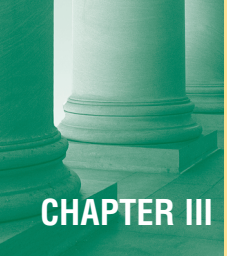


CHAPTER III RISK TRANSFER AND THE INSURANCE INDUSTRY

The transfer of risk from banks to nonbank institutions, such as mutual funds, pension funds, insurers, and hedge funds, has been taking place for many years. Banks have generally tried to distribute the risk that they have originated—particularly concentrations of credit risk—in order to optimize the use of their balance sheets and as an integral part of their risk management practice.[1] Some nonbanks, in certain markets, have demonstrated a strong or growing appetite for credit risk exposure in various forms. These include insurers, which increasingly view credit instruments as a relatively stable investment to meet their liabilities. The development of new credit instruments, particularly derivatives, has facilitated this process.

The transfer of risk to nonbanking sectors has raised concerns about "where the risk has gone;" whether risk has been widely dispersed or concentrated; and whether the recipients of risk are able to manage such risk. As noted in previous GFSRs, most observers agree that the transfer of credit has improved the banking sector's ability to manage risks, and hence the stability of the banking system. A wide variety of nonbank institutions have taken on the risk. But the relatively less transparent nature of some nonbanking institutions, their different systems of regulation, and, in some cases, less developed risk management skills have raised questions about whether a reallocation of credit risk has *reduced* risk for the overall financial system or merely *shifted* it to less transparent sectors. In the latter case, new forms of risk and vulnerability may be introduced.

This chapter, the first of a series that will examine risk transfer, discusses the insurance sector, particularly life insurers. It expands on issues raised in previous GFSRs by asking whether financial stability has benefited or could benefit from insurers' broader participation in credit markets, including credit derivatives (see, for instance, IMF, 2002a). Life insurance companies traditionally have been viewed as long-term, savings-oriented institutions and not as a potential source of systemic risk, and as such have been seen as possibly "better" holders of credit and longer-term assets. However, in light of the increasing volume of credit being reallocated from banks to nonbanks, including certain insurance sectors and companies, and the intention among many insurers, particularly in Europe, to increase their exposure to credit, policymakers have expressed increased interest in the possible effect of risk transfer on financial stability.[2] Within the insurance sector, life insurers are the largest holders of financial assets, and their balance sheets are generally much larger than property and casualty (P&C) insurers and reinsurers.[3]

In focusing on risk reallocation, we use the term "credit risk transfer" to refer in a broad sense to all manners in which insurers have taken on credit risk (e.g., corporate bonds, loans, asset-backed securities, and credit deriv-

[1]International Association of Insurance Supervisors (2003), Financial Services Authority (2002), and Rule (2001b) examine the credit risk transfer between banks and nonbank financial sectors, including the insurance sector.

[2]Häusler (2004) discusses how the blurring of boundaries between insurance and other financial institutions implies heightened importance of insurers for financial stability. Das, Davies, and Podpiera (2003) also explore the potential for the insurance sector to affect the vulnerability of the financial system, focusing on the banking-type activities that life insurance companies have increasingly taken on, as well as risks stemming from the possible failure of a large reinsurer.

[3]Somewhat separate issues regarding reinsurance disclosure and risk (primarily concerning insurance liabilities) are being discussed in various fora, including an IAIS Task Force that reported to the Financial Stability Forum in March 2004. These issues are not dealt with directly in this chapter. See Swiss Re (2003b) for an overview.

atives). In so doing, we are widening the definition of credit risk transfer from its frequent use in official circles, which has focused on credit derivatives and related structured products.[4] While such products do raise important questions for policymakers, we wish to review the broader credit markets, regulatory framework, and risk management systems at insurers, taking into account all credit products, including derivatives and structured products. This chapter does not intend, however, to cover certain other issues related to the insurance industry, such as their exposure to asbestos claims and other tort liabilities, and the capital needs arising from such business risks. Our work focuses instead on the investment activities of life insurers, and how they may impact broader financial market stability.

The chapter assesses the impact on financial stability of life insurers' investment behavior and risk management in the largest mature markets (i.e., United States, United Kingdom, continental Europe, and Japan). The policy implications differ from market to market, and may offer useful lessons to emerging market countries with developing capital markets. The financial difficulties experienced by many insurance companies have eased in the last year as equity and other asset prices have risen. But, more fundamentally, they have acted as an impetus for enhancing insurers' risk management skills and for strengthening supervisory and accounting standards. These are likely to continue evolving for some time. As such, this is an appropriate time to take stock of the outstanding issues and to highlight the gaps and potential weaknesses in the framework.

Market Structure and Regulatory Framework

National insurance sectors often may hold different types of asset portfolios from each other and show different degrees of sophistication in credit risk management. Discussions with a wide range of regulators, insurance executives, investors, and the rating agencies reveal the common view that the structure of national financial systems and capital markets and insurance regulations are very important factors explaining the observed differences. Accounting standards and rating agencies are also important influences, albeit somewhat more general, and are discussed in a later section of this chapter. The chapter will also compare the robustness of insurers' financial conditions during market downturns and will finish with certain assessments and policy conclusions on how best to ensure that credit reallocation to the insurance sector enhances financial stability.

Table 3.1. Size of Global Financial Markets, 2002
(In billions of U.S. dollars; amounts outstanding)

	United States	United Kingdom	Euro Area	Japan
Equity	11,871	2,856	3,279	2,027
Bonds[1]	14,831	2,059	7,977	7,484
Of which:[2]				
Government	9,135	441	4,122	6,028
Financial corporate debt	2,985	130	3,293	298
Nonfinancial corporate debt	2,711	370	562	1,159
Bank loans to nonfinancial corporations	1,066	692	3,117	8,824
Memorandum item:				
GDP	10,446	1,567	6,670	3,986

Sources: Board of Governors of the Federal Reserve System, *Flow of Funds;* U.K. Office of National Statistics; ECB; Bank of Japan; and IMF, World Economic Outlook database.

[1]For United Kingdom, the aggregates include bonds issued by nonresidents while the components are issued by residents.

[2]Following are selected components of the above aggregate.

The Structure of National and Regional Financial Markets

Insurers from different countries have evolved different investment styles. U.S. and Japanese insurers have traditionally favored

[4]See Committee on the Global Financial System (2003) and the Joint Forum (forthcoming) for a broad review of credit risk transfer techniques. See also Kiff (2003); Kiff, Michaud, and Mitchell (2003); IMF (2002a); and Hall and Stuart (2003) for more on credit risk transfer.

Table 3.2. United States: Financial Market Size[1]
(In billions of U.S. dollars; amounts outstanding)

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Equity	6,318	8,475	10,276	13,293	15,547	19,523	17,627	15,311	11,871
Bonds	7,927	8,562	9,233	9,805	10,768	11,713	12,219	13,491	14,831
Of which:									
Treasuries	3,466	3,609	3,755	3,778	3,724	3,653	3,358	3,353	3,610
Agencies	2,199	2,405	2,635	2,848	3,321	3,912	4,345	4,971	5,525
Financial corporate debt	1,009	1,205	1,383	1,569	1,878	2,080	2,286	2,588	2,985
Nonfinancial corporate debt	1,253	1,344	1,460	1,611	1,846	2,068	2,230	2,579	2,711
Bank loans to nonfinancial corporations	681	766	836	930	1,031	1,122	1,214	1,149	1,066
Memorandum item:									
Total equity, bonds, and loans	14,926	17,804	20,345	24,028	27,346	32,357	31,060	29,950	27,768

Sources: Board of Governors of the Federal Reserve System, *Flow of Funds;* and Bond Market Association.
[1]Claims on residents.

credit instruments, U.K. insurers have preferred equity, and continental European insurers have favored a mix of government securities and equities. The structure of the underlying national and regional markets has played a major role in influencing these preferences (Table 3.1).

Differences in national financial systems and capital markets are due to a variety of factors, including stages of development, levels of financial intermediation, and regulations.[5] In a bank-based system, where banks provide the bulk of financing to corporates, capital markets for credit remain less developed. Insurance companies (and other large institutional investors) therefore have fewer opportunities to invest in credit instruments and consequently have found less reason to build up credit risk management skills. This is particularly true since, until recently, in many countries, insurance companies have been largely required to invest in domestic markets (or in instruments denominated in domestic currencies).[6] As such, their asset portfolios tend to reflect the structure of their national or regional capital markets. By contrast, in a market-based system, corporate bond markets are more well developed, and insurance companies have a longer tradition of investing in and managing credit risk.

Insurance companies, and other institutional investors, of course have an influence on the development of their national capital markets. The investment demand from insurers, in terms of the variety of credit instruments, credit quality, maturity, and other features, helps to sustain demand for corporate bonds and other assets. However, this influence is only one among many shaping the development of capital markets. For example, the European corporate bond market only took off after the introduction of the euro in 1999.

Corporate credit in the U.S. financial system operates largely through capital markets, while banks have a more prominent role in Europe and Japan. The corporate bond market is the largest source of credit for nonfinancial businesses in the United States (Table 3.2). More relationship-based systems, such as those in Europe and Japan, have

[5]Rajan and Zingales (2003) discuss the difference between the more market-based system in the United States and the relationship-based system in continental Europe, which remains despite Europe becoming more market-oriented and the increase in corporate bond issuance following the introduction of the euro. Hartmann, Maddaloni, and Manganelli (2003) discuss the difference between a market-based U.S. system and a bank-based Japanese system, with Europe placed somewhere between.

[6]For a more general discussion of home bias, see Ahearne, Griever, and Warnock (forthcoming).

Table 3.3. Euro Area: Financial Market Size[1]

(In billions of U.S. dollars)

	1998	1999	2000	2001	2002	2003:Q1
Equity	4,591	5,498	5,054	4,104	3,279	4,066
Bonds	6,834	6,382	6,278	6,406	7,977	9,260
Of which:						
Government bonds	3,862	3,460	3,292	3,310	4,122	4,795
Financial corporate debt	2,625	2,570	2,583	2,634	3,293	3,801
Nonfinancial corporate debt	347	353	403	462	562	664
Loans to nonfinancial corporations (NFC)	2,690	2,440	2,499	2,559	3,117	3,448
Memorandum items:						
Total equity, bonds, and loans to NFC	14,114	14,321	11,248	13,068	14,373	16,774
Asset-backed securities (issuance)[2]	. . .	68	80	80	134	. . .
Collateralized debt obligations (issuance)[3]	. . .	42	71	71	114	. . .

Sources: ECB, *Monthly Bulletin* (various issues); and Moody's.
[1]Claims on residents.
[2]For 2002, data shown as year-to-date as of September 30.
[3]For 2002, data refer to first half of 2002.

Table 3.4. Japan: Financial Market Size[1]

(In billions of U.S. dollars)

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Equity	3,232	3,940	3,005	2,443	2,966	4,850	3,173	2,420	2,027
Bonds	5,478	5,755	5,526	5,147	5,919	7,096	6,770	6,257	7,484
Of which:									
Government bonds	3,490	3,771	3,704	3,585	4,262	5,225	5,121	4,896	6,028
Financial corporate debt	768	710	607	471	482	535	416	315	298
Nonfinancial corporate debt	1,220	1,275	1,215	1,091	1,175	1,336	1,233	1,045	1,159
Loans to nonfinancial corporations	11,918	11,712	10,318	9,234	10,336	11,464	9,983	8,454	8,824
Memorandum item:									
Total equity, bonds, and loans	20,629	21,407	18,848	16,824	19,222	23,410	19,926	17,131	18,335

Source: Bank of Japan, *Flow of Funds.*
[1]Claims on residents.

relatively smaller nonfinancial corporate bond markets and larger stocks of loans. However, the difference in structure between the United States and continental Europe has been narrowing since the adoption of the euro, and the euro-area corporate bond market has almost doubled in size since 1999 (Table 3.3). By contrast, the weak credit demand from the corporate sector and the prolonged period of sluggish economic activity in Japan help to account for the slow growth of Japan's nonfinancial corporate bond market (Table 3.4).

In more capital market-based systems, like the United States, life insurance companies have a wide variety of credit instruments in which they can invest. Corporate bonds represented 61 percent of the aggregate general account portfolio of U.S. life insurers at the end of 2002, well above other asset classes and much greater than their non-U.S. peer group (Figure 3.1). (Corporate bond holdings have been the largest asset class for some time, and grew further in 2002 as insurers sought to earn extra spread income from credit instruments.) U.S. insurers also hold investments in "separate accounts," relating to products such as variable annuities where, like a mutual fund, policyholders receive a return based on the assets invested (see the Glossary at the end of this report for definitions of insurance

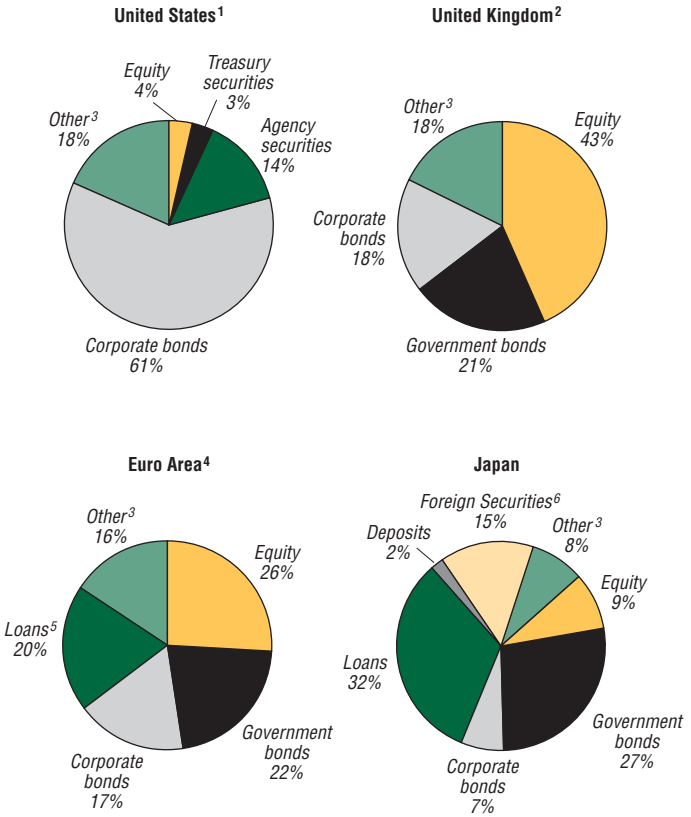
terms).[7] In 2002, 28 percent of U.S. life insurers' assets were in separate accounts, with 74 percent of separate account assets comprising equities (Table 3.5).[8] The insurance products related to separate account assets (in the United States and elsewhere) explicitly pass the investment risk to the end-consumer or policyholder, and do not represent a financial or solvency risk to the insurer.

U.S. life insurers are an important and cyclically stable source of credit to business. The amount of credit to corporates and consumers held in the bond portfolios of insurance companies has grown steadily and today exceeds the stock of such loans at banks (Figure 3.2). This contrasts with the more cyclical pattern of bank lending. U.S. insurance companies can use a range of capital market instruments to achieve targeted credit and equity exposures, as well as the desired risk/return profile. Moreover, because the U.S. capital markets are very liquid, significant trading activity by insurance companies usually has little impact on market prices or volatility. This has facilitated the ability of U.S. insurers to manage risk generally, and U.S. insurers have employed more people and systems with specific credit and risk management skills than their non-U.S. peers. However, even in the

[7]Insurance company balance sheets are divided into general and separate accounts. Separate accounts are established by insurers to legally segregate funds—for example, related to pension or variable life insurance products—where the investment risk is borne by the client, not the insurer. General accounts contain all other assets and liabilities of the insurer.

[8]Zucker and Joseph (2003). These figures are consistent with the 24 percent equity allocation of the life insurance sector reflected in U.S. flow of funds data, which comprise both general and separate accounts. Complete data on separate accounts are not available for insurance companies in other regions. Discussions with market participants suggest that equity holdings in the general account could also be somewhat lower than for the combined accounts in the euro area, the United Kingdom, and Japan, but remain well above U.S. general account levels. For example, among some of the largest life insurance companies in Japan, the differences between the equity share in the general and combined accounts is approximately one percentage point.

Figure 3.1. Asset Allocation for Life Insurance Industry, 2002
(In percent of total assets)



Sources: Board of Governors of the Federal Reserve System, *Flow of Funds;* U.K. Office of National Statistics; Comité Européen des Assurances; Bank of Japan, *Flow of Funds;* Fox-Pitt Kelton; and IMF staff estimates.

[1]U.S. data exclude holdings in separate accounts.

[2]U.K. data are for 2001.

[3]Unless separately shown, the "Other" investment category includes real estate (including mortgages), money market funds, deposits, and other investment assets.

[4]For the euro area, the data are for life and nonlife insurance sectors for the year 2001.

[5]Loans include medium-term notes (MTNs), such as schuldscheinforderungen, and other private placements.

[6]Discussions with major Japanese insurance companies suggest that there is wide variation in the composition of foreign securities from company to company. However, they typically include government and agency securities, but also corporate bonds and equities.

Table 3.5. United States: Asset Allocation for the Life Insurance Industry[1]
(In percent of investment assets in general accounts)

	1994–1997	1998	1999	2000	2001	2002
Equities	3.9	4.7	5.0	4.7	3.9	3.6
Bonds	70.7	71.6	71.2	71.4	72.4	79.7
Of which:[2]						
U.S. government securities	18.8	14.7	13.6	19.4	12.7	17.2
Treasuries	8.3	5.1	4.6	4.3	3.9	3.3
Agencies	10.5	9.6	9.0	15.1	8.8	13.9
Corporate bonds	41.5	47.8	49.3	50.8	53.0	60.8
Mortgages	12.8	11.5	11.9	11.8	11.3	11.2
			(In billions of U.S. dollars)			
Memorandum items:						
Total assets of life insurance	2,172	2,770	3,068	3,136	3,225	3,335
Of which:						
Amounts in separate accounts	512	906	1,129	1,129	1,058	950
Nonlife insurers' assets	758	876	873	862	858	919

Sources: Board of Governors of the Federal Reserve System, *Flow of Funds;* Fox-Pitt Kelton; and IMF staff estimates.
[1]These data (apart from memorandum items) exclude separate accounts. The table shows selected assets only, and therefore allocations do not total 100 percent.
[2]Following are selected components of the total for bonds.

United States, large life insurers have noted that their targeted investments can be large relative to the overall size of certain market segments or an individual bond issue. Needless to say, insurers' activity can have a more significant impact in the less liquid markets outside the United States.

The U.K. market structure helps to explain why U.K. insurers have historically had a high proportion of investments allocated to equities and a significantly lower allocation to government and corporate bonds (Table 3.6). The U.K. financial system has a capital market-based orientation, like the United States, but continues to have a relatively small and concentrated corporate bond market. In many respects, the U.K. market structure has features similar to both the U.S. and continental European systems. The U.K. equity market is large and liquid, while U.K. bank lending to nonfinancial businesses is larger in comparison to GDP than in the United States and more in line with the euro area (Table 3.7). At the same time, the U.K. markets for government and corporate debt are relatively small compared with those in the United States, and corporate issuance is somewhat concentrated in a few sectors, such as banks and utilities. In 1999, equities represented more than 58 percent of U.K. insurers' investment portfolios. However, starting in 2000, insurers have increased their corporate bond allocations significantly, as the broader European credit markets have developed, and reduced their equity allocation.

Insurers in more relationship-based systems, such as continental Europe, have historically had a narrower range of investment options. In continental Europe, the great majority of corporate credit claims continue to be held in the banking system. While the European credit securities market has grown, it remains less developed than the U.S. market in terms of diversity of products, credit names, and matu-

Table 3.6. United Kingdom: Asset Allocation for the Life Insurance Industry[1]
(In percent of total investment assets)

	1997	1998	1999	2000	2001
Equities	55.8	52.1	58.2	51.9	43.4
Bonds	27.9	31.3	27.3	31.5	38.9
Of which:					
Government	18.6	20.8	16.4	16.7	17.7
Corporate	9.3	10.4	10.9	14.8	21.2
Other	16.3	16.7	14.5	16.7	17.7
			(In billions of U.S. dollars)		
Memorandum item:					
Total financial assets for life insurance industry	430	480	550	540	565

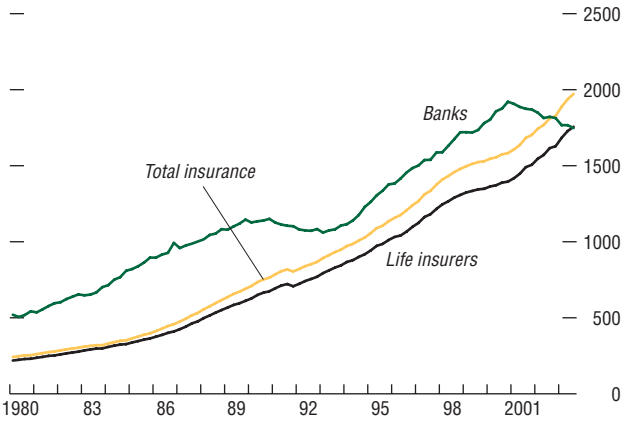
Sources: Bank of England; and Standard & Poor's.
[1]Excludes separate accounts.

rities, and it is less liquid. Therefore, insurers in some euro area countries, such as Germany, tend to hold relatively larger amounts of government bonds and more equity securities (Table 3.8). The same is true in Switzerland. In addition, in both the corporate and government bond markets, life insurers have fewer long-duration securities available to hedge longer-term liabilities. Finally, the smaller size of these equity and credit markets also restricts large insurers. These constraints limit the capital market tools available to insurance risk managers. However, the credit market in Europe has expanded since 1999, as noted above, and the largest European insurers have increased risk management skills and systems in the last few years.[9]

Of course, the credit experience of continental European insurers is diverse, as some European insurers have operated on a global scale for some time. Several European insurers have purchased companies in the United States and Japan, and through these operations tend to manage larger credit positions. These institutions are often recognized by market observers as possibly ahead of other European insurers in their investment activities and risk management systems because of their experience in these other markets.

In Japan, insurance companies have a culture of managing credit, but in the country's relationship-based structure this has been principally through loans rather than corporate bonds. (Table 3.9). During the rapid

Figure 3.2. United States: Total Nonmortgage Credit to Private Nonfarm Sectors[1]
(In billions of U.S. dollars)



Source: Board of Governors of the Federal Reserve System, *Flow of Funds.*
[1]Including consumer credit, nonfinancial corporate and noncorporate sectors, and financial sector.

[9]An example of this expansion would be the growth of the asset-backed securities, mortgage-backed securities, and covered bond markets in Europe. In Germany, the "True Sale Initiative" (TSI) is aimed at developing securitizations as an additional funding source for small and medium-sized German business loans. TSI is supported by a consortium of 13 banks (Landesbanks, cooperative, savings, and commercial banks, including Citigroup) led by KfW, the German industrial development bank. A press release giving some details on TSI is available at *http://www.kfw.de/Dateien_RSP/pdf/118_e.pdf.* See Chapter II for a broader discussion of the growth of securitization markets in Europe.

Table 3.7. United Kingdom: Financial Market Size[1]
(In billions of U.S. dollars)

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Equity held	1,583	1,860	2,247	2,751	3,107	3,838	3,643	3,156	2,856
Bonds issued[2]	878	1,033	1,252	1,386	1,536	1,637	1,686	1,714	2,059
Of which:[3]									
Government	282	348	398	443	483	449	398	367	441
Financial corporate debt	54	59	74	78	89	109	111	113	130
Nonfinancial corporate debt	105	130	149	170	209	257	300	306	370
Bank loans to nonfinancial corporations	337	368	427	449	471	516	543	583	692
Memorandum item:									
Total financial assets	8,538	9,617	11,379	12,998	14,112	15,638	15,740	15,564	16,894

Source: U.K. Office of National Statistics, *Blue Book 2003.*
[1]Claims on residents.
[2]Includes bonds issued by nonresidents.
[3]Following are selected components of the above aggregate.

expansion of credit through the early 1980s, regulations granted insurance companies (together with long-term credit banks and trust banks) an exclusive privilege of providing long-term credit to the corporate sector. This policy and the culture of relationship-based lending inhibited the development of a corporate bond market. During the late 1980s, however, deregulation allowed commercial banks also to compete in long-term lending, and since the 1990s there has been weak loan demand overall and overcapacity in banking. These factors, combined with deteriorating loan quality, have reduced credit holdings by insurers and led them to shift their portfolios more toward government bonds, and, in some cases in recent years, to foreign securities.

Table 3.8. Euro Area: Asset Allocation for the Insurance Industry[1]
(In percent of total investment assets)

	1999	2000	2001
Equities	25.2	26.8	25.9
Bonds[2]	39.1	37.8	38.8
Loans[3]	21.3	20.4	19.6
Real estate	4.4	4.3	4.2
Other	9.9	10.7	11.5
	(In billions of U.S. dollars)		
Memorandum item:			
Total assets of insurance industry	2,081	2,448	2,479

Source: Comité Européen des Assurances.
[1]These data include separate and general accounts. Comparable disaggregated data for the euro area are not readily available prior to 1999.
[2]Based on IMF staff discussions with market participants and review of annual reports, approximately 60–65 percent of fixed-income holdings are often government bonds, with the remainder represented by credit securities.
[3]Loans include medium-term notes (MTNs), such as *schuldscheinforderungen*, and other private placements.

Credit Derivatives

Credit derivatives remain a small but rapidly growing market and are increasingly used in both market-based and relationship-based systems. (Table 3.10 and Box 3.1 on page 90). In the early days of the credit derivative market, regulatory arbitrage (whereby banks sought to lower their capital risk weightings) was an important factor behind many transactions. However, more recently, banks have been primarily motivated by the desire to reduce credit risk concentrations and to diversify their credit exposure. This diversification has tended to occur mostly by banks (particularly larger banks) transferring risk to other banks (particularly smaller banks, such as regional European and Asian banks), allowing the latter to gain credit exposure to names they may not otherwise be able to access.[10]

Insurers have made some use of credit derivatives to gain additional credit exposure

[10]Standard and Poor's (2003b) provides a review of the factors underlying banks' use of credit derivatives. See also FitchRatings (2004) for a similar study.

Table 3.9. Japan: Asset Allocation for the Life Insurance Industry[1]
(In percent of total investment assets)

	1994–1997	1998	1999	2000	2001	2002
Equity	16.1	14.0	16.4	13.6	11.8	8.8
Bonds	22.2	26.2	29.1	34.4	36.9	40.3
Of which:[2]						
Government bonds	15.2	17.7	20.0	22.7	24.6	27.3
Corporate bonds[3]	3.6	4.9	5.2	5.8	6.2	6.6
Foreign securities[4]	6.6	9.8	9.7	9.7	12.5	14.5
Loans	49.0	42.8	38.1	36.7	34.4	32.2
Other	6.1	7.2	6.7	5.6	4.3	4.2
			(In billions of U.S. dollars)			
Memorandum items:						
Total assets of life insurance	1,249	1,270	1,489	1,290	1,094	1,213
Total assets of nonlife insurance	312	291	337	267	219	227

Source: Bank of Japan, *Flow of Funds.*
[1]These data include separate and general accounts, and do not include the Japanese Postal Insurance System.
[2]Following are selected components of the above aggregate.
[3]Excludes debt of government-related enterprises.
[4]Discussions with major Japanese insurance companies suggest that there is wide variation in the composition of foreign securities from company to company. However, the foreign securities typically include government and agency securities, but also corporate bonds and equities.

Table 3.10. Credit Derivatives and Bank Credit
(In billions of U.S. dollars)

	1998	1999	2000	2001	2002	2003	2004
Credit derivatives (notional value)[1]	350	586	893	1,189	*1,952*	. . .[2]	*4,799*
(As a percent of global corporate bonds and bank loans to nonfinancial corporations)	1.5	2.4	3.8	5.2	7.7	. . .	. . .
Memorandum items:[3]							
Corporate bonds	8,650	9,308	9,563	10,042	11,507	. . .	. . .
Bank loans to nonfinancial corporations	14,528	15,541	14,238	12,745	13,698	. . .	. . .

Sources: British Bankers' Association (BBA); Board of Governors of the Federal Reserve System; U.K. Office of National Statistics; ECB; Bank of Japan; and IMF staff estimates.
[1]Credit derivatives include all forms of derivative products, including portfolio products. Numbers in italics are BBA forecasts made by the BBA in the end-2001 survey.
[2]No forecast was made for 2003.
[3]The following global aggregates are corporate bonds issued by financial and nonfinancial corporations, and bank loans taken by nonfinancial corporations in the United States, United Kingdom, the euro area, and Japan.

and to diversify credit risks. Monoline credit insurers are the largest insurance sector represented in this market, with $166 billion of net credit protection sold via credit derivatives. (Table 3.11). Primary insurance companies (life and nonlife) accounted for $105 billion and reinsurers for $32 billion of net credit protection sold, as of September 2002. The exposure taken on to date is small (relative to their total investments or capital), largely in the form of portfolio products, such as collateralized debt obligations (CDOs), and generally of high credit quality.[11]

However, supervisory authorities must monitor credit derivative activity closely, because reporting of exposures is often not sufficiently disaggregated in financial or regulatory reports. A significant number of supervisors comment that a lack of information impedes their monitoring of these activities, and the current work by the Joint Forum, including its survey on credit risk transfer

[11]See Box 3.1 for a discussion of CDOs and credit quality.

Table 3.11. Global Credit Derivatives Positions by Sector, End-September 2002[1]
(In billions of U.S. dollars; notional value)

	Credit Protection Sold	Credit Protection Bought	Net Credit Protection Bought
Global banks	1,324	1,553	229
Insurance companies (including monoline credit insurers)	344	41	–303
Of which:			
Insurance companies (excluding monoline credit insurers)	152	15	–137
Monoline credit insurers	192	26	–166

Source: FitchRatings.
[1]"Credit protection sold" means that an investor has taken on credit exposure, while "credit protection bought" means that exposure has been reduced (see Box 3.1 for more details).

focusing on the credit derivative markets, is eagerly awaited.[12]

Summary

The capital market structure in the United States has facilitated corporate bond investments, while the systems in continental Europe, the United Kingdom, and Japan have led insurers to rely more on government securities, equities, and loans, respectively. As corporate bond and credit markets continue to develop outside of the United States, the broad shift in credit exposure from banks to insurers is expected to continue. Similarly, today we see relatively more credit specialists and market-oriented risk management systems at U.S. insurers; however, the trend in other markets is clear, and larger European insurers are rapidly improving their credit risk management skills.

Regulatory Framework

Regulations set a framework for insurance companies' balance sheet structures and risk management.[13] There are wide differences between regulatory regimes, with regard to both investment portfolios and insurance products. The style of regulation may also encourage or retard the development of risk management skills. Solvency regimes and regulations concerning the structure of insurance products are two important areas discussed below.

Solvency regimes vary widely between major market centers. Generally, regulators in all of the countries we reviewed intend to set capital requirements based upon overall business risk (including both insurance liabilities and investment assets). However, the existing approach varies from country to country. Approaches in the major jurisdictions generally can be split into two styles. The U.S. and Japanese regulatory systems apply a risk-based capital framework to assets, as well as a component related to insurance risks, as part of the overall solvency requirement, while the U.K. and German systems (like other EU countries) have adopted EU directives for minimum solvency standards. Swiss regulations have evolved independently; however, they have been influenced by their EU neighbors. Currently, the EU directives base the solvency calculation primarily on premiums, claims, and loss reserves, and set asset limits regarding large exposures, rather than applying a relative risk weighting or risk assessment to different asset classes. However, some European countries, such as Denmark, the Netherlands, and (under current proposals) the United Kingdom, go beyond the EU directives, incorporating elements of a risk-based system. Some countries, such as Germany and Japan, and some states in the United States also have specific

[12]The Joint Forum is a group of technical experts working under the umbrella of the Basel Committee on Banking Supervision, the International Organization of Securities Commissions, and the International Association of Insurance Supervisors.
[13]IMF (2002b) compared regulatory frameworks for the insurance industry across countries and discussed the additional oversight roles played by others, such as rating agencies and investors. The following section focuses on how regulation affects insurance company investment activities and risk management. The Appendix describes these regulations in greater detail.

Table 3.12. United States and Japan: Comparison of Risk-Based Capital Weightings for Life Insurance Companies[1]

	Capital weightings on assets[2] *(in percent)*	
	United States	Japan
Equities	22.5 to 45	10
Government bonds	0	0
Corporate bonds[3]	0.4 to 30	1 to 30
Foreign bonds	10	5
Real estate	10	5

Sources: U.S. National Association of Insurance Commissioners; and the Japanese Financial Services Agency.

[1]This table shows credit risk weightings only, and does not include other elements of the risk-based capital calculations, such as price fluctuation risk or business risk.

[2]The weightings are on a pre-tax basis.

[3]For the United States, these weightings also apply to assets synthetically replicated using credit derivatives, and to the potential counterparty credit exposure from derivatives.

limits on certain asset classes (see footnotes 19 and 33).[14]

A risk-based capital regime attributes a range of capital charges to different investment risks. The U.S. and Japanese systems have similar architectures, but assign different risk weightings to asset classes (Table 3.12).

Capital weightings for most assets are higher in the United States than in Japan, making U.S. insurers more sensitive to the relative weightings of different asset classes and thus more strongly reinforcing the incentive for them to hold corporate bonds rather than equities. The U.S. National Association of Insurance Commissioners (NAIC) adopted the risk-based capital approach in 1993, and U.S. insurers we met (even mutuals) indicated that immediately thereafter they began to restructure their portfolios to reduce equity holdings and to increase credit exposure. Japan introduced its risk-based regime in 1996, amidst significant solvency problems in the insurance sector (described below), and therefore found it more difficult to introduce standards as strict as those in the United States. In addition to the lower capital weightings, there are differences concerning assets that may be included in solvency calculations, for example for deferred tax assets, which also render the Japanese system comparatively less demanding (Fukao, 2002).[15] These factors weaken the discipline provided by the Japanese risk-based capital regime, and the current upturn in financial market conditions provides a good opportunity for regulators to consider strengthening various risk weightings and the calculation method.

The U.S. system uses six different capital weightings for bonds according to their credit risk, and the Japanese system uses three. Credit securities are assigned a classification between one and six by the NAIC, closely following ratings published by the rating agencies, where they exist. Weightings are derived from historical default rates (Table 3.13). The U.S. system differentiates more than Japan according to credit quality, and thereby encourages holdings of single–A and higher credits. In addition, the U.S. system allows reductions in capital as the number of issuers in a portfolio increases, reflecting the benefit of a diversified portfolio.

The current EU solvency regime applies capital charges to investment risks only in limited cases and is expected to be replaced by Solvency II in 2007.[16] The EU intends to implement a Basel II-style three pillar approach, with a risk-sensitive capital criterion in Pillar I. This will bring a beneficial discipline upon companies to develop more

[14]Some U.S. states have limits relating to the credit quality of securities. For instance, New York state limits below-investment grade instruments to 20 percent of total fixed-income investments.

[15]The Japanese system allows deferred tax assets to be included in full in solvency margin calculations, while the U.S. system allows them to be included only up to a maximum of 10 percent of capital and surplus.

[16]Information from the EU Commission about the Solvency II project can be found at *http://europa.eu.int/comm/internal_market/insurance/solvency_en.htm#solvency2*. Annex 3 of Bank for International Settlements (2003) also provides a useful summary.

Table 3.13. Risk Weights for Credit Instruments in the United States and Japan[1]

United States			Japan		
NAIC rating	Moody's (S&P) ratings	Weight (percent)	FSA rating	Recognized ratings authorized by FSA	Weight (percent)
1	A (A) and above	0.4			
2	Baa (BBB)	1.3	1	BBB and above	1.0
3	Ba (BB)	4.6			
4	B (B)	10.0			
5	Caa (CCC)	23.0	2	Other	4.0
6	Ca (CC) and lower	30.0	3	In or near default	30.0

Sources: U.S. National Association of Insurance Commissioners; and the Japanese Financial Services Agency.
[1]The weighting are on a pre-tax basis.

sophisticated asset-liability management and risk management systems.[17] As noted above, the current EU solvency requirements for insurers are relatively unsophisticated. Likewise, the EU regulation of investment activity is also less developed and generally includes investments as assets in the solvency margin in full up to a given threshold for exposures to an individual issuer.[18] Member states are free to impose stricter investment restrictions, and some states have done so with regard to equity and derivative holdings.[19] The EU approach allows a substantial proportion of assets to be held in equities (since zero capital charge is applied up to a stated threshold or limit) and reflects an historical preference for holding equities to match longer-duration liabilities. This approach, whereby capital is not directly linked to investment risks, fails to encourage the development of risk management systems or address changes in the business environment. Solvency II would replace the existing framework with a risk-based capital approach, and the United Kingdom is acting more immediately to introduce a risk-based system through its CP 195 initiative (Box 3.2).

Regulations and market practice influence life insurance products. The structure of life products in turn significantly influences insurers' investment strategy, with the effects varying from country to country. Life insurance products include both protection (death benefits) and savings features (like annuities). Returns to policyholders can be either fixed-rate, variable-rate (e.g., "with-profits" policies), or unit-linked (with returns determined by investment performance). Some products provide a guaranteed minimum return, and in several markets these guarantees have contributed to the recent financial stress of life insurance companies.

In Europe, guaranteed minimum returns arise partly from regulation and partly from competition and have recently been a source of stress. In Germany, for instance, regulations

[17]An overly prescriptive regulatory framework tends to retard these skills. This was previously seen in the U.S. savings and loan industry where, before deregulation, managers pursued a "3-6-3" risk management approach: "borrow at 3 percent, lend at 6 percent, and be on the golf course at 3 p.m." After deregulation, many thrift managers were ill-equipped to manage different or changing risk positions.

[18]EU directives require that holdings of securities by a single issuer should not be greater than 5 percent of the gross technical provisions (i.e., the net present value of future liabilities before reinsurance recoveries).

[19]German regulations, for instance, set limits for the amounts of equities and derivatives in the portfolio. The limit for equities (measured in book value terms) was 25 percent of total assets covering technical provisions until 1992; 30 percent from 1992 to 2002; and has now been raised to 35 percent. The limits for derivatives are as follows: for interest rate and currency swaps designed to increase yield, 7.5 percent of total assets; for derivatives to meet short-term cash flow needs, 7.5 percent of total assets for contracts of up to a year in length and 5 percent for contracts beyond one year; and for structured products such as asset-backed securities (ABSs) and CDOs, 7.5 percent and 5 percent of assets covering technical provisions, for investment-grade and other instruments, respectively.

effectively set guaranteed minimum returns, with competition often forcing guarantees above the regulatory minimum.[20] Moreover, in Germany guaranteed returns are supplemented by a regulation designed to return "excessive premiums" to policyholders, which in essence requires 90 percent of profits to be repaid to policyholders each year. In the United Kingdom, there are no regulatorily required minimum returns, but many insurers offer various guarantees on life and annuity products. In these two countries, as well as others, many insurers have suffered (and continue to suffer on certain in-force business) negative spreads in recent years between their investment returns and guaranteed rates. In several European countries, a trend of more unit-linked products (i.e., where the return is tied solely to investment performance) is under way (with recent sales of such products particularly large in the Netherlands and the United Kingdom), and should work to strengthen solvency positions. Of course, through such insurance products, the investment risks are being reallocated to policyholders.

Life insurance companies have historically been viewed as long-term savings institutions, but their liabilities have become shorter in duration in recent years. This has occurred in part because of increased competition from providers of other long-term savings products, such as mutual funds, which has led insurers to reduce penalties for early withdrawal and to create greater optionality in life policies, with guaranteed returns and principal protection features. The shorter duration and greater optionality require insurers to undertake more short-term trading and hedging of market risks, or to hold greater capital to address periodic investment underperformance.[21] This shift in balance sheet and risk profile is particularly relevant to the current debate surrounding financial accounting and reporting standards.

Summary

The risk-based capital regimes in the United States and Japan encourage holdings of investment-grade credit and discourage relatively large equity holdings, while European solvency regulations focus largely on premium volumes and little on asset composition in setting minimum capital standards. Risk-based solvency standards also seem to stimulate greater development of risk management systems, relative to regulatory regimes that rely on premium volumes or apply strict limits on the investment portfolios of insurers. The liability structure, including the effect of guaranteed minimum rates, also strongly affects risk management, as discussed below.

Comparison of Different National Systems in the Recent Market Downturn

Insurers' financial performance and their vulnerability during market downturns have depended heavily on their investment and asset-liability management strategies. This section begins by discussing insurers' asset-liability management objectives. It then briefly examines the evidence on relative volatility of credit and equity investments over different periods. It also reviews how insurers in the United Kingdom, continental Europe, the United States, and Japan (starting at a much earlier date) weathered the recent market downturn; how the relevant historical and current market structure and regulatory framework contributed to the insurance sector's ability to manage risk during this period; and the lessons for policymakers and risk managers.

[20]The guaranteed minimum rate of return is effectively set by the technical interest rate for calculation of provisions against future liabilities.

[21]Briys and de Varenne (1995) demonstrate that guaranteed rates of return and bonus features can shorten duration considerably at relatively low interest rates, and that asset allocations may be biased toward equity investments.

Box 3.1. Credit Derivatives

A credit derivative transaction involves one party shedding credit risk (in other words, buying credit protection) and another taking on this risk (i.e., selling credit protection). Credit risk can be transferred in part or in its entirety either by buying credit risk protection to reduce credit risk exposure or by directly selling the credit-risk bearing instrument. Sellers of credit protection take on credit risk in a manner similar to purchasers of corporate bonds, loans, or other credit instruments.

Credit derivatives can be classified into two broad categories, those that transfer the credit risk relating to an individual borrower (single-name products) and those relating to a number of borrowers (portfolio products). Examples of these two categories are single-name credit default swaps (CDSs) and collateralized debt obligations (CDOs), respectively. In a CDS transaction, the protection seller agrees to pay the protection buyer if a reference entity (a company or sovereign) experiences a predefined "credit event," such as a default on a debt obligation. The protection seller receives a premium (typically paid quarterly) from the protection buyer over the lifetime of the transaction.

Typical "cash" CDOs are debt securities issued by a special purpose vehicle (SPV), collateralized by a portfolio of loans or bonds. "Synthetic" CDOs are created using portfolios of CDSs combined with highly rated debt securities (e.g., government bonds) to synthetically replicate credit securities. Investors who purchase CDOs from the SPV are selling credit protection, while the entities packaging the loans or bonds within (or entering into CDSs with) the SPV are protection buyers.

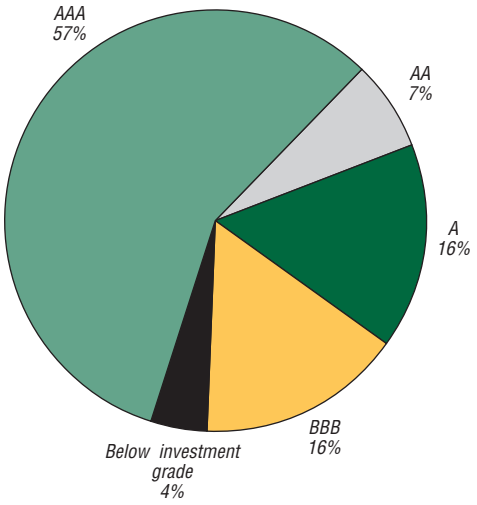
CDOs have often been sold in a number of tranches (senior, mezzanine, and equity), each with a different credit rating (or no credit rating). Tranching is achieved by issuing securities of different seniority in terms of their relative exposure to any credit losses from the underlying collateral. The credit enhancement provided by the tranching of risk, and (in many cases) by a guarantee from a monoline credit insurer, is an important feature of many CDOs, as they enhance the grade of the security for investors buying the more senior tranches.[1]

Insurers were reported to be the second largest group of credit protection sellers (after banks) in the Fitch and British Bankers' Association (BBA) surveys (see FitchRatings, 2003; and BBA, 2002). While life insurers seem to use CDOs to diversify or expand their existing credit exposure, nonlife insurance companies also may use them to acquire credit risk because it is seen as uncorrelated with the risks from their traditional P&C insurance business.

CDOs have been especially popular among insurance companies because they provide credit exposure to a diversified portfolio of credits, rather than to single names, and because CDOs allow insurance companies to fine-tune the credit quality of their investments, often by buying higher-quality tranches. The share of insurers' CDOs rated A or higher is greater than for fixed-income investments in general (see the Figures). Market participants report that insurance companies tend to purchase all tranches of CDOs, but only small amounts of the "equity" or first-loss tranche, which in some cases is retained by the issuer. It should also be noted that the credit ratings associated with CDOs differ from those of traditional fixed-income products because of diversification scoring procedures, and, being a portfolio product, CDOs can have defaults among some underlying obligors yet still make payments to holders of the senior tranches.

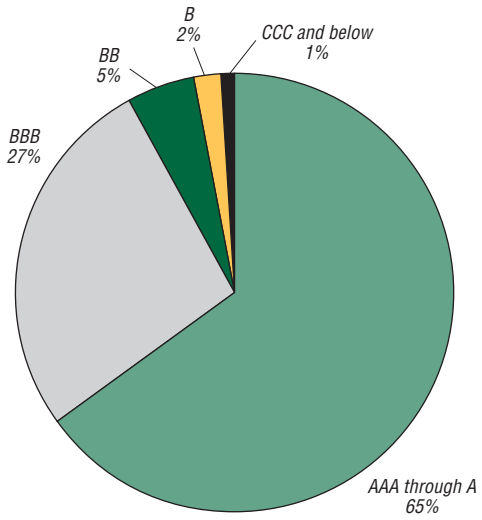
[1]Monoline credit insurance companies are financial guarantors that provide credit enhancements by guaranteeing securities. See Rule (2001b) for a more detailed discussion of monoline credit insurers.

Insurance Company Holdings of Credit Derivatives Including Collateralized Debt Obligations



Source: FitchRatings.

U.S. Life Insurance Company Fixed Income Investments, March 2003
(Percent of the portfolio)



Source: Fox-Pitt Kelton.

Asset-Liability Management and the Relative Risks from Credit and Equity

The liability structure of insurance companies provides further rationale for insurers to prefer credit to equity investments. Insurers manage investment portfolio risks relative to the insurance liabilities they underwrite. Key drivers of an insurer's asset strategy are the related duration, convexity, and cash flow profile of its liabilities and the need to ensure that it holds sufficient assets of appropriate term and liquidity to enable it to meet liabilities as they become due.[22] The International Association of Insurance Supervisors (IAIS) notes that an insurer's asset-liability analysis would need to include testing the resilience of the asset portfolio to a range of market scenarios and investment conditions, including examining the resulting impact on the insurer's solvency position (IAIS, 1999).

Investments need to be managed against both savings and insurance (or protection) products by life insurers, many of which pay a fixed nominal sum and, in the case of savings products, with fixed future payment dates. Other products, with variable-rate or bonus features, allow part of the risk from investments to be passed to policyholders. However, in practice insurers' flexibility is limited (competitively or regulatorily), especially where guaranteed minimum returns or similar payment features exist. Thus, a large proportion of the liabilities in life insurers' general

[22]Swiss Re (2000) discusses asset-liability management, including its growth in importance during the 1970s, as high and rising inflation led to an increase in the volatility of interest rates.

Box 3.2. EU Solvency II and the United Kingdom's CP 195 Initiative

EU Solvency II

The Solvency II project will further develop the capital adequacy framework for EU insurers. It aims to implement a three-pillar approach: standardized capital requirements, supervisory requirements, and risk-oriented public disclosure. It is thus a similar framework to the Basel II approach for banks. There is a great deal of agreement between member states over Pillars II and III of Solvency II, and work can now begin on drafting the framework directive. Adoption of the directive is expected by 2007.

The detailed technical work will concentrate initially on Pillar I risk-based issues of setting appropriate levels for target capital and technical reserves. The Commission has stated its aim for a higher degree of harmonization, which would reduce member states' need to set their own additional requirements. If so, it would contrast with the national flexibility shown under the existing directives and continuing under Basel II.

U.K. CP 195 Proposal

The United Kingdom is actively participating in Solvency II discussions, but it has proposed its own risk-oriented prudential approach, which anticipates or even goes beyond much of Solvency II's expected approach. The proposed U.K. system (described in a consultation paper—CP 195), which may be implemented in 2004, will introduce closer links between investment risks and the requirements for capital and reserves, especially for "with-profits" business. The required capital buffer will reflect market, credit, and persistency risks, while reserves will include an element to cover reinvestment risk. It includes stress tests designed to better reflect changing market conditions, which are described in the Table.

Market participants anticipate that CP 195 will likely be revised before adoption, with the general thrust of risk-based capital approach retained. As a result of the proposed regime, many insurers expect with-profits business to be reduced significantly and unit-linked business to increase. Going forward, new with-profits policies are likely to have more back-loaded or terminal bonus features and/or more clearly emphasize the voluntary nature (optionality) of interim payments (a very attractive option held by insurers). Finally, many industry observers also believe that smaller insurers will suffer under the proposed system, which will require more investment in risk systems and, with potentially less product differentiation, greater emphasis on distribution. As such, this may result in some industry consolidation.

Stress Tests Proposed Under CP 195

Risk	Proposed Stress
Equity	10 percent fall in U.K. equities or higher, contingent on index movements.
Interest rate	The more onerous of a fall or rise in yield of fixed-interest securities equivalent to a 20 percent shift in long-term gilt yields.
Real estate	10 to 20 percent decline in real estate value, depending on rate and direction of movement of an appropriate real estate index.
Credit risk	**Investment Grade Corporate Bonds** Increase in corporate bond spreads over risk-free rates, up to a maximum spread level of 90–210 basis points, depending on the rating.
	Non-investment Grade Bonds Increase in corporate bond spreads over risk-free rates, up to a maximum spread level of 525–900 basis points, depending on the rating.
	Commercial Mortgages and other Nonrated Assets If no credit rating, a 10 percent charge based on market value of the asset.
	Reinsurance Concentration Rated reinsurer—as for corporate bonds. Unrated reinsurer, 10 percent of recoverable.
Persistency rate	50 percent reduction in termination rates for each year compared with termination rates assumed in realistic liabilities.

accounts are fixed in nominal terms, or have a fixed nominal guarantee.[23]

Fixed-income investments of similar duration can best match insurers' typical liability payment structures. Equities, while offering higher returns over longer periods, have unknown or less predictable future cash flows and greater risk and volatility profiles than fixed-income securities, especially during intermediate periods. As such, equities can be a less reliable cash flow source, and fixed-income instruments tend to be a better match than equities for the majority of insurers' underwriting liabilities. In Canada, for instance, companies often attempt to match assets against the individual products in their insurance business, leading them to hold equities primarily as an investment of surplus funds.[24]

The lower volatility of credit than equity implies that, even apart from the benefits of matching liabilities, an insurance sector with greater exposure to credit than equities may be more stable. As an illustration, historical comparisons for the United States suggest that, while the equity market has had a higher average return than fixed-income assets over long holding periods (e.g., 20 years), they also have a higher volatility over shorter periods. Corporate bonds, in contrast, have historically had a lower average total return than equities, but also much lower volatility.[25] The credit spread on such bonds also provides some cushion against falls in broad market prices. Between 1926 and 2002 the average return on equity shares (as represented by the S&P 500 equity index) was 10.2 percent, and corporate bonds averaged 5.9 percent. The annual standard deviation of returns on corporate bonds over this long period was 8.7 percent, compared to 20.5 percent on the S&P 500 index (Ibbotson Associates, 2003).

This pattern of lower volatility and steadier returns for corporate bonds has been consistent over the years, including recent periods (Table 3.14). The volatility for corporate bonds peaked at 14.1 percent during the high inflation period of the 1980s, and has since declined to approximately half that level. By contrast, average volatility is much higher for equities than for corporate bonds, and the low point of 13.1 percent in the 1960s is only a little below the highest level of volatility for corporate bonds. Over a more recent period, 1993–2002, corporate bond returns were again much less volatile than stock returns (7.3 percent compared with 17.1 percent), and the average annual return for corporate bonds, at 8.8 percent, was only slightly below the 9.3 percent return for equities.

Recent Events in Continental Europe and the United Kingdom

Many European insurance companies increased their equity holdings during the 1990s, in the face of declining interest rates and high guarantees on in-force policies. Historically, fixed-income securities have always had a significant role in insurers' portfolios, because they fit relatively well with their liability profile. During the 1990s, disinflation and deregulation led many insurers in Europe to seek a higher return than their government bond holdings could provide, and the booming equity market, together with the limited size of the corporate bond market in many jurisdictions, led insurers to increase equity allocations. The bursting of the equity bubble, together with the growing depth and sophisti-

[23]Unit-linked products held in separate accounts pass the risk to policyholders, so the investments chosen to back these products have no direct balance-sheet risks for the insurer, and in many cases the investments or risk profile are selected by the policyholder.

[24]The Canadian Superintendent of Financial Institutions states that this matching approach is reinforced by the Canadian Asset Liability Method actuarial and accounting standard (Le Pan, 2003).

[25]Similar comparisons of returns and volatility in Europe and Japan over long periods are not available, as the corporate bond markets in these regions have historically been smaller and much less liquid.

Table 3.14. United States: Comparison of Bond and Equity Returns and Volatility
(In percent)

	1960s	1970s	1980s	1990s	2000s[1]	1993–2002
			Total Returns[2]			
S&P 500	7.8	5.9	17.5	18.2	–14.6	9.3
Long-term corporate bonds[3]	1.7	6.2	13.0	8.4	13.3	8.8
Long-term government bonds[4]	1.4	5.5	12.6	8.8	14.1	9.7
Intermediate-term government bonds[5]	3.5	7.0	11.9	7.2	11.0	7.3
			Volatility of Total Returns[6]			
S&P 500	13.1	17.1	19.4	15.8	16.7	17.1
Long-term corporate bonds[3]	4.9	8.7	14.1	6.9	7.5	7.3
Long-term government bonds[4]	6.0	8.7	16.0	8.9	9.9	9.3
Intermediate-term government bonds[5]	3.3	5.2	8.8	4.6	5.1	4.7

Source: Ibbotson Associates.
[1]For the period 2000–2002.
[2]Returns are calculated as compound annual rates.
[3]Salomon Brothers Long-Term, High-Grade corporate bond total return index.
[4]Twenty-year U.S. treasury bond.
[5]Five-year U.S. treasury note.
[6]Volatility is calculated as annualized monthly standard deviation.

cation of certain credit markets, has since led many insurers to reallocate holdings from equity to credit. However, there is still scope for this reallocation to go further.

European life insurers increased equity investments throughout the 1990s in part to meet guaranteed returns to policyholders,[26] particularly in Germany (but also in the United Kingdom and Switzerland).[27] Many insurers had offered high guaranteed rates on life insurance products since the 1980s. The adoption of EU directives and the easing of regulations on product terms in the early 1990s allowed insurers to compete more directly through the return offered on products. In Germany, for instance, after regulations were relaxed in 1994, increased competition led to much higher guaranteed returns. Premiums for annuities and pensions (which offered guaranteed rates) rose dramatically as a share of total premiums written by German life insurers, from around 4 percent during the 1970s and 1980s, to above 20 percent by the late 1990s (Statistical Yearbook of German Insurance, 2003).

The stock market decline from 2000 onwards reduced the solvency margins of insurers with large equity exposures, triggering a solvency crisis and significant selling of equities. The FTSE index declined 50 percent from its January 2000 peak to the March 2003 trough, and the DAX fell more than 70 percent from its peak to trough.

Market commentary during this period included discussion of thresholds for the FTSE, DAX, and Swiss stock market that would trigger further forced selling by insurers. The rate of price declines often accelerated as markets approached these thresholds, at times threatening to lead to disorderly market conditions. The episode highlighted to market participants, regulators, and many insurers themselves the need to improve risk management capabilities and the need to rethink the desirable level of equity holdings. In addition, it highlighted the possible dan-

[26]Rule (2001b) makes a similar point that the need to pay guaranteed minimum nominal returns that were in excess of current nominal returns on government bonds was leading some insurers to take more risk.

[27]For example, in Germany, the share of equities rose to 30 percent of investment assets at the peak of the stock market in 2000, from 21 percent in 1997, as the regulatory ceiling was raised (as described earlier). Most of this increase was at the expense of their fixed-income (primarily government bond) holdings, which fell to 49 percent from 58 percent during this period. The regulatory ceiling on equities was also relaxed in Switzerland.

gers of amplified price falls caused by forced selling to protect regulatory capital ratios in the short term, but more fundamentally resulting from their existing investment strategies and risk management systems (across the entire balance sheet).

Discussions with many market participants suggested that pressure to sell equities came in part from the rating agencies, as well as from insurance companies' own internal risk models. Interestingly, in several cases, insurers indicated that the risk models were indicating a need to sell equities in earlier periods, but this analysis was not often followed by management. This probably reflects the relatively recent adoption and use of such models, and the need for greater management understanding of the risk management process. During this period, the high market volatility could have produced financial instability and, at certain points, a few insurers found themselves effectively unable to access the markets to raise additional solvency capital.

Regulatory authorities in some jurisdictions acted to reduce these market pressures and to ease the impact of declining equity prices on solvency margins. The German regulators responded in early 2002 by amending the regulations governing the valuation of equities and other assets, while leaving in place the solvency requirements. Insurers were allowed to value equities at an "estimated ultimate realizable value," above current market prices, based on an analogy to the treatment of long-term assets held in a "banking book" rather than a "trading book." This action eased stability pressures, but many observers noted that it also reduced the transparency of reported solvency margins.[28] The U.K. authorities took perhaps bolder and more transparent action in relieving the pressure on insurers. U.K. life insurers must be able to pass solvency margin tests, including a stress test called "the resilience test" and, during this critical period, the resilience tests were softened or removed by the U.K. Financial Services Authority (FSA). To prevent this temporary forbearance from masking situations where an insurer was in need of greater supervisory action, the FSA also assessed companies on a case-by-case basis, proactively reviewed insurers' risk management systems and required specific actions of a number of individual companies. More recently, the FSA has introduced CP 195, which lays the groundwork for a risk-based capital regime, taking account more fully of credit and market risks in solvency requirements (see Box 3.2). It has also increased resources for insurance supervision, including a greater diversity of financial skills, such as banking experts.

Many large insurers in Europe have expressed an intention to expand credit holdings and have begun to upgrade risk management capabilities, including the employment of new people with greater risk management experience. In the past two years, a number of insurers have hired more experienced risk management professionals (often from the banking sector) and adopted more sophisticated risk management practices (e.g., banking models, including value-at-risk and economic capital measures). The decision to reduce equity holdings reflected, in part, significant pressure from the rating agencies as early as in 2001. By mid-2003, the equity holdings of most of the largest European insurance companies had declined considerably, from a high of above 25 percent to below 15 percent of total assets. While lower share prices contributed, portfolio sales were an important factor as well, which reduced insur-

[28]The German authorities also established in late 2002 an "insurance" scheme for policyholders, called Protektor, which could assume the portfolios of any failed life insurance company, and act to preserve market confidence. Life insurance companies were to contribute equity stakes in proportion to their liabilities, and further funds, if required, up to one percent of their investments. Protektor has assets of €5 billion, and it has taken over the portfolio of failed insurer Mannheimer Leben and is administering the portfolio as it runs off.

ers' risk profile but also crystallized the losses, limiting insurers' gains from the equity market rebound during the past year.

United States

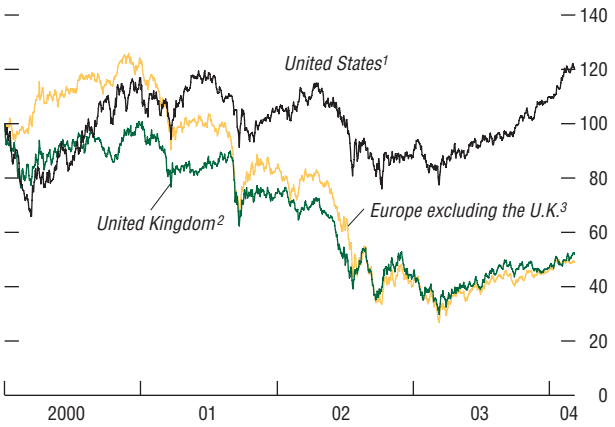
The U.S. insurance sector has long had a strong credit culture, in contrast to European insurers. Many major U.S. insurers have a team of in-house credit analysts. As in Europe, the competition for business drives U.S. insurers to offer products with features attractive to savers, including guaranteed returns. However, the risk-based capital regime reinforces the portfolio allocations into less volatile assets, with significant capital requirements for equities (see Table 3.12).

U.S. insurers earned returns above those required by policy guarantees without taking large positions in equities. The recent low interest rate environment has resulted in some spread compression for U.S. insurers, as the average spread over fixed-annuity products decreased about 25 basis points to 175 basis points from a historical average of about 200 basis points (Moody's Investors Service, 2003). Still, insurers' ability to maintain a positive spread over liabilities allowed them to avoid the need to reach for higher returns. As a result, their balance sheets remained largely composed of corporate credit and other fixed-income risk, with a smaller exposure to equities than their European counterparts.

Comparison of European and U.S. Experience

The U.S. insurers weathered the deterioration in financial markets from 2000 to 2003 without experiencing solvency problems similar to European insurers. The more robust performance of U.S. insurers is reflected in the relative share price performance (Figure 3.3). In the United States, losses on equity positions have been small relative to insurance companies' solvency levels. While credit losses impaired insurers' current income, such losses were at a much lower level than losses on

Figure 3.3. International Insurance Sector Equity Indices
(January 3, 2000 = 100)



Sources: Bloomberg L.P., and Datastream.
[1]S&P 500 life and health insurance index.
[2]FTSE 350 life assurance index.
[3]Dow Jones STOXX excluding the U.K. insurance index.

equity holdings would have been, particularly since many U.S. insurers have a diverse and on average highly rated portfolio. For example, despite the highest corporate bond default rate in a decade, credit losses for life insurers rose to only 75 basis points of invested assets in 2002 (Moody's Investors Service, 2003). Even if further credit losses are yet to be recognized, the magnitude of the losses will not be nearly as damaging as the 25 percent or higher losses suffered in many European insurers' equity portfolios.

Finally, with solvency margins largely intact, U.S. life insurance companies continued to invest in market assets, including equities, even during the market downturn. Net purchases of equities slowed slightly from an average of $90 billion between 1997 and 1999 to $74 billion per year in the period since 2000. In no quarter, though, were there aggregate net sales. Net purchases of credit market instruments by U.S. insurers doubled in the same period, from an average of $78 billion to $157 billion. Purchases of corporate bonds and agency securities have been particularly strong in recent years.

Credit investments offer European insurers the opportunity to earn a positive spread without the exposure to potential large capital losses posed by equity investments. As discussed below, this is particularly important to those insurers that continue to suffer from high guaranteed returns and other product features on in-force business, which prevent a more regular building up of solvency capital during stable market periods. Of course, it will be important for insurance companies to implement adequate credit risk management skills and systems, especially for institutions that have not had significant exposure to credit instruments in the past.[29]

Synthetic credit products may allow European and Japanese insurers with smaller domestic or regional corporate bond markets to achieve increased credit exposure.[30] Furthermore, it may be easier to make a meaningful investment or obtain a specifically tailored credit exposure through derivatives than through the cash market. A portfolio of CDO and credit default swap (CDS) investments may also improve geographic, maturity, sector, and ratings diversification (see Box 3.1).[31] As with increased credit risks generally, insurers need to improve risk management skills prior to increasing credit derivative activity.

Japan

The Japanese insurance sector was significantly affected by the market downturn of the early 1990s. Although the particulars of the Japanese insurance sector differ from those in Europe and the United States, some of the same fundamental forces were at work, especially the regulatory framework and national market structure. According to both official and private sector observers in Japan, deregulation combined with insurers' reach for higher returns through greater equity holdings in the 1980s (factors similar to those in Europe) weakened the Japanese insurance industry during the equity market downturn and posed a potential threat to financial stability.

In a similar manner to Europe, deregulation led insurers to shift into equities. In 1980, life insurers had 60 percent of their assets

[29]CGFS (2003) also makes these points, and indicates that it agrees with similar recommendations by the IAIS Working Group. It should, of course, be kept in mind that the degree of credit experience varies between companies and between countries, including credit products other than bonds. In the Netherlands, for instance, life insurers hold one-third of their assets in commercial and mortgage loans.

[30]Standard and Poor's (2003a) provides an overview of the synthetic credit markets by region and reviews how synthetic, structured credit products are created. See also Rule (2001a) and Appendix 2 of FitchRatings (2004) for more on synthetic credit products.

[31]The European CDO market has grown very rapidly, particularly in Germany. See Rule (2001b).

Table 3.15. Japanese Life Insurers' Investment in Equity and Loans
(In percent of total assets, selected years)

	FY1980	FY1989	FY1995	FY1999	FY2002
Equity at book value	17.2	21.8	19.0	15.0	11.5
Equity at market value	. . .	34.7	16.1	16.4	8.8
Loans	59.7	35.4	37.7	29.5	25.1

Source: Bank of Japan, *Financial and Economic Statistics* and *Flow of Funds*.

invested in loans (Table 3.15). However, financial deregulation during the 1980s allowed most commercial banks to compete in the long-term loan market, which significantly compressed credit spreads. To increase returns during the rising stock market of the late 1980s, insurers increased their holdings of equities.

Regulation and industry structure also encouraged generous bonus features in life insurance products. Regulations on insurance products discouraged Japanese life insurers from competing directly on the basis of the premium offered.[32] Meanwhile, mutual insurers, which form a significant part of the Japanese industry, competed not only through guaranteed rates of return but also on bonus payments to policyholders as a way of returning earnings to their stakeholders. Because bonuses can be paid only out of excess profits, insurers increasingly mismatched positions, mainly by holding equities, expecting to build excess gains over time.

Throughout the 1980s, virtually no countervailing forces existed to check insurers' high investment in equities. Similar to Europe, solvency regulations in Japan focused on the appropriateness of reserves against insurance obligations (measured by volume of premiums), but not on the quality or diversity of assets. Insurance regulators relied on prescriptive rules, such as investment limits. Accounting rules exempted mutual companies from financial disclosures, and regulatory financial reporting was based on book values. Likewise, ratings agencies had little influence over mutual or other Japanese insurers at that time.

The severe and prolonged downturn in the Japanese equity market, however, exposed insurers to significant solvency pressure. Life insurers' equity positions (at market value) fell from 35 percent to 9 percent of total assets between 1989 and 2002, primarily due to price declines rather than asset sales.[33] Unlike European insurers, Japanese insurers did not sell equities into the falling market (many insurers were reluctant to sell shares of client companies), but the accumulated valuation losses significantly eroded their solvency margins. Older policies with high guaranteed rates of return, meanwhile, led to negative spreads in the low interest rate environment, further sapping financial strength. Life insurers now pay average guaranteed rates of approximately 3 to 4 percent, while their investments currently generate average returns of 1.5 to 2 percent.

In an effort to increase profitability and support solvency margins, many Japanese insurers took more market risks, including greater duration risks. As a result, many Japanese insurers reduced long-term domestic loans and invested in medium-term foreign sovereign bonds to benefit from steeper foreign yield curves. Between 1995 and 2002, life insurers increased foreign securities from 5.5 percent to 14.5 percent of total assets (see Table 3.9), which diversified holdings, but the foreign exchange risk is believed to be only partially hedged. In addition, many insurers have more than doubled their sol-

[32]The level of the required mortality reserves is calculated by using a conservative mortality table provided by the regulator. If life insurers wished to use more realistic mortality assumptions to set more competitive premiums, they were required to place additional reserves for the difference at a sharply higher rate.

[33]Japanese regulations place a limit of 30 percent on the amount of equity in the portfolio, but this is measured at book value.

vency margins by issuing surplus notes (a form of hybrid capital) and other subordinated debt, almost exclusively to Japanese banks. While this form of capital raising is used in other markets, regulatory and rating agency pressure elsewhere often limit such hybrid capital to 15–25 percent of an insurer's capital base.

The weakened financial strength of the insurance industry became a threat to financial stability in Japan. Confidence in the reliability of solvency margins was shaken between 1997 and 2001, when seven life and two nonlife insurers, all small- and medium-sized firms, failed due to funding crises stemming from significant policy cancellations, even though their reported solvency margins were several times the regulatory minimum. These failures contributed to liquidity strains faced by Japanese banks with sizable exposure to the insurers. The close relationship between banks and insurers in Japan underscores the need for stronger supervisory standards to avoid contagion between financial sectors.[34]

Improved risk management at some insurance companies has eased stability concerns within the Japanese insurance sector. Some of the more sophisticated insurers have reacted to these structural and regulatory changes by selectively increasing their investment in credit instruments. These insurers increased their investments in domestic corporate and municipal bonds, as well as foreign corporate bonds, in some cases exceeding 50 percent of total assets. Such companies are typically demutualized insurers, and some are foreign-owned. Importantly, they also aggressively reduced their equity holdings and the sale of policies with bonus features, reducing their overall risk profile and creating balance sheets more comparable to U.S. life insurers. Japanese insurance companies are also investing in structured credit, including CDOs, but they have so far allocated less than 5 percent of total assets to these products, and (like U.S. and European insurers) generally purchase AA or AAA tranches. The increased focus on credit instruments and the reduced risk in product structuring are positive developments in Japan.

Financial Accounting and Rating Agencies

Reporting and disclosure standards, including proposed changes to accounting principles, have an important influence on the investment strategies and risk profile of insurance companies. The current discussion regarding appropriate financial reporting standards for insurers is assessed below, together with the influence rating agencies have on insurance companies, particularly reinsurers and monoline credit insurers.

Financial Accounting

There is currently an active debate in the industry regarding the appropriate accounting framework to reflect the business reality of insurance activities. This section outlines the historical view of insurance accounting, the "fair value" principles being proposed, and the desire to converge financial and regulatory accounting principles.

Historically, insurance companies' financial accounting reflected their longer-term focus on returns. This allowed market fluctuations in asset values to go unreported in earnings, with the intention of smoothing them over longer periods. Meanwhile, the long-term nature of liabilities (particularly for life insurers), and the difficulty in calculating reliable market values of these liabilities, argued for risks to be measured on an actuarial basis rather than at market prices, and for changes in valuation not to be recorded in profit and loss accounts.

[34]In 2001, the Japanese FSA improved the robustness of its regulations by revising the risk-based regime to be based more closely on market values for assets.

There is no existing international accounting standard for insurance liabilities. Historically, many national systems used "deferral and matching" accounting principles, which is an approach based on book values. This was seen as appropriate for an industry with a long-term focus. More recently, "embedded value" accounting has become increasingly used in some mature market jurisdictions, under which insurance liabilities are valued as the present value of cash flows on existing insurance contracts. "Market-consistent embedded value" goes one step further, by including in the calculation the estimated market value of the embedded options in insurance contracts.

The relatively stable results reported under historic accounting methods may mask the underlying volatility of insurers' balance sheets. For instance, valuing assets and liabilities using book values and estimated long-term rates of return can obscure underperformance for extended periods, and can mislead policyholders, investors, counterparties, regulators and even insurance firms themselves about the true risks in their balance sheets. Such accounting methods may also have led insurers to underestimate the market risks of certain investments (such as equities), or to underprice certain insurance products (especially if embedded options are not valued). With the greater recognition of the optionality of insurance products and recent asset market volatility, the justification for such longer-term horizons for accounting has been challenged.

The International Accounting Standards Board is developing a more comprehensive proposal for "fair value" accounting, aiming to incorporate more market-based valuations for both assets and liabilities. The aim is to provide observers with a clearer view of insurers' risk profiles. The proposals for the asset side of the balance sheet seem relatively well defined, and would be similar to International Accounting Standard (IAS) 39, but the process of developing standards for liabilities is likely to be more protracted.[35]

Insurance liabilities can be some of the most complex financial instruments to value. A fair value approach to liabilities is controversial within the insurance industry because of difficulties and potential inconsistencies of applying such an approach to insurers' liabilities (e.g., embedded options related to guarantees, bonuses—periodic and terminal—and policyholder cancellation options). At present, it is contemplated that a new fair value standard for assets could be implemented as early as 2005, well before principles are developed for liabilities (not before 2007, and possibly delayed even longer). This carries the further risk of an extended period of accounting asset-liability mismatch.[36]

Insurers have a number of concerns about fair value accounting:

- Insurers are concerned that fair value accounting would lead to significantly greater volatility in reported profits. The trade associations for the U.S., German, and Japanese life insurance industries, among others, argue that the deferral and matching system is better suited to capture the interdependence of assets and liabilities over the longer periods of an insurance contract.
- Insurers believe that fair value accounting would increase their cost of capital. Assuming an increase in earnings volatility, many insurers believe (possibly correctly) that investors will require greater returns. The rating agencies, however, have indicated that such accounting or reporting changes would have no impact on pub-

[35]IAS 39 distinguishes between assets "held for trading" or "available for sale," which are marked to market, and those intended to be passive investments to maturity (and thus held at book or amortized value).

[36]The EU Parliament passed a resolution in 2002 requiring listed companies to use IAS for published accounts from 2005 onwards.

lished ratings, given that these ratings already reflect the risk in an insurance company's balance sheet. Of course, the greater focus on risk may benefit those insurance companies whose investments are well diversified and whose risks are well managed.

- Insurance industry concerns are exacerbated by the possible implementation of fair value principles for assets at least two years before liabilities. This could result in even greater volatility in earnings for that period, since assets will be marked to market but liabilities will continue to be reported on an accruals basis.

If fair value accounting principles (and risk-based capital standards) are adopted, insurers are likely to reduce the risk profile of their investments and products. In light of the losses incurred from equities from 2000 to early 2003, many insurers have already begun to reallocate their investment portfolios into credit instruments. The insurers we met indicated that adoption of fair value accounting principles will only serve to reinforce this trend. Some insurers also indicated that, while they have previously sought longer-duration assets, such reporting measures may lead them to hold more shorter-dated assets and to increase trading activity in the investment portfolio. Insurers are also likely to structure policies with bonus payments at later dates (i.e., back-loaded), and to pursue more unit-linked business, which essentially moves the investment risk and volatility from the insurer's earnings to the policyholder's return.

From a regulatory perspective, it would be desirable to have the regulatory and financial accounting standards as similar as possible. In that sense, regulatory accounts and measures of solvency in some mature market countries already use a degree of market valuation when calculating insurers' solvency positions. Moreover, most institutional investors, as well as research analysts, pay particular attention to the regulatory solvency of insurers, including the quality of the solvency calculations. As such, there is a natural desire to move the regulatory and financial reporting standards closer together. In some jurisdictions (e.g., the EU's Solvency II initiative and adoption of IAS), this is the direction in which regulators are moving, including the use of insurers' own risk-based models to help set solvency requirements. However, the crux of the debate may lie in the degree to which fair value measures reflect the "business reality" of insurers, and whether such measures are equally appropriate when evaluating the solvency standards and the periodic earnings of insurers.

In any case, a focus on a wider range of financial disclosure by insurers, including fair value measures, may be more useful than overreliance on a "single-point estimate" of earnings. Any accounting measure for insurers is dependent on many assumptions, especially on the liability side of the balance sheet. Application of fair value accounting standards would increase these complexities. As such, it may be most useful to employ fair value measures as part of a wider range of financial reporting or disclosure information, rather than seeking a precise single-point measure of earnings. As noted earlier, investors, analysts, and other market participants currently seek market-based measures of insurers' solvency positions, and supplementary information incorporating fair value principles could only serve to improve observers' understanding of insurers' risk profile. To the extent the historic notion of insurers as long-term institutions is no longer accurate, fair value accounting principles may more correctly reflect the risk profile of insurance activities.

In recent years, some insurance companies have published detailed supplementary financial statements to complement their main accounts. These statements often illustrate the way insurers themselves think about risks, include fair value estimates for some balance sheet items, and are helpful for all stakeholders in understanding insurance risks. Interestingly, the insurers that provide additional disclosure regarding risk positions and

risk management strategies more generally view such disclosure as providing a competitive advantage relative to industry peers that report only standard accounting information.

Rating Agencies

Rating agencies can be a more important influence on insurers than they are on many other types of business.[37] Rating agencies facilitate the analysis and dissemination of information on an insurer's financial condition and, in that sense, their role is little different than for any industry. However, insurers (like many other financial institutions) are more frequent users of institutional markets, where credit standing (including ratings) is of particular importance to counterparties. For example, changes in an insurer's credit rating may raise the cost of capital if policyholders, investors, or counterparties question an insurance company's financial strength. In considering the different insurance sectors, ratings may matter least to life insurers selling directly to individuals in the retail market, rather more to sellers of group life and health insurance and to P&C insurers operating in corporate or commercial markets, and take on the most significance to reinsurers and monoline credit insurers, for whom credit quality is often critical to their core business activities.

In the short term, the influence of rating agencies on insurance companies can accentuate selling pressure during market downturns. Rating agencies have the greatest impact during market downswings, when questions arise concerning firms' financial strength and capital adequacy. For example, the threat of downgrades during 2002 and early 2003 appears to have contributed to the significant selling of equities by some European insurers. This selling would very likely have been larger, but for the steps taken by a few regulators, such as the U.K. FSA and BaFin in Germany. But these insurers would have benefited far more from a more active supervisory dialogue at an earlier stage regarding the potential volatility of their solvency position during a prolonged market downturn.

In situations where there are perceived gaps or weaknesses in supervision, rating agencies have been seen by some market participants as a *de facto* regulator. In recent years, rating agencies have independently applied pressure on certain insurers to take steps to bolster their financial soundness. This is particularly true of insurers participating in the wholesale markets, such as reinsurers, for whom regulation may be lighter. In addition, pressure from rating agencies in recent years has led many primary insurers (life and P&C companies) and reinsurers to improve capital standards (in terms of the amount and quality of capital), beyond that required by existing regulations. Such actions are not inappropriate, and even under Basel II most bank regulators assume banks will hold capital above that required by the new standard, based on a variety of market forces, including desired ratings.

Nevertheless, rating agencies have been criticized by some market participants for the quality of their analysis and a perceived overdependence on quantitative models. Particularly in Europe, some market participants have been critical of the influence rating agencies can have on insurers through their published ratings relative to the quality of their analysis and, in the case of one agency, the possible overreliance on very quantitative models. Finally, the quality of analysis remains inconsistent, and many insurers spoke of frequent analyst turnover at certain agencies and of the impact turnover has on the agencies' understanding of the particular business at the insurers they rate. Some of these criticisms are not new, and the major

[37]See Swiss Re (2003) for a detailed discussion of the methodology of the major rating agencies, as well as the relationship between ratings and the insurance firm's cost of funds and ability to attract business.

rating agencies have increased staff in Europe and Japan, and have improved their analysis to address regional and national differences.

Credit ratings are particularly important for the core business activities of reinsurers and monoline credit insurers. In these insurance subsectors, retaining a strong investment-grade rating is very important due to the institutional nature of their business and counterparties, particularly other financial institutions. Moreover, for monoline credit insurers, the very purpose of underwriting bond insurance is to provide credit enhancement, thus they must maintain the highest credit standards. As such, rating agencies strongly influence all aspects of a monoline insurer's activities, including its investment portfolio. The influence of rating agencies, and other market forces, on these insurance sectors most often produces solvency and other requirements above regulatory standards.

Any perceived overreliance on rating agencies to set disclosure, capital, and other standards should be addressed with improved supervision, not reduced scrutiny by rating agencies. Greater transparency of the business activities and financial positions of reinsurance companies, including in offshore centers, is being considered by official bodies, while some regulators (such as the European Union) are considering enhanced supervision, and we encourage these efforts.

Policy Conclusions

Greater portfolio allocation to credit instruments would provide a more predictable return for many life insurers and would strengthen financial stability more generally, but only if risk management and regulatory oversight are improved at the same time. Corporate bonds are a less volatile investment than equities and tend to be a better match for insurers' liabilities. Credit derivatives may play a useful role in the risk management process, particularly in areas where the market for corporate credit is less developed. We are encouraged by the risk management programs being developed by many large insurers. Nevertheless, as the reallocation to credit instruments proceeds, it needs to be accompanied by a further upgrading of the risk management process.

The reallocation of credit risk to insurers that has already taken place, improvements in risk management, and the recovery in equity markets have reduced vulnerabilities and enhanced financial stability. Since we last reviewed the condition of the insurance sector in prior GFSRs, a number of things have changed (see IMF, 2002b; and IMF, 2003). Most notably, stronger capital markets have improved the financial condition of most insurers, and many insurance companies have raised new capital since 2002. Likewise, driven largely by the experience of 2000–03, as discussed above, many insurers have adjusted their asset portfolios and improved their risk management capabilities. As such, the insurance industry is clearly in better financial condition today. Nevertheless, some of our concerns expressed in previous issues of the GFSR remain, and we have outlined below a variety of policy issues that should be addressed in order to strengthen the insurance industry and its contribution to the stability of the broader financial framework.

Regulators should anticipate a growing appetite for credit, and should seek to support and facilitate further development of credit markets. We expect non-U.S. insurance companies to increase their credit exposures, including the use of synthetic portfolio products. In Europe, we encourage policymakers to support developments across the EU regarding mortgage-backed and other asset-backed securities, and the expansion of the Pfandbriefe, Obligations Foncières, and Cedulas markets to other European jurisdictions. Likewise, the "True Sale Initiative" in Germany is welcomed as a means to support small and medium-sized business lending and to provide a credit instrument that insurers should find attrac-

tive. In the area of credit derivatives, policymakers should continue to encourage increased transparency and standardization through market initiatives, especially by the International Swaps and Derivatives Association. This should facilitate broader market participation and a deeper, more liquid market. Supervisors should look to improve regulatory reporting of credit risk (including the disaggregation of credit and risk exposures in order to act as an early warning indicator), and monitor closely the participation by smaller banks and insurers and those located in less developed markets. Such institutions and their participation in these markets are often not reflected in market surveys, and they may be more inclined to reach for higher returns at certain points in the economic cycle (e.g., when credit spreads are tight or local loan demand is weak). Moreover, there is some evidence that smaller institutions hold relatively larger percentages of structured credit and other risk positions compared with larger institutions.

Supervisors should implement risk-based solvency standards, which align prudential requirements more closely with insurance companies' risks and encourage improvements in risk management. We are encouraged by the more market- and risk-sensitive solvency regimes proposed under Solvency II in the European Union and CP 195 in the United Kingdom. We also recommend that Japanese insurance regulators use the opportunity of the current financial market recovery to introduce a stricter risk-based capital regime. A prerequisite to any increase in credit exposure should be a thorough review and upgrading of risk management systems. Among the larger, internationally active insurers, an increased focus on risk management is generally under way, including in the last few years a greater use of more sophisticated models. Consistent with this approach, we would encourage policymakers to consider the removal of rigid regulations related to investment strategies and product pricing (including effective guaranteed returns). In large part, the recent financial turmoil experienced by some European insurers was due to the inability to build solvency reserves in good times because of guaranteed or otherwise regulatorily required returns to policyholders.

Supervisory resources should be enhanced in many mature market jurisdictions, with further investments in people, systems, and training required. In general, policymakers should seek to increase regulatory resources, with further investments in people, systems, and training, so as to better enable supervisors to evaluate and monitor the risk management models that increasingly will be required of insurers. Policymakers should also look to encourage and facilitate increased dialogue among mature market supervisors (and among insurance risk managers). Market participants frequently noted that, relative to the banking sector, risk managers and supervisors speak less often with their peers on a formal or informal basis. However, in the past six to 12 months an effort is under way by insurers to have a broader industry dialogue and consideration of best practices, and we welcome efforts by the IAIS, the Financial Stability Forum, and the Joint Forum in this area.

Policymakers and standard setters should ensure that the financial and regulatory accounts provide an accurate reflection of an insurance company's financial position, and they should seek to converge, wherever possible, financial and regulatory accounting standards. It would be desirable to have financial and regulatory accounting move closer together. The current financial accounting debate strives to improve the disclosure of balance sheet risks within the insurance sector, while providing an accurate and fair reflection of the business reality of insurance activities. This is a difficult balance, as the optionality embedded in many life insurance products has not been fully reflected in insurers' reports to date, and most insurers seek to manage these risks only over longer periods. In part, the accounting debate reflects the fact that the traditional view of life insurers as

long-term, savings-oriented institutions may be less true today.

We encourage the participants in this accounting debate to consider enhanced disclosure standards, rather than placing undue emphasis on a single-point accounting measure. The resistance to fair value accounting proposals by some insurers and national bodies is clear, given that such measures will likely increase the volatility of insurers' financial reports. However, sophisticated investors seek to understand and monitor the solvency and other financial positions of financial institutions, including insurers, and so we would encourage standard setters to consider employing such fair value or market value principles as part of enhanced financial disclosures (e.g., as supplemental disclosures and measures, and possibly sensitivities), which should improve reporting standards and broader market understanding of insurance risks.

Rating agencies are a significant influence on reinsurance companies and monoline credit insurers, but should not be relied upon as a substitute for appropriate supervision. The influence of rating agencies in these insurance sectors reflects the essentially institutional markets in which they operate and in some cases (e.g., reinsurers) the comparatively light regulation of these insurers. However, rating agencies should not be relied upon as the primary monitor of these systemically important markets. To reduce the disproportionate reliance on rating agencies, greater supervisory oversight and transparency of the business activities of reinsurance companies in particular would seem appropriate.

Policymakers should be aware that improvements in risk management and reporting, while desirable, may have other market ramifications. Through many of the market-based measures policymakers and standard setters are now pursuing, the perceived long-term nature of the insurance business will come under increased scrutiny. As such, the insurance industry's ability to act as a shock absorber for the financial system could be reduced. We anticipate that many insurers will take steps to reduce the risk profile of both insurance products and investment portfolios. This may lead to further consolidation in mature markets, particularly as smaller insurers are likely to lack the analytical resources, distribution networks, or access to capital necessary to compete. In general, such developments may be welcomed. However, as insurance companies move to reduce balance sheet risk, some or all of the risk must again go somewhere, and it is likely that such risk will continue to be passed to less sophisticated participants, namely to policyholders and hence the household sector. This will be a topic for future issues of the GFSR, as we continue our review of the implications of risk transfer.

Appendix: Regulatory Capital Regimes

The countries mentioned in this chapter have different systems for imposing minimum regulatory capital requirements.[38] This appendix describes important features of the systems in the United States, United Kingdom, Germany, Switzerland, and Japan.

These countries have many basic features in common. They have a method of calculating the required excess of assets over liabilities (regulatory capital or solvency), and they have methods of valuing assets for the purpose of performing regulatory capital tests. The tests differ in levels of sophistication and risk sensitivity. The description is based on current regimes for life insurers, and Box 3.2 describes ongoing work to enhance these regimes for the United Kingdom, where changes are more immediate and far-reaching, and also for the EU as a whole.

The description of the regime for each country is divided into two parts: first, the calculation of the regulatory capital requirement; second, the valuation of assets.

[38]This appendix was prepared by the IMF's Monetary and Financial Systems Department.

United States

U.S. insurance regulation is conducted on a state by state basis. There is, however, a great deal of commonality provided through the superstructure of the National Association of Insurance Commissioners (NAIC). Reporting requirements and prudential rules are substantially the same throughout the United States.

Regulatory Capital Calculation

As mentioned in the chapter, the risk-based capital system identifies specified risk for which calculated amounts of regulatory capital are required. Base figures for specified risk are taken from the publicly available regulatory returns, and are multiplied by specified coefficients to produce the risk capital component. The individual components are combined to give the risk-based capital requirement, against which the value of the company is compared. Coefficients are monitored and updated annually to reflect changes in the risk environment.

Business Risk

Coefficients address risks in mortality and morbidity rates, and volatilities in the claims rates. In addition, there is an overarching life business risk element, which is a flat rate of life premiums.

Asset Risk

The risk-based capital requirements are based on risk factors relating to the types of asset. Asset risk is defined as the risk of default or loss in market value, and is the largest of the four life risks. The NAIC has developed a detailed risk weighting system for life company assets, and they regularly reassess those weightings. The system for bonds and equities is as follows:

Bonds are classified into seven different categories: government and government-guaranteed securities are given a 0 percent weighting; all other bonds are classified into asset classes 1 to 6. The method of allocating a bond to a class depends on its nature, considering contractual promise, rights, periodic payment, maturity/redemption, and involuntary redemption. The performance of bonds in asset classes 1 to 6 is monitored through the detailed NAIC reporting requirements. Actual performance is, therefore, used to determine risk weighting to prescribed confidence levels. Currently, the weightings are: 0.4 percent, 1.3 percent, 4.6 percent, 10.0 percent, 23.0 percent, and 30.0 percent for classes 1 to 6, respectively. The weightings are the same for long-term and short-term bonds, and portfolios are allowed a diversification credit as the number of issuers they contain increases.

An important feature of the system is the capital charge applied to equity holdings. The basic capital charge of 30 percent can be adjusted up to 45 percent or down to 22.5 percent depending on the volatility of the portfolio. Weights for bonds and equities are reviewed annually, based on updated estimates of bond defaults and secondary market volatility, respectively.

Other Risk

Various other charges are included to cover a range of risks. In particular, there is an element regarding off-balance-sheet liabilities.

Valuation of Assets

In general, most countries require regulatory returns to be completed using local Generally Accepted Accounting Principles (GAAP), although there may be instances of prescribed adjustments. This is not the case in the United States. Regulatory returns are completed under Statutory Accounting Principles (SAP), which are unique to U.S. regulatory reporting. While GAAP stresses the matching of revenue and expenses, SAP stresses measuring the ability of the insurer to pay claims in the future.

United Kingdom

The United Kingdom and other EU systems have a great deal in common with each other

since they are based on EU directives. The method of calculating the regulatory capital requirement is the same; it is described for the United Kingdom below, and applies to Germany as well.

Regulatory Capital Calculation

Business Risk

The solvency margin for life insurance undertakings is made up of six elements that reflect the categories of products sold. The solvency margin is derived from EU directives and the major requirements are based on premiums and insurance liabilities. The Required Minimum Margin is the average of the six elements, and is subject to a *de minimis* provision of €3 million.

In the United Kingdom, life insurers were required to pass their solvency test after the imposition of a resilience test. This test involved an assumed 25 percent reduction in equity values and 3 percent rise in interest rates. In September 2001, the resilience test was relaxed to relieve pressure on solvency margins during volatile market conditions. In mid-2002, the test was changed in order to calculate the equity stress by reference to an index movement.

Asset Risk

EU directives impose overarching principles, requiring assets that cover provisions for future insurance liabilities have suitable security, yield, marketability, and diversification. Restrictions are imposed that require no single equity holding be greater than 5 percent of such liabilities (i.e., a single entity or large exposure limit). Directives pose no restrictions on the assets held in excess of those required to cover insurance liabilities.

Other Risk

Not currently addressed.

Valuation of Assets

Assets are generally valued at market or realizable value. The counterparty and concentration thresholds apply to assets for the purposes of the solvency margin calculation. To the extent that an asset falls within its threshold, it is fully included in the asset valuation. To the extent the threshold is breached, it is attributed no value. Thus, the former attracts a zero percent capital charge, and the latter suffers 100 percent capital charge.

Germany

Regulatory Capital Calculation

Business Risk

Based on EU directives, the regulatory capital margin is the same as that described above for the United Kingdom. German authorities began imposing stress tests on insurers at the end of 2002. The test imposed two scenarios: first, 35 percent reduction in equity values, 10 percent reduction in bond values, and discounts of up to 30 percent in non-investment grade bond holdings; second, 20 percent reduction in equity values, 5 percent reduction in bond values, and discounts of up to 30 percent in non-investment grade bond holdings.

Asset Risk

Germany follows the EU directives, as described above, but imposes restrictions on the form of certain investments, which apply only to assets that cover the insurance liabilities. This includes a restriction of equity investments (at book value) to 35 percent of insurance liabilities.

Other Risk

Not currently addressed.

Valuation of Assets

German Insurance Supervisory Law makes direct reference to the provisions of the EU directives as mentioned above. Historically, assets have been carried at cost. When assets had been held for many years, and the market value was greatly in excess of cost, German

insurers benefited from large undisclosed "hidden reserves." The equity bear market and negative spreads on life insurance products caused the hidden reserves to be consumed, and increased pressure on solvency margins. Consequently, valuation rules were changed to allow the valuation of equities at their "estimated ultimate realizable value," even if this was above both cost and current market value. The rationale was that the investments were made for the long term, and the effect was to relieve pressure on solvency margins.

More recently, for financial reporting purposes, some of the larger German companies have made fair value disclosures.

Switzerland

Switzerland is not a part of the EU, but its regulations reflect those of its EU neighbors. The Swiss authorities are in the process of revising their insurance supervisory law and solvency margin regulations. Whereas the detail of the revisions is not yet known, the reference material for their drafting work was based on EU directives, and Solvency II and other technical background work.

Japan

Regulatory Capital Calculation

As mentioned in the chapter, Japan's risk-based capital system is similar to the U.S. system. Compared to the United States, the Japanese system uses lower risk weights and applies differing treatment in solvency margins in some respects, such as deferred tax assets.

Business Risk

Separate from the risk-based capital system, the Financial Services Agency (FSA) checks underwriting risks and the sufficiency of technical reserves.

Asset Risk

Risk weights for assets are exhibited in Tables 3.12 and 3.13. In addition, price movement reserves and general loan-loss reserves are included in solvency margin.

Table 3.16. United States: Authorized Control Levels
(In percent)

	Capital to RBC[1]
No action	More than 250
Company submits plan to restore capital	Between 150 and 250
Company must comply with corrective measures	Between 70 and 150
Authority may take control	Below 100
Authority takes control	Less than 70

[1]Capital is the company valuation under SAP, and RBC is the combination of risk capital components.

Other Risk

The FSA's inspection manual sets out qualitative standards for the treatment of risks relating to underwriting, investment, markets, credit, liquidity, real estate investment, operational, and information technology.

Valuation of Assets

This is described in the main text.

Overview of Supervisory Intervention

Supervisory intervention is often determined by law, and the nature and extent varies from country to country.

In the United States, certain types of intervention are required at certain risk-based capital thresholds, given in Table 3.16. However, U.S. supervisors typically discuss significant negative developments with insurers before these thresholds are breached.

Under the EU Solvency I reforms (which were essentially upgrades in advance of the more comprehensive Solvency II project), supervisors acquired the power to intervene when a company shows adverse trends, regardless of whether prescribed solvency margins have been breached.

In Japan, supervisors are required to intervene if the risk-based capital margin or liqui-

dation value fall below certain levels. An early warning system also gives supervisors the power to take preventive actions, based on profitability, credit risk, market risk, or liquidity risk measures, even if the capital margin or liquidation value thresholds have not been breached.

Under IAIS Core Principles, supervisory authorities should have the power to take remedial action (including requiring capital to be increased) in a timely manner where problems are identified, and immediate action in the case of emergencies.

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