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LIQUIDITY: THE HIDDEN RISK FACTOR

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Liquidity has seldom been a concern to insurance companies and pension plans in the past. However, liquidity crises are often the preludes to an insolvency. How can actuaries assist in the forestalling problems caused by the lack of liquidity? Where does liquidity end and insolvency begin? What can the corporate finance department do to alleviate the liquidity crisis? What effect do the commercial paper programs have on the liquidity requirements? The panel will address the relevance of liquidity to insurance and pensions.

MR. FREDERICK S. TOWNSEND, JR.: Our panelists bring diversified views on liquidity. Neil Haynes, vice president, treasury management of Mutual Life of Canada, will discuss the internal company point of view of liquidity. Fred Townsend from Townsend & Schupp, which issues private credit ratings on life insurance companies, will discuss the external view of liquidity. Ken Levine, chief investment officer for Mutual of New York, lived through a liquidity crisis in the early 1990s after the failures of Executive Life and Mutual Benefit. He will discuss an actual case history, his own company. George Braun, who's not only a life actuary but also a portfolio manager at the John Hancock Mutual, deals with liquidity on a day-to-day basis in the investment department at John Hancock and will discuss the practical aspects of managing a portfolio for liquidity.

MR. NEIL L. HAYNES: I'm here to talk to you about liquidity. I will discuss some of the relevant factors in monitoring and positioning a company to meet its needs for cash that may arise from its normal course of business, or, more importantly, from one or more abnormal events that cause a strain on corporate liquidity.

Why should we be concerned about liquidity in the first place? I think the first reason is obvious. Having insufficient liquidity can very simply be a bet-the-company gamble. Unexpected events do happen. And if a company is not prepared for some level of these unexpected events, the forced sale of assets to meet cash needs can cause losses from the sale of assets below their market value, resultant asset/liability mismatch losses, and possibly even the demise of a company in a surprisingly short period of time.

Even if a company is prepared to take some reasonable level of liquidity risk, the company is not the only party that monitors its liquidity profile. In recent years, regulators and rating agencies have become increasingly concerned about the liquidity resources of companies that they monitor. Just as life insurance companies are working on developing tools and expertise to manage their liquidity positions, so, too, are these third parties.

In Canada, for example, regulators have issued draft guidelines requiring that banks have sufficient liquidity policies in place, that procedures be documented, and that they meet certain ratio tests. Although these guidelines have been drafted only for banks thus far, I am certain that similar guidelines will soon be on their way for life companies.

Standard & Poor's has a rudimentary methodology at this point, but I do know that it is presently working to enhance its capability to evaluate the liquidity needs, resources, and profiles of the companies that it rates. Rating agencies work primarily on behalf of the investor community, and this can put them in a difficult position. Some have suggested that a downward revision of a company's claims-paying ability or financial-strength rating can become part of a vicious cycle. A downgrade, whether it is for liquidity reasons or otherwise, can cause increased policy loans, surrenders, and other cash drains as a result of shaken public confidence. This may strain the company's liquidity, potentially prompting another downgrade. The spiral continues until the regulator steps in.

It may be that liquidity is not the heart of the problem. It may only be a symptom. Unfortunately, it is a symptom that can kill. Liquidity management is not something companies should do, but is something companies must do to operate safely in today's environments.

I think of liquidity as a measure of a company's ability to meet its known and unknown cash needs as they arise. Known cash requirements are normally addressed through a combination of the regular cash management and asset/liability management process. The challenging part of liquidity management is being prepared for surprises—for unknown cash needs. These unknowns typically include early surrenders and unusually large withdrawals of cash surrender values, or the taking of policy loans.

But how much is enough? Is it \$100 million? Is it 25% of assets? It depends. I don't think you can look to an absolute amount or a fixed percentage of assets to determine what constitutes enough liquidity. What a sufficient amount is depends on the structure of a company's liabilities. How much could policyholders and other creditors request, and how fast could they contractually demand it?

It is only in reference to these elements that a company's level of liquid assets means anything. If a company has to pay out cash, but with notice requirements of a couple of weeks, government bonds are clearly liquid enough. But if a notice period is 24 hours, even government bonds may not be liquid enough. In examining a company's liquidity, you have to compare both the amount and the timing of a company's needs and sources of cash.

But what are the sources of cash demands on life insurers? Surrenders and policy loans can often be requested on a same-day or near-same-day basis. Group deposit administration-type contracts are particularly susceptible to withdrawal. Policyholder claims may take a longer period of time to process and distribute. Investment commitments can range out to 90 days or longer. And to the extent that the company participates in any wholesale financing activities, such as short-term debt, or participates in the repo markets, these typically have a fixed maturity date.

To some extent, it may be possible to manage some of the unknown cash needs of a life company by contractually restricting the timing or amount of withdrawals. This would give a company additional time to plan for cash outflows, or at least restrict the amount of cash going out on very short notice. However, there will likely be limitations that the market will bear. Contract terms that are too much in favor of the issuer may not be

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embraced by buyers. As well, some insurers may offer shorter notice periods to gain a competitive advantage.

Sources of cash for life insurance companies are relatively straightforward. Cash, short-term securities, and bank lines of credit are normally ready sources of cash for ongoing operations. Some companies have commercial paper facilities or participate in the repo markets. Marketable bonds, stocks, and loan dispositions through securitization or other sale programs are also sources of liquidity with various availability characteristics. In addition, there are many ongoing sources of cash for a life insurance company: premium receipts, investment income, investment maturities, etc. But the company's ability to prompt these sources when needed is limited at best.

Life companies should be cautious about their degree of reliance on bank lines. A standard clause in line of credit agreements may allow the bank to deny funds if it considers that the company has experienced what is known as a material adverse change. Unfortunately, that is likely the time when the company is most in need of the funds. Companies should be cautious about assuming the availability of lines of credit, particularly when looking at company-specific stress situations.

The first step in preparing a liquidity plan is to assess or estimate the effect of various events that could strain a company's liquidity. These may be company-specific. They may be industry events or system events that are national or international in scope. All plausible events, whether they are conceivable or perhaps inconceivable, should at least be considered. Events can strike with a speed that would have been improbable or even impossible in years past.

Company-specific events that could affect liquidity include downgrading of short-term, or long-term debt or claims-paying-ability ratings; rumors of financial problems whether they are real or not; published financial results that are significantly below expectations and reinforce questions about a company's viability; or the loss of one or more significant sources of revenues, such as an important group of brokers or general agents.

Industry events that could affect liquidity could include financial difficulties of a prominent life company, perceived problems with a product associated with life insurers, or possibly even sudden shifts in consumer demand, such as funds moving from guaranteed annuity products to mutual funds. System events that could affect liquidity include financial difficulties of a money center bank, political instability, downgrading of government debt, and implementation of currency controls in lesser-developed countries.

A liquidity planning model might be prepared in a manner similar to a capital-requirements model. Each liability amount would be weighted according to the likelihood of its requiring cash funding in the next day, the next week, or the next month. As well, each asset would be similarly weighted as to its availability including any liquidation costs. The weighted liabilities would then be compared with the weighted assets for each time period to assess the strength of the company's liquidity position. By following this modeling procedure, a company will have a better understanding of its ability to meet liquidity needs as they occur. Tables 1, 2, and 3 illustrate this concept.

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TABLE 1
SCENARIO: LIQUIDITY POSITION UNDER NORMAL CIRCUMSTANCES

Liquidity Requirements	Base Amount \$(millions)	Same Day Availability/Demand		1 Month Availability/Demand	
		%	\$(millions)	%	\$(millions)
Commercial Paper	200	10	20	100	200
Life Cash Surrender	2,000	<1	5	1	20
Annuity Cash Surrender	1,000	<1	10	4	40
Policy Loans	2,000	<1	5	1	20
Total Requirements			40		280

TABLE 2
SCENARIO: LIQUIDITY POSITION UNDER NORMAL CIRCUMSTANCES

Liquidity Available	Base Amount \$(millions)	Same Day Availability/Demand		1 Month Availability/Demand	
		%	\$(millions)	%	\$(millions)
Cash & Short Terms	400	100	400	100	400
Commercial Lines of Credit	250	25	65	100	250
Uncommercial Lines of Credit	250	10	25	100	250
Commercial Paper	500	25	125	100	500
Marketable Securities					
Federal Government Bonds	600	0	0	100	600
Other Bonds	1,000	0	0	70	700
Total Available			615		2,700

TABLE 3
SCENARIO: LIQUIDITY POSITION UNDER NORMAL CIRCUMSTANCES

	Base Amount \$(millions)	Same Day Availability/Demand		1 Month Availability/Demand	
		%	\$(millions)	%	\$(millions)
Total Requirements	-	-	40	-	280
Total Liquidity Available	-	-	615	-	2,700
Net Liquidity Available	-	-	575	-	2,420
Liquidity Ratio (Available/Required)	-	-	14.4x	-	11.6x

These weights should represent the maximum requirements and minimum availability that the company might experience under a normal set of circumstances. Using averages probably would not be very useful or meaningful.

Of course, the modeling doesn't end with a scenario of normal circumstances. The fun begins when a company reevaluates its liquidity position in other scenarios. Call it disaster planning. Company, industry, system events, acting alone or in concert could affect the company's liquidity position in a number of ways. The speed of liabilities being called will

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likely increase. The value of assets may decrease due to an increased liquidation speed. Other sources of liquidity, particularly wholesale sources of funds such as lines of credit, short-term debt, and repos may dry up altogether. One has to constantly reexamine these factors to ensure that the most current data are included in your liquidity model. Using available published data from other life company failures may help to provide some additional guidance. Tables 4, 5, and 6 illustrate the effect of applying stress scenario factors to the model.

TABLE 4
SCENARIO: LIQUIDITY POSITION UNDER CREDIT STRESS

Liquidity Requirements	Base Amount \$(millions)	Same Day Availability/Demand		1 Month Availability/Demand	
		%	\$(millions)	%	\$(millions)
Commercial Paper	200	10	20	100	200
Life Cash Surrender	2,000	5	100	15	300
Annuity Cash Surrender	4,000	10	400	20	800
Policy Loans	2,000	5	100	15	300
Total Requirements			620		1,600

TABLE 5
SCENARIO: LIQUIDITY POSITION UNDER CREDIT STRESS

Liquidity Available	Base Amount \$(millions)	Same Day Availability/Demand		1 Month Availability/Demand	
		%	\$(millions)	%	\$(millions)
Cash & Short Terms	400	100	400	100	400
Commercial Lines of Credit	250	0	0	0	0
Uncommercial Lines of Credit	250	0	0	0	0
Commercial Paper	500	0	0	40	200
Marketable Securities					
Federal Government Bonds	600	0	0	100	600
Other Bonds	1,000	0	0	70	700
Total Available			400		1,900

TABLE 6
SCENARIO: LIQUIDITY POSITION UNDER CREDIT STRESS

	Base Amount \$(millions)	Same Day Availability/Demand		1 Month Availability/Demand	
		%	\$(millions)	%	\$(millions)
Total Requirements	-	-	620	-	1,600
Total Liquidity Available	-	-	400	-	1,900
Net Liquidity Available	-	-	(120)	-	300
Liquidity Ratio (Available/Required)	-	-	(0.2)x	-	0.2x

An interesting and important aspect to note is that while a company may have adequate liquidity in the longer run (for example, 6 to 12 months), it may not get the opportunity to prove it if it has a liquidity shortfall in the near term.

By evaluating multiple time periods under multiple scenarios, some of them company-specific, there will be a great number of possible outcomes. That doesn't mean necessarily creating a balance sheet prepared for a run on your company tomorrow, but you should have a plan for that contingency. Constantly monitor and adjust your liquidity position to ensure that you have sufficient liquid assets when you need them.

Despite all the best planning, events beyond a company's control can create problems. What can be done in such a situation? You can modify the normal and stress assumptions in your liquidity models. You can adjust short-term lending objectives. You can reduce any outstanding short-term debt. You can initiate an orderly sale of less liquid marketable assets. If possible, extend the term and stagger the maturities of wholesale funding that are not paid off. Keep your regulators informed. This will increase your chances of working with them to resolve situations to your mutual satisfaction. And last, but definitely not least, effectively manage public perception of the situation.

The ironic thing about liquidity planning is that the better the job a company does, the less likely it will be that it ever has to prove it.

MR. TOWNSEND: Now we have an external view of liquidity. We calculate a quick ratio of liquidity before we contact companies. It's a quick way of identifying whether a company is in line with industry averages, significantly above industry averages, or significantly below industry averages in which, if a combination of events occur, the company might end up in trouble.

For the numerator of the equation, liquid assets is quite simple: cash, short-term investments, unaffiliated stocks. We don't give any credit for affiliated companies. It's unlikely that somebody plans to sell a successful subsidiary, particularly one that's handling lines of life insurance and annuities. And if someone owns a stock brokerage firm, or a property casualty company that's in an unfavorable part of the business cycle, it's unlikely that a buyer can be found very quickly.

The bond portfolio is difficult to assess, and this is best addressed by conversations with management. For a quick ratio, we currently take 100% of the public bonds in classes one through four, omitting the bonds in classes five and six.

Although private placements tend to be lower rated, presumably the buyer of the bonds has protective covenants. Private placements issued by larger companies are said to be almost as marketable as publicly traded bonds issued by companies other than top 100 corporations in the U.S. So we apply a 50% factor to private bonds that are rated investment grade classes one and two.

For the denominator of the quick ratio, we take all the general account liabilities, less nonsurrenderable annuity reserves, policy loans, investment reserves, the Asset Valuation Reserve (AVR), and the Interest Maintenance Reserve (IMR). Table 7 shows the 130

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largest companies at year-end 1994. During the solvency, rating agency, and Risk-Based Capital (RBC) crises, the mix of bonds rose from 57% to 67% of industry assets and mortgages and real estate fell from 28% to 18%.

TABLE 7
RATIO OF LIQUID ASSETS TO DEMAND LIABILITIES
130 U.S. LIFE INSURERS: 85% OF INDUSTRY ASSETS

Year	Liquidity Ratio	Asset Mix	
		Bonds	Mortgage Loans and Real Estate
1990	76%	57%	28%
1991	86	60	25
1992	90	63	23
1993	97	66	20
1994	96	67	18

The industry composite liquidity ratio, calculated for 130 large companies, rose from 76% to 97% at year-end 1993 and fell to 96% at year-end 1994. Interest rates rose in 1994, which caused a 5% reduction in the liquidity ratio (the change in excess of market value of bonds over amortized bonds in the bond portfolio). Had there been no change in interest rates in 1994, perhaps the ratio would have risen to 102%. So it looks as if the industry is very close to a 100% liquidity ratio when using our quick ratio. In the 130-company universe that comprises 85% of industry assets, Table 8 shows the bottom ten companies. The current lowest liquidity ratios are 44%, 49%, and so on. The industry is 96%.

TABLE 8
LIQUIDITY RATIOS

Company	Ratio	Asset Mix		Bonds in Private Placements
		Mortgage Loans and Real Estate	Bonds	
Company 1	44%	40%	38%	55%
Company 2	49	49	45	9
Company 3	51	26	47	39
Company 4	55	21	33	8
Company 5	59	29	61	14
Company 6	59	30	54	60
Company 7	59	20	53	43
Company 8	61	34	44	34
Company 9	61	18	55	35
Company 10	63	42	47	21
Industry	96%	18%	67%	26%
Failures (Mutual Benefit, Fidelity Mutual, Confederation Life of Canada)	31-44%	45%	30%	

Mortgages and real estate have shrunk to 18% of asset mix, but some companies exceed 40%. Bonds are two-thirds of the industry asset mix. If you look at the prominent failures,

Mutual Benefit, Fidelity Mutual, Confederation Life of Canada, which were all heavy with mortgage and real estate assets, in the last year-end that they reported financial results before their failure, their liquidity ratios ranged from 31% to 44%. The mix of mortgages and real estate was as high as 45% of invested assets, and the investment in bonds, both public and private, averaged out at only 30%.

The industry has 26% of bonds in private placements. Mostly the larger companies in the industry are heavily into private placements. Company 1 has 55% of its bonds in private placements. Company 3 has 39% of its bonds are in private placements. For Companies 6–10, the liquidity ratio is in a range of 59% to 63%, which is more than one-third below the industry average.

A low liquidity ratio in itself isn't bad. It's a question of what combination of events could imperil a company? So other things have to happen to cause a run on the bank, which would then make the liquidity ratio of prime importance to a company.

For protection against a run on the bank, both the asset side of the balance sheet and the liability side of the balance sheet come into play. As I've already mentioned, liquid assets are publicly traded securities and highly rated private placements. If you have a high enough mix of these assets to produce a liquidity ratio in excess of 100%, you're probably home scot-free.

But what do we compare this against? What do we have on the other side of the balance sheet to protect us? Nonsurrenderable liabilities on some of our annuity contracts can be protection against a run on the bank, or punitive market-value adjustments protect us in a period of rising interest rates against loss on liquidating bonds in our portfolio, or long waiting periods for surrenders protect us.

Many GIC specialists were saved during the last four years because of long waiting periods. A company in my own backyard was considered to be in financial peril, but many of its GIC contracts had waiting periods of 180 to 270 days before settlement. If you can delay a payment for 180 to 270 days, you can wait and see if there's a significant run on the bank. If too many people want to cash in, you can go to the state insurance commissioner and say, "We can't handle this. Put us under protection." But if 160 of the 180 days pass, and you see there's not a tremendous backlog of these requests, you can easily handle it.

Regarding a lack of protection against a run on the bank, a company is exposed when the market value of its portfolio in a heavily invested asset class is less than book value. If you rely on a depressed asset class as a source of funds, this will chip away at your surplus. Examples, of course, would be junk bonds. In 1990, the market value of many junk bond portfolios was only \$0.70 on the dollar, which precipitated the downfall of Executive Life, First Capital, Fidelity Bankers, and Guarantee Security. Even triple "A" bonds, if you've gone long on your bond portfolio, you may have zero credit risk but you might have very high interest rate risk.

One new entry into the single-premium deferred annuity (SPDA) field started three years ago. It wrote \$1 billion a year in SPDAs for three years straight, and its bond portfolio is probably double "A." It is heavily weighted with Treasury bonds. But the average

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maturity is 20 years. And this is why the company is offering competitive rates in the portfolio. But people can surrender these SPDA contracts. It is relying on the strength of its parent company name to forestall any run on the bank. So there may be little credit risk, but there's certainly interest rate risk, especially in collateralized mortgage obligation (CMO) specialty bonds, interest only bonds (IOs), and principal only bonds (POs).

Some smaller- and medium-sized companies in the life industry have gone out of business and have failed because of reliance on risky asset classes. One common factor among the failures is that often a risky asset class exceeded nine times the company's surplus. If you have a risky asset class that exceeds nine times your surplus and you're forced to take an 11% writedown in that class, 99% of your surplus is gone.

Among the six companies that had junk bonds more than nine times surplus, five of those six companies failed. Among five companies that had mortgages exceeding nine times their surplus, three of those companies failed. One company had CMOs two years ago exceeding nine times its surplus. It had CMO losses in the last two years that exceeded its surplus, but the parent company kicked in additional surplus funds to keep it afloat.

And finally is what I call the deadly trio. The deadly trio is a combination of three factors: low investment yield, long bond maturation, and high asset classes. Again, it's never one thing that puts you under. Never one statistical ratio, but a combination of events in a company. If I see a company that has an overall portfolio yield that is 150 to 200 basis points below the industry, my intuition tells me it is exposed to problems. Maybe those problems will never occur, but there's an exposure.

If you're earning 150 to 200 basis points less than your competitors are earning, how can you compete? How can you credit current high rates on interest-sensitive life policies or on interest-sensitive accumulation annuities? How can you maintain your policyholder dividend scale if you're a mutual company and you're earning 150 to 200 basis points less than the competition? And then you're in trouble if interest rates spike because everybody starts crediting higher and higher rates. You are highly exposed to a potential movement of your business by people who produced policies for you in the past.

If you happen to have long bond maturity, such as the SPDA company I referred to before, and you're forced to sell bonds in a higher interest rate environment, you're going to take a loss on your portfolio. If your bonds are such a long duration, you might receive \$0.90 on the dollar, even for double-A and triple-A issues. And the higher your asset leverage, your operating leverage as Standard & Poor's calls it, the greater the multiplier factor.

If your long bonds have a market value of \$0.90 on the dollar, that's a 10% loss. If your bonds are 12 times your surplus and you're forced to liquidate all your bonds at a 10% loss, that's 1.2 times your surplus. So a combination of adverse events can do you in or leave you exposed to severe liquidity risks.

MR. KENNETH LEVINE: I will talk about an actual liquidity stress situation that occurred at the Mutual Life Insurance Company of New York in the summer of 1991. I'm going to give you the background, the atmosphere, talk about what we did, and the results of those actions.

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Let me first start with the atmosphere in United States life insurance companies in the summer of 1991. In July 1991, Mutual Benefit was taken over by the state. That obviously was preceded by Executive Life Insurance Company being taken over. However, the Mutual Benefit takeover was viewed much differently. It was viewed as a traditional old line insurer and had a much greater effect.

A number of feature articles in the press followed that. They had a similar theme, and the theme and the actual heading of one of those articles was, "Is the Life Insurance Industry the Next S&L [Savings & Loan] Crisis?" And I think you'll all remember what that would mean back in 1991. At the same time, the press had a number of articles, Risky Asset Ratios, showing the ratio of risky assets to surplus for a number of insurers. A number of articles suggested which insurers you should pull your money from to protect yourself.

A number of other things happened in the summer of 1991 that didn't receive a great deal of publicity. Alan Greenspan called a meeting of the CEOs of large insurers in Washington to privately discuss the situation. Senator Howard Metzenbaum (D-OH) had a meeting with the senior life insurance executives in Washington in which he told them that while he didn't have the votes that day, if one more larger insurer was taken over, he would have the votes for federal control of the life insurance industry, and he meant it. Of course, what also happened in the summer of 1991 very much increased concern by the state regulators. None of the regulators wanted to be in the next state that would be surprised by a life insurance situation.

That was the general atmosphere in the industry. What about Mutual of New York? We had a meeting scheduled with Moody's Investor Services for July 18, 1991. It was scheduled a number of months in advance and it was supposed to cover real estate. Unfortunately, less than one week prior to that meeting, the Mutual Benefit takeover occurred. The meeting was to be on Thursday. We received a call on Monday telling us that the meeting would now be a full-ratings meeting. We had the meeting and finished at six o'clock on Thursday. On Friday morning we were downgraded to BAA-1, making us the only large insurer whose ratings started with a B versus an A.

Eleven days later, *The New York Times* and *The Wall Street Journal* had feature articles about Mutual of New York, both suggesting comparisons with Mutual Benefit Life. The day after those articles appeared, Standard & Poor's downgraded us two notches to single "A," and A.M. Best downgraded us one notch, also to single "A." At the same time, numerous articles appeared in all sorts of media publications, highlighting Mutual of New York as one of the companies that an investor or a policyholder should be concerned with. The combination of the atmosphere in the general insurance industry and what I just described at Mutual of New York constitutes, at least in my mind, a very serious liquidity stress situation.

What did our asset and liability profile look like at that time? Let's start with liabilities. At the beginning of 1991, we had \$7.5 billion in pension liabilities. Of those, \$3 billion was with GICs, which all had market-value provisions. But the level of interest rates in the summer of 1991 was such that the market-value hit was well less than 5% for almost the entire GIC portfolio. Of the remainder of the pension liabilities, they were mostly full-service-tax deferred annuities and full-service defined-contribution-type liabilities. They all

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had termination provisions of various sorts, none of which would be sufficient to prevent someone seriously concerned from pulling out.

What about our asset portfolio at the beginning of 1991 excluding policy loans? We went into 1991 with \$2.2 billion of public bonds, short-term investments and cash—highly liquid. We had \$6.4 billion of real estate, debt and equity—highly illiquid. We had \$4.1 billion of private placement loans of which \$1.8 billion was below investment grade. The two key numbers that stick out are \$7.5 billion of pension liabilities and \$2.2 billion of public bonds, cash, and short-term investments. A number of rating agencies' liquidity stress models exist today. I think under any of those models, the combination of the atmosphere and those two facts would yield an impossible situation.

We had several other things to deal with while we were busy with that. Number one, we did not want to take actions that would deal with the liquidity situation but would create significant economic loss to the company. For example, we certainly could sell some of the real estate to someone at some market value, and that would create cash but the values being paid in 1991 for real estate were not at the level where we were willing to do that.

The second issue we had to deal with was mentioned earlier. After they downgraded us, rating agencies became concerned about the spiral. They downgrade you. Policyholders become concerned and pull money out. You get downgraded because they pull money out. More policyholders pull out, and you have the spiral that one of our speakers mentioned. We had a significant challenge in dealing with the liquidity situation and, at the same time, keeping the rating agencies happy.

What did we do? *Let me start with the liability side. The liability actions were probably, when it came down to it, more important than the asset actions. Communication sounds like such a simple word. I would think it was worth billions in monies that were not pulled out. Within one week of the Moody's downgrade on July 18, we prepared a financial-strength communication package going over the financials of our company to be used with policyholders, contract holders on the pension side, and representatives of those contract holders. We divided the pension area, the investment area, and the financial area into teams to go out throughout the country and meet face to face with pension contract holders and representatives of pension contract holders.*

Within two months of the downgrade, we had met face to face with 50% of the GICs, 75% of the full-service defined contributions, and 90% of the tax-deferred annuity contract holders. At the same time, we are a career agency system, and our career agents control a good deal of business and obviously can have an effect on cash flow. Again, within two months of the downgrade, we had meetings with career agents. We met face to face with about 400 of our top career agents.

That's the communication side. What about the product side? Starting with our full-service tax-deferred annuity and defined-contribution contracts, we decided that we basically had two constituencies that could cause a run on the bank. Number one was the contract holder. The contract holder could elect to terminate that contract, in which case all the money would, over some period of time, move.

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Number two, even if that did not happen, under almost all defined-contribution contracts, the individual participant can move from the general account to a separate account and have the same effect. We made a decision to offer a new investment choice, which we called the GFF fund. Basically, it was a separate account that looked like a GIC as an investment option for a defined-contribution plan. These are very prevalent today.

It was a tough decision to make, and let me tell you why. From the contract holder's standpoint, it was very easy to make that decision. Certainly we knew that if we made this option available, contractholders would be more likely to say, "Because my participants have a safe place to go, I will leave the contract where it is." From the participant's standpoint, that was a much tougher decision. If the availability of this option meant that participants would move en masse to take advantage of this safe haven, the withdrawal would cause the same effect on liquidity as if they had left us entirely. We made the decision to do it, and I'll tell you about the results later.

On the GIC front, we arranged a reinsurance option with Metropolitan Life that had two parts. Number one was a \$300 million coinsurance arrangement, and number two was an option for each GIC client to transfer its funds from Mutual of New York to Metropolitan with no adjustment. However, it would transfer to a Metropolitan separate account for GICs with the assets transferred from Mutual of New York being those assets that had supported the GIC contracts at Mutual of New York. And I'll get into the results of that later.

What about the asset side? We made the decision very early that we were not going to sell a significant number of public bonds to meet the liquidity situation. The reason for that was very much thinking about communication with rating agencies. In 1991, rating agencies gave very little credit, liquiditywise, to private placements. Well, if you remember our balance sheet, if you remove real estate and private placements, the only thing left is \$2.2 billion of public bonds. If those are used for liquidity, at some point the rating agencies will be looking at no liquidity and still-liquid liabilities, and the spiral would commence. So we decided we couldn't go that way, which meant we needed to dispose of private placements.

We made another tough decision at the time. We could have certainly disposed of three-quarters of a billion dollars of private placements up front to generate cash for what was certain to be a significant liquidity need. However, as I noted earlier, we did not want to take significant economic hits in meeting this liquidity crisis. And selling that many private placements up front would affect our pricing.

We decided to sell privates in \$100–200 million batches through investment bankers acting either as intermediaries or as principals. For each private that we put in a pool, we established what we thought a fair price would be by discounting the future cash flows at what we thought was an appropriate rate. When we received a bid for a package, we would kick out any bid in which the discount rate used by the investment banker was more than ten basis points different from the one we used. It was a very tight spread.

What were the results of that? In two-and-a-half months, we sold \$800 million of private placements, including \$180 million of below-investment-grade private placements. In all

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of 1991 we sold \$1.5 billion of private placements, including \$300 million of below-investment-grade private placements. Very few of the bids we received caused us to have to kick out a private because of our ten-basis-point rule. The \$100–200 million packages in every case moved within two weeks of the day we put the package together.

We had to deal with reporting to rating agencies. Obviously, we had to have daily reports of cash. But the more important report we had was a weekly report in which the pension operation would show us cash flow from its contract holders based upon notices—*notices* received of termination. So we would have a five-month projection that would say: these are the notices of terminations that have been received along with the expected payouts. We then had to develop a tool for dealing with the rating agencies, and it was very important to us to get the rating agencies to move away from a static view of our situation; the static view being \$7.5 billion of potential liabilities, \$2.2 billion of public bonds, cash, and short-term investments.

So we developed a report that we sent every week to all the rating agencies and to certain regulators. The report started with liability cash flows during the next five months, and showed all the monies that were expected to be paid out based upon notices of termination. It then showed asset cash flows during the next five months, deposits (and we have continued to receive substantial deposits, even from pension clients), investment cash flows, maturities, investment income. And the report would subtract the liability outflows versus the investment inflows to develop a net need, and that's what we wanted people to focus on. That's the amount we would have to raise. That tool was very helpful in dealing with the rating agencies and, in fact, after the initial downgrades, there were none.

What were the actual results? If we look at our full-service defined-contribution and tax-deferred annuity clients, less than 20% terminated or transferred to a separate account during the liquidity stress situation. The Metropolitan transaction: \$458 million elected to move to Metropolitan, along with the \$300 million of coinsurance. The good news for us was that the \$758 million of assets that we transferred were dominated by mortgages. So, in effect, we covered liquid liabilities with illiquid assets. In total, over about a one-year period, between two-thirds and three-quarters of all GICs terminated.

Regarding assets, we started the period with \$2.2 billion of public bonds, cash, and short-term securities. We had \$2.5 billion of withdrawals, and we ended the period with \$1.9 billion of public bonds and short-term securities.

Let me say a word about ordinary life. I've been dealing just with the pension situation because that was the most critical. Ordinary life, as you know, has no restrictions on withdrawals. You can get your cash value easily even though the cash value may not be attractive versus the premiums paid. We had significant communications with our staff.

As I mentioned, we met with 400 agents face to face. Every agent received a financial strength package, and phone calls were made between senior management and large policyholders. The net effect of that was that by the end of the liquidity stress situation, including policy loans, less than 10% of all ordinary life liabilities moved.

There are several conclusions we should remember:

1. Life insurers have significant liquidity resources.
2. You can't overlook the liability side, and communication is worth a fortune.
3. Private placements have significant liquidity. That's more accepted today than it was back in the summer of 1991. In the summer of 1991, one of the rating agencies gave us no credit for private placement liquidity. After the period was over, and we described what actually happened, they were still skeptical about giving any credit for private placement liquidity in spite of how quickly it moved.
4. Ordinary life is extremely persistent in spite of no apparent withdrawal charge, and that's especially true if you have a career agency system. I don't believe that's adequately reflected in the models that I have seen from the rating agencies.
5. Having a full-service arrangement in the pension area will give you better liquidity protection than if you have just an investment relationship with the contract holders.

In short, 1991 was not a pleasant experience for us. It was certainly a learning experience and I hope that some of the details I have given you will help you consider how to model your own liquidity stress situations.

MR. GEORGE H. BRAUN: I'm on the investment side. I'm a bond portfolio manager, and I sort of feel like my role here today is to be a hostile witness. I think I was chosen by Fred to be on the panel mainly because my company, I think, is one of those bottom companies that he referred to. So we'll see if I can make any progress on that.

One of the best things about being up here is that you get to define terms any way you want, and I'm going to take liberty of that here. I define *liquid* as having the ability to turn assets into cash at very close to fair value. I define a *liquid asset* as an asset having the ability to turn into cash at very close to fair value by the time the cash is needed for that particular investor.

What this means is that what may be a liquid asset for one investor might not be a liquid asset for another investor. I suppose I should have changed this second definition to a "liquid enough asset." I basically agree with what Neil said before. This isn't a black and white issue. It varies with every investor.

First I have a little historical perspective. In the art and science of asset/liability matching, first came duration matching in the late 1970s and early 1980s, and you all know about that. Then came convexity matching in the mid 1980s. Basically I see two kinds of convexity risks. The first is the degree of cash-flow matching. And the second is convexity produced as a result of options, and I think we've heard enough of that over the last few years. Now comes liquidity. This is just another slice of asset liability matching. Basically the liquidity of assets needs to be better than or equal to the liquidity of the liabilities. That's all there is to it.

Liquidity matching, or for our rating agency friends, liquidity analysis, has two sides. On the quantitative side, liquidity risk and management start with the liabilities. On the asset side, and I assume that most of you are on the liability side, we always get blamed for poor matching. But it's your fault. You give us impossible assignments. As I said, good liquidity management starts with the design and manufacture of good, solid, "sticky"

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liabilities. Please tell your investment manager, your company, and the whole industry (because when one person has a problem, we all have credibility problems), to do us all a favor and build liquidity-conscious contracts.

On the qualitative side, once the product is designed, I hope sensibly, 90% of liquidity management is management of information. The last thing that we portfolio managers want to receive is a phone call that says, "Oh, by the way, I need \$100 million by Friday." If that happens, that's probably an information flow problem. Somebody did not find out about that on that particular day. Remember how I defined liquid asset? Turn into cash by the time needed. Inadequate cash-flow systems can be the real cause of a liquidity problem. This is absolutely crucial.

So after you've designed sensible liabilities, and after you've built an adequate information system, where do you access liquidity? Well, as Neil said, one easy way is just to rent it through a bank line of credit. And, as he said, this is also kind of expensive. The next place to look is just in your operational cash flow; essentially, how much cash comes in the door from investments versus how much cash goes out the door on liabilities. In addition to that, if everything is going smoothly, you can always just sell more liabilities. Obviously, if you have a crisis, it's not going to be possible to find enough buyers who are willing to buy your liabilities at a reasonable price. So that's probably not going to be an option.

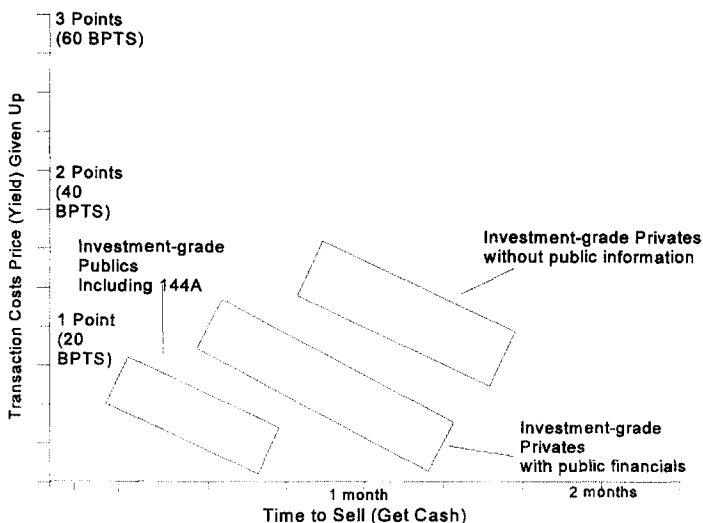
The last resort is to look on the asset side of the balance sheet. You can just sell them, or there may be some better alternatives. You can now access the capital markets fairly quickly through securitizations, which can essentially result in either a full sale or just a partial sale of assets. Or you can use those assets to secure a loan.

That will buy you time, but it's not a permanent solution. But buying time can be very valuable. Selling assets involves execution costs. The amount that you give up depends on what type of assets you have and how much of a hurry you're in. Presumably, before buying assets, you thought about the liquidity-versus-yield premium tradeoff and, from a portfolio manager's standpoint, one of the first things we learn in our job is to understand our client's constraints in order to understand this investment assignment.

Liquidity has at least two dimensions. Actually, I think it has three or four. The time available versus the give-up; by *give-up* I mean how much less than fair value you will receive. Chart 1 attempts to show how this works. The point here is that if typically you provide for a 90-day delay on payout to contracts, and if you manage your information well so that you use those 90 days for liquidity on the assets, then efficient execution is doable.

Chart 1 shows the relationship of transaction costs on the left, either in terms of price or yield versus the time available to work on the execution to raise cash. As you can see, for these asset classes shown, and I have investment-grade privates and publics and 144 As on there, even 45 days is enough to greatly improve execution to within acceptable levels. And Ken's story about what happened to MONY certainly supports this.

CHART 1
LIQUIDITY



In summary, you can't just look at the liquidity of the assets. It's not that easy. It's not that black and white. It's not a yes or no question. You need to look at the liquidity needs as a function of your liabilities. The liquidity issue starts with your liabilities. Second, liquidity is very much a function of time. In fact, the more time you have, the better, obviously, it is. Unless you have some very bad liabilities, you probably have plenty of time. Third, last and maybe most overlooked, is the fact that information management is crucial to maximizing the time for a portfolio manager to be able to liquidate a portfolio at a very nice execution level.

MR. TOWNSEND: I'd like to thank our panel who are representatives of companies that, from an external point of view, have what look like less-than-liquid portfolios. They explained how such portfolios are managed today. And I welcome questions from the audience for our panel.

MR. BRAUN: Actually, Ken, I was very surprised and very relieved that you were able to dispose of your private placements very quickly and very efficiently. We've sort of always known that, and we made the same argument to the rating agencies. They just didn't buy it even though we had bought, over the years, billions of private placements on a secondary basis, and we bought some from MONY. We didn't like the price on most of the ones that Ken sold, so he did get very good execution. Private placements have a very bad name, and it sounded like the rating agencies became softened up somewhat, but they're still not believers.

MR. LEVINE: If you look at one of the ratings, they've recently developed liquidity models in which, for each asset, they give a liquidity rating. There's still a huge haircut for private placements versus public bonds. My own feeling would be that if you're talking about an investment grade, unless it's an unusual credit, and there are unusual credits

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insofar as structure, it shouldn't be treated much differently than an investment grade public bond. I see a very minimal difference in how quickly you could dispose of an investment-grade private placement versus an investment-grade public bond.

The investment banking community is dominated by some large players. These large players typically are the people who sold or act as intermediaries for these private placements. They know the names. They have inventory. They're looking for inventory. They have buyers. They do not, if you're trying to sell them, start by saying, "Let's look at the files from scratch." They already know the names, and they already know the documents, and you can move them very, very quickly.

NAIC-3 double-bond private placements are obviously less liquid than investment grade, but they are still a fairly substantial liquidity. If it's a traditional bond versus an asset-backed bond, especially if it's in an issue that was brought by an investment banker to several insurers versus an issue that was gobbled up by a single insurer, there's good liquidity.

MR. TOWNSEND: What's the cost of making a private placement liquid? About ten basis points in an investment-grade bond?

MR. LEVINE: Obviously, if the investment bank is acting as principal, it's built into the price. If it is acting as intermediary, 10–20 basis points, depending upon the size, how many NAIC-3s there are, and so on.

FROM THE FLOOR: George made a comment about products being designed with liquidity consciousness in mind. George, if you could elaborate on that, from a product development side, it seems as if companies are becoming more aware of those kinds of needs.

MR. BRAUN: Right. And it's an interesting tradeoff that we all have to live with. You want your product to be at least as competitive, or more competitive than the guy next door's product, and people often resort to giving away some sweet product features. You get the sale, but you may end up with a very problematic product on your balance sheet that causes you many more problems down the road. A few years later, you may wish that you never sold it, so it's that balance of, you know, short-term orientation. Get the sales, get a good product that everybody likes, to let's get a product that we can actually support and invest for. And everybody makes out in that kind of a product.

It doesn't answer your question, I suppose, but it's a competitive issue, no doubt. I think that we have to know when to dig our heels in and not write business. I think we've come to that point where if somebody in the institutional market wants us to write a particular kind of contract that we don't like, we must be strong enough to say no and let somebody else do it. Then maybe they'll learn over time. But it's hard to say no.

MR. LEVINE: Let me add something to that because I've been on both sides. I'm now a chief investment officer. I was the chief pension officer, so I have had both sides to worry about. Just to take the simplest example, the GIC contracts probably all or most of them, are written with market-value provisions. That will help you economically, it certainly

won't help you that much from a liquidity standpoint if the market value is somewhere near 1, which it might be at the time when a liquidity stress situation comes due. So you may have protected yourself economically, but if the market value is \$0.99, or \$1.00, or \$0.98, because of interest rates being down, you haven't done much to protect yourself.

On the other hand, if the same contract has a 90-day notice period versus a 30-day notice period, that makes all the difference in the world. From the asset side, the 30- versus 90-days makes all the difference in the world.

MR. HAYNES: CompCorp, the industry guarantee association in Canada, provides insurance coverage on annuity deposits up to \$60,000. If a client has a quarter of a million dollars invested in an annuity with your company, it might be quite happy to get out at \$0.90 on the dollar if it thinks that you have a serious problem. I agree with the point that was just made. Even if you have products that are market-value-adjusted, you and your clients have economic protection but you may have a liquidity issue that needs to be addressed.

Essentially, when selling cashable products with market-value adjustments, you're giving away an option to your clients. It's not an interest rate option per se; it's a liquidity option of sorts and from an economic standpoint, that option has value. It has value to your clients in that they can take their cash if they become concerned about something.

The point that George made is right on. We should take liquidity issues into account when we're designing products in the same way that we look at other investment-related issues. As I said to one of the product actuaries at my company recently, "Treasury should charge you guys something for the fact that you put market-value cashability features in your products. You're creating liquidity risk, and that has an implied cost." It was a bit of a tongue-in-cheek comment, but it did cause us to stop and think about what that option might be worth.

And I know that there are some insurers in the United States sell their excess liquidity to third parties for a fee. Largely, it's a regulatory capital arbitrage. But our company had been approached as to whether we were prepared to sell some of our excess liquidity, and are declined because of currency reasons. But it did cause us to think about the opportunity costs.

MR. DOUGLAS A. LECOCQ: I was wondering how you set your targets for liquidity, and whether they're dynamic based on yield give-up and/or bid/ask spread or whatever on a long-term asset.

MR. BRAUN: Strictly on the asset side, you can look at that chart and you're going to have a bigger give-up if you're in a rush to sell something. But if you can sell something on a more routine basis, it helps great deal, but that's only such a small part of it. I think that's kind of the easy part. I think the harder part is to look at the other side of the balance sheet to figure out what the risk is there and how you can quantify that.

For somebody who tries to rate insurance companies, everybody has different contracts with various notice provisions and terms and market-value outs. Those small details make

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an enormous amount of difference so that some quick analysis and rough approximations of things can be very misleading unless you get a microscope in on all these different contracts and figure them out. I don't know how anyone manages that, but it seems like an unbelievable task to me to try to figure out what liquidity needs are.

FROM THE FLOOR: You had mentioned that your company had a very low liquidity ratio; that you were maybe in those ten. Is that primarily a function of your product designs? Or is that a conscious decision that you've made? Do you think that you're at an appropriate level and perhaps other companies are keeping too much?

MR. BRAUN: I think we have actually an excessive amount of liquidity, given the structure of our liabilities. We have very sticky liabilities, so we have very small real liquidity needs. We went through the same pressure from the rating agencies in 1991, and we went out and paid for a bank line, and we did all kinds of things that cost real money. In our heart of hearts, we knew we didn't need these liquidity enhancements, other than for public relations purposes or for managing the rating agencies, but if they're not going to believe you, you don't have many choices. We think we have excessive liquidity, given the nature of our liabilities. But we do show up on the radar screen as being one of those bottom companies, and that creates a whole other set of public relations problems.

MR. TOWNSEND: Because of these outside perceptions, are any of your companies currently still disinvesting in mortgages or private placements? And at what point does that stop? You've been comfortable with them in the past. I'm sure you'll be comfortable with them at a certain level going forward.

MR. BRAUN: We kept up our investment in private placements at the Hancock, and I think we made some progress in terms of the perception of liquidity with the rating agencies. Again, Ken helped. We had at least one of the highest commercial mortgage percentages in the industry, and we've reduced that more for credit reasons than for liquidity reasons. We, in fact, did about a billion-dollar securitization through Fannie Mae that moved a billion dollars of mortgages into Fannie Mae bonds. It cost us real money, but did it achieve anything? Yes. There was more liquidity created, but we didn't think we needed it in the first place.

So we've reduced our mortgage exposure, but we're back in that business now—we're back making mortgage loans again. Not to the extent that we once were, but it's a very attractive market and we want to be there.

MR. HAYNES: We didn't stop making mortgage loans. We did constrain our underwriting standards and have continued to constrain underwriting standards over the last three or four years such that new loan volume is essentially flat, or down slightly, from where it was a few years back.

Our commercial mortgage exposure as a percentage of assets rose to somewhat more than 20%, although total mortgage exposure was 40–45%. We are in a somewhat unique position of having a large portion of our loan portfolio in residential mortgages, which is unusual for a Canadian life insurance company. I believe it would also be unusual for a U.S. life insurance company.

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We made a conscious decision to allow our commercial mortgage loan percentage to drift down to 20% of total assets, or slightly below. However, we were there in one fell swoop when we made an acquisition last year, and we did not take on the company's commercial mortgage or private-placement exposures as part of that transaction. That took us well down under the 20% level all at once, but we've continued to make loans when we think the underwriting standards are sufficiently high enough.

MR. LEVINE: I don't have much to add. We've reduced most of the categories that were listed under the illiquid category by Fred, but the reduction was based upon a number of issues of which liquidity was one, but probably not the most important.