth rates have been more contained than on the interest rate options segment. This can be attributed to the fact that financial innovation is mainly achieved through options rather than futures.

² Growth in interest rate options' open interest between 1999 and 2005: 452%; growth in interest rate futures' open interest between 1999 and 2005: 152%.

4.2 Turnover of exchange-traded interest rate derivatives (by marketplace)

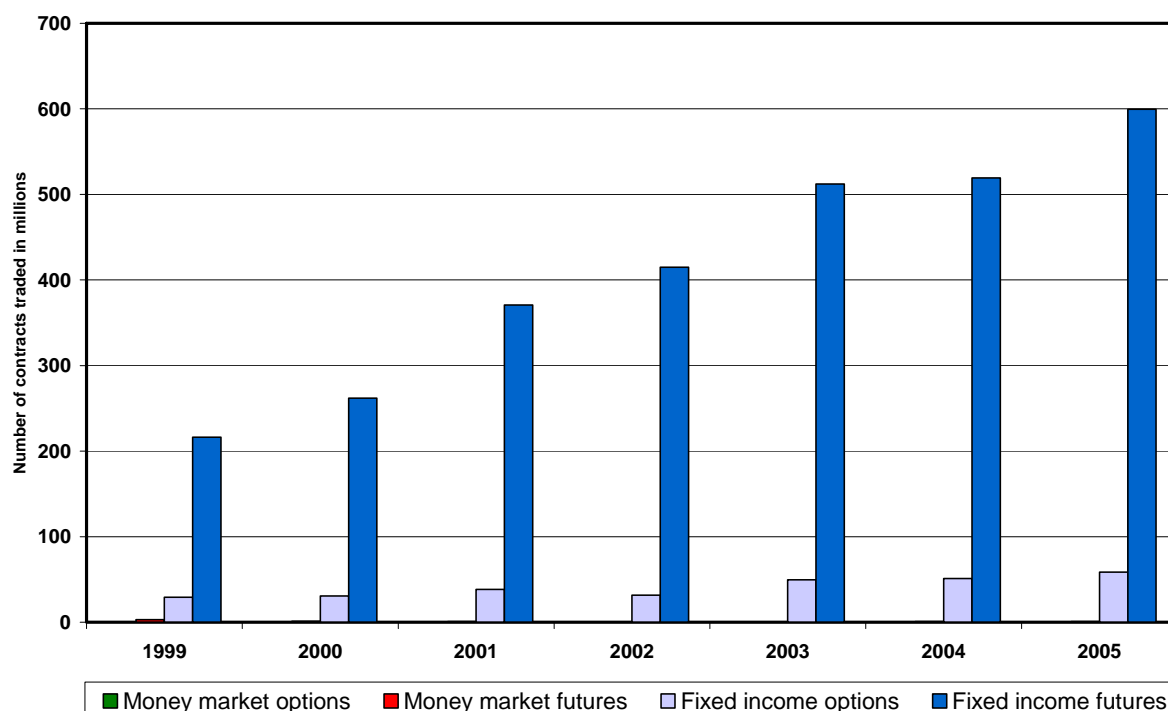
4.2.1 Turnover of interest rate derivatives on Eurex

Table 4.3 Turnover of interest rate derivatives on EURE, 1999-2005 (in millions of contracts)

	1999	2000	2001	2002	2003	2004	2005
Interest rate derivatives	248.56	293.85	409.63	447.12	562.20	571.04	658.86
Money market options	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Money market futures	3.11	1.23	0.66	0.53	0.50	0.61	0.69
Money market derivatives	3.11	1.23	0.66	0.53	0.50	0.61	0.69
Fixed income options	29.11	30.68	38.32	31.61	49.54	51.05	58.55
Fixed income futures	216.34	261.94	370.64	414.98	512.16	519.39	599.62
Fixed income derivatives	245.45	292.62	408.96	446.59	561.69	570.44	658.17

Sources: BIS and data from various exchanges.

Figure 4.3 Turnover of interest rate derivatives on EUREX, 1999-2005 (number of contracts in millions)



Sources: BIS and data from various exchanges.

Comment

It is mainly fixed income products that are traded on the EUREX market. The trading activity on the fixed income options segment of the EUREX market has increased slightly over the period from 1999 to 2005 whereas the trading activity of fixed income futures has tripled over the last seven years. A contract-by-contract analysis is required to gain a better understanding of the determinants for this dynamic.

Trading activity has fallen away on the derivatives money market segment of EUREX. The most actively traded contract was the three-month EURIBOR futures contract, but the number of contracts traded is one fifth of what it was in 1999. Nevertheless, the number of OTC-traded three-month EURIBOR futures is on the rise.

Fixed income market activity accounted for about 99% of the number of contracts traded on EUREX in 2005, with the most traded contracts being fixed income futures. The contracts that have historically generated the largest share of trade on EUREX are Euro Bund future contracts and options on Euro Bund futures. EUREX market activity therefore relies heavily on the benchmark role that German bonds play on Europe's financial markets.

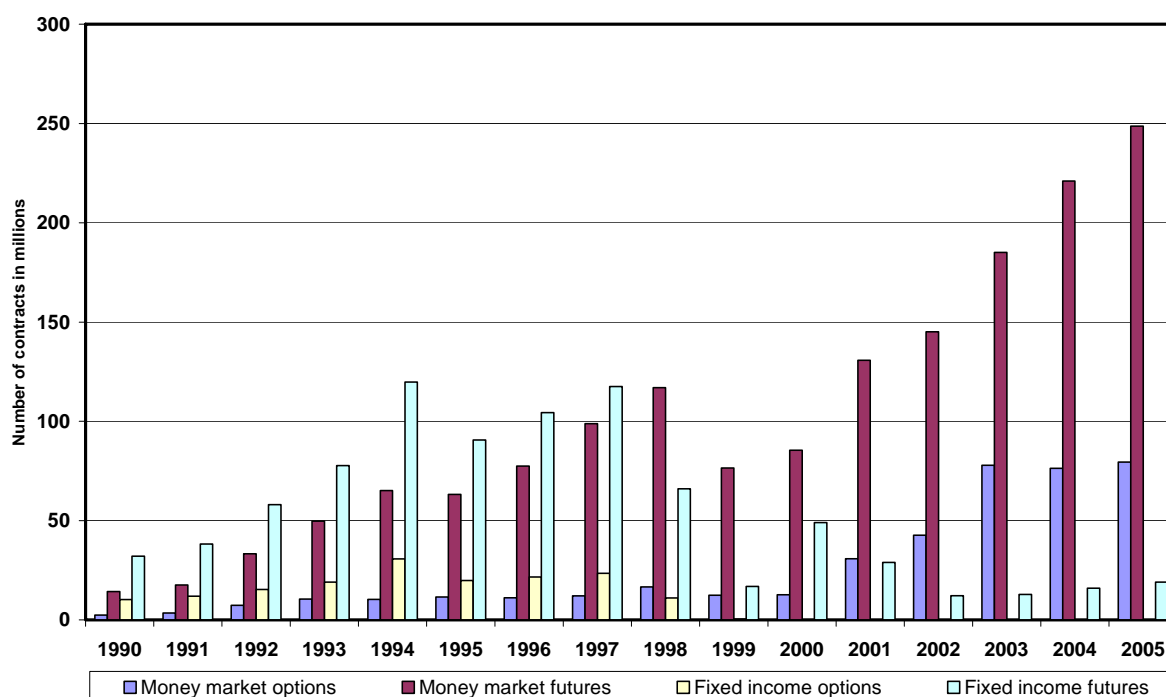
4.2.2 Turnover of interest rate derivatives on Euronext.LIFFE

Table 4.4 Turnover of interest rate derivatives on Euronext.LIFFE, 1999-2005 (number of contracts in millions)

Interest rate derivatives	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Money market options	2	4	7	10	10	12	11	12	17	13	13	31	43	78	76	79
Money market futures	14	18	33	50	65	63	77	99	117	76	85	131	145	185	221	249
Money market derivatives	17	21	41	60	76	75	89	111	134	89	98	162	188	263	297	328
Fixed income options	10	12	15	19	31	20	22	23	11	0	0	0	0	0	0	0
Fixed income futures	32	38	58	78	120	91	104	118	66	17	49	29	12	13	16	19
Fixed income derivatives	42	50	73	97	150	110	126	141	77	17	49	29	12	13	16	19

Sources: BIS and data from various exchanges.

Figure 4.4 Turnover of interest rate derivatives on Euronext.LIFFE, 1999-2005 (number of contracts in millions)



Sources: BIS and data from various exchanges.

Comment

As opposed to the EUREX market, trading activity on the Euronext.LIFFE market has been more diversified, at least until 1999. Since then, the range of products traded has fallen considerably. Up until 1999, its trading activity included both fixed income options and futures as well as money market options and futures. After 1999, the fixed income segment disappeared, essentially reflecting the fact that Eurex had successfully recaptured liquidity in Euro Bund futures. This has led to two of the largest European exchanges for derivatives specialising in terms of their product lines. While EUREX is now specialising on fixed income derivatives trading, the Euronext.LIFFE market is focusing on money market derivatives trading.

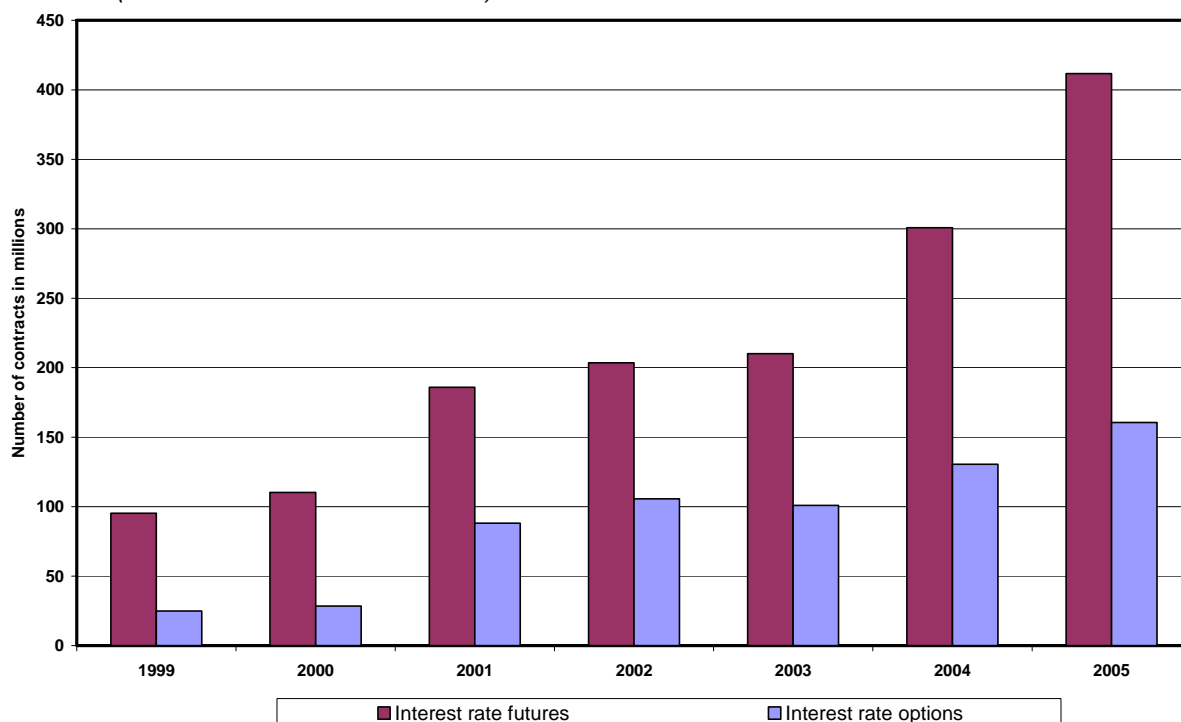
4.2.3 Turnover on the Chicago Mercantile Exchange (CME)

Table 4.5 Turnover of interest rate derivatives on the Chicago Mercantile Exchange, 1999-2005
(number of contracts in millions)

	1999	2000	2001	2002	2003	2004	2005
Interest rate derivatives	120.18	138.80	274.05	309.04	311.02	431.45	572.22
Interest rate options	24.93	28.60	88.18	105.58	100.83	130.60	160.52
Interest rate futures	95.25	110.20	185.87	203.46	210.19	300.85	411.71

Source: CME data.

Figure 4.5 Turnover of interest rate derivatives on the Chicago Mercantile Exchange, 1999-2005
(number of contracts in millions)



Source: CME data.

Comment

Over the period from 1999 to 2005, the Chicago Mercantile Exchange's trading volume of financial products has grown tremendously. The volume of interest rate futures has multiplied fourfold while the volume of interest rate options has multiplied sevenfold. In 2005, the Chicago Mercantile Exchange's trading record for financial products consisted mainly of those two products. These products have evolved to become the most traded options and futures contracts in the world.

The Chicago Mercantile Exchange became the world's leading exchange in terms of on-exchange options trading in 2000. In 2005, twice as many financial options were traded on the CME than on the CBOT. CME has also been able to multiply its trading volume of financial futures by four. However, in absolute terms, more interest rate futures contracts are being traded on the CBOT.

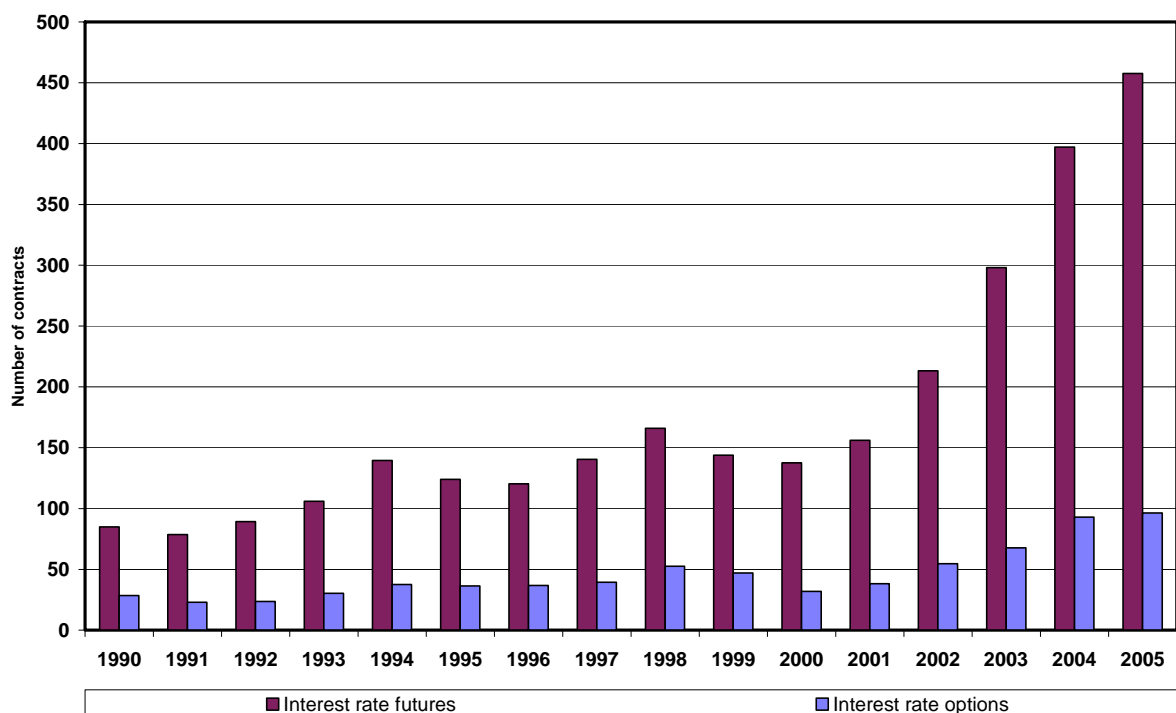
4.2.4 Turnover on the Chicago Board of Trade (CBOT)

Table 4.6 Turnover of interest rate derivatives on the Chicago Board of Trade, 1999-2005 (number of contracts in millions)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Interest rate derivatives																
Interest rate options	28.43	23.00	23.53	30.33	37.53	36.28	36.72	39.31	52.61	47.05	31.84	38.28	54.74	67.79	92.92	96.42
Interest rate futures	84.98	78.57	89.12	105.99	139.46	124.02	120.26	140.39	165.96	143.94	137.59	156.02	213.28	298.05	397.12	457.67

Source: CBOT data.

Figure 4.6 Turnover of interest rate derivatives on the Chicago Board of Trade, 1999-2005 (number of contracts in millions)



Source: CBOT data.

Comment

The Chicago Mercantile Exchange (CME) and the Chicago Board of Trade (CBOT) have both witnessed very rapid growth, with over 400 million derivatives contracts traded at each exchange in 2005. Whereas the CME has specialised in Eurodollar futures contracts' trading, the CBOT mainly trades derivatives products around the US yield curve, i.e. options and futures on medium/long-term treasury notes.

4.3 Turnover of exchange-traded interest rate derivatives (by geographical zone and maturity)

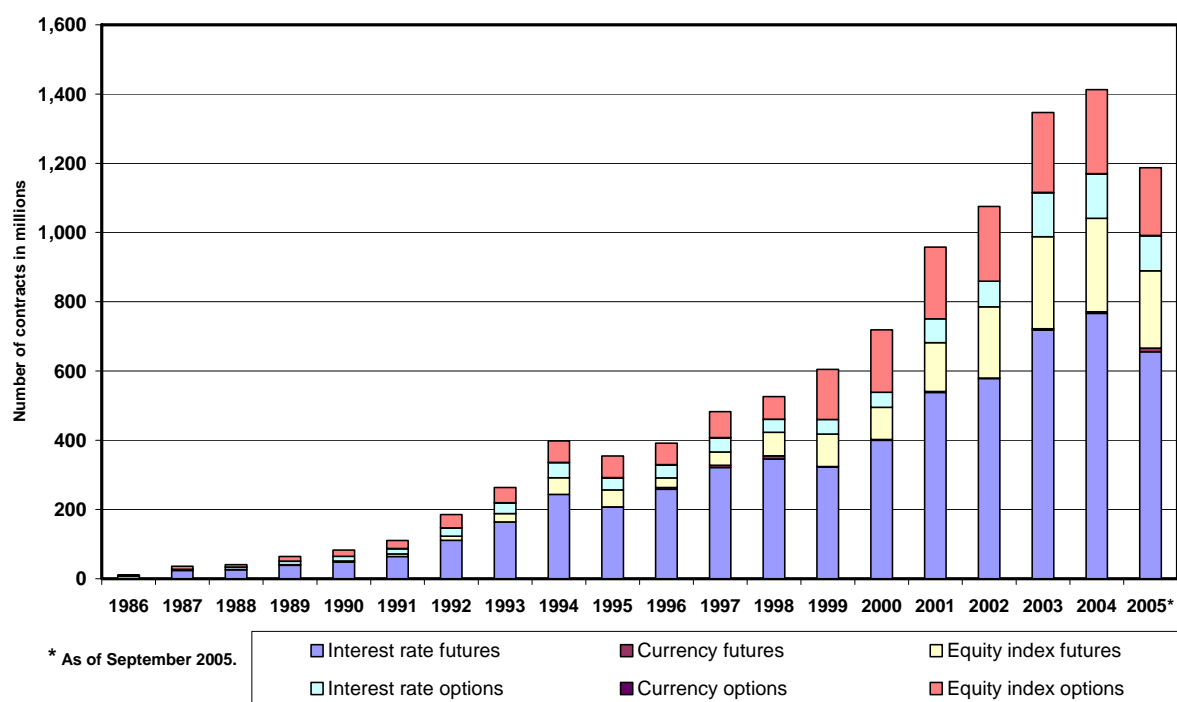
4.3.1 Turnover of derivative financial instruments on European exchanges (number of contracts traded)

Table 4.7 Turnover of derivative financial instruments traded on European exchanges by instrument, 1986-2005 (number of contracts in millions)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005*
Total	10.3	35.9	40.8	64.3	83	110.5	185.1	263.4	398.1	354.7	391.8	482.8	525.9	604.5	718.5	957.8	1074.8	1346.4	1412.6	1186.8
Interest rate products	9	26.4	32.1	48.5	60.8	80.2	134.5	195.5	287.4	240.7	296.2	362.6	383.5	364.7	443.2	607.3	652.7	845.1	894.9	757.1
Currency products	0.7	0.7	0.5	0.5	0.2	0.4	0.6	0.7	0.8	2.3	6.1	7.2	9.3	1.5	2.2	2.8	1.6	5.7	4.7	11
Equity Index products	0.5	8.7	8.1	15.3	22	29.9	49.9	67.4	109.8	111.5	89.5	113	133.2	238.3	273.2	347.5	420.5	495.8	512.9	418.8
Futures	7.6	24.6	27.2	40.6	51.7	71.2	122.7	187.7	291.8	257.2	291.1	365.8	423.1	417.9	495.3	681.8	785	987.4	1041.1	889.2
Interest rate futures	7.4	23.9	26.2	38.7	47.8	64.3	110.7	164.3	243.6	206.4	258.5	321.5	346.1	322.9	399.7	538.2	578.3	717.4	766.3	655.6
Currency futures	0.1	0	0	0	0	0	0.1	0	0	1.4	5.3	6.1	8.8	1.5	2.2	2.8	1.3	5.1	4.3	10.4
Equity index futures	0.1	0.6	0.9	1.9	3.9	6.9	11.9	23.6	48.1	49.2	27.2	38.2	68.1	93.4	93.5	140.8	205.3	265	270.4	223.2
Options	2.7	11.3	13.6	23.7	31.3	39.3	62.4	75.7	106.3	97.5	100.7	117	102.8	186.6	223.2	276	289.8	359	371.5	297.6
Interest rate options	1.6	2.5	5.9	9.8	13	15.9	23.8	31.2	43.8	34.3	37.7	41.1	37.4	41.8	43.5	69.1	74.4	127.7	128.6	101.5
Currency options	0.6	0.7	0.5	0.5	0.2	0.4	0.5	0.7	0.8	0.9	0.8	1.1	0.5	0	0	0	0.3	0.6	0.4	0.6
Equity index options	0.4	8.1	7.2	13.4	18.1	23	38	43.8	61.7	62.3	62.3	74.8	65.1	144.9	179.7	206.7	215.2	230.8	242.5	195.6

Source: BIS.

Figure 4.7 Turnover of derivative financial instruments traded on European exchanges by instrument, 1986-2005 (number of contracts in millions)



Source: BIS.

Comment

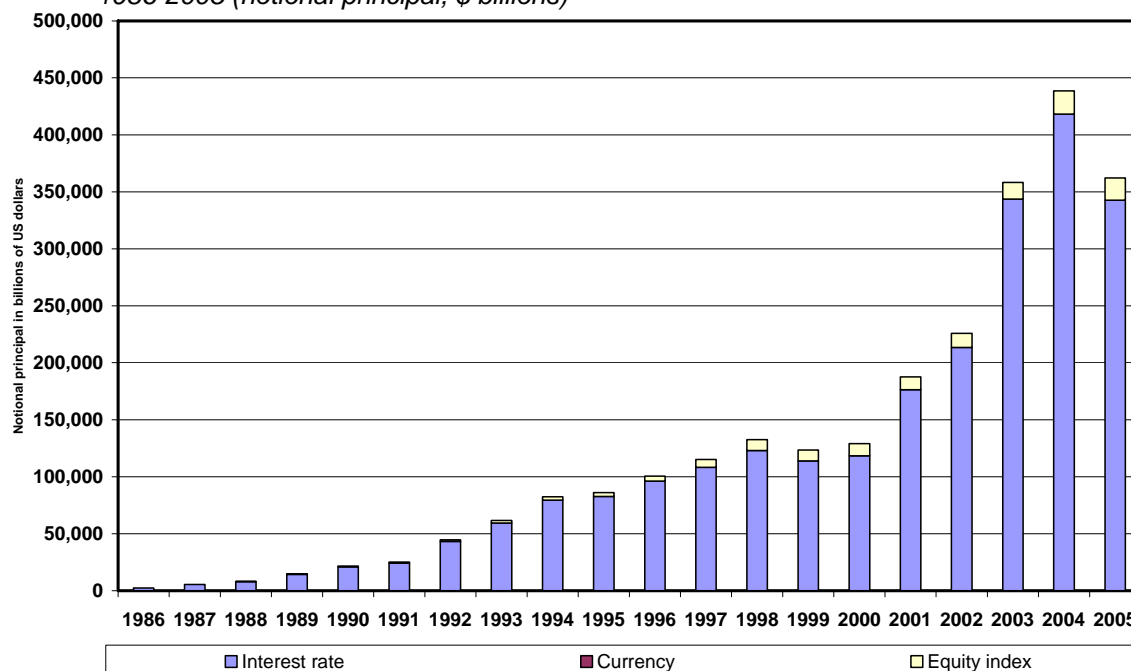
Exchange-traded financial derivatives were virtually non-existent in Europe 20 years ago. However, since then, the landscape has change dramatically. Today, with a total of 1.4 billion contracts traded on European exchanges in 2004, the market is more than 20 times larger than it was two decades ago. Figure 4.7 highlights the driving forces behind this growth. Interest rate products account for most of the turnover activity of exchange-traded derivatives, albeit with a declining share relative to other products. Whereas interest rate futures accounted for 66% of the turnover of contract up until 1998, their share in total turnover had fallen to 55% by 2004. Since the introduction of the euro, equity index products (options and futures) have been one of the major drivers behind the market's growth. Over the period from 1998 to 2004, equity products grew by 285% compared to 133% growth for interest rate products.

4.3.2 Turnover of derivative financial instruments on European exchanges (notional principal)

Table 4.8 Turnover of derivative financial instruments on European exchanges by instrument, 1986-2005 (notional principal, \$ billions)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Interest rate products	2,354	5,314	7,984	14,364	20,908	24,159	43,114	59,354	79,396	82,629	96,102	108,234	122,927	113,885	118,412	176,480	213,476	343,598	418,239	342,613
Currency products	11	10	6	7	3	6	13	8	37	33	23	15	14	11	4	3	2	16	16	34
Equity index products	17	112	142	396	649	1,016	1,656	2,135	3,117	3,300	4,347	6,998	9,700	9,664	10,604	11,117	12,353	14,735	20,328	19,546
Total	2,383	5,436	8,132	14,767	21,561	25,181	44,784	61,497	82,550	85,962	100,471	115,247	132,640	123,561	129,021	187,600	225,832	358,349	438,583	362,194

Figure 4.8 Turnover of derivative financial instruments traded on European exchanges by instrument, 1986-2005 (notional principal, \$ billions)



Source: BIS.

Comment

While Figure 4.7 highlighted an increase in the turnover of equity index products, as measured by the number of contracts traded, equity-linked products are completely dwarfed by interest rate products when turnover is measured in terms of the notional principal underlying the contract. The average notional amount of a contract traded in 1995 was around 200,000 US dollars, which increased to about 310,000 US dollars in 2004. Hence not only have more derivatives contracts been traded on European exchanges, but the average value of contracts has also increased.

4.3.3 Turnover of interest rate products by maturity

Table 4.9 Short-term interest rate futures, 1999-2004 (number of contracts traded)

	1999	2000	2001	2002	2003	2004
Eurex	3,107,609	1,227,098	663,980	527,815	504,617	585,142
Euronext	76,478,480	85,459,735	130,727,459	145,048,196	185,083,136	221,070,137
Stockholmsboersen	n/a	n/a	n/a	3,756,772	4,890,858	4,489,482
Europe	79,586,089	86,686,833	131,391,439	149,332,783	190,478,611	226,144,761
Chicago Board of Trade (CBOT)	0	0	0	6,287,330	8,271,726	11,940,120
Chicago Mercantile Exchange (CME)	95,253,421	110,201,639	185,874,175	202,451,997	210,188,753	300,849,399
US	95,253,421	110,201,639	185,874,175	208,739,327	218,460,479	312,789,519

Source: WFE.

Comment

Most of the upswing in activity in exchange-traded interest rate derivatives can be traced to the short-term segment of the market. As Table 4.9 underlines, the volume of short term interest rate futures traded increased by 184% between 1999 and 2004 in Europe, whereas long term interest rate futures 'only' gained 131% over the same period (see Table 4.11).

Table 4.10 Short-term interest rate options, 1999-2004 (number of contracts traded)

	1999	2000	2001	2002	2003	2004
Euronext	12,509,164	12,696,408	30,809,690	42,692,554	77,836,576	76,328,919
Europe	12,509,164	12,696,408	30,809,690	42,692,554	77,836,576	76,328,919
Chicago Board of Trade (CBOT)	n/a	n/a	n/a	0	1,614,319	4,707,103
Chicago Mercantile Exchange (CME)	24,927,483	28,602,420	88,179,130	105,581,574	100,828,023	130,599,067
US	24,927,483	28,602,420	88,179,130	105,581,574	102,442,342	135,306,170

Source: WFE.

Comment

Vibrant activity on short-term interest rate options in particular has given a further boost to the upswing in derivatives activity. Nevertheless, the short-term interest rate options segment continues to be small in absolute terms compared to the short-term interest rate futures segment. In growth terms, however, the options segment has grown markedly. Its turnover, measured in terms of the number of contracts traded, increased six-fold between 2000 and 2004. Since economic and monetary union (EMU), there has been less diversity in traded contracts, as most currency-specific interest rate futures, such as Euromark or Eurolira ones, no longer exist. The subsequent concentration of trading activities into fewer contracts with the effective integration of European money markets considerably deepened market liquidity and demand for contracts such as three-month Euribor contract or the three-month Sterling contract. In fact, the turnover of these contracts has grown by 214% and 71%, respectively, over the period from 1999 to 2004.

Table 4.11 Long-term interest rate futures, 1999-2004 (number of contracts traded)

	1999	2000	2001	2002	2003	2004
Eurex	216,337,800	261,938,502	370,643,883	414,991,424	512,156,750	522,190,193
Euronext	16,892,180	49,060,478	28,909,749	12,166,482	12,878,688	15,929,862
Stockholmsboersen	n/a	n/a	n/a	1,829,401	1,783,550	2,056,553
Europe	233,229,980	310,998,980	399,553,632	428,987,307	526,818,988	540,176,608
Chicago Board of Trade (CBOT)	143,941,513	137,590,254	156,024,293	206,989,970	289,781,060	385,179,108
US	143,941,513	137,590,254	156,024,293	206,989,970	289,781,060	385,179,108

Source: WFE.

Comment

The long-term interest rate futures segment of exchange-traded derivatives has increased steadily. The most notable feature of trading activity is the vigorous expansion of long-term interest rate futures contracts traded in Europe. Over the period between 1999 and 2004, the US market grew more strongly, with the number of contracts traded rising by a factor of 1.7. On the European long-term interest rate futures market segment, the number of contracts traded grew by a factor of 1.3. Thus, over the period from 1999 to 2004, the dominance of the European long-term interest rate futures segment relative to the US fell from 162% to 140%.

Table 4.12 Long-term interest rate options, 1999-2004 (number of contracts traded)

	1999	2000	2001	2002	2003	2004
Eurex	29,108,590	30,681,797	38,318,057	31,609,631	49,538,160	51,509,033
Euronext	429,994	66,474	16,776	17,755	26,244	4,528
Europe	29,538,584	30,748,271	38,334,833	31,627,386	49,564,404	51,513,561
Chicago Board of Trade (CBOT)	47,054,651	31,842,462	38,277,207	54,743,806	66,171,432	88,212,785
Chicago Board of Options Exchange (CBO)	n/a	n/a	n/a	43,232	90,438	90,608
US	47,054,651	31,842,462	38,277,207	54,787,038	66,261,870	88,303,393

Source: WFE.

Comment

Contrary to what is happening in the long-term interest rate futures segment, the US market is dominating the European market in the short-term interest rate futures segment. As of 1999, the European market for long-term interest rate options was 62% of the size of the US market for the same products. Given that the US market growth dominated the EU's market growth, the share of EU's long-term interest rate options was reduced to 58% in 2004, emphasising the dominance of the US market in this market segment.

Moreover given that the pattern of growth of on-exchange traded long-term interest rate options is similar to that in interest rate futures, turnover in options on Euro Bobl futures³ grew by 466%, options on Euro Schatz⁴ by 1,825%, and options on Euro Bund only by 16% over the period from 1999 to 2004.

4.4 Technical notes and sources

Note on data. The statistics in this section come from various sources. Overall market data are either retrieved from the BIS website or from the World Federation of Exchanges website. Final data are also retrieved from the exchanges websites.

Most data in this section are not expressed in monetary terms but in terms of contracts.

Open interest.

Open interest is the number of contracts of derivatives that have a time limit after which they expire. Hence open interest of a market is the sum of all contracts that have not expired or been exercised.

Sources

Bank for International Settlements (BIS) (<http://www.bis.org/statistics/secstats.htm>). Securities statistics.

Chicago Board of Trade (www.cbot.com). Monthly statistics.

Chicago Mercantile Exchange (www.cme.com). Monthly statistics.

Euronext.Liffe (www.liffe.com). Monthly statistics.

World Federation of Exchanges (WFE) Eurex monthly statistics (www.eurexexchange.com). Eurex is the world's leading futures and options exchange and is jointly operated by [Deutsche Börse AG](#) and [SWX Swiss Exchange](#).

³ Euro-Bobl Futures are futures contracts based on notional medium-term debt instruments issued by the Federal Republic of Germany, with a remaining term of 4.5 to 5.5 years. They bear a notional coupon rate of 6%. The contract value is €100,000 and the minimum price change is 0.01%, equivalent to a value of €10.

⁴ Euro-Schatz Futures are futures contracts based on notional medium-term debt instruments issued by the Federal Republic of Germany, with a remaining term of 1.75 to 2.25 years. They bear a notional coupon rate of six percent. The contract value is €100,000 and the minimum price change is 0.005%, equivalent to a value of €5.

5. Over-The-Counter Derivatives Market

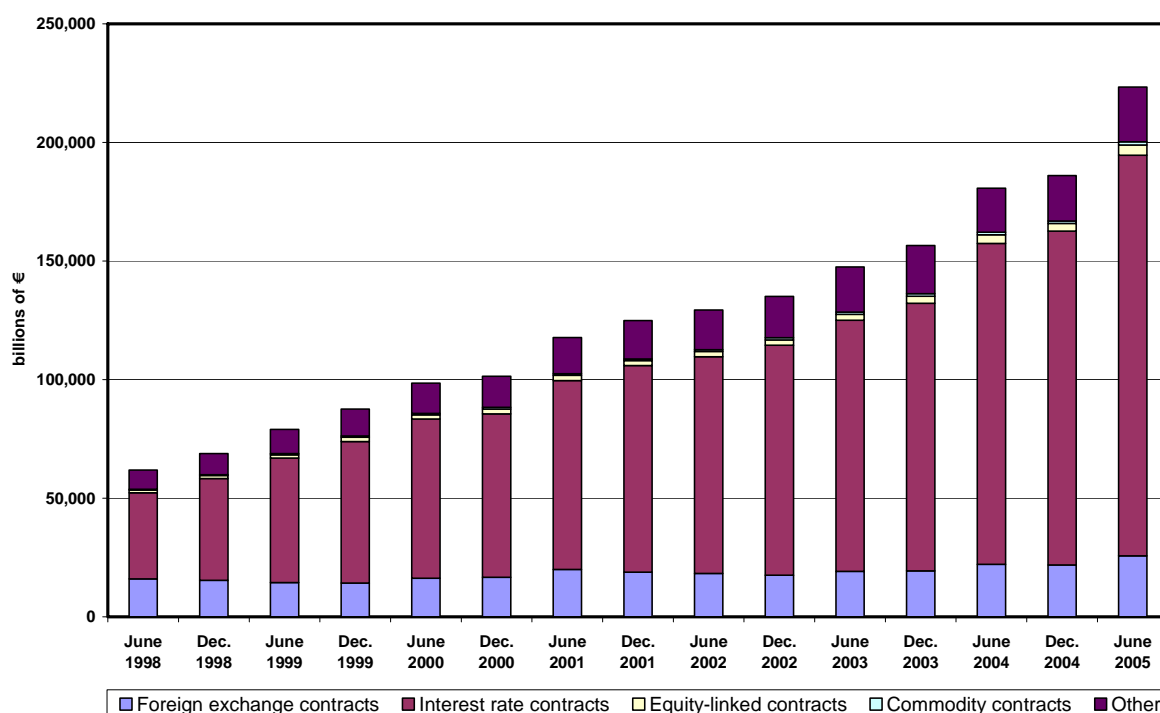
5.1 Over-the-counter derivatives: Overview

Table 5.1 Notional amount outstanding of OTC derivatives, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
Foreign exchange contracts	16,044	15,437	14,451	14,244	16,233	16,687	19,955	18,816	18,332	17,595	19,189	19,429	22,167	21,850	25,686
Outright forwards and forex swaps	10,413	10,339	9,254	9,526	11,005	10,795	12,488	11,612	10,578	10,223	10,722	9,833	11,434	11,259	13,251
Currency swaps	1,669	1,931	2,279	2,427	2,729	3,402	4,522	4,429	4,277	4,295	4,485	5,058	5,775	6,074	6,808
Options	3,962	3,167	2,919	2,291	2,499	2,490	2,945	2,775	3,477	3,077	3,982	4,538	4,958	4,517	5,628
Interest rate contracts	36,313	42,867	52,446	59,673	67,182	68,884	79,614	87,145	91,269	96,956	105,894	112,718	135,172	140,717	168,948
Forward rate agreements	4,411	4,933	6,922	6,728	7,094	6,842	7,714	8,692	9,280	8,385	8,930	8,549	10,792	9,446	11,219
Interest rate swaps	25,166	31,079	37,218	43,631	50,281	51,947	60,664	66,169	69,231	75,460	82,232	88,282	104,746	111,265	135,352
Options	6,735	6,854	8,305	9,315	9,807	10,094	11,236	12,283	12,759	13,110	14,733	15,886	19,634	20,004	22,376
Equity-linked contracts	1,092	1,275	1,466	1,796	1,723	2,014	2,223	2,113	2,246	2,202	2,433	3,006	3,712	3,239	4,253
Forwards and swaps	132	125	192	281	356	357	388	360	392	347	424	477	567	558	972
Options	960	1,150	1,274	1,516	1,368	1,656	1,836	1,754	1,855	1,854	2,009	2,529	3,144	2,681	3,280
Commodity contracts	380	350	428	544	612	705	696	672	788	880	904	1,116	1,043	1,066	1,399
Gold	159	150	183	241	273	232	240	260	283	300	264	273	261	273	238
Other commodities	221	200	244	303	338	474	457	412	505	580	640	843	782	793	1,162
Forwards and swaps	131	117	123	162	176	264	270	244	294	383	398	333	413	412	610
Options	91	83	121	142	162	209	186	169	211	196	243	510	369	381	552
Other	7,997	8,903	10,219	11,329	12,739	13,116	15,230	16,160	16,737	17,480	19,083	20,249	18,593	19,141	22,973
Total contracts	61,825	68,831	79,010	87,587	98,488	101,406	117,719	124,906	129,373	135,113	147,503	156,519	180,686	186,012	223,259

Sources: BIS & FRED II database.

Figure 5.1 Notional amount outstanding of OTC derivatives, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

Globally, the total notional amount outstanding of over-the-counter (OTC) derivatives has increased in a linear fashion over the past seven years from a value of €50 trillion to over €220 trillion in mid-2005. A breakdown by product type shows that interest rate derivatives continue to account for the overwhelming majority of derivatives contracts in terms of notional amount outstanding. The OTC segments for foreign exchange, equity-linked contracts and commodity contracts have marginally deepened over the period from 1998 to 2005. In fact, the growth of the OTC derivatives notional amount outstanding was largely led by the interest rate contracts segment, which deepened by a factor of five.

By further breaking the products down into product types, Table 5.1 shows that the explosion in the market for OTC derivatives, (and interest rate contracts in particular) was driven by interest rate swaps, whose notional amount outstanding has increased by a factor of 5.4 over the past seven years. The OTC derivatives markets for options and forward rate agreements also deepened considerably, with the former doubling and the latter tripling in size.

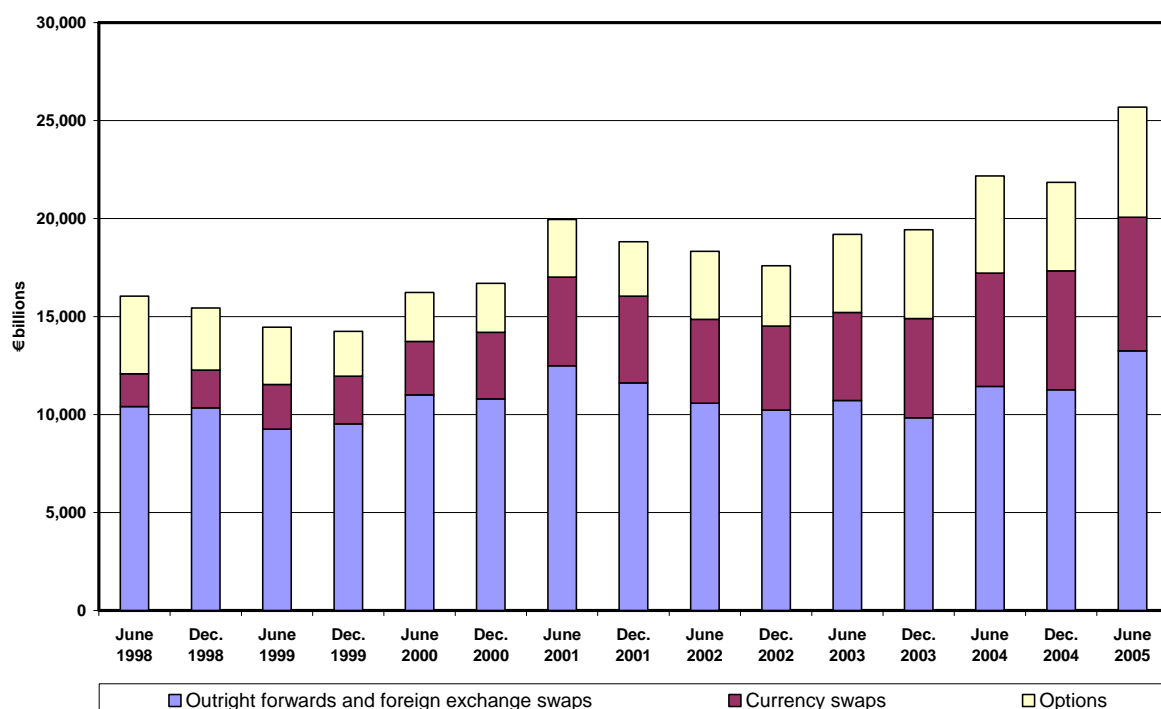
5.2 OTC foreign exchange

Table 5.2 Notional amount outstanding of OTC foreign exchange by instrument and counterparty, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
Outright forwards and foreign exchange swaps	10,413	10,339	9,254	9,526	11,005	10,795	12,488	11,612	10,578	10,223	10,722	9,833	11,434	11,259	13,251
with reporting dealers	4,412	4,459	3,557	3,843	4,411	4,272	4,729	4,270	4,128	4,120	4,127	3,676	4,777	4,387	5,041
with other financial institutions	4,155	4,357	4,094	4,094	4,628	4,554	5,409	4,764	4,255	4,163	4,463	4,048	4,379	4,552	5,213
with non-financial customers	1,844	1,523	1,603	1,589	1,966	1,968	2,351	2,578	2,195	1,941	2,132	2,109	2,279	2,320	2,997
Currency swaps	1,669	1,931	2,279	2,427	2,729	3,402	4,522	4,429	4,277	4,295	4,485	5,058	5,775	6,074	6,808
with reporting dealers	405	484	609	646	724	938	1,240	1,361	1,347	1,354	1,543	1,804	2,224	2,306	2,561
with other financial institutions	750	878	977	1,065	1,177	1,502	1,984	1,881	1,790	1,820	1,909	2,039	2,312	2,568	3,049
with non-financial customers	514	569	694	716	830	963	1,298	1,189	1,139	1,121	1,032	1,215	1,238	1,199	1,198
Options	3,962	3,167	2,919	2,291	2,499	2,490	2,945	2,775	3,477	3,077	3,982	4,538	4,958	4,517	5,628
with reporting dealers	1,530	1,299	1,134	865	970	893	1,002	1,011	1,224	1,050	1,245	1,394	1,862	1,930	2,367
with other financial institutions	1,136	1,142	1,165	902	923	973	1,207	946	1,270	1,264	1,408	1,415	1,613	1,478	2,088
with non-financial customers	1,296	726	620	525	605	626	736	818	983	762	1,328	1,730	1,482	1,109	1,174
Total contracts	16,044	15,437	14,452	14,244	16,233	16,687	19,955	18,816	18,332	17,595	19,189	19,429	22,167	21,850	25,687

Source: BIS & FRED database II.

Figure 5.2 Notional amount outstanding of OTC foreign exchange by instrument, 1998-2005 (€ billions)

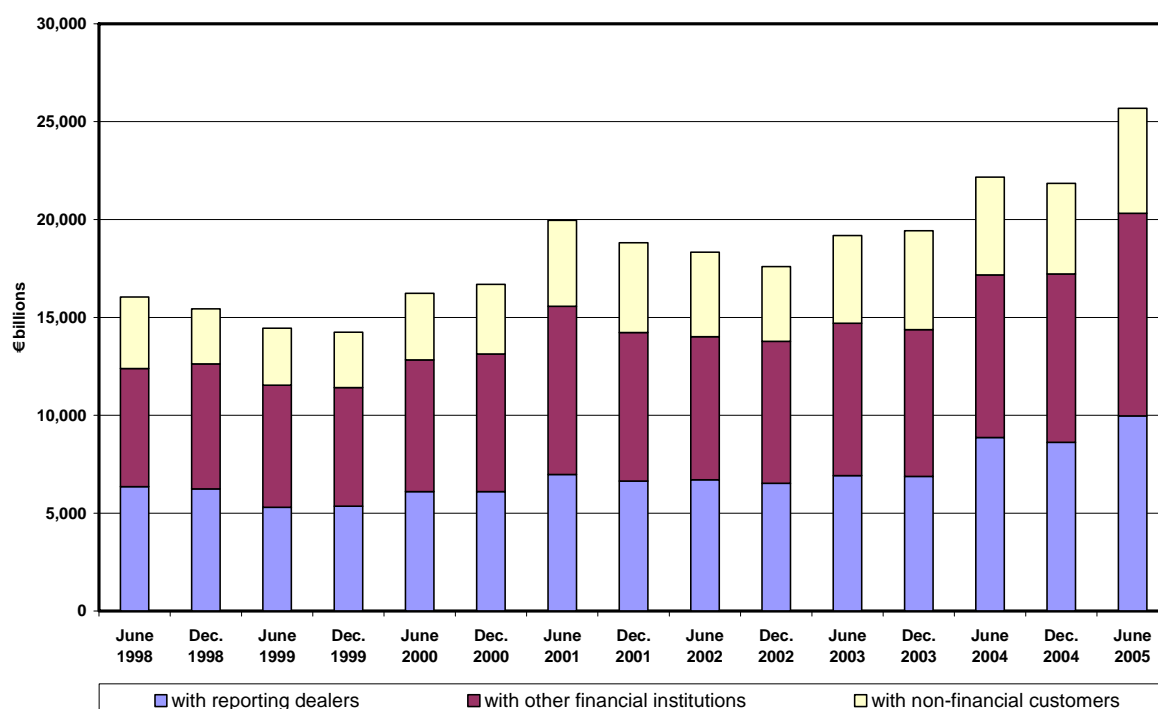


Source: BIS & FRED database II.

Comment

The OTC foreign exchange market deepened by 60% between 1998 and 2005, from just over €15 trillion to over €25 trillion. Nevertheless, within this product category, certain types of contracts outpaced others in terms of growth. This is especially true of currency swaps, a market segment which has grown by 300% since 1998. The market size for OTC foreign exchange with forwards and options also expanded over the same period, albeit at a more modest pace. As opposed to currency swaps and options, the outright forward and foreign exchange swaps segment remained stagnant.

Figure 5.3 Notional amount outstanding of OTC foreign exchange by counterparty, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

Analysis of the counterparties on the OTC foreign exchange market reveals that trading patterns have remained identical in the time period under consideration. In 2005, just as in 1998, 40% of the total notional amount of OTC foreign exchange contracts had a reporting dealer as counterparty, 40% had a financial institution and 20% had non-financial customers as counterparties. This pattern shows that the OTC foreign exchange market continues to be an inter-dealer market dominated by financial institutions.

Table 5.3 Share of the notional amount outstanding of OTC foreign exchange by counterparty, 1998-2005

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
with reporting dealers	6,348	6,243	5,300	5,355	6,105	6,102	6,971	6,642	6,698	6,526	6,915	6,875	8,864	8,623	9,968
with other financial institutions	6,041	6,377	6,236	6,060	6,727	7,027	8,599	7,589	7,315	7,246	7,780	7,502	8,304	8,598	10,350
with non-financial customers	3,655	2,818	2,917	2,830	3,401	3,558	4,385	4,585	4,318	3,824	4,493	5,053	4,999	4,628	5,369
TOTAL CONTRACTS	16,044	15,437	14,451	14,244	16,233	16,687	19,955	18,816	18,332	17,595	19,189	19,429	22,167	21,850	25,686
with reporting dealers	40%	40%	37%	38%	38%	37%	35%	35%	37%	37%	36%	35%	40%	39%	39%
with other financial institutions	38%	41%	43%	43%	41%	42%	43%	40%	40%	41%	41%	39%	37%	39%	40%
with non-financial customers	23%	18%	20%	20%	21%	21%	22%	24%	24%	22%	23%	26%	23%	21%	21%

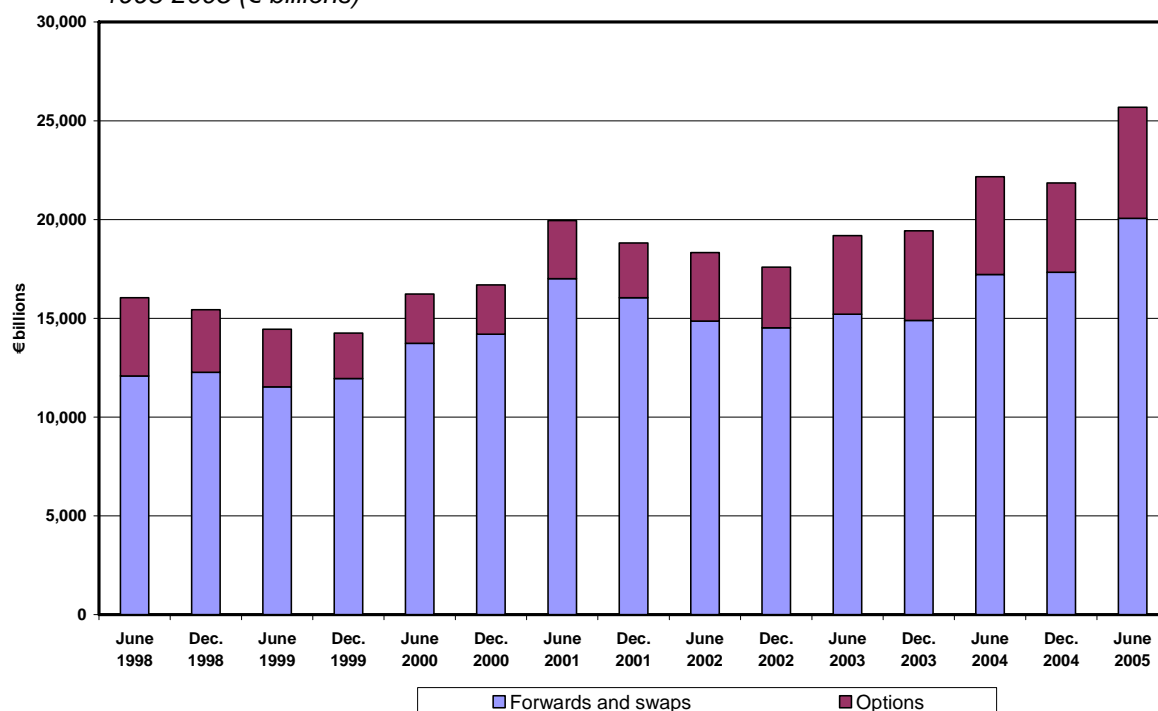
Source: BIS & FRED database II.

Table 5.4 Notional amount outstanding of OTC foreign exchange derivatives by instrument maturity and counterparties (net), 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
TOTAL CONTRACTS	16,044	15,437	14,451	14,244	16,233	16,687	19,955	18,816	18,332	17,595	19,189	19,429	22,167	21,850	25,686
Maturity of one year or less	13,964	13,534	12,070	12,056	13,806	13,728	15,355	15,085	14,611	13,850	15,252	14,956	17,450	17,082	20,056
Maturity over 1 year and up to 5 years	1,570	1,392	1,719	1,528	1,700	2,026	3,343	2,629	2,574	2,593	2,720	3,097	3,212	3,240	3,898
Maturity over 5 years	510	507	662	661	726	933	1,257	1,102	1,147	1,152	1,216	1,377	1,506	1,528	1,732
Forwards and swaps	12,081	12,270	11,533	11,953	13,734	14,196	17,010	16,041	14,854	14,518	15,207	14,891	17,209	17,333	20,058
Maturity of one year or less	10,285	10,528	9,348	9,888	11,436	11,425	12,802	12,556	11,461	11,189	11,657	10,912	13,001	13,158	15,231
Maturity over 1 year and up to 5 years	1,307	1,242	1,545	1,421	1,590	1,879	3,001	2,406	2,277	2,230	2,377	2,664	2,778	2,715	3,180
Maturity over 5 years	489	497	640	644	706	892	1,206	1,079	1,117	1,099	1,173	1,315	1,431	1,460	1,648
Options	3,962	3,167	2,919	2,291	2,499	2,490	2,945	2,775	3,477	3,077	3,982	4,538	4,958	4,517	5,628
Maturity of one year or less	3,679	3,007	2,722	2,167	2,369	2,303	2,554	2,529	3,150	2,660	3,593	4,044	4,449	3,924	4,826
Maturity over 1 year and up to 5 years	263	150	174	108	110	147	342	222	297	363	343	433	434	524	719
Maturity over 5 years	21	10	22	17	20	42	50	24	29	52	43	62	75	69	83
Total contracts	16,044	15,437	14,452	14,244	16,233	16,686	19,955	18,816	18,331	17,595	19,189	19,429	22,167	21,850	25,686

Source: BIS & FRED database II.

Figure 5.4 Notional amount outstanding of OTC foreign exchange derivatives by counterparty (net), 1998-2005 (€ billions)

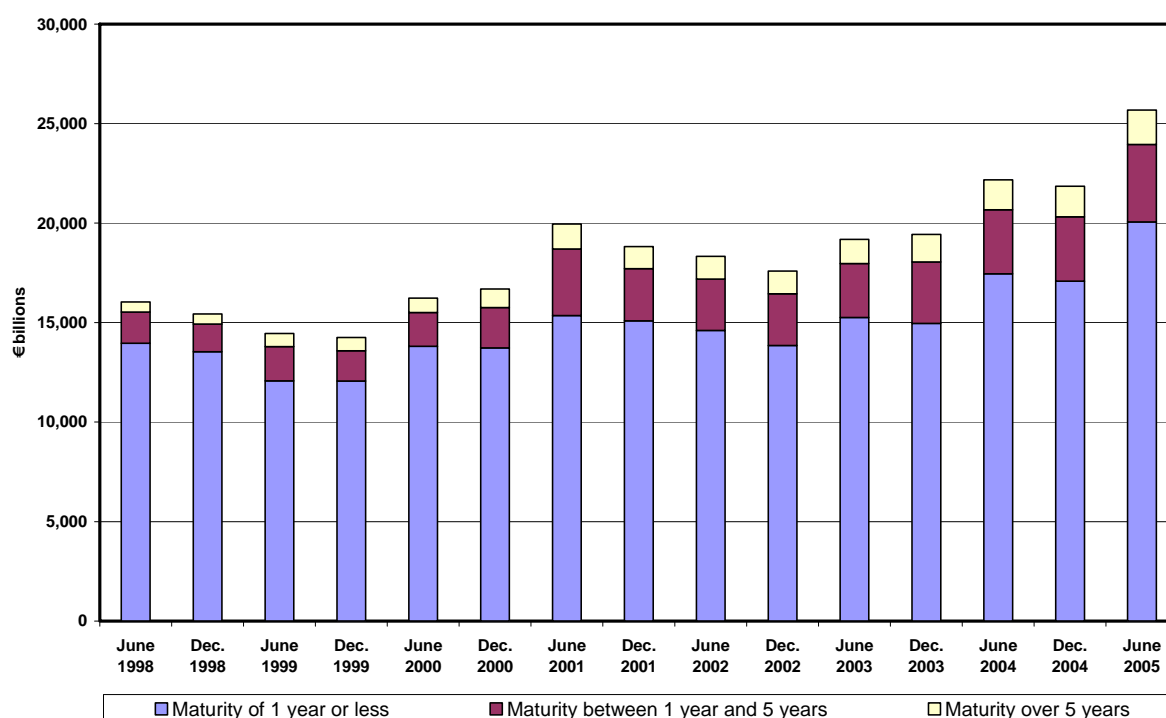


Source: BIS & FRED database II.

Comment

The notional amount outstanding of OTC foreign exchange derivatives increased by 60% between 1998 and 2005. The market deepening that took place was slightly more pronounced for forwards and swaps products than for options. This is illustrated by the fact that, in 1998, the market for OTC foreign exchange derivatives products consisted of 75% of forwards and swaps products and 25% of options, while in 2005 the share of forwards and swaps had increased slightly to account for 78% of the market's liquidity.

Figure 5.5 Notional amount outstanding of OTC foreign exchange derivatives by maturity, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

The OTC foreign exchange market is essentially made up of short-term products that have a maturity of a year or less. This has been the prevailing pattern since 1998. Nevertheless, in relative terms, medium- and long-term products on the OTC foreign exchange market have gained in importance. In 2005, 15% of the market (up from 10% in 1998) consisted of medium-term products and 7% (up from 3% in 1998) consisted of long-term products. This trend towards longer contracts reflects greater confidence in OTC derivatives markets and less fear of counterparty risk as the legal framework underpinning bilateral contracts has become more robust. It also reflects better hedging opportunities that enable greater risk-taking over longer maturities.

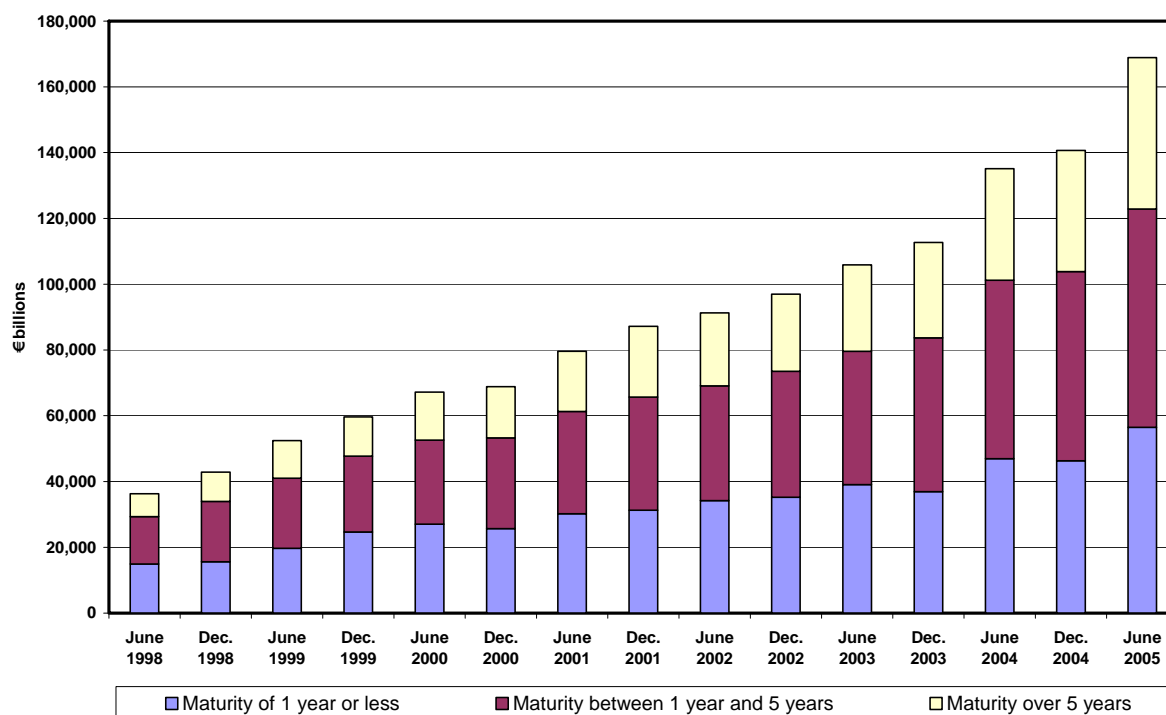
5.3 OTC single currency interest rate derivatives

Table 5.5 Notional amount outstanding of OTC single-currency interest rate derivatives by instrument and counterparty, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
Total contracts	36,313	42,867	52,446	59,673	67,182	68,884	79,614	87,145	91,269	96,956	105,894	112,718	135,172	140,717	168,948
with reporting dealers	15,637	20,949	26,245	30,306	33,743	33,547	38,139	39,852	43,973	44,561	46,620	50,472	59,570	60,761	71,877
with other financial institutions	16,022	16,962	20,513	23,845	26,999	28,811	33,813	36,524	36,841	41,590	46,195	45,697	57,656	63,324	75,865
with non-financial costumers	4,654	4,957	5,687	5,523	6,439	6,525	7,663	10,770	10,455	10,804	13,079	16,549	17,946	16,632	21,206
Forward rate agreements	4,411	4,933	6,922	6,728	7,094	6,842	7,714	8,692	9,280	8,385	8,930	8,549	10,792	9,446	11,219
with reporting dealers	2,096	2,441	3,656	3,764	3,736	3,233	3,906	4,110	4,767	4,367	4,274	4,242	5,625	4,803	5,834
with other financial institutions	1,999	2,043	2,551	2,578	2,985	3,037	2,931	3,320	3,545	3,376	3,444	3,802	4,401	4,046	4,697
with non-financial costumers	317	448	717	386	373	572	877	1,263	968	642	1,212	505	766	597	687
Swaps	25,166	31,079	37,218	43,631	50,281	51,947	60,664	66,169	69,231	75,460	82,232	88,282	104,746	111,265	135,352
with reporting dealers	11,541	15,693	19,476	23,063	25,985	26,041	29,392	30,509	33,837	34,681	36,314	39,413	46,327	47,769	56,203
with other financial institutions	10,400	11,974	14,028	16,732	19,775	21,443	26,005	28,308	28,110	32,793	36,502	35,877	45,053	50,885	62,306
with non-financial costumers	3,226	3,411	3,713	3,836	4,521	4,463	5,267	7,353	7,284	7,987	9,415	12,993	13,366	12,612	16,843
Options	6,735	6,854	8,305	9,315	9,807	10,094	11,236	12,283	12,759	13,110	14,733	15,886	19,634	20,004	22,376
with reporting dealers	2,000	2,814	3,113	3,479	4,022	4,274	4,841	5,232	5,370	5,514	6,032	6,817	7,617	8,189	9,840
with other financial institutions	3,624	2,944	3,934	4,534	4,240	4,331	4,876	4,896	5,186	5,421	6,248	6,018	8,203	8,393	8,861
with non-financial costumers	1,111	1,096	1,257	1,301	1,545	1,490	1,520	2,155	2,203	2,175	2,453	3,052	3,814	3,423	3,675

Source: BIS & FRED database II.

Figure 5.6 Notional amount outstanding of OTC single-currency interest rate derivatives by counterparty, 1998-2005 (€ billions)

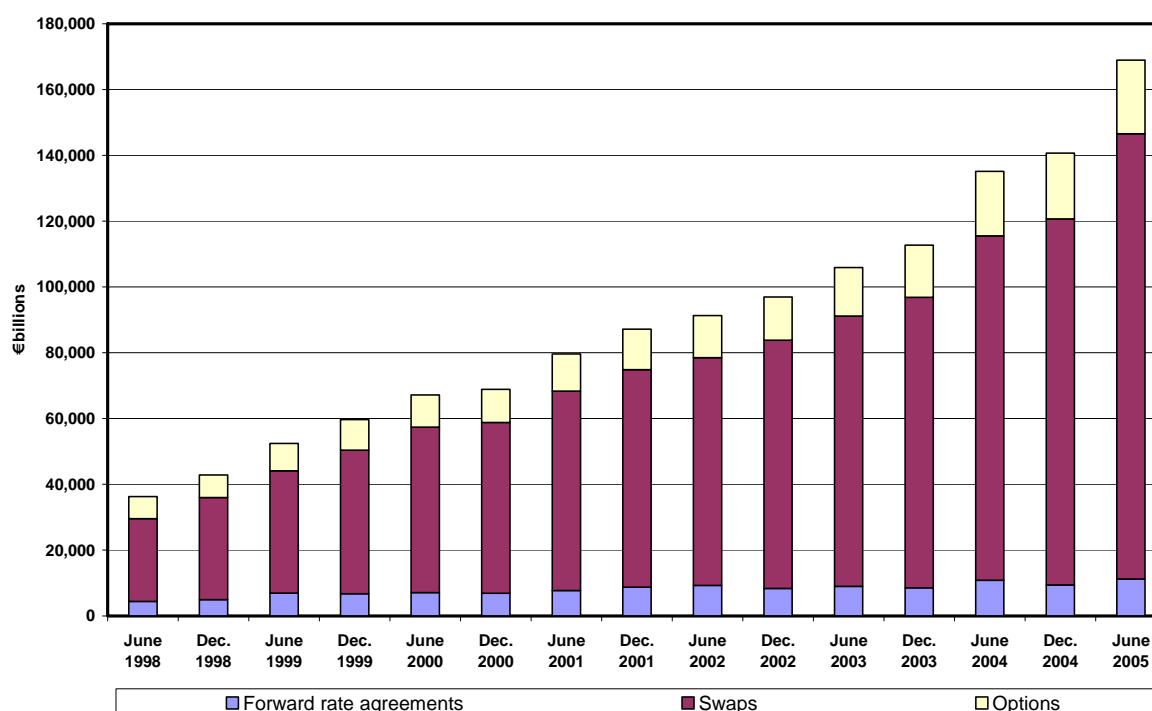


Source: BIS & FRED database II.

Comment

The market for OTC single currency derivatives has exploded over the past seven years, growing by a factor of five to reach a total of over €165 trillion. As in the case of foreign exchange OTC derivatives, the counterparties of OTC single currency interest rate derivatives are financial institutions, followed overwhelmingly by reporting dealers, which make extensive use of these instruments for hedging purposes.

Figure 5.7 Notional amount outstanding of OTC single-currency interest rate derivatives by instrument, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

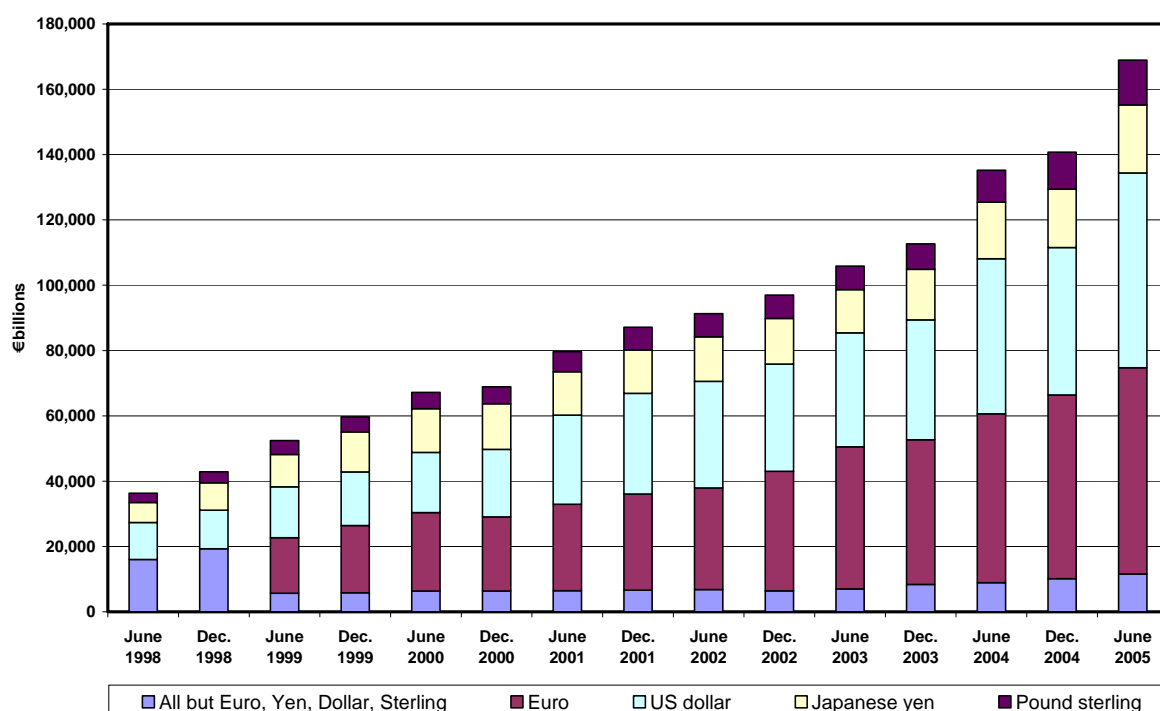
Figure 5.7 sheds light on the source of the explosion of OTC interest rate derivatives. The notional amount outstanding interest rate swaps segment as of these types of contract went up by a factor of seven. The other types of OTC interest rate derivative contracts, such as options and forward rate agreements, only slightly expanded their market share.

Table 5.6 Notional amount outstanding of OTC single-currency interest rate derivatives by currency, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
ALL CURRENCIES	36,313	42,867	52,446	59,673	67,182	68,884	79,614	87,145	91,269	96,956	105,894	112,718	135,172	140,717	168,948
Australian dollar	95	101	118	231	208	196	379	281	287	240	327	387	376	450	535
Canadian dollar	660	640	790	819	886	895	926	877	872	790	988	1,034	1,066	1,090	1,324
Danish krone	148	255	339	335	359	328	156	93	135	85	106	117	72	155	145
Euro	0	0	16,957	20,548	24,042	22,700	26,440	29,469	31,119	36,651	43,471	44,291	51,733	56,257	63,172
Hong Kong dollar	46	27	74	114	81	198	140	144	144	155	196	228	232	191	322
Japanese yen	6,140	8,368	9,900	12,305	13,371	13,961	13,309	13,256	13,629	13,972	13,276	15,501	17,327	17,882	20,850
New Zealand dollar	2	3	3	4	4	3	4	0	0	2	4	8	8	7	9
Norwegian krone	284	339	357	175	179	314	274	267	246	150	194	241	265	347	404
Pound sterling	2,818	3,352	4,266	4,556	4,967	5,168	6,110	6,983	7,080	7,098	7,235	7,846	9,744	11,293	13,739
Swedish krona	708	805	1,088	1,363	1,315	1,210	1,177	1,188	1,086	1,043	988	1,207	1,351	1,635	1,837
Swiss franc	904	1,131	1,362	1,404	1,476	1,444	1,377	1,530	1,614	1,646	1,706	1,940	2,177	2,395	2,318
US dollar	11,325	11,796	15,590	16,395	18,445	20,687	27,240	30,813	32,648	32,808	34,872	36,658	47,481	45,134	59,643
Other	13,183	16,051	1,602	1,421	1,848	1,778	2,085	2,245	2,410	2,315	2,529	3,237	3,338	3,879	4,648

Source: BIS & FRED database II.

Figure 5.8 Notional amount outstanding of OTC single-currency interest rate derivatives by currency, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

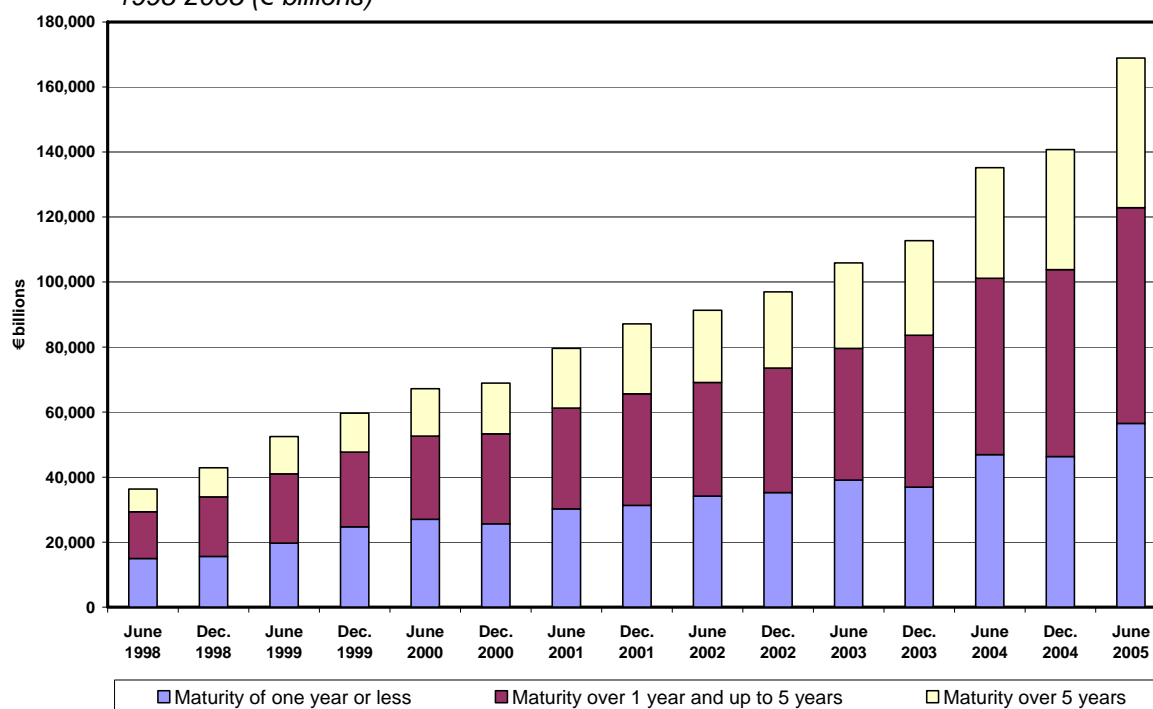
The market for OTC interest rate derivatives is at its highest for contracts denominated in euro and US dollars. Each of these currencies accounts for about one-third of the market. The stability of these ratios over time is particularly noteworthy. In 1999, the dollar and the euro accounted respectively for 30% and 32% of the OTC interest rate derivatives market. In 2005, the ratios came to 37% and 35%, respectively. Both currencies have therefore gained in importance vis-à-vis other currencies in the OTC derivatives markets. As a result, other currencies have cumulatively lost 10% of market share over the past six years. This phenomenon reflects the consolidation of vehicle currencies in the world of finance, which used to represent five currencies (US dollar, German deutschmark, British pound, Swiss franc and Japanese yen), but which today is effectively limited to the dollar and the euro.

Table 5.7 Notional amount outstanding of OTC single-currency interest rate by instrument and maturity, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
TOTAL CONTRACTS	36,313	42,867	52,446	59,673	67,182	68,884	79,614	87,145	91,269	96,956	105,894	112,718	135,172	140,717	168,948
Maturity of one year or less	14,932	15,586	19,677	24,701	27,039	25,679	30,216	31,329	34,166	35,229	39,060	36,893	46,931	46,283	56,462
Maturity over 1 year and up to 5 years	14,403	18,346	21,324	23,018	25,569	27,613	31,046	34,340	34,940	38,280	40,555	46,768	54,268	57,562	66,385
Maturity over 5 years	6,978	8,931	11,445	11,954	14,573	15,592	18,354	21,475	22,163	23,446	26,279	29,057	33,973	36,870	46,101
Forwards and swaps	29,578	36,012	44,141	50,358	57,375	58,789	68,379	74,861	78,511	83,845	91,161	96,831	115,538	120,712	146,571
Maturity of one year or less	12,297	13,772	17,521	21,636	24,482	23,097	27,435	28,216	30,813	31,677	34,731	32,614	40,559	39,111	49,735
Maturity over 1 year and up to 5 years	11,511	14,718	17,387	18,631	20,776	22,600	25,430	28,349	29,001	32,330	33,958	39,586	46,015	49,513	57,190
Maturity over 5 years	5,769	7,519	9,233	10,093	12,115	13,092	15,516	18,297	18,697	19,839	22,472	24,631	28,964	32,088	39,646
Options	6,735	6,854	8,305	9,315	9,807	10,094	11,236	12,283	12,759	13,110	14,733	15,886	19,634	20,004	22,376
Maturity of one year or less	2,635	1,814	2,155	3,066	2,556	2,582	2,781	3,112	3,353	3,553	4,329	4,279	6,372	7,172	6,728
Maturity over 1 year and up to 5 years	2,893	3,628	3,937	4,387	4,793	5,013	5,616	5,991	5,940	5,950	6,596	7,183	8,254	8,050	9,195
Maturity over 5 years	1,208	1,412	2,212	1,862	2,458	2,499	2,838	3,178	3,466	3,607	3,808	4,425	5,009	4,782	6,455

Sources: BIS & FRED database II.

Figure 5.9 Notional amount outstanding of OTC single-currency interest rate by maturity, 1998-2005 (€ billions)

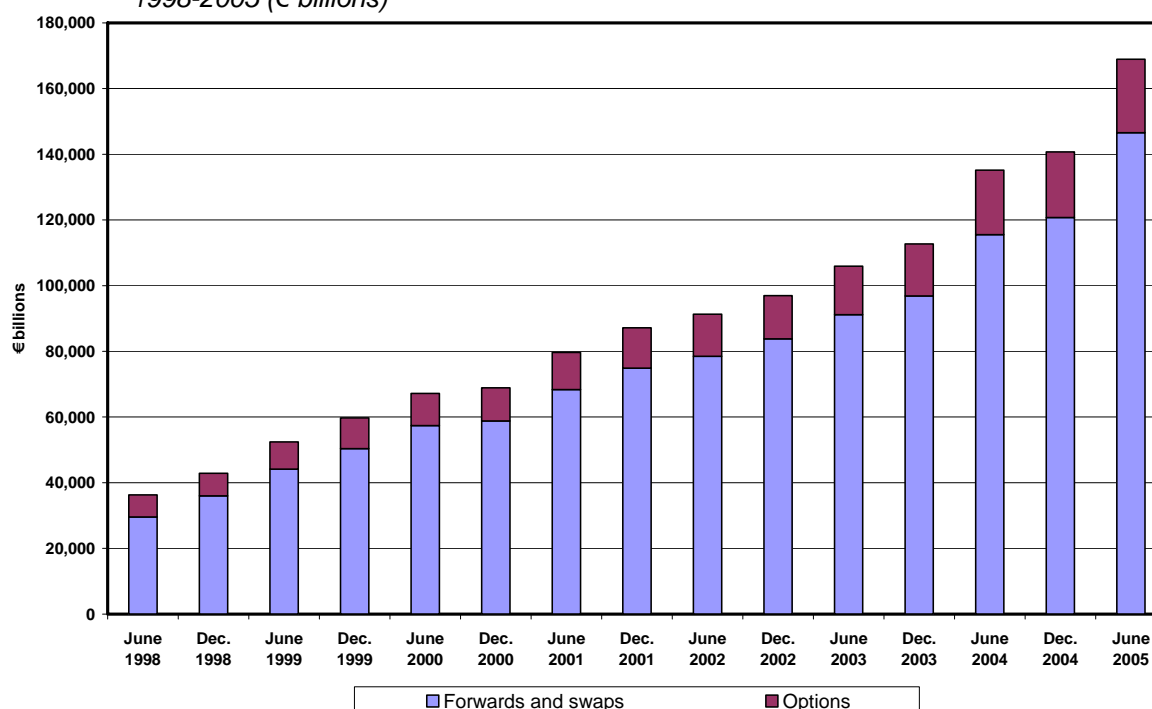


Sources: BIS & FRED database II.

Comment

According to Figure 5.9, maturities for OTC interest rate contracts are growing in length, reflecting more risk-taking and better hedging opportunities. By 2005, OTC interest rate derivatives with a maturity of over five years accounted for 27% of the market, up from 19% in 1998. The short-term segment accounted for 33% of the OTC interest rate derivatives market in 2005, down from around 50% in 1998.

Figure 5.10 Notional amount outstanding of OTC single-currency interest rate by instrument, 1998-2005 (€ billions)



Sources: BIS & FRED database II.

Comment

From an instrument perspective, it can be observed that most of the growth in OTC interest rate derivatives has been driven by forward and swaps products (although a further breakdown shows that swaps have been the real driver of growth). The market depth for forwards and swaps contracts has risen by a factor of seven, whereas it has increased by a factor of three for options. Contracts with longer maturities have grown faster (forwards and swaps with a maturity of more than five years increasing by a factor of seven), whereas contracts with maturities of less than one year have grown by a factor of four.

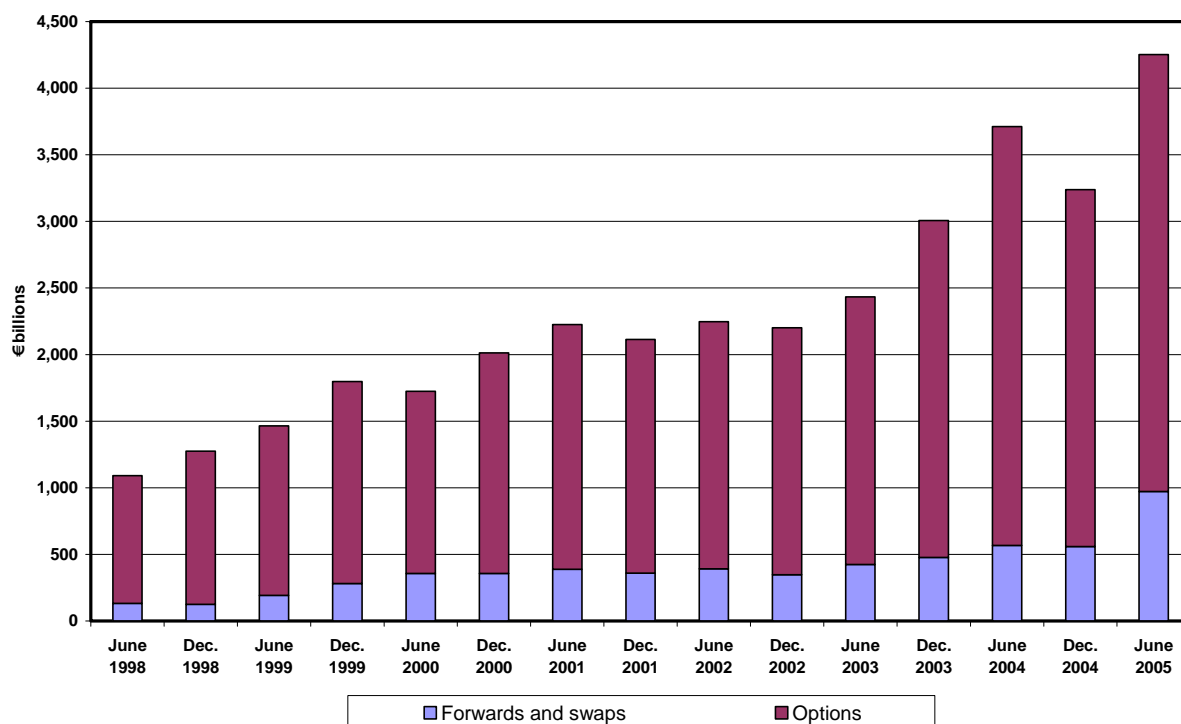
5.4 OTC equity-linked derivatives

Table 5.8 Notional amount outstanding of OTC equity linked derivatives by market and product, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
TOTAL CONTRACTS	1,092	1,275	1,466	1,796	1,723	2,014	2,223	2,113	2,246	2,202	2,433	3,006	3,712	3,239	4,253
US Equities	332	268	367	512	399	487	409	422	418	411	485	680	712	778	897
European Equities	594	861	902	1,033	1,069	1,319	1,608	1,520	1,629	1,590	1,700	1,891	2,273	2,028	2,397
Japanese Equities	67	80	128	123	146	107	94	63	86	76	90	166	367	144	251
Other Asian Equities	11	11	11	15	15	10	9	12	15	27	28	152	202	92	83
Latin American Equities	22	18	5	22	21	19	21	17	16	15	15	23	45	65	431
Other Equities	66	36	53	91	75	72	80	80	80	83	116	96	112	132	193
Forwards and swaps	132	125	192	281	356	357	388	360	392	347	424	477	567	558	972
US Equities	45	48	65	102	117	134	125	125	132	113	123	144	164	173	313
European Equities	54	51	79	105	156	157	209	183	214	194	245	250	314	310	510
Japanese Equities	17	19	24	28	31	22	8	9	10	8	6	22	17	7	18
Other Asian Equities	1	1	1	3	2	0	1	1	2	1	3	5	7	8	15
Latin American Equities	3	1	1	9	9	6	9	2	2	2	3	10	25	16	30
Other Equities	12	7	21	34	40	37	35	38	30	31	43	46	40	44	86
Options	960	1,150	1,274	1,516	1,368	1,656	1,836	1,754	1,855	1,854	2,009	2,529	3,144	2,681	3,280
US Equities	287	221	302	410	283	353	286	298	286	298	362	535	548	604	584
European Equities	540	811	823	928	913	1,162	1,400	1,337	1,414	1,396	1,455	1,641	1,958	1,718	1,887
Japanese Equities	50	61	104	95	113	84	86	54	77	69	83	144	350	137	233
Other Asian Equities	11	10	10	12	13	10	8	10	12	25	26	147	195	83	69
Latin American Equities	19	17	4	13	12	13	12	15	14	14	11	13	20	49	401
Other Equities	53	30	32	57	36	36	45	42	50	52	72	50	73	89	107

Source: BIS & FRED database II.

Figure 5.11 Notional amount outstanding of OTC equity linked derivatives by product, 1998-2005 (€ billions)

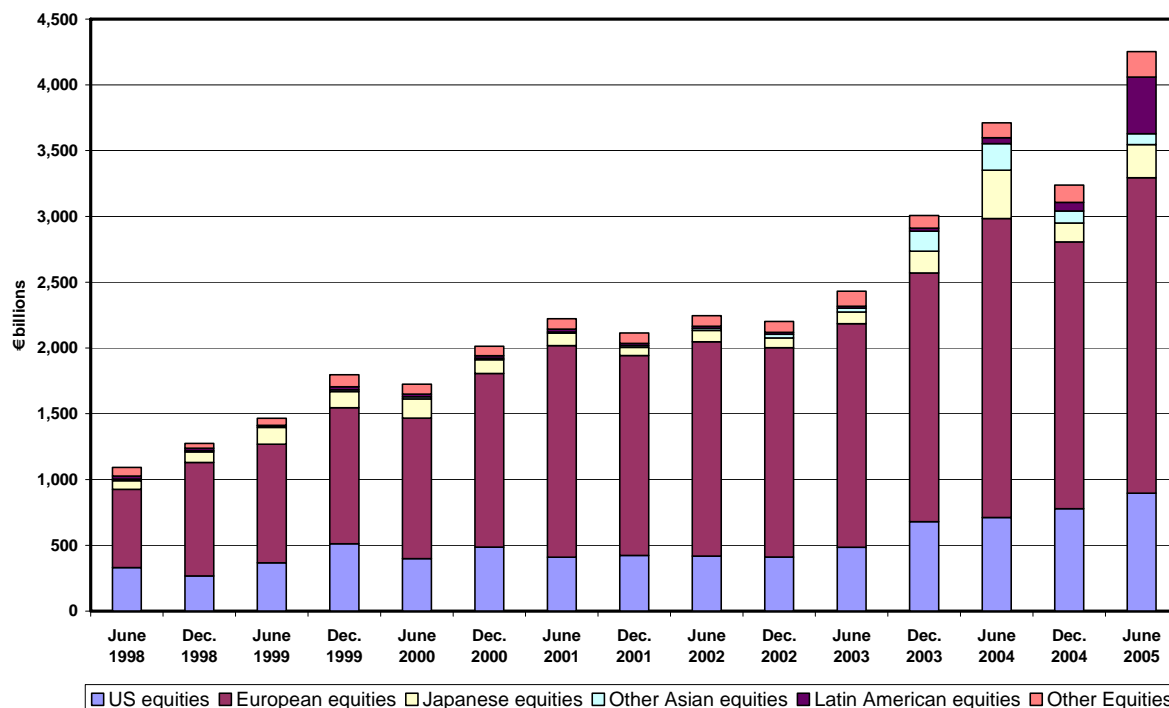


Source: BIS & FRED database II.

Comment

Market deepening for equity-linked derivatives products was relatively modest compared to other OTC market segments such as interest rate derivatives, but that is merely because OTC derivatives have witnessed such phenomenal growth in recent years. Nevertheless, the market for equity-linked products grew by a factor of four over the time period under consideration. Breaking down OTC equity-linked derivatives by instrument shows the leading role that options play in this market segment. It is interesting to note that, as opposed to OTC interest rate products, where swaps account for the lion's share, the equity-linked derivatives market is dominated by options. However, equity forwards and swaps have been growing rapidly, and account for an increasing market share.

Figure 5.12 Notional amount outstanding of OTC equity linked derivatives by market, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

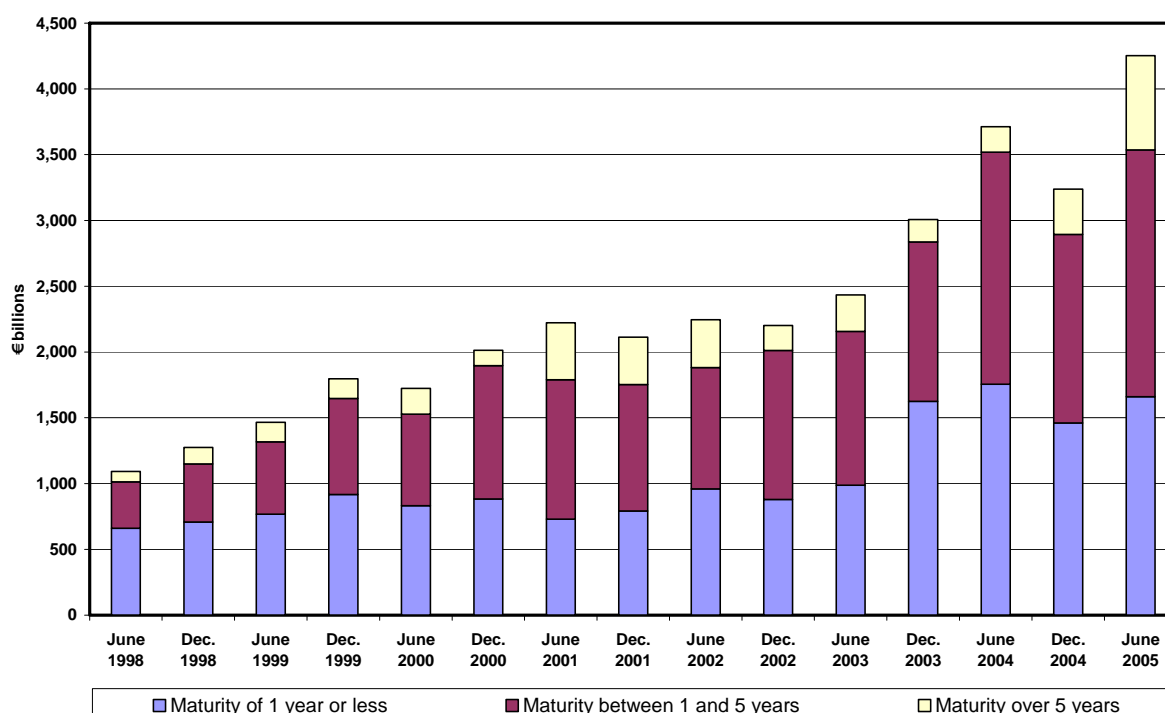
Figure 5.12 compares OTC derivative activity in equities in different regions of the world. It is not surprising that European equity markets have offered an environment for the rapid development of OTC equity-linked derivatives products, first because of the first-move advantage of European exchanges towards electronicisation and second because derivatives markets in the EU are the most developed and efficient in the world. Today, 60% of the global market for OTC equity-linked derivatives products is made up of contracts on European equities as underlying assets. In relative terms the US market share has declined over time to stabilise at around 20%, although in absolute terms the US market for equity-linked derivatives has expanded steadily. The market share of OTC equity-linked derivatives products in Europe has likewise declined over time, particularly since June 2001, when European equities underlying OTC contracts accounted for 72% of market depth.

Table 5.9 Notional amount outstanding of OTC equity-linked derivatives by instrument and maturity, 1998-2005 (€ billions)

	June 1998	Dec. 1998	June 1999	Dec. 1999	June 2000	Dec. 2000	June 2001	Dec. 2001	June 2002	Dec. 2002	June 2003	Dec. 2003	June 2004	Dec. 2004	June 2005
TOTAL CONTRACTS	1,092	1,275	1,466	1,796	1,723	2,014	2,223	2,113	2,246	2,202	2,433	3,006	3,712	3,239	4,253
Maturity of one year or less	660	707	767	917	833	884	730	792	960	878	987	1,626	1,755	1,462	1,661
Maturity over 1 year and up to 5 years	352	443	549	730	695	1,012	1,060	962	921	1,134	1,169	1,211	1,764	1,432	1,876
Maturity over 5 years	81	125	149	150	196	117	433	360	364	189	277	170	193	345	716
Forwards and swaps	132	125	192	281	356	357	388	360	392	347	424	477	567	558	972
Maturity of one year or less	97	63	118	162	220	196	195	156	197	146	202	248	333	321	492
Maturity over 1 year and up to 5 years	26	39	48	83	98	120	148	143	139	153	170	183	195	189	370
Maturity over 5 years	10	24	27	36	38	42	46	61	55	49	51	45	39	48	111
Options	960	1,150	1,274	1,516	1,368	1,656	1,836	1,754	1,855	1,854	2,009	2,529	3,144	2,681	3,280
Maturity of one year or less	563	645	650	755	613	687	536	636	763	732	785	1,378	1,421	1,140	1,170
Maturity over 1 year and up to 5 years	327	405	501	646	596	893	912	818	782	981	999	1,027	1,569	1,243	1,506
Maturity over 5 years	70	100	122	115	158	77	387	300	309	140	225	124	154	297	605

Source: BIS & FRED database II.

Figure 5.13 Notional amount outstanding of OTC equity-linked derivatives by maturity, 1998-2005 (€ billions)



Source: BIS & FRED database II.

Comment

In June 1998, most of the market depth for equity-linked OTC derivatives was accounted for by short-term products but, by June 2005, the lion's share of the market shifted to products with a medium-term horizon (i.e. between one to five years). It is worth noting that long-term equity-linked derivatives have attracted increased interest by investors since 2005. Market depth in this type of product with a longer maturity has doubled in the first half of 2005.

5.5 Technical notes and sources

Note on currencies used. The statistics in this section are provided in current euro denominations. Data retrieved from the World Federation of Exchanges (WFE) were converted from dollars into euro whereas the data from the Federation of Exchanges (FESE) is available in euro. All values are end-of-year values.

OTC derivatives market statistics. The dataset provided by the Bank for International Settlements covers data reported by more than 60 major reporting dealers in the G10 countries. It is supposed to be fairly comprehensive, as OTC derivatives activity is very concentrated. *Source: BIS paper 14, 2003*

Notional amount outstanding. Nominal or notional amount outstanding are defined as the gross nominal or notional value of all deals concluded and not yet settled on the reporting date. For contracts with variable nominal or notional principal amount, the basis for reporting is the nominal or notional principal amount at the time of reporting. *Source: BIS paper 14, 2003*

Gross market values. Gross market values are defined as the sums of the absolute values of all open contracts with either positive or negative replacement values evaluated at market prices prevailing at the reporting date. Gross market value at current market prices provides a measure of economic significance that is readily comparable across markets and products. *Source: BIS paper 14, 2003*

Sources

Bank for international Settlements (BIS) (<http://www.bis.org/statistics/derstats.htm>). OTC derivatives statistics.

FRED II (Federal Reserve Economic Data) is a database of US economic data. Federal Reserve Bank of Saint-Louis (<http://research.stlouisfed.org/fred2/>).