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RISK-BASED CAPITAL (RBC): AN INTERNATIONAL PERSPECTIVE

Moderator: PAUL F. KOLKMAN
Panelists: FRANK S. AUSTIN
JOHN A. JENKINS*
MICHAEL LOMBARDI
Recorder: DOUGLAS K. DUNNING

This panel will examine the development and use of RBC requirements from an international perspective, including certain members of the European Community (EC), Canada, and the U.S. Specific topics include:

- Regulatory context and background
- Role of RBC in regulation
- Influence on industry practice—investments? products?
- Problems, issues and expected future developments

MR. PAUL F. KOLKMAN: We intend to take a brief look at the regulatory use of RBC requirements around the world. We'll address such questions as how such requirements came about, or how they are coming about in some countries. We'll also discuss how the requirements are structured and how they are used in practice. Where possible, we'll make comments on how successful they've been. We hope this will provide us with a richer context in which to view our own RBC issues as far as regulation is concerned, as well as teach us a little something about the successes and problems that others have had.

The first speaker will be Mike Lombardi who is with Tillinghast in Toronto. Mike joined the life consulting unit of Tillinghast in 1991. Prior to that he held various senior management positions with Prudential in England. This is not our Prudential, it is the U.K. Prudential. He has a wide variety of experience having served as a chief actuary, a valuation actuary, a senior vice president and board member for various units of the Prudential. He's a member of the Canadian Institute of Actuaries, the Society of Actuaries, and the American Academy of Actuaries. He's authored a number of articles on the regulation of Canadian insurers and on asset/liability management. Mike will be going into some detail on the Canadian RBC requirements.

Frank is from ING North America Insurance Corporation. He has wide experience in financial analysis, performance measurement, and profitability issues with respect to both stock and mutual companies in the U.S., Canada, and the Netherlands. He has worked as an actuary in all three countries, and is currently involved in an assessment of the Mexican insurance market. Frank will be talking about RBC requirements in the Netherlands, Canada, Mexico, and Poland.

John began his career with the Legal and General in the U.K. In 1988, he joined Clay and Partners. He is currently senior consultant and actuary with the firm of Alexander

*Mr. Jenkins, not a member of the sponsoring organizations, is Senior Consultant and Actuary of Alexander Clay and Partners Consulting in London, England.

Clay and Partners, which was formed when Alexander and Alexander merged with Clay Partners. He currently serves as the appointed actuary for a U.K. insurer, and is a member of a number of working parties of the Institute of Actuaries and the Faculty of Actuaries, including the working party on RBC. The working party, by the way, is what we call a task force or a committee over here. John will be covering the requirements in the U.K. in a little more detail.

So clearly, we have an experienced and distinguished panel, and I'm looking forward to the discussion. But before I turn it over to Mike, I'd like to provide just a quick context from a U.S. perspective, starting with a little history and background. The first existence of RBC formulas in the U.S. that I'm aware of goes back to individual company formulas in the mid to late 1970s. These were covered in actuarial literature under the names target surplus, benchmark surplus, required surplus, and the like. Soon, some of the rating agencies began to use such formulas in their work.

The IDS position paper published in 1990 was an important event in the history of RBC. IDS tried to make the point that the guarantee fund associations in the various states were in no way capable of handling a major insolvency or a string of medium-sized insolvencies. The associations simply didn't have the capacity. The paper went on to say that this was of concern because the climate was such that some companies were taking on a little too much risk and in the event of a recession, as much as 20% of the industry could be at risk of financial trouble and insolvency. The supporting work to make this extreme claim was a simple RBC formula. The paper went out, the country went into a recession, and a short time later we lost several large insurers like First Executive, First Capital, Mutual Benefit, Monarch.

As a result of that, some regulators decided not to take what was the main point of the paper, which was that we needed broad guarantee fund reform. Instead, they decided to build on the RBC idea. Wisconsin had a simplistic formula for a long time. But in 1990–91, Minnesota and New York both were working on formulas. Minnesota adopted one, and the state of New York left its formulas on a research basis until the NAICs came along.

The NAIC began its RBC project in late 1990 as part of its overall solvency policing agenda, which was as a response to the rash of insolvencies that we had seen as well as the threat of federal intervention. The insolvencies were attributed largely to asset defaults, and the feeling was that the RBC mechanism might have provided an early warning. The original charge to the working group was to develop a suitable formula that would work industry-wide, and a model law to support it, enhance regulatory powers, replace the current, low/fixed minimum capital requirements that were in state law, and put the results of the formula in the annual statement.

The regulators had certain expectations going into this. They really wanted to reduce the number and size of insurance solvencies, reduce the risk to the guarantee fund associations, provide additional information to consumers, increase management and regulator focus on the capital implications of various company actions, and help forestall a push toward federal regulation.

The outcome of that process was a RBC formula and model law that much followed the classic C-1, C-2, C-3 structure. It covers both life and property and casualty

(P&C) companies with different formulas but the same model law. I think that's quite a different situation from other countries where most of the focus has been on the life side as opposed to the P&C side. The regulators also adopted a formula that was a threshold, which is a much lower standard than what we commonly think of as a target, or a level to aspire to.

The NAIC adopted a mechanism that forces a standard calculation nationwide with results reported publicly. It adopted a model law that features a shifting of responsibilities along the way. Anybody familiar with the model law is familiar with the four levels: A, B, C, and D. At level A the legal responsibility is on the company to provide a plan. At level B the responsibility shifts to the regulator to do an exam. At level C, regulatory powers go further—the regulators have authority to take control of a company. In other words, there's the legal presumption that they have the power, although the company can still go into court and resist it. Finally, at level D, the commissioner is compelled to take control of the company.

There was a great deal of discussion in designing these levels, due to concern with states that were weak from a regulatory point of view. You wanted the powers to slowly shift, but you also wanted to ultimately compel the commissioner to act at a certain level. By having a level D that says the commissioner must act, anyone can go into court in a state and sue the commissioner for not doing his legal duty.

How is it working? Well, it's obviously too early to tell. You need a strong regulator to use the tool. The tool can't do the job alone.

Let's discuss a few issues that are out there right now.

LEVEL PLAYING FIELD

The formula has been in operation for a while. I have heard no concerns about an unlevel playing field, either between different types of life insurance companies or different types of products. There are little concerns at the fringes, but so far nothing material. Perhaps as the international market grows, some will arise. But so far, we really haven't seen anything.

USE OF REINSURANCE

There's been less reinsurance activity than many had expected. There has been some use of reinsurance to shift a company's risk profile around, but, so far, the use of reinsurance has been less than many people predicted going in.

CHANGES IN INVESTMENT POLICY

Investment policy changes have occurred. But we have not seen the flight to quality that many expected. And you really wonder if the RBC requirements are a cause or an effect of revised investment strategy. The low grade bond holdings of some companies and the mortgage holdings of some companies were going to be addressed at some point in time. Along the way comes RBC. You can always claim that it was the cause, but many companies needed to get a little better structure to their balance sheet.

INCREASED CAPITAL LEVELS

If you look at industry-wide figures for the last few years, capital levels have definitely risen, particularly at the end of 1993. Companies have strong earnings, but there are significant capital contributions going into companies. This is in addition to the emergence of surplus notes issued by many mutual companies.

THRESHOLD LEVEL

Some are concerned that the threshold may be too low. Obviously it's too soon to tell. There was a desire, I think, on the part of the regulators to err on the side of a low threshold rather than a high threshold. If you make a mistake, I guess it's more acceptable if it's too low, at least initially, than if it's too high. Otherwise, you might seriously affect the market.

CONFIDENTIALITY

Confidentiality is currently a hot topic. I don't know how significant it will be long term. As long as RBC is new and novel, there's a lot of fascination with it. It just simply may not be an issue a year, two, or three years from now.

The problem with confidentially stems from a fundamental conflict between the regulation of consumer/investor interests and the focus of regulators concerned with solvency. The basic focus of consumer/investor regulation in the U.S. is disclosure, primarily driven by the securities and exchange commission (SEC). Your prospectus always says something to the effect that these securities are neither approved nor disapproved by the SEC. But what the SEC does is make certain that the prospectus has full disclosure. There's a lot of discussion back and forth between someone issuing securities and the SEC to make certain that complete disclosure is in the prospectus. The SEC is more than happy to step back and let the market—which it also polices for fairness, openness, and efficiency—take its course.

The confidentiality provisions in the model law therefore are really in direct conflict with the entire focus of consumer and investor regulation. And, I think, ultimately the confidentiality structure will collapse. I do think, however, it will be effective in the short term.

The U.S. RBC formula and model law grew up in a near crisis environment. There were a large number of insolvencies, and the federal government was off to the side saying, if you guys don't do the job right, we'll come in. Those kinds of intense pressures can lead to poor law and regulation as people try to do things quickly.

Despite all of that I think that the formula and model law are good. Can they be improved? Sure. But they are probably the most comprehensive set of RBC regulatory standards that I'm aware of.

I expect the changes that we'll see in the next few years to be relatively minor. RBC has been a big change for the industry. There's nothing in the formula that's broken. There are some things that could be improved but the regulators, and probably the industry, would just as soon see change happen gradually, so that the formula isn't bouncing around every six months. I don't expect a lot of change unless we see some kind of catastrophe. If something significant happens that is solvency related, changes will happen more quickly.

There has been a strong push by some regulators to use RBC for purposes that were not intended by those that put it together. So far, the industry and many of the people who helped develop the formula say that's inappropriate. It was designed carefully for a very specific use. It shouldn't be used in a lot of other areas. So far, the regulators have respected that. But I think given the proper kind of crisis situation, that veil could be pierced. And once pierced the regulators would use RBC for a wide variety of uses.

As an overall assessment, I think that the requirements and model law are going to be a net benefit for both insurance regulation and for the industry. I think out of it will come increased consumer confidence. And, I hope, pressure will be reduced on the guarantee fund associations.

MR. MICHAEL LOMBARDI: My topic is RBC from a Canadian perspective. I will be reviewing this topic under five broad areas: (1) review of the Canadian Insurance Regulatory background, (2) discussion of the role played by RBC, (3) some management reactions and changes in behavior arising out of the introduction of RBC, (4) some comments on the likely evolution of the concept, and (5) some lessons learned and conclusions to be drawn from the Canadian experience.

Despite the proximity of the U.S. border, the insurance regulatory environment in Canada is quite dissimilar in many important ways.

Insurance and solvency regulation, except for a very small number of provincially registered companies, has always been a federal matter. There is normally no filing or approval process for new products and premiums. There are no nonforfeiture laws; cash values for life products are dictated by consumer preference and competitive pressures.

Accumulation products, such as deferred annuities, tend not to have any book-value guarantees. The interest rate risk on early surrender of a policy is normally charged directly to the policyholder as a market-value adjustment.

Reserves set up for statutory purposes must be the same as those set up for GAAP purposes. These GAAP reserves apply equally to mutual and stock companies.

There is an insurance guarantee association called COMPCORP, which exists to provide a floor of protection in the event of insurer insolvency. Insolvencies of life companies have been a very rare phenomenon—there have been two in the last 60 years.

In addition, the appointed actuary plays an important role in this environment, and is one of the cornerstones of the regulatory framework. The basis for determination of actuarial liabilities is not dictated by regulators. Rather, these are calculated from first principles, based broadly on professional standards of practice and guidelines. These standards and guidelines emphasize use of the full policy premium, explicit assumptions for interest, expenses, mortality, morbidity, lapses, commissions, dividends, reinsurance, and a limited and reasonable additional margin in each assumption for adverse deviation.

It should be noted that unlike U.S. GAAP where actuarial assumptions for traditional products are generally fixed at the time of policy issue, actuarial assumptions under the policy premium method (PPM) are not fixed. They must be reviewed periodically in light of emerging experience or actuarial judgment.

There's an annual report made to the regulator by the actuary, summarizing the results of the valuation including the nature of the business valued, validation of data, analysis of experience, and factors considered in the selection of actuarial assumptions and the margins for adverse deviation.

The actuary signs a personal opinion on corporate solvency with a broader intent than one certifying merely compliance or the technical accuracy of the calculation. The actuary performs an annual investigation known as dynamic solvency testing (DST), and separately reports to management on the future threats to solvency.

If the actuary becomes aware of any circumstances that may have a material impact on the ability of the company to meet its obligations and require rectification, he or she must bring the matter to the attention of management and the board. If satisfactory action is not taken to correct the situation within a reasonable period of time, the actuary will have a statutory obligation to send a copy of his or her report to the Superintendent of Insurance and advise the board of directors.

The actuary is to render an opinion to the board on the administration of the required company dividend policy with respect to participating business prior to any distributions being made. Provided the actuary acts in good faith, he or she is protected against any legal action for damages arising as a result of carrying out his regulatory duties.

And finally, the actuary is appointed by the board of directors, and regulators must be informed of subsequent appointments or terminations.

The net result is that artificial statutory strain is eliminated, and products sold with the expectation of profit tend to recognize some profit up front, except for the provision for adverse deviation which will be released in future years as the policy runs its course.

The fact that there is only one set of books serving both GAAP and statutory purposes helps to make the financial statement more understandable. It should be noted that the competence and professionalism of the actuary is critical to the success of this system.

Turning now to the role played by RBC, I will concentrate my comments primarily on the general nature of the formula as well as its central role in DST.

The movement to make actuarial liabilities appropriate for both solvency and income reporting necessitated a fresh look at how management and regulators can be assured that a company will remain solvent.

The Canadian Life and Health Insurance Association, a life insurance industry association, implemented a policyholder protection plan, which is administered by a specially

established corporation known as COMPCORP. The companies that join the plan must pass an annually administered formula test, calculated and signed by the company actuary to continue in the protection plan.

Provincial regulatory authorities have supported this initiative and have made or intend to make joining the plan a condition for continuing to carry on business in their jurisdictions. In fact, one provincial regulator, Quebec, has adopted its own version of RBC to aid in the monitoring of solvency for Quebec insurers.

Nevertheless when we speak of RBC in Canada, known as minimum continuing capital and surplus requirements (MCCSR), and the role it plays, we are primarily concerned with a specific formula used by the federal Office of the Superintendent of Financial Institutions (OSFI). While it may be confusing for the moment to have three distinct formulas for MCCSR (one for federally regulated companies, one for Quebec companies, and a third for companies wishing to join the industry guarantee association), these formulas all share similar structural characteristics. For simplicity I will focus most of my remarks on the formula used by OSFI to regulate federally registered companies.

The MCCSR ratio is basically the ratio of available capital to required capital. Required capital is determined based on specific factors applied to components, such as asset book values, sums assured, premiums in force or reserves. The required capital components are summarized by category: asset default risk, mortality/morbidity risk, interest margin pricing risk, and changes in interest rate environment. Many of you in this audience will recognize these as the familiar C-1, C-2, and C-3 risks.

ASSET DEFAULT RISK

This component of the MCCSR is calculated as a percentage of assets with the percentage varying widely by asset class. National government bonds, for example, carry a risk factor for this calculation of 0%, while the factor for corporate bonds varies from 0.25% up to 16% depending on the bond's rating. Mortgages generally carry a 2% factor if residential, and a 4% factor if commercial. Common stock has a factor of 15%.

MORTALITY

The net amount at risk of the insurance policy (the full amount less the reserves held) is clearly a measure of what the insurance company is risking. In-force policies where the company has considerable flexibility to reflect through dividend or premium adjustments the impact of emerging mortality experience (for example, most universal life, adjustable premium policies and participating policies) use a factor of $1 per thousand of net amount at risk. Most other nonparticipating insurance, on the other hand, requires $2.50 per thousand, as the risk borne by the insurance company is generally greater.

Further adjustments to this calculation are made to reflect things like reinsurance, group cases with claim fluctuation reserves, and company size. Annuities, of course, are handled differently; where life contingencies are involved, the requirement is 1% of policy liabilities.

MORBIDITY

The risk associated with disability income coverage is best related to how far into the future current premium rates are guaranteed. The requirement can vary from 12% to 40% of premium, where the premium guarantee period extends beyond five years and individual underwriting does not take place. An additional requirement reflecting risks on disabled lives, is a percentage ranging from 2% to 8% of existing claim reserves.

INVESTMENT RISK

There are several different aspects to this risk. One is the interest margin pricing risk: that the company will not be able to achieve the planned interest margins on its in-force business. The MCCSR component for this risk is 1% of most reserves, except on participating and adjustable business it is cut in half given the ability to reflect actual interest returns as they emerge.

Another piece of investment risk is related to changes in the interest rate environment, for example the impact of rapid rises in rates causing a fall in asset values and potential problems for the insurer where cash values are guaranteed. Factors here range from 0.5% to as high as 10% of policy liabilities, depending on the nature of policy guarantees and withdrawal provisions.

The required surplus of the company is then the sum of these separate components. Unlike the NAIC formula there is no covariance component, and there is no C-4 component.

What we discussed so far are some of the key components of the minimum required capital. The other half of the question is the determination of each company's capital and surplus available to be applied against the minimum. While this may seem at first straightforward (simply assets less liabilities), it isn't, and some of the most difficult discussions between the regulators and the industry have taken place around this issue.

Tier 1 capital is recognized as fully available to meet the capital requirements and includes contributed capital, unappropriated surplus, realized unamortized gains or losses on stocks and real estate, and some portion of appropriated surplus.

Tier 2 capital is general capital whose nature or permanence is less certain. It includes such items as subordinated debt, preferred shares with maturity dates, surplus appropriations to cover negative reserves, and surplus appropriations to cover the aggregate difference between cash values and reserves.

The extent to which each element of Tier 2 capital counts as available capital is a function of the various percentages applied to the components themselves. In addition, overall limitations apply based on the relationship of Tier 2 to the overall size of the Tier 1 component.

So, what is the significance of the resulting ratio? As mentioned before, it is used as a tool for monitoring the solvency of an insurance company. Companies that fail to pass the test are subject to increasing levels of regulatory scrutiny, depending on the extent to which they fall short. Companies may be asked to file quarterly statements,

prepare a new business plan, restrict the volume of new business sales, or raise more capital. In the most extreme cases, the company may be subject to shutdown or liquidation.

Given the relatively short period companies have been operating under the new regime, and in order to allow sufficient time to raise capital or otherwise adjust to the new realities, the minimum acceptable ratios will be 83% by the end of 1994, 92% by the end of 1996, and 100% by the end of 1999. Nevertheless OSFI has indicated that the desired level of operating capital should be a ratio of available-to-required surplus of 120%, and many companies may want to hold even greater levels to meet their growth plans or to satisfy rating agencies.

In the discussion so far, it should be noted that we have been discussing life insurance companies. Equivalent risk-based minimum capital requirements for P&C companies are still not well-defined, at least not in Canada. While there is no RBC measure as such, there is an asset adequacy test as well as a set of monitoring ratios, such as growth in premiums, change in capital, and so on which are similar to the Insurance Regulatory Information Systems (IRIS) ratios formerly used by the NAIC to monitor U.S. life companies prior to the advent of RBC.

Coming back to life companies, one issue that has emerged is the question of how much cushion a company needs. On the one hand, reserves are supposed to include a provision for adverse deviation. On the other hand, required capital is in part a percentage of reserves. If a company determines that its reserves need to be strengthened, available surplus (the numerator in the ratio) will decrease by the amount of reserve increase. Unfortunately there is a second hit in that the required surplus will increase since it in part reflects a percentage of the actual reserves held. While it was not the intent of the new regime to discourage reserve increases when needed, the reality is that there is a double hit to the ratio when such an event occurs. This issue, while it is under study by various professional committees, remains unresolved.

Another issue that is of some concern surplus appropriations in the balance sheet. While reserves are supposed to fully cover the policy liabilities of the company, additional appropriations of free surplus are nevertheless required for negative reserves and cash-value deficiencies. Only a portion of these items are deemed available surplus for purposes of satisfying the MCCSR ratio, and there is some concern over the extent to which they are disallowed.

There's also a concern over the extent to which capital invested in a financial services subsidiary or affiliated company is allowed as available capital. Where a life company has financial subsidiaries that tie up capital as well, measures have been taken to eliminate the "double counting" of capital backing the liabilities of both the subsidiary and its parent.

The details and results of the MCCSR calculation are currently not public information. Why not? Well, it's important to recognize that the MCCSR methodology is by no means perfect. While it does consider the different characteristics of a company's asset/liability portfolio, it can do this only imperfectly, and can't reflect any number of differences in strategies and policies. It's also a measure at one point in time, and

may not reflect the changing conditions adequately. Hence, while useful as a standard for use by the regulator, COMPCORP, and company management, wide communication of the results for all companies could lead to misleading conclusions and decisions taken for the wrong reasons. However, it's possible that, after several more years' experience with the MCCSR, we may well see publication of these results if the approach has proven to be credible.

A related issue for Canadian life insurance companies competing both domestically and abroad against other providers of financial services is how these capital requirements compare against those of these other providers, potentially leading to a competitive disadvantage. Banks have the Bank for International Settlement (BIS) formula from which the concept of Tier 1 and Tier 2 capital have been copied. But it is unclear whether the different capital rules end up favoring banks or insurers.

Turning now to DST, the first point worth noting is that while both U.S. style cash-flow testing and DST share the technique of modeling and examination of scenarios, they are actually quite different. Cash-flow testing examines interest scenarios, and DST examines all risks to solvency. Cash-flow testing is concerned with reserve adequacy and therefore ignores assets backing surplus. DST is concerned with corporate solvency, and therefore all assets are considered. Cash-flow testing looks at in-force policies, and DST looks at in-force and future new business.

The Canadian Institute of Actuaries adopted a standard of practice on DST effective with the 1991 year-end, which requires the actuary to examine not only the company's current financial position but also its financial condition, that is, its ability to withstand future threats to solvency.

The actuary's annual investigation of the company's solvency should consider the past, present, and future financial positions of the company, and the sensitivity of surplus to changes in various experience factors and management policies. The analysis in practice involves projecting the company's operations for a period of approximately five years, and making such changes in reserve bases as indicated by the anticipated emerging experience. The MCCSR ratio at the beginning of the period is compared to its expected value at the end of the projection period and conclusions are drawn about the viability of the company's current plan. In addition to the base scenario normally underlying the company's business plan, a minimum of ten other scenarios are suggested for investigation.

Furthermore, the actuary is expected to choose a variety of additional scenarios to investigate the effect of combinations of scenarios, additional risks, and company policy or strategy with respect to underwriting, investment, marketing, and dividend policy.

Finally the actuary should provide a written report to the board of directors each year outlining the investigation performed and present the significant findings and conclusions and recommendations. This report is expected to be qualitative, identifying the degree of risk posed by various scenarios. While the principle audience for DST is the company's management and directors, it is likely that, if a company's circumstances deteriorate, the regulators may request a copy of the report.

I'd like to turn now to some management reactions and changes in behavior arising out of the introduction of RBC concepts in Canada. Companies can improve their position through corporate restructuring, better management of liabilities, and improving the asset mix.

Corporate restructuring includes such activities as selling off affiliated companies, demutualization, floating subordinate debt instruments or minority interests, and consolidating the activities of various subsidiaries into the parent company. These activities, though possible, have not yet occurred in great abundance.

Improving the asset mix includes such activities as improved quality of assets and a reassessment of mortgage loans, common stock, or real estate holdings. This approach must recognize the additional expenses required to restructure assets as well as the likely decline in yields.

Better management of liabilities includes using reinsurance to reduce liabilities and capital requirements, selling off in-force blocks of business, reducing sales growth, raising premium rates, and revising or refocusing current strategies or product offerings. This group of activities by far has been the most widespread reaction.

One final strategy is specific to branches or subsidiaries with well-capitalized foreign parents. Such companies are in a position to ask their parent organization to inject more capital into the Canadian operations. Such requests, once routinely dispensed with, are increasingly subject to greater scrutiny as parent organizations faced with limited capital and competing demand from other international operations, insist on seeing a strong business case made for such additional capital, the expected return on the equity, and a prior track record of delivering results on plan.

In fact, for a number of foreign companies, the returns are just not there. And they're choosing to exit the Canadian insurance market.

So what is the future evolution of RBC in Canada? While making predictions is seldom easy, let me be bold and make a few comments on where future developments may lead.

The various MCCSR formulas are likely to converge over time as the benefits of a single standard become more apparent.

Various components of the MCCSR formula that are seen as incomplete or redundant will be subject to amendment or further refinement. Examples of these include the move to aggregate rather than seriatim cash surrender value (CSV) deficiencies, the desire to treat branches on a basis more consistent with that of subsidiaries, and recent developments concerning the appropriate risk factor for lapse-supported products.

P&C companies will eventually be using RBC ratios and DST as a tool in monitoring or altering their strategic direction.

Stochastic rather than deterministic modeling will eventually become common practice for DST as computing power and software becomes more abundant, and

asset/liability refinements become increasingly necessary to adequately quantify behavior.

And finally the need for banks, insurance companies, and trust companies to compete on a level playing field in Canada and elsewhere will eventually lead to a convergence of currently diverse RBC standards for financial institutions.

Let me now wrap up briefly with some conclusions. The Canadian regulatory framework of PPM reserves, RBC, DST, and the expanded role of the appointed actuary is considered by many outside observers to be a modern leading edge insurance regulatory package. Canadian actuaries are proud of the role they played in achieving this as well as being mindful of the extra professional responsibilities this entails.

The financial management of insurance companies is becoming a science rather than an art. There is now sharper and more focused management attention on business risks and insurance fundamentals. There is a noticeable movement away from price competition and pursuit of larger market share, and towards price increases and achieving adequate return on equity.

And finally the economic fundamentals of a low return, competitive, saturated insurance market in Canada, coupled with increasingly available technology to effect efficiencies of scale, are pressuring companies to consolidate, sell noncore blocks of business, or exit completely.

MR. FRANK S. AUSTIN: Some of what I'm going to talk about may overlap a little bit, but it should be complementary. I'll talk about the international perspectives of RBC management.

These comments represent my views of this subject. No example represents any specific company, and some of the regulatory information may have been superseded. Therefore, don't rely on any specific information here. You should research it yourself.

The expansion of insurers into new countries and regions appears to be at a faster rate than ever before. And that appears to be on the perception of better growth opportunities outside your home market. Unique opportunities have occurred such as privatization of insurance companies, the elimination of trade barriers, and the transfer of experience and technology. The development of a more interactive global economy as well as competition from banks and other financial institutions have created an environment of new international business strategies involving all facets of financial services.

While there may be opportunities, there are also some distinct risks. Having a large pot of capital is very helpful in international expansion, but unless risk and capital are well managed, policyholder and shareholder interests may be adversely affected. The diverse regulatory environment, internal competition for capital, developing perceptions on risk, and financial reward all create a need for a well-reasoned corporate policy toward capital use. This should be integrated into an overall business development and financial management process. And the pricing and performance cycles that have been commented on in the past need to be integrated with a view of RBC.

I'll go very briefly through a superficial profile of the risk and regulatory aspects of five countries (Table 1). Then, I'll discuss a very general framework for RBC management. If we have time, I'll go through an example.

TABLE 1
NORTH AMERICAN AND EUROPEAN ECONOMIC, POLITICAL, INSURANCE RISKS, RISK-BASED CAPITAL AND SOLVENCY MARGINS

Country	Overview	RBC/Solvency Margin
Mexico	•Emerging, prone to high inflation—immature credit market •Questions about political stability—more reform needed •Much progress in past six years •Federal regulation—well-controlled •Multi-line operations—six large companies dominate market •NAFTA—opened doors for U.S. & Canadian Insurance	Life: .06% of average sum assured General insurance greater of: Auto 35% premiums 48% of average claims over three years A&S 24% of premiums adj. for reinsurance 38% of average claims over three years Other 34% of premiums 54% of average claims over three years Investment Participation % of investment category Diversification category to reserves
Netherlands	•Mature—intertwined in overall European economy •Small country with global perspective •Part of European Community •Collegial relationship of govt. to industry •Insurers are international in scope •General ins. separate from life	Life Ins. 4% of reserve fund 0.1, 0.15, 0.3% of sum assured depending on coverage period General Ins. Greater of: Premiums 18% 10 min. ECU, 16% excess Claims 26% 7 min. ECU, 23% excess
Poland	•Immature—seeking to enjoy prosperity of Western Europe •Hyperinflation •Need for capitalistic infrastructure to develop further •Insurance market still dominated by state-owned companies	•Generally same as EC •Local currency breakpoint (ZL)
U.S.	•Mature—major world economy •Highly competitive market •Patchwork of state regulation bound together by NAIC •Pattern of insolvencies from lack of prudence as to risk •Reaction by regulators, industry, and prof. org.	•Series of formula based on Statutory Statement •Specific focus on C-1 and C-2 risks •RBC ties to Val. Actuary, AVR, IMR •C-4 Risk, and covariance are unique •Adopted for life cos.—P&C in development
Canada	•Mature—interrelated with U.S. •Economic swings more volatile than U.S. •Banks are major driving force in financial services •Federal regulation—known for effective regulation •Few insolvencies—but these have been recent	•Forerunner to U.S. •Specific calculation on C-1, C-2, and C-3 risk •Appointed Actuary DST •Concern as to mortgage loans & R.E.

Mexico has an emerging economy. It's been prone to high inflation, has a high national debt, and is overly dependent on oil revenue. The Salinas government has made substantial improvements in the last few years by reducing foreign debt,

encouraging a privatization program, and so on. But the economic benefits have not reached a large portion of the population. As a result, there is still ongoing political instability. The population is very young, with 80% under age 40. There is a likelihood of a very strong insurance market developing there in the coming years. Right now, the market is relatively uninsured, or not as insured as it might be by U.S. standards.

The Mexican insurance market is dominated by six large companies which are all multiline except, I think, for one. The regulatory process is very well-controlled in Mexico. The solvency standards were published in the middle of last year, and I believe they're still talking about changing the first one listed in the chart. Basically, it's 60 cents a thousand for life insurance. For other general lines of business, it's the greater of either a premium or a claim calculation. There's also a reinsurance offset, but it's limited.

The investment risk is separate and refers to the investment of the reserves. There is no restriction on investments backing surplus or excess capital.

The Netherlands has a very mature economy. It's a small country among powerful neighbors. And it has learned to survive by creating strong companies, almost at the risk of competitive influences within the country. The people there believe in an orderly market and a well-controlled environment. Federal regulation is collegial. And the Netherlands follows the EC rules. John is going to talk about the EC rules later.

The next country to consider is Poland. There is another panel discussion at this moment that's going to talk about Poland in greater detail. There's a very nice discussion of the Polish economy and investment environment in Volume 3 of the *AFIR Proceedings*. The Polish economy is basically immature as the country is coming out of communism. It is making great strides towards a capitalistic environment, but there's hyperinflation—30 to 40% per year. The economy also has a soaring stock market, so there's all kinds of unique risk in Poland.

Poland has adopted the EC solvency margins. By the way, the EC formula is just a broad formula. It doesn't reflect the underlying risk of investments or the underwriting risk of a specific company.

Paul has talked about the U.S. in some detail, the insolvencies that have occurred, and the fact that we've gone to a fairly detailed calculation of RBC.

Canada, as Mike has discussed, has been a forerunner of the U.S. The economy there is, of course, quite intertwined with that of the U.S., but is somewhat more volatile.

Now, take a broad perspective and consider how you might do business as an insurer in all five countries. There are five different sets of rules and five distinct economies. There are several challenges in that. Some of these challenges would apply to any insurer whether you cross international borders or not—such as leverage versus safety and how much surplus should be put at risk.

I think the question from an international expansion perspective is, if you're going to expand into a foreign country, should you go for a big impact and acquire a large company? This would allow a meaningful presence right away while avoiding the risk of not having critical mass. An alternative is to buy a smaller company and learn what's going on, but have the risk of never creating a sufficient size to be effective. The most highly controlled but riskiest venture is to buy a shell company and start an operation from scratch. In that environment a lot of capital is expended with very little to show for it in the earlier years. But the full control you have in that situation may be less risky than going into a joint venture in a foreign country.

The need for attractive financial returns are key to this. Without good returns you will not hold and create new capital. Without it you won't survive. Your shareholders will look elsewhere. So, while prudence is always welcome, the cost of holding excessive levels of capital can choke an organization.

From this you can build a program of RBC planning. You can define how much surplus is actually needed as required surplus and how much is free surplus. You can develop performance measures such as value added, which is very common in Europe, and looks at the present value of distributable earnings—earnings that have been adjusted for target surplus charges. Or you can look at GAAP ROE with the free surplus taken out, so that you're looking at a return on the surplus that's been invested.

Pricing should follow the same course as performance measurement. You need to look at the capital set aside. But you also need to look at the margins themselves that are in the pricing as well as the correlation of the default charges to the capital that's being held. Holding capital back as a buffer for solvency purposes is not the same as actually pricing in a default or a loss. These are, in my opinion, two separate and distinct aspects that need to be correlated very carefully.

Investment guidelines are key in this. Table 2 shows a crude example with the number of variables greatly reduced. I assumed absolutely everything was equal. Whether you can sell disability income in Poland or not is a good question. But the only two variables I allowed in the example were the investment mix and the individual solvency formulas in each of the countries.

There are fairly substantial differences in the formulas by country and the investment mix has a tremendous effect on this. For example, in the U.S. formula, common stock requires a 30% factor; while in Canada, the factor is 15%. This compares to 1% or even less on corporate bonds. You can realize tremendous leveraging depending on your asset mix.

TABLE 2
ANALYSIS OF RBC/SOLVENCY MARGIN
APPLIED TO HYPOTHETICAL INSURANCE COMPANIES (AMOUNTS IN MM US$)

Company	C-1	C-2	C-3	C-4	Cov. Adj.	Total	Free Surplus	Solvency Ratio	Adj. ROE*
Mex	$3.6	$15.3				$18.9	$81.1	528%	17.9%
Ned	$34.8	$24.1				$58.9	$41.2	170%	11.7%
Polski	$34.8	$24.1				$58.9	$41.2	170%	11.7%
Can	$2.9	$28.1	$24.6			$55.6	$44.4	180%	11.9%
U.S.	$3.1	$18.3	$12.3	$4.0	($9.9)	$27.8	$72.2	360%	15.8%
Average	$15.8	$22.0	$7.4	$0.8	($2.0)	$44.0	$56.0	598%	13.2%

*Note: Risk adjusted ROE: (Net Income—Int. on Free Surplus) divided by (Equity-Free Surplus)

INSURER PROFILE

Investments	Mex	Ned	Polski	U.S.	Can
Bonds					
Govt.	67%	15%	45%	30%	30%
Corp. AAA	0	10	0	5	5
Corp. AA	0	15	0	10	45
Corp. A	0	10	0	40	5
Subtotal	67%	50%	45%	85%	85%
Mortgages					
Commercial	0%	15%	0%	0%	0%
Residential	0	5	5	0	0
Subtotal	0	20	5	0	0
Stock	10%	10%	10%	0%	0%
Real Estate					
Co. Occ.	2%	2%	2%	0%	0%
Foreclosed	1	1	1	0	0
Investment	5	2	2	0	0
Subtotal	8	5	5	0	0
Cash/S.T.	5%	5%	25%	5%	5%
Pol. Loans	10%	10%	10%	10%	10%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

	Indiv. Life	Ind. Annuity	Ind. Dis. Inc.	Total
Premiums	$100	$50	$50	$200
% Dist.	50%	25%	25%	100%
Res./Liab.	$560	$300	$40	$900
% Dist.	62%	33%	4%	100%

NAR	$5000	Assets	$1,000
A&H E.P.	$ 50	Adj. C&S	$ 100
A&H Claim Liab.	$ 10	GAAP Equity	$ 130
Net Income	$ 12.0		

Table 3 is still overly simplified but again attempts to reflect doing business in all five countries. I've shown three examples of methods to use if you are the corporate actuary trying to come up with a method for allocating surplus as well as having a target surplus formula.

The first sets 150% of each country's standard as the basis. In this example, you can see that there are substantially different results in the target surplus formula and in the adjusted ROE, which has GAAP equity less free surplus in the denominator. In the numerator, it's net income less the interest on free surplus. That's a crude way of doing it, but it illustrates the financial differences.

In the second example, I used the Canadian formula as a proxy to evaluate each country's RBC. I chose the Canadian formula since it is more specific than the EC formula and I like it in some ways better than the U.S. formula. I also made a decision that Mexico and Poland government bonds should be rated and, therefore, have a risk factor. In those countries, government bonds don't have a risk factor. I think the same thing applies in the U.S. with state and local bonds. You need to look beyond the formulas. You can get substantial differences in return by the way that you allocate target surplus.

The last method shown in Table 3, is what I called a common formula where one formula covers every circumstance. In that basis, you may fit some countries well, but too much surplus will be tied up in other countries. In effect, you may become inefficient from a capital utilization standpoint.

There are a number of things that I'm not mentioning in this discussion: reinsurance ratings, diversification of risk, redundancies in legal structure (the more legal structures you have, the more surplus that can be tied up artificially), leverage and debt burden, currency risk, problems of recovering profit from overseas operations, political instability, war, and catastrophic risk. I advise not using anybody's formula, but rather devising one yourself based on your current business profile and investment environment.

But this is hard work. After you set up a formula, you have to keep going back and validating it. You have to communicate it to other people, especially senior management. If it's going to be part of performance and pricing, management should understand it completely.

In summary, the globalization of the world's insurance markets is increasingly bringing differing views on risk and appropriate solvency levels into discussion. I was fortunate enough to have some colleagues in Holland help me with some of the research, and I appreciate that. But I also benefited from doing some analysis on this. I would suggest to you that you should do the same.

MR. JOHN A. JENKINS: First of all on behalf of the Institute of Actuaries and the Faculty of Actuaries, I'd just like to say how pleased I am to be here attending this spring meeting of the Society of Actuaries. It's been a magnificent meeting. The reason that I'm here, rather than anybody else, is that I'm a member of the joint actuarial working party that has been considering RBC in the U.K. over the last few months.

TABLE 3
SEPARATE FORMULA

	Mex	Ned	Polski	U.S.	Can
Common Multiple of RBC/SM: 1.5					
Ind. Life	Res. 1.30% NAR 0.90 Prem.	Res. 6.00% NAR 4.00 Prem.	Res. 6.00% NAR 4.00 Prem.	Res. 2.00% NAR 1.50 Prem. 3.00%	Res. 4.50% NAR 3.50 Prem.
Ind. D.I.	Res. 0.50% Prem. 34.00%	Res. 6.00% Prem. 24.00%	Res. 6.00% Prem. 24.00%	Res. 1.00% Prem. 24.00%	Res. 3.50% Prem. 45.00%
Ind. Ann.	Res. 1.30% Prem. 0.00%	Res. 6.00% Prem. 0.00%	Res. 6.00% Prem. 0.00%	Res. 2.00% Prem. 3.00%	Res. 4.50% Prem. 0.00%
Target Surplus Free Surplus Adjusted ROE	$28.4 $71.7 15.7%	$88.2 $11.8 9.8%	$88.2 $11.8 9.8%	$41.7 $58.3 13.5%	$55.6 $44.4 11.9%
Common Process to Measure Risk Target: 1.25 Can. Base Base: Canadian formula, Mexico and Poland government bonds rated					
Ind. Life	Res. 7.00% NAR 2.00	Res. 7.00% NAR 2.00	Res. 8.00% NAR 2.00	Res. 4.50% NAR 2.00	Res. 4.50% NAR 2.00
Ind. D.I.	Res. 6.00% Prem. 40.00%	Res. 6.00% Prem. 40.00%	Res. 8.00% Prem. 40.00%	Res. 2.00% Prem. 40.00%	Res. 2.00% Prem. 40.00%
Ind. Ann.	Res. 7.00%	Res. 7.00%	Res. 8.00%	Res. 4.50%	Res. 4.50%
Target Surplus Free Surplus Adjusted ROE	$93.7 $6.3 9.5%	$93.7 $6.3 9.5%	$103.0 ($3.0) 9.1%	$69.5 $30.5 10.8%	$69.5 $30.5 10.8%
% of RBC/SM	495%	159%	176%	250%	125%

COMMON FORMULA
LARGEST FORMULA USING BASE COUNTRY RBC/SM

Ind. Life	Res. 4.50% NAR 2.00
Ind. D.I.	Res. 2.00% Prem. 40.00%
Ind. Ann.	Res. 4.50%
Multiple of RBC or SM	
Mexico Netherlands Poland U.S. Canada	3.73 1.20 1.20 2.50 1.25
All Companies	
Target Surplus Free Surplus Adjusted ROE	$69.5 $30.5 10.8%

I'm going to discuss the main aspects of the present U.K. regulatory system, particularly as far as actuarial and solvency matters are concerned. I'll then move on to the nature of life insurance business in the U.K. I think you'll find there are some significant differences between the U.K. and the U.S., as far as assets and liabilities are concerned. Last, I'll discuss the possible role for RBC in the U.K. At present, the U.K. doesn't actually have any formal system of RBC as is the case in the U.S. and Canada. Therefore, much of my talk is going to be concentrated on the first two items, before moving on to RBC itself.

The main aspects of the U.K. system from an actuarial and solvency point of view can be summarized by five key points.

First in the U.K., assets are valued at market value wherever it's possible to determine a reasonable market value. These values are published in our Department of Trade and Industry (DTI) returns. The DTI is the U.K. regulator, and the returns submitted each year are very similar to what you call the blue book. Assets are broken down in the return by market value and all the separate classes are shown. Listed investments have to be valued at mid-market value. Property, or what you call real estate, has to be valued professionally at least every three years. Debts have to be discounted at market rates of interest. There are also admissibility limits to prevent an undue concentration of investment in any particular stock, share, or property. For example, any particular piece of real estate cannot count for more than 5% of the total liabilities. If it is valued at more than that, the excess is inadmissible.

Second, we have a requirement for a prudent valuation of the actuarial liabilities by the appointed actuary. The regulations require appropriate methods and prudent assumptions. We have two fairly lengthy actuarial guidance notes, but it's very heavily the responsibility of the actuarial profession, and the appointed actuary in particular, to determine the appropriate prudent value of the liabilities.

Third, there is, however, a minimum built into the reserves. The actuarial reserves determined by the appointed actuary must not be less than those on a certain minimum basis. The key point of that minimum basis is assessed in terms of the maximum valuation rates of interest that can be used.

Fourth, we also have the EC solvency margin requirement. After doing a valuation, you have to calculate the requirement, and assets must exceed liabilities by at least this amount. If they don't, the office is in trouble. As a minimum, the DTI will prevent it from writing new business.

Fifth, we have something called a resilience test. A resilience test must be carried out that postulates certain discrete changes in assets values and interest rates. The company must be able to demonstrate solvency in accordance with the regulations following any of these particular changes. This is, in fact, the closest thing we have to RBC at the moment.

The regulations split the maximum rates of interest into two parts: that relating to existing investments and that relating to future monies to be invested. Looking at existing investments first, the maximum rate of interest that can be used is 92.5% of the yield on the existing assets based at market value.

For a fixed-interest investment—in other words, bonds—we're talking about a redemption yield, which will include future interest payments and future capital appreciation. For equities (what you call common stock) as well as property and real estate, we're looking at a running yield, with no future allowance for capital appreciation. The maximum valuation rate of interest, then, is 92.5% of those running yields and redemption yields. For example, if you were to price an immediate annuity based on an interest rate of 10%, because that's what you can earn in the market, the maximum valuation rate of interest is 9.25%.

There also has to be an adjustment for risk. Considering bonds, for example. If you invest in corporate bonds rather than government stocks, the excess yield that you may be getting on the corporate bonds is disallowable for the purpose of this maximum rate of interest. You're forced to use the safe rate.

That's the position for existing investments. For future investments the maximum is defined as an absolute amount that's currently a maximum of 7.2% gross of tax. There are some proposals in the U.K. now, which will probably go through, to actually reduce that to 6%, subject to a phasing-in period over five years. Once this particular change has worked its way through, and it's almost certain that it will, the maximum rate of interest for future investments will be 6% per annum.

Very few life offices actually use a double interest rate approach to their valuation. They only use a single rate of interest which means that the maximum rate is effectively the minimum of the two bases, existing investments, and future investments.

It is possible to hypothecate assets/liabilities for the purposes of choosing individual rates of interest for individual classes of business. But the overall weighted averages must satisfy the conditions I've just described.

Most life offices' valuation bases are actually stronger than the statutory minimum, although there have been a few occasions in recent years where life offices' valuation bases have effectively been equal to the statutory minimum with no margin.

I'll now move on to discuss details of the EC solvency margin. I'd agree that it is just a formula, and there is room for improvement.

For conventional business, or nonunit-linked business, the formula is 4% of reserves. That can be reduced for reinsurance but only up to a maximum of 15%, which is clearly quite limited. There's also a rather onerous factor of 0.3% of the sum at risk or three pounds for every 1,000 pounds of sum at risk. That's for policies of original term greater than five years.

This is reduced for policies that are of original term less than six years. If the original term is either four or five years, it comes down to 0.15% And if the original term is less than four years, it comes down to 0.1%. The maximum deduction for reinsurance here is only 50%. Compared to other countries, the EC requirement of 0.3% is generally regarded as being quite onerous. The figures that Frank has given us demonstrate that.

For unit-linked business—this is business where the policyholder is bearing all the investment risk—the 4% factor actually comes down to zero provided that there are no investment guarantees or expense charge guarantees. Modern unit-linked business is very much like this, but there is some old unit-linked business that has investment guarantees or expense charge guarantees. In those instances, either the 4% factor or a 1% factor applies instead.

The 0.3% of sum at risk also applies to unit-linked business. As I said, there's little or no scientific background to this requirement. The technical work that was done back in the 1970s had more to do with general insurance than life insurance. Having said that, the 4% factor is probably about right. The 0.3% is probably a bit on the high side.

Let's move on now to what we call the resilience test. This is sometimes referred to as the mismatching test. It is a general requirement in our legislation for the appointed actuary. The actuary must consider changes in asset values and the nature and the term of the assets backing the liabilities. This resilience test is actually not in our legislation, and you'll probably find this a uniquely British feature of our system. This resilience test was introduced by a letter from the government actuary to all life office appointed actuaries saying that for the purposes of the regulations, this is how the Government Actuaries Department (GAD) would be interpreting the requirement to take into account changes in asset values. The GAD is the actuarial advisor to the DTI, the official supervisor or regulator.

One advantage of introducing a resilience test by this method rather than having it laid down in legislation is that the test can be changed quite easily if need be. Since the test was originally introduced, we have had one major change to it which was introduced without a great deal of fuss—quite simply by another letter from the government actuary to all the appointed actuaries.

The life office must carry out each of three tests and calculate whether a resilience reserve or a mismatching reserve is required. The reserve would essentially allow for the fact that the market value of the assets might fall by more than the value of the liabilities when the test is applied. If that happens, the difference has to be put in the valuation returns as an additional mismatching reserve.

Obviously, if there's not enough money in the company to cover the mismatching reserve, you have a problem. It is up to the appointed actuary to make a case to the GAD if he considers that this working rule is not particularly suited to his own office and its circumstances. There is some flexibility there, but if you are going to go the GAD and argue for a weaker test, you need to have a strong argument. Just saying that the company can't afford to do it is not good enough.

The current test is a three-way test (Table 4). It used to be a two-way test, but then the parameters were quite a bit harsher. For interest rates, we're considering long-term interest rates. For example, the 20% fall test would consider a long-term interest rate of 10% falling to 8% per annum. The 3% rise is expressed as an absolute amount. For example, a current interest rate of 10% would have to rise to 13%. I should add that interest rates in the U.K. are actually quite a bit lower than that at the moment.

TABLE 4
RESILIENCE TEST
MAIN ASPECTS OF PRESENT U.K. SYSTEM—4

Test Number	Change in Interest Rates	Fall in Equity Values	Fall in Property Values
1	20% fall	10%	20%
2	10% fall	25%	20%
3	0.3% per annum rise	25%	20%

The magnitudes of the fall in equity and property values are shown. They are 10% or 25% for equities and 20% across the board in the case of property. The idea is that, when you apply these changes, the current dividends or rents on the investments stay the same. The running yield increases, and the maximum valuation interest rate increases, and the liability goes down. That's how the mismatching test works. If you're very well-matched, you don't come out with too much of a mismatching reserve at all. The more mismatched you are, the greater the reserve.

The office must take the worst of the three tests, whichever applies to it. In practice, few offices actually have to disclose an explicit mismatching reserve, and there are two reasons for this.

First, the degree of general matching is now a lot greater than it used to be. A few years ago, life offices were mismatching quite deliberately in order to improve returns. They could afford to do that. Nowadays, with competition and investment returns coming down, the degree of inherent matching of assets/liabilities has improved. There's less need for offices to disclose explicit mismatching reserves, although one or two of them still have to do so.

The second reason is due to margins in the published valuation basis compared to the statutory minimum. If your actual published valuation basis is stronger than the statutory minimum, then that difference can be used effectively to offset the required mismatching reserve.

So, that's a general summary of our regulatory system at the moment. I'd like to move on and briefly consider the main types of business that we have in the U.K.

The main business that applies in the U.K. is what we call with-profits. You refer to it as participating business. It's very big business still in the U.K. and is by far the biggest class.

Nonprofit business is what you call nonparticipating. This business has guaranteed benefits for fixed premiums. Much of it is single premium immediate and deferred annuities, but this category also includes temporary insurance. This is the third largest class.

Unit-linked business is where the policyholder bears the investment risk. The life office doesn't bear any investment risk nor much expense risk because the charges

can be increased. I think this sort of business is rather similar to what you call interest-sensitive business, but without the investment and interest rate risks. It is the second largest class, but is actually growing quite rapidly.

To complete the U.K. picture, I'll briefly discuss assets, although the EC solvency margin doesn't take assets into account very much. Considering the assets used in the U.K., I don't think that's too much of a deficiency.

Fixed-interest securities are very largely U.K. government, so there are no security problems there. We do have some corporate bonds, normally of high quality. We don't have any junk bond problems as yet. Fixed-interest securities are used to back nonprofit business and part of the guaranteed benefits on with-profits business.

We have large amounts of equities, both U.K. and overseas. Currently, in fact, there are quite a bit of overseas equities used. These are mainly listed on stock exchanges, so it's very easy to value them.

Property is another important class. The assets here are mainly large commercial properties, offices, and shopping centers, with very little in the way of domestic or small retail properties.

I'll just say a few more words about the features of with-profits business because any RBC system, or any other system for that matter in the U.K., would have to cope very well and very properly with with-profits business because it is so important to us.

With-profits business is very heavily backed by equities and properties as opposed to fixed-interest investments. Up to 60% or 70% equity backing is not uncommon, and it has been up to 100% for some offices.

The guaranteed part of the return to policyholders is increased each year by what we call a reversionary bonus. Once declared, this can't be taken away again. But, in fact, those guaranteed parts are usually fairly modest, and a significant part of the return to policyholders, both on death and maturity, is given in the form of a terminal bonus at levels that aren't guaranteed and therefore don't have to be reserved for. In fact, when you look at a life offices in the U.K., part of the excess of assets over liabilities is covering the terminal bonus. They are not actually free assets.

The returns to with-profits policyholders are quite heavily smoothed, normally over a period of about five years.

I'll now discuss the review process, which has been going on in the U.K. In 1993 the joint actuarial working party was formed. The word joint refers to the fact that it's joint between the actuarial profession on one hand, with representatives such as myself, and official representatives from the GAD also on the working parties, who are there in their official capacity as members of the GAD. So there's a joint approach between the profession and the regulators, putting recommendations to the DTI, the official regulator.

There's an overall controlling joint actuarial working party with several sub-working parties underneath it. The review that's going on in the U.K. at the moment is partially EC driven. But I think this has been just a trigger for a more thorough review.

There are three sub-working parties underneath the main working party. One of them is looking at the net premium valuation. This is the main valuation method used for traditional life business, but it's a bit old-fashioned and doesn't apply very well to modern types of unitized with-profits contracts and unit-linked contracts.

The other two important sub-working parties on the joint actuarial working party are those relating to DST and RBC. These working parties were set up to investigate whether the North American concepts can be usefully imported into the U.K.

The RBC working party could actually see several advantages in introducing RBC into the U.K. It would be much more office specific than the current EC solvency margin. A more scientific approach might enable the requirements to be relaxed with no real loss of security. This is particularly true for the three per million of sum at risk factor. More direct account would be taken of asset risk as opposed to just liability risk. In fact, it may prevent some problems developing in the U.K. For example, a trend towards increased use of high-risk bonds or higher-risked bonds might actually be arrested if we had RBC. So, there are advantages.

But several difficulties were also identified. It's likely that we will always have a general requirement in the U.K. for prudent reserves. And some offices will want to be more prudent than others. The difficulty, which you identified here, is actually quantifying the degree of prudence, which is already in the basic reserves, and hence, the difficulty in quantifying what the RBC requirement should be.

That was perceived as quite a significant difficulty, particularly for with-profits business. With-profits offices can vary future bonus rates at will, depending on future investment experience. They have to be able to justify their actions and satisfy policyholders' reasonable expectations. Essentially, if future investment experience is bad, bonus rates will reflect that. So there's this negative risk as we saw it, and how you actually quantify that and allow for that in a RBC system is not clear.

Another point is that, within the general classification of U.K. business that I've given you, there is, in fact, quite a bit of heterogeneity. We have large volumes of old with-profits contracts that differ in design—different levels of guarantee, different bonus rate structures and so on. You may well have the same thing in the U.S.. But we did actually foresee a major difficulty in developing a system of factors that would cope with all that in a very sensible way.

To summarize, the conclusion of the RBC working party so far is that a RBC system, such as the one you have in the U.S., would have some advantages. However, many aspects of RBC that you have are in some ways covered by our existing system, the resilience test in particular.

Any extra complexity would have to add supervisory value. And RBC is only really relevant for the nonprofit part of our business, which is, in fact, the smallest of the

three classes. An additional point is that we don't have any particular problems with asset defaults at the moment, which has obviously been a major reason for the requirement for RBC in the U.S.

Out of the DST and RBC concepts, the controlling joint actuarial working party has reached the conclusion that DST would actually add more to our existing system than RBC. Therefore, it's unlikely that we will develop a formal RBC system in the foreseeable future, meaning over the next five years. This, of course, may change. It could well be that our existing system will gradually attract more aspects of your RBC system, particularly if any unexpected problems arise.

A final point is that we're hoping to use RBC-type analyses on the sort of modeling work that you've done to input into the forthcoming review of the EC solvency margin to try to get that on a slightly more scientific basis.

There is a formal report of the RBC working party in the U.K. If anybody would like a copy, I could arrange for one to be sent to you.

MR. LOUIS M. WEISZ: I was wondering, with RBC being developed in the U.S., could any of the recent U.S. failures, such as Mutual Benefit or Executive Life, have been prevented had RBC been in place earlier?

MR. KOLKMAN: I really can't answer that. Remember, RBC is a tool. And it will really only function in the hands of a good regulator. Ultimately it's up to the regulator to take action. I think that some of the situations that arose would have been clearer along the way and we hope therefore slowed down or stopped earlier, but again it's difficult to say, because the two pieces have to fit together—the formula and the regulation, and then a good regulator willing to use it.

MR. KURT K. VON SCHILLING: I have a question for John Jenkins. In your presentation, you indicated that for with-profits business, the terminal dividends, which are reversionary bonuses payable at the end, are not included in the determination of liabilities. Is there any requirement to disclose the value of these terminal dividends, so that the public is aware whether the difference between the assets and liabilities is adequate to cover the promised or indicated reversionary bonuses?

MR. JENKINS: That's a very good question, and the answer is no. There is no requirement to publish any information on that at the moment.

The main indicator that life offices use to assess whether they have sufficient assets to meet their obligations is what we refer to as asset shares. These are, effectively, a retrospective accumulation for all the policies on the books to determine how much you need to have in the kitty. You compare that with the total assets to see whether you have enough assets to meet your requirements and policyholders' reasonable expectations.

For very strong offices it's almost certainly the case that they have sufficient assets to cover these asset shares. For weaker offices, it may or may not be the case. That information is not published. There was a suggestion in the past to publish it, but that did not meet with general approval.

The regulators have access to that information and can ask questions and interrogate the appointed actuary to make sure the situation is healthy. So I don't think the situation is as bad as I've just painted it. But on the published front, there isn't anything like that.

MR. ALLAN BRENDER: The first question was whether RBC would retrospectively have helped discover the issue. I just want to mention that the Society does have a research project not dealing with RBC, but with DST, where the intention is to go back and look at some of these companies that have failed, and try to judge whether DST, if done beforehand, might have been helpful in analyzing the situation and have given some early warning.

There is someone at work now trying to look at likely companies and decide whether, in fact, there are enough data available. And the hope is that we'll be able to do some modeling of that in summer 1994 so that by the fall we might be able to give you some kind of answer. But it really depends on whether there are data available. As we heard from the opening speaker of this meeting, when organizations die, the data very often die with them.

MR. KOLKMAN: The data either die or get locked up in court.

MR. BRUCE E. JACKSON: I think that RBC has prevented a number of small companies already from going bankrupt. Some states require only $50,000 of surplus and capital. I was aware of one company that had $100 million in deferred annuities and had guaranteed some of those at high interest rates for five or ten years. Most of the other countries don't have this flat dollar amount surplus, they have kind of a RBC as a minimum surplus. So, I think, that's moving all the U.S. into requiring this higher limit for surplus.

In Britain, it sounds like the actuary has an enormous amount of area to work with the reserves. For example, consider the amount that you call the termination benefit. It sounds like it could be high. And without having to reserve for it, isn't the actuary saying I know we have enough but, we'd rather not show it so it will look like we have higher profits?

It seems like there are some cases where there's room for U.S. actuaries to do some of that as well. And it seems like that's where it comes into play. You say, well, we really ought to have something there. But since it's not required, we're not going to put it there, and it will make it look like it's more profitable.

MR. JENKINS: I think I can grasp the point that you're making. There are different levels of strength of valuation bases. If you look at some offices' DTI returns, you'll find that the strongest offices could actually increase their valuation rates of interest by about 2% per annum before they would come up against the statutory maximum for that office.

Other offices could only increase it by 0.1% or 0.2% per annum on average before coming up to the maximum for their office. So there are very wide differences in valuation bases and strengths. A lot of it is historical, particularly for with-profits life business. There's an old argument whereby if you reduce the valuation rate of

interest it holds back surplus in the early years so that you can release it in the later years to have a more controlled declaration of bonus.

There's obviously pressure on appointed actuaries to weaken their valuation bases from time to time so that the amount of free assets disclosed increases. This is because life insurance brokers look at that when they're deciding where to place business.

But because the actual valuation bases are all so strong and the statutory minimum is even quite strong, the free assets actually disclosed in the published DTI returns are actually understated. The office actually has more than that to meet its terminal bonus obligations. If you calculated the reserves for the guaranteed benefits on a realistic basis, you would actually come up with a much lower answer.

MR. ANTHONY DARDIS: I wonder if some of these formula-based RBC requirements would give you advance warning of a company that was in financial trouble, which is after all what we're trying to get to with these solvency requirement standards. I think the only way forward is this Canadian way of the DST. It really does identify the areas in which the company might be vulnerable. As Mike said, it puts as much emphasis on the assets as it does on the liabilities. I think this is what the regulatory authorities are looking for, and I think DST is surely something that all management should be looking at anyway. It can give the actuary a much better feel for how the finances of the company are working as well.

Outside of Canada, and this includes the U.S. and the U.K. where we know people are doing cash-flow testing of some sort, are companies thinking about doing this sort of thing simply as part of good actuarial and management practice?

MR. KOLKMAN: The DST?

MR. DARDIS: That's right, full blown solvency testing so that it goes beyond simply looking at interest rate or market value.

MR. KOLKMAN: Right. That's difficult to say. I like to think, for example, that our company does. We don't do a lot of long-term projections in this area. We've got a valuation actuary opinion that gives us some comfort on reserves. And then we look at our equity position over a variety of sales forecasts and interest rate forecasts. We look at what kind of dividends we probably can pay, or what capital we need. And we do that over a rolling three to five-year period. And as long as the management of the company has some comfort that reserves are adequate and that your equity base, on a statutory basis, meets the internal standards you've adopted under a reasonable variety of scenarios with respect to sales and to interest rates over a term of time of three to five years, I think that's about all you need.

I think doing very long-term DST where you're including company, or new business strategies really is not too valuable. But I don't know if other people do that or think they do that.

MR. BRENDER: Regarding the first part of your question, I had a lot to do with both the design of the Canadian RBC MCCSR and the DST.

Somebody said that in the U.S., you only need $50,000. Actually you only need $50,000 to incorporate. And most of the original laws never said anything about how much surplus you have to have after you've incorporated. You can spend it away very quickly. Basically, MCCSR means minimum continuing capital and surplus requirement, and this, almost with only the exception of perhaps Wisconsin, is one of the few cases where we said there's something you have to maintain. It was always intended to be something to give the regulators room to move. And to give them some criteria because regulators traditionally have been faced with the case where they couldn't take any action until the company has in fact gone in the tank. And you want to give them some criteria so they can move beforehand. I don't think it should ever be thought that it was intended to be a predictor.

Now, as far as who is doing DST, first of all, DST is now required in several other places like Singapore and Malaysia. So these things will be required if you do business in other places. The first company I ever saw that was really doing all of this stuff on its own was a company, in fact, in Edinborough. It was doing a lot of this stuff seven, eight, or nine years ago. The whole purpose was to prove that its terminal dividend policy would not ruin the company because terminal dividends in the U.K. are multiples of face amount of the policy at some time.

MR. JENKINS: That's right. The terminal bonus can actually double the pay out.

MR. BRENDER: And I saw some cases of some really very good work, where they were projecting 30 and 40 years out to make sure that the bonus policy itself was sound with respect to the solvency of the company. Also, the actuarial guidance note that's going into effect in Singapore with respect to DST suggests that the actuaries should do projections along the 30-year range. The reporting to the company's board might not be credible beyond the five-year range, but the actuaries should have some ideas where these things might go. So test for a much longer period but don't necessarily disclose much more than the five years.

FROM THE FLOOR: I can't resist the temptation to talk about DST. And the significant difference, as Mike indicated, is between the reserve validation versus the total company. The DST value also comes in if you are a company with a number of subsidiaries that could be nonlife subsidiaries—in other words, if you get into banking, casualty, other things. If you do a good DST, you have to consider all the risk inherent in all of these subsidiaries. And that's where the real value comes into the process.

MR. KOLKMAN: I would agree. You really have to take into account the down-stream problems that may occur and upstream strengths and/or weaknesses that you may have.