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A Comparison of Canadian and U.S. Reserving Methods and Their Financial Implications

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Summary: The Canadian reserving methods of a life and health insurer are different from those of insurers in the U.S. Discussion leaders cover the reserving methods used by Canadian life and health insurers, the conceptual frameworks and theoretical bases underlying these reserving methods, the difference between Canadian and U.S. methods, proposed/potential changes in the various reserving methods, and the financial and investment implications of these reserving methods.

Mr. Thomas G. MacKinnon: Canadian GAAP reserves, U.S. statutory reserves, and U.S. GAAP reserves are quite different, and all are developed for different reasons. They have different levels of strain and different earnings patterns. We have three speakers who have some knowledge of these three reserving methodologies: Canadian GAAP, (which is synonymous with Canadian statutory), U.S. statutory, and U.S. GAAP. Our speakers will be Dale Mathews, Paul Wharram, and me.

Dale is the assistant vice president, corporate actuarial, with Manulife Financial in Toronto, and her current responsibilities include the Canadian GAAP valuation. Prior to that, Dale was with the U.S. Individual Financial Division of Manulife where her responsibilities included the production of the business plan financials, source of earnings analysis, solvency testing, and evaluation of participating insurance.

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Paul Wharram is the assistant vice president with Crown Life Assurance Company where he is responsible for financial reporting for the annuity and individual life lines, including the National Association of Insurance Commissioners (NAIC) Canadian GAAP and U.S. GAAP reserves for these lines. Paul also is the appointed actuary for Crown's U.S. annual statement which involves responsibility for the NAIC Actuarial Opinion and Memorandum.

I'm currently with Tillinghast in the New York office where I've had some exposure to U.S. statutory and U.S. GAAP reserving methods. Prior to that I was with Tillinghast's Toronto office where I had a fair bit of exposure to Canadian GAAP.

First, we'll briefly go over each of the reserving methodologies. Dale will start with Canadian statutory reserving methods. I'll follow with U.S. statutory. Paul will follow with U.S. GAAP. We'll take you through a product and highlight the differences in the three methods and their financial implications. Dale will take a traditional participating product and highlight the reserves and earnings patterns under the three methods. I'll then do the same with a universal life product. Paul will do the same with an annuity product.

Ms. B. Dale Mathews: As Tom mentioned, I'm going to do a fairly high-level overview of Canadian GAAP reserving methodology which is also known as the policy premium method (PPM).

Let's discuss the influences on an actuary doing a PPM valuation; they would be the same types of influences that a U.S. actuary would encounter. The influences include regulatory considerations and, in Canada, that includes the role of the appointed actuary. Another influence is professional standards and guidance produced by the accountants and the actuaries; in Canada that would be the Canadian Institute of Chartered Accountants (CICA) and the Canadian Institute of Actuaries (CIA). Of course, a lot of judgment is needed. Judgment may be a bigger factor with a PPM valuation because it's a less prescribed method than, for example, the NAIC's in terms of prescribed assumptions and exact methodology.

With regard to the regulatory environment in Canada, annual statements are now done in accordance with GAAP. With the advent of the Insurance Companies Act of 1992, a couple more things happened. PPM became the prescribed methodology for valuation of actuarial liabilities, and each company must now appoint an Fellow of the Canadian Institute of Actuaries (FCIA) as the appointed actuary.

The CIA has been liberal in terms of providing guidance and standards with regard to PPM valuation. The valuation technique paper (VTP) (as noted by the names, a

lot of them refer specifically to types of products) interprets PPM methodology for that type of product. The VTP becomes the standard for valuation. There are a number of other types of guidance notes produced as well. For example, there are guidance notes on how to select your expected assumptions for cash flows and how to select your provision for adverse deviation (PADs). The term PAD and margin will be used kind of interchangeably by me. So, with luck, it won't be confusing. There's a new note on C–1 risk and so there's a lot of material to absorb.

One of the responsibilities of the appointed actuary is to produce the appointed actuary's report which goes to the regulatory authorities once a year. I won't go into a lot of detail about what has to go into it, but there's a lot of material required, and this should give you a flavor of some of the things that have to be made available. The actuarial liabilities themselves have to be quantified by line of business. There's a compliance checklist where you have to indicate whether or not you've complied with the appropriate VTP for each product, and, if you have not, you must state why not, and state whether it is a material consideration.

You also have to include all the details of the assumptions and methodologies for each type of product. That would include your expected assumptions like mortality, the margins, and the details of the calculation methodology. You have to indicate where you used approximations and if they're material. Also, since the last time the report was done, (probably a year earlier), you also have to indicate what has changed in terms of assumptions, margins, methodologies, and so on. You have to quantify the impact since the last report, give the reason for the change, and decide what the old basis is versus the new basis.

Finally, the actuary has to assign an opinion. The opinion essentially says that the reserves are appropriate. It's quite a high level of responsibility on the appointed actuary and requires a great deal of comfort with the reserve calculation itself.

Now I'll get a bit more into the actual mechanics of doing a PPM reserve calculation. There are two kinds of generic type approaches. The first one, which is the original policy premium method, defines the reserve just the way you'd expect a reserve to be defined. It's the present value of the expected benefits and expenses less the present value of the premiums. For each assumption, you decide on an appropriate margin for adverse deviation and include that. With this methodology it's usually done on a seriatim basis and with a single economic scenario. A contrast to this is a cash-flow-valuation-type methodology. I'll get into a little more detail later so the differences should become more apparent. In this case, the reserve is defined as the book value of the assets needed to support the liability cash flows. Again, margins for adverse deviation are included. Under this methodology, the reserve is usually calculated on an aggregate basis for a block of

business and with multiple economic scenarios. This was started for annuities under VTP #9, and in 1997 with VTP #10, similar types of requirements are involved.

Now a little more detail on the PPM calculation. Again, you take the present value of the benefits, add the present value of the future expenses, and subtract the present value of the expected premiums. Each of these assumptions should be based on the actuary's best estimate plus an appropriate margin. The benefits would include claims, maturities, and surrenders. Unlike the NAIC, surrenders are reflected. I would put "cliffs" in brackets after surrenders, and the concept is that, as you would do in pricing, when assigning surrender or lapse rates, you need to take into consideration the product design. Is the product lapse supported? Are there persistency bonuses and so on that would impact your choice of a lapse assumption in a particular year?

Dividends have to be included in the benefits as well, and they should be based on the policyholder's expectations relative to the economic scenario you're dealing with. In the present value of the expenses, all commissions would be included. Normally, you would inflate the maintenance expenses at a rate that is consistent with the underlying interest assumption in your valuation. From this, you subtract the present value of the expected premium. These would normally be the contractual gross premiums. When you're valuing universal life, as with a pricing model, you need to decide on an expected pattern of premium persistency or premium tracks that you want to include. The fund values would emerge based on these expectations. That's the basics of the calculation. The expected assumptions are the actuary's best guess, and these would be developed in a similar way as for pricing based on company experience, product design, and so on. Reinsurance ceded cash flows should be reflected. I think the idea here is that you do the valuation with and without the reinsurance ceded cash flows, and the difference would be your reserve for reinsurance ceded. How would you develop the interest assumption? You would normally start with the yield that you are currently getting on the assets backing the liabilities in question, and then you would assume a reinvestment rate. For non-participating, that reinvestment rate should be graded down to an ultimate rate of 5% after 20 years, and for participating it is suggested that you reinvest at the current new money rates level through the life of the policy.

Taxes are always a tricky subject. Under PPM, you wouldn't reserve for income taxes. I think the idea here is that you expect to have positive income. As long as your tax rate is less than 100%, you'd still expect to have positive after-tax income. Therefore, you wouldn't reserve for income taxes. You would reserve for capital taxes if they're not recoverable or offset by income taxes. Finally, in my experience the most complicated issue is setting up the deferred tax asset or deferred tax

liability to reflect timing differences. Now, these timing differences would include the difference between your tax reserves and your statutory reserves and also the different treatment of capital gains and losses on the investments. One final point—reserves under PPM can be negative, and often are in the first couple of policy years.

I talked a little bit about setting expected assumptions. You also have to set margins. The CIA has published guidance on how to set them. For each assumption—mortality, interest, lapses, and so on—you decide whether this product should have a high margin or a low margin. Things you take into account include how fast your company tends to react in adjusting its dividend scale or universal life (UL) credited rates, the level of guarantees in the product, and the degree of matching of your assets and liabilities. For example, a nonparticipating, nonadjustable product would have margins at the high range.

For each of the assumptions, there is a range of suggested margins. For mortality for insurance products, the high range is 15% over the expectation of life per thousand. The low is 3.75% over the expectation of life. Mortality margins for annuities is a percentage of the expected mortality: high is 15% and low is 5%. Lapses are again a bit trickier. You have to set your lapse margin with a positive or negative sign to make sure that when you add the margin you actually increase the reserve. The high range is plus or minus 40%. The low range is plus or minus 10%. Ideally you should also vary this so that you reflect the crossover points where the margin changes from positive to negative, or vice versa, and have it zero at the crossover points. For the interest assumption, the high margin would be 200 basis points and the low would be 20 basis points. For maintenance expenses, you have a high margin of 10% and a low margin of 2.5%. These are basically the margins you would set in your assumptions for PPM methodology.

A cash-flow-type valuation is used for annuity products, and this is discussed in VTP #9. Basically, the technique is to project all the asset and liability cash flows in aggregate for a block of business. As I've said before, you use several economic scenarios. Many is probably more appropriate. You would include normal margins for mortality and expenses and reflect your company's investment policy for each scenario, i.e., how your company would react. Then, for each scenario, you would get a reserve for this block, and you'd end up choosing a reserve that captured most of the range of your results and a reserve that you feel would include an adequate margin. It would be very similar to calculating the reserve based on an expected assumption and then doing scenario testing to quantify a C–3 risk for different economic scenarios. Once you're done, you now have a reserve for the block of policies in aggregate. If you must have available reserves on a policy-by-policy basis, you'd have to develop a methodology for allocating the total reserve.

In 1997 VTP #10 came into effect for participating policies, and it has similar scenario testing requirements. You run a bunch of scenarios to make sure that the margins in your reserve are adequate. One of the scenarios that's required is to test your margins against the reserve you'd get if you assumed the high margins you'd put in for a nonparticipating, nonadjustable product. Your mortality, for example, would be the expected plus the highest margin available, and you assume your experience deteriorates to that extent. Then you decide how much your dividends can be adjusted to absorb this deterioration. Do you hit the interest guarantees and so on? You then project the dividends on that basis. Also, you should reflect a lag between the time the experience deteriorates and the actual change in the dividend scale as a result of management action. Different dividend options, for example, purchasing dividend additions, don't all have the same financial impact on the company. Therefore, you have to take those into account as well. Again, this can be tested in aggregate. Therefore, you would get a reserve based on expected assumptions and a reserve based on these more severe assumptions. The difference would be compared to your existing margins.

That basically covers the methodologies involved. The last thing I was going to talk about was how earnings emerge on a PPM basis. I will explain three different situations representing what can happen at issue. At issue, you have a trade-off between the profit margins in the product and the provisions for adverse deviation. The first situation is that you put no margins in the valuation at all. Therefore, you just have your expected assumptions being realized. At issue, you would put all the profit in the policy up front. The whole present value (PV) would come into earnings at issue. Therefore, your earnings would be positive. The second situation is if you put in margins that are towards the higher end of the scale. What can happen here is that the present value of your margins is higher than the present value of your profits. Therefore, you have negative earnings at issue, which is your traditional new business strain. Somewhere in the middle you have kind of a mid-range where you would get a small positive or a small negative impact when you put the policy on the books.

What happens after issue? If you're really good and experience emerges exactly as you've predicted, what you'll get coming into earnings each year is solely the margins for adverse deviations that you've set up. For example, if you use the 50-basis-point interest margin, you get 50 basis points on your reserve coming into earnings every year. The result is a fairly smooth earnings pattern in relation to your reserves because a lot of your margins are set up in a way that they will move with the size of the reserve. If you decide you need to change your assumptions, this could involve either a change to your expected assumptions or to your margins. The whole present value of this change comes into earnings in the year that you make the change. For example, if you decide you're going to expect mortality

better than you predicted for the remaining life of the policy, you would change your expected mortality assumption, recalculate your reserve, and the whole present value would hit your earnings in that year.

Mr. James F. Reiskytl: I was curious about your lapse assumptions. You would assume that the bigger concern might be that lapses might improve under certain products.

Ms. Mathews: Yes.

From the Floor: It seems like when you take that into account, the lapses are zero.

Ms. Mathews: Yes. Well, there's actually CIA guidance on that for lapse-supported products, and there are other guidelines. If you know your product is lapse supported, you have to go down to a fairly low lapse assumption, and you'd actually put a negative margin on the expected assumption itself.

From the Floor: You probably know it, but you don't necessarily have to identify the product as lapse supported. It could be lapse supported just by knowledge of the actuary of pricing design.

Ms. Mathews: Yes. We actually have to report. In the appointed actuary's report you test to see which products are lapse supported, and you have to document that and do some scenario testing and include the results. So, if it's lapse supported, normally when you increase the lapse rate, your reserves actually go down. You would put a negative margin on it, and you would grade to quite a low ultimate rate, perhaps even zero.

Mr. Reiskytl: I'm surprised about the emphasis on non-participating. I guess I consider non-participating essentially gone. Everything's participating in today's world. You actually still build something on a non-participating model. You'd be lucky, obviously, if you adjust your pricing assumptions, whatever the product may be. It shouldn't take much luck to come out right. It's just the lying factor and obviously you'd adjust the experience as it emerges. You don't really have to project the future. You just have to make sure your pricing stays in line with reality as it emerges.

Ms. Mathews: I think the non-participating assumption is used just to set a level of ultimate experience that you could deteriorate to. You do find that when you reinvest at a low rate, your portfolio rate that you've set your dividends on becomes quite low and can't hit the guaranteed rate in the dividend scale, in which case you wouldn't be able to absorb it, and you'd have to have a PAD to cover that.

Mr. Daniel J. Kunesh: I'd be curious to know why it was decided to put the full effect of basis changes through earnings. It seems to me that there would be tremendous pressure on the appointed actuary from management to avoid such changes and perhaps not do what is correct or right.

Ms. Mathews: I'd agree with you about the pressure. Actually, I'm not sure why historically it was developed that way.

Mr. Paul F. Wharram: The only answer I can think of is that it's theoretically correct, and I put it into place anyway, against the objections of people who said this can't be correct because of what that's going to do to earnings and your statement.

Mr. Gayle E. Emmert: I believe it's correct that acquisition expenses are not included as the present value of expense. If that is correct, which means no deferral, what was the purpose in that? In other words, why was it not put in?

Ms. Mathews: I guess the concept is just that you're reserving entirely prospectively, and so when you set up a reserve I guess at time zero, the acquisition expenses are really there, but an instant later they're gone, and it's just consistent with a completely prospective valuation.

Mr. Kenneth J. Goll: I'm still interested in the dividend question, particularly with regard to vanishing premium problems. Can you drop your dividend scale if you have an interest rate going down. How do you take into consideration policyholder action against you?

Ms. Mathews: I think VTP #10, which is the basis for all this, does say that you should take this into consideration. If you really feel that there are possibilities of potential litigation or a limit to the extent to which you can drop your dividend scale no matter what interest rates do, then you should take that into account in setting your PADs. So when you're developing a scale that you project, if you think you're going to have a big lag or you think you're going to be limited in the amount you can reduce your scale, you would reflect that, and that would just increase your reserve. You might also want to set up a separate provision if you think there's a litigation concern.

Mr. MacKinnon: I'm going to try to quickly walk people through the key elements with respect to U.S. statutory reserves and attempt to highlight the key differences in Canadian GAAP reserves. First of all, U.S. statutory valuation emphasis is obviously on determining the financial health of a life company. Because of the emphasis on determining solvency, U.S. statutory valuations tend to utilize conservative

assumptions and techniques, thereby producing larger liabilities. In the U.S. the assumptions and methodology used to calculate minimum reserves and a statutory valuation are fairly explicit in the law. While specific valuation requirements can vary from state to state, all states have adopted some form of the standard valuation law which was developed by the NAIC to provide uniformity.

I'd like to just highlight a few of the differences between Canadian GAAP and U.S. statutory accounting in terms of the difference in the basic liability reported. In Canada, it's a PPM reserve, and in the U.S., statutory is generally the Commissioner's Reserve Valuation Method (CRVM) or discounted cash flow in the case of annuity reserves. The required methods in the U.S. are based on practical decisions made before computers. You'd think the methods would be relatively simple, but having said that, the calculation of a guaranteed minimum death benefit (GMDB) reserve and a flexible premium universal life reserve is, by no means, a walk in the park.

U.S. statutory reserve bases are determined as of the policy issue date by the state valuation law in effect. The standard valuation law sets forth the minimum standards for mortality and interest and may be used in calculating the reserves. Interest rates range from 3.5% to 6% depending on issue year, and the mortality table used is usually the 1958 Commissioners Standard Ordinary (CSO) or 1980 CSO, with or without select mortality and smoker-distinct for some later issues. Valuation interest rates for annuities and guaranteed investment contracts (GICs) vary as to the specifics associated with the contract guarantee with respect to whether the annuity has cost settlement options or not, the length of its guarantee period, and the withdrawal rights entitled to the policyholder. Although U.S. statutory reserves make no explicit provision for expenses or commissions, one could argue that they are implicitly covered through conservative valuation interest rates and conservative mortality rates.

There are a few more areas where U.S. statutory reserves differ from the Canadian reserves. The level of future guaranteed nonforfeiture is not explicitly taken into account in the determination of minimum U.S. statutory reserves except in the case of the Commissioner's Annuity Reserve Valuation Method (CARVM) reserves where it's necessary to determine every possible cash value and annuity payment under the contract. At the end of each contract year, you calculate the present value of each and then select the largest present value. Here is a point about dividends. As Dale mentioned, recent developments in Canada have said that the dividends are to be included in the policy benefit liability (even if not guaranteed) since it's a reasonable policyholder expectation; however, it's excluded from the U.S. statutory valuation since it's not guaranteed.

U.S. statutory reserves have a cash surrender floor, whereas Canadian methods allow both negative reserves and cash-value deficiencies. U.S. statutory reserve assumptions for an in-force policy never change, whereas the Canadian assumptions are revisited every year-end. U.S. statutory reserves allow for a credit that's often calculated based on the percentage of the liability ceded if the business is ceded to an authorized reinsurer. Under the Canadian method all cash flows associated with the reinsurance, whether authorized or not, are reflected in the calculation. Deficiency reserves are a major headache for those in the term market in the U.S., and they are needed generally where future guaranteed premiums are less than valuation net premiums. Canadian reserves, because they're based on a gross premium, don't involve the development of a valuation net premium. They don't have to worry about deficiency reserves.

I guess discussion of the differences here isn't complete without addressing cash-flow testing. The 1990 amendments to the standard valuation law require every U.S. company to submit an actuarial opinion that considers not only the liabilities but the ability of the cash flow of the assets to make sufficient provisions for the liabilities of the company. Prescribed scenarios and additional scenarios are tested if the actuary deems it prudent, and it's up to the appointed actuary to determine if additional reserves need to be set up. Cash-flow testing, as such, is used in the development of the valuation interest rate in Canada where the valuation interest rate becomes a function of the in-force asset portfolio, new money rate, future net cash flows, future reinvestment, disinvestment strategies, and the PAD. As Dale mentioned, the cash-flow valuation method used to develop annuity reserves as in VTP #9 also employs cash-flow-testing techniques.

The first-year strain under the two methods shown in Table 1 is probably the situation Canadian companies with U.S. subsidiaries often face. With a premium of $1,000 and first-year expenses of $2,500, the Canadian PPM reserve with PADs provide $1,000 relief in the first year. For the CRVM reserve methodology, the year-end reserve is zero, and the result is a loss of about $1,500 in the first year. The Canadian loss is $500. Also shown in Table 1 is the PPM no-PAD reserve. That is the negative $2,100. If the no-PAD reserve was used in the reserve calculation, as Dale mentioned, the entire profit would be fronted; in this example, a first-year profit of $600 would result.

The level of statutory reserves has many effects on a company other than the obvious financial implications. When setting gross premium levels, the key reserving consideration in terms of Canada is really the front-ending of profits. Business that is too profitable sometimes needs higher PADs in Canada since front-ending of profits is something the regulators frown upon. In the U.S., the guaranteed premium levels are often set so as to avoid deficiency reserves. Federal

income tax has certainly affected profitability but is insensitive to the actual statutory reserve level in the U.S. since tax reserves are federally prescribed and must be less than statutory reserves. In Canada, if there are differences in tax, the statutory reserves that result in a deferred tax liability that is not separately set up by the accountants must be set up in the statutory reserves themselves.

TABLE 1
CANADIAN GAAP VERSUS U.S. STATUTORY
First-Year Strain Example
Premium = $1,000
First-year commissions and acquisition expenses = $2,500
End of first year
PPM (no PADs) = $(2,100)
PPM (with PADs) = $(1,000)
CRVM = $ 0

	Canadian Strain	U.S. Statutory Strain
Premium	$1,000	$1,000
Expenses and commission	(2,500)	(2,500)
Reserve increase	1,000	0
Total	$(500)	$(1,500)

Reinsurance is another area to consider. U.S. companies often might try to cede deficiency reserves to jurisdictions that don't require them, thus making them vanish from their own balance sheets. The only way a Canadian company can make reserves vanish through reinsurance is if the reserve incorporating the reinsurance cash flows is calculated to be zero.

Reserving considerations play an important part in product design in both Canadian and U.S. regulatory environments. In Canada, the lapse support of the product, the effect of the commission structure, and the effect of the dividend scale and other nonguaranteed elements have a big effect on the reserve. They have no impact on U.S. statutory reserves. In the U.S., the impact of reserving considerations on product design usually lies in terms of guaranteed elements, such as the guaranteed cost-of-insurance (COI) rates and how they relate to the valuation mortality in the flexible premium UL product, to the extent that alternate minimum reserves might be needed. Other examples include guaranteed premiums for term products and the possibility of deficiency reserves, guaranteed minimum death benefits, and their reserving implications with respect to variable products, and a whole host of annuity features and guarantees and how they influence the selection of the CRVM valuation interest rate. As you can see, the Canadian GAAP, which is really synonymous to U.S. Canadian statutory, is really by no means similar to U.S.

statutory. Strain levels, earnings patterns, and product development considerations are quite different in Canadian GAAP and U.S. statutory accounting.

Mr. Goll: Perhaps you could go over some information on deficiency reserves. What I'm confused about is in your Canadian/U.S. comparison, you said Canada doesn't have deficiency reserves. To me, a deficiency reserve is a positive reserve at duration zero. Remember, in a PPM method, you can have any amount of positive reserves, which I would call by any other name a deficiency reserve.

Mr. MacKinnon: I'm thinking more about whether we have to have another separate calculation similar to the U.S. in order to develop the deficiency reserve. I guess your point is it's embedded in the reserve itself.

Mr. Reiskytl: If you're a brand new Canadian company, can you actually have negative reserves?

From the Floor: Yes. Do you actually enter in your balance sheet a negative number for a reserve?

Mr. MacKinnon: That's correct.

From the Floor: If that's GAAP, that's very interesting. The other point is, what if your gross premium is inadequate? You still don't have deficiency reserves? You just end up with kind of a strange mismatch of stuff. Suppose you price the product, and it doesn't meet your margins. Do you fiddle around with assumptions until they work?

Mr. MacKinnon: You'll end up having no profitability in the product at all. The strain at issue will never be overcome by the release of the profits later on.

From the Floor: Don't you just report it as a negative reserve then?

Mr. MacKinnon: You may not necessarily have a negative reserve in that case.

From the Floor: I'm just curious because I do not live in the Canadian system. I price a product that's inadequate, and I end up setting up a negative reserve that I think flows out of that system. I end up with a positive result.

Mr. MacKinnon: I don't think your reserve would be negative if you didn't have any profitability in the product.

From the Floor: Wouldn't the present value of benefits exceed the present value of premium?

Ms. Mathews: Yes. You'd have a positive result.

Mr. Albert L. Peruzzo: Is there any penalty at all to reinsuring with a company that is not licensed or approved in Canada?

Mr. MacKinnon: You have to fill out a minimum continuing capital and surplus requirements (MCCSR) form, which is similar to risk-based capital (RBC). You're not allowed to take credit for your reinsurance that you've ceded to an unauthorized reinsurer on that form, so you do get penalized in terms of your MCCSR ratio.

Mr. David Marc Cole: The codification project in the U.S. will probably allow deferred tax assets to be recognized in statutory accounting, at least to a limited extent.

Mr. Wharram: I'm going to talk briefly about three different valuation methods in U.S. GAAP. There's *Financial Accounting Standard (FAS) 60* which tells us how to calculate reserves for traditional policies. *FAS 97,* introduced later, describes how to calculate reserves for universal life, and deferred or accumulation annuities. *FAS 120* is very recent and tells us how to calculate reserves for participating policies, particularly those aimed at mutual companies but optionally allowed for stock companies.

Why is there U.S. GAAP? U.S. statutory is too conservative for many purposes. It produces losses at issue, and if you write enough business, you become insolvent. For example, the Securities and Exchange Commission (SEC) was unhappy with that as a way of reporting earnings to shareholders. It wanted something that produced a profit if you wrote profitable business. There was interest in having a uniform way of reporting income and not letting everybody come up with their own method of reporting it that wasn't U.S. statutory. That was one of the reasons for moving to U.S. GAAP from a number of methods in use by many companies. Accountants took control of this and started setting up rules and guidelines leading to *FAS 60*, and in their wisdom, they decided that there was little room for actuaries or appointed actuaries in the process. So there is no actuarial sign-off on U.S. GAAP, but there is an accounting sign-off. Nevertheless, actuaries will tell you that U.S. GAAP is 80% actuarial and 20% accounting. We have an interesting result there. I might point out, unlike Canadian reporting or U.S. statutory reporting, there are no capital requirements like RBC or MCCSR in U.S. GAAP.

FAS 60 for traditional business became effective for year-end 1983 and UL. It was developed earlier in the 1980s before UL had made an impact on the industry. It was developed and did not take into account this emerging product called UL. It consists of two parts. The first part is a net level premium benefit reserve which is a liability, and it is calculated using mortality, interest, lapse assumptions, and maintenance expenses. You start with your best estimate for each assumption, and some people use pricing assumptions as their best estimate, provided those pricing assumptions include some implicit margins. Other people use best estimates and then add an explicit margin to it. The principle is that there is some margin in your assumptions that will be released over time.

Then, on the asset side of the balance sheet, there's a deferred acquisition cost (DAC) asset. You should get the accountants to tell you how much of your acquisition expense is deferrable. They do that by determining how much your acquisition expenses are and then exclude nondeferrable acquisition expenses. A nondeferrable acquisition expense is one that does not vary with the amount of business you sell. So the cost of that might not change if you sold more or less policies. That would be a nondeferrable. The DAC asset then is amortized in proportion to your premiums or expected premiums on the business. The assumptions you use that I referred to before are set at issue. Some companies use the issue year in which the policy is sold to set the assumption. Some use the year in which the product was set or the pricing assumptions for that particular product to set the assumptions. You don't change the assumptions unless experience gets worse, and by that I mean much worse. By much worse I mean if it's enough to use up all of the PADs that you have in the product. At that point, you'll have to change your assumptions and your reserves. I think it's prescribed that you do a gross premium valuation in order to see whether you have to change your assumptions and your reserves. I'll refer to it later, so I'll just mention that PPM is a good gross premium valuation, if you take the PADs out.

Profit under *FAS 60* emerges in a relatively level manner. What do I mean by that? A level percentage of premium is what is intended; in addition to that, you get margins coming out that were in the assumptions, and you experience fluctuations coming out. You will usually have a small loss at issue, and that is primarily because the nondeferrable acquisition expenses cannot be set up as a negative reserve or an asset. The other reason might be if the present value of the profits on your business isn't enough to cover your deferrable acquisition expenses, in which case you can't defer them all; you can only defer some of them. In either case, you'll suffer a loss at issue.

Let's move on to *FAS 97*, which became effective at the end of 1989. A net level premium reserve was becoming very difficult to calculate for UL or accumulation

annuity products. The new definition for the benefit reserve was the account balance or the fund balance. That was simple. For the deferrable acquisition expense, the initial amount starts the same as *FAS 60*. Instead of being amortized in proportion to premium, it was concluded that the right thing to do was to amortize the DAC in proportion to your expected profits on the business. To measure expected profits, they use the spreads between your expected experience and what you charge the policyholder. For example, the cost-of insurance you charge a policyholder is compared to your expected mortality assumption. The same thing is done for expenses and interest. In the calculation of the DAC, you discount everything at the credited rate, i.e., the rate credited to the policyholder.

Under *FAS 97,* the profit at issue looks much the same as it does under *FAS 60,* and the profit then emerges over the life of the policy at the level percentage of spread, plus experience fluctuations, plus basis changes. For *FAS 97*, unlike *FAS 60*, you change your assumptions continually. You substitute your new expected future spreads for what you had at issue. You substitute your actual past experience as you move through durations on a particular issue of your block of business, and you recalculate your DAC amortization each year. So if the present value of future spreads becomes less than the current DAC, then the DAC is reduced to this present value, and this is a loss recognition event. If loss recognition occurs at this point, you discount at the earned rate of the assets instead of the credited rate to the policyholders.

The third U.S. GAAP method that we're going to talk about is *FAS 120,* which is for participating business and is required for mutual companies who want to do U.S. GAAP. Stock companies have used *FAS 60* to do U.S. GAAP for years, but mutual companies didn't like it. In fact, some stock companies don't like it. The argument is that participating business doesn't really fit either method. Your dividends are adjustable so that DAC amortization using the premiums is wrong. There's no fund balance, so you can't use *FAS 97*. In 1996, a new method came out, and one of the primary reasons for it is mutual companies wanted to be able to report audited GAAP earnings. The FASB had decided that U.S. statutory was no longer going to be acceptable. They needed something else; hence, *FAS 120*. However, stock companies are still allowed to use *FAS 60* if they wish. *FAS 120* is the net level premium reserve based on your dividend assumptions. Instead of just using an account balance, you calculate a net level premium reserve. The DAC amortizes in proportion to the spreads in your dividend assumptions, i.e., the spreads between what you credit and what you earn. That is a brief introduction to U.S. GAAP.

Mr. Paul P. Spurr: We're a stock company that sells a lot of participating business, and I'm not quite sure that we have a choice between *FAS 60* and *120*. Is that what you're saying?

Mr. Wharram: You have a choice. You may want to look at both in order to decide which one you want to choose. A previous company I worked for was a stock company and we had a very small amount of participating business. We weren't selling any and hadn't sold any for 20 years. *FAS 60* was fine. If it's a significant part of your portfolio, you might want to look at it very carefully as an alternative.

Ms. Mathews: This is all going to come to life now with an example. The example I put together was for a single life, participating whole life policy. I developed charts of the reserve patterns and earnings emergence on all three bases. So cast your mind back to margins. Since this is a participating policy, we would use lower margins. The assumptions are as follows. For mortality, I used a four over the expectation of life. The interest margin is 50 basis points, 6% on the maintenance expenses, and the lapse margin is –20% which sort of gives you a clue about whether it might be slightly lapse supported or not. The dividends are based on the current scale, and in this case, they were all used to purchase dividend additions.

The PPM reserve pattern is negative at issue and quickly becomes positive and has a nice, smooth curve. There's probably not too much more to say about it than that. This is per-policy issued. When we get to the NAIC reserve on the same policy, it's done on the CRVM basis, and the assumptions were CSO 1980 at 4.5% (Chart 1). When contrasting the reserve on this basis with a PPM reserve, we see a couple of things. First of all, it floors at zero at issue. So it's higher than the PPM reserve at issue, it stays higher for a couple of years, and then crosses over once or twice. This pattern shows up in the earnings emergence.

The U.S. GAAP reserve is based consistently on what Paul has said about the mutual Standard of Practice (SOP). The first step was to calculate a gross reserve based on net level premium reserve at the nonforfeiture rate which was CSO 1980 at 5.5%. In the next step, I assumed all commissions were deferrable because the commission eventually becomes zero with this product. I also assumed that 60% of the other first-year expenses were deferrable. Then I calculated gross profits in all years, then present valued them, and finally compared them with the present value of the deferred acquisition expenses. This produces an amortization ratio which turned out to be 42%. The GAAP reserve then becomes the net level premium reserve less the unamortized DAC; the DAC is amortized to be consistent with 42% of the gross profit every year. So the GAAP reserve actually got the lowest net reserve at issue on the basis of the three, and the GAAP reserve stayed the lowest for a number of years, finally crossing over around year 19 or 20.

CHART 1
TOTAL RESERVE

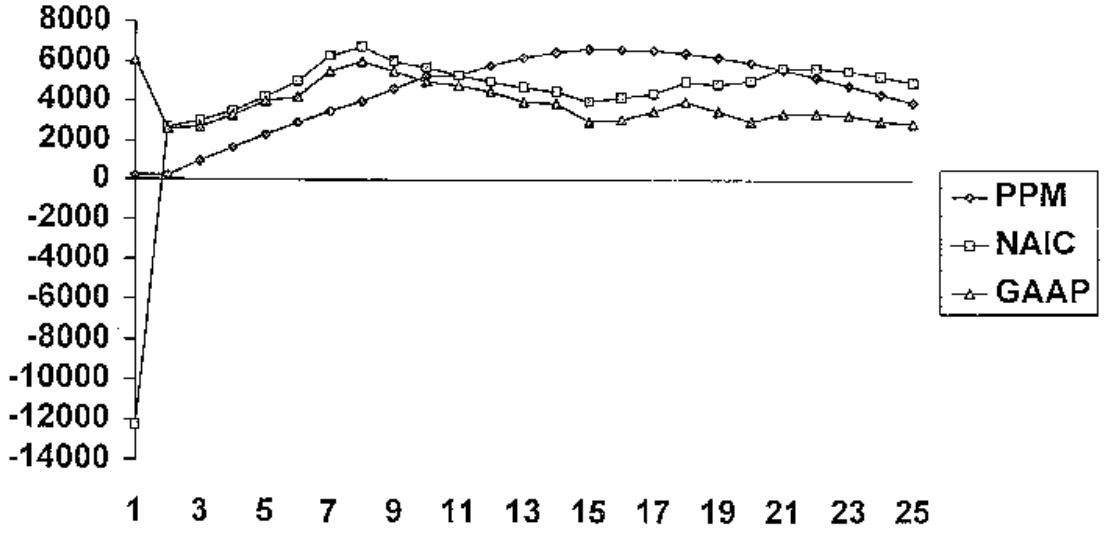
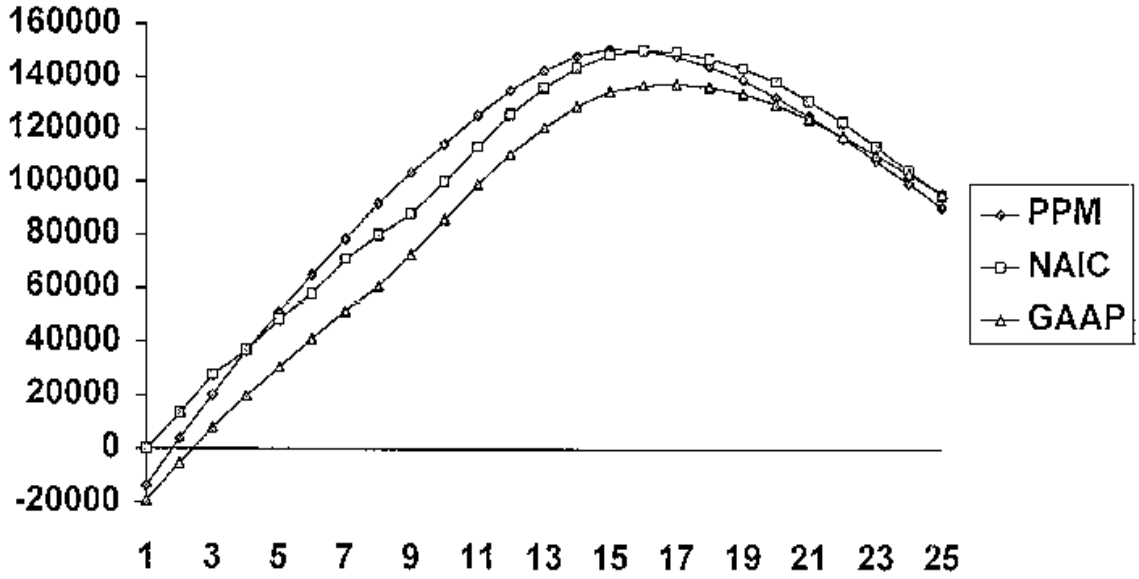


Chart 2 shows the PPM earnings. I'm not quite sure why, but one thing to note is that the slope of the earnings is very similar to the reserve pattern in Chart 1. At issue there's a very small positive earning for the PPM, and after that, it essentially chugs along the same way as the reserve does. What you're doing is releasing the margins each year—the 50 basis points of interest, the mortality margin, and the expense margin. At this point we're assuming that all the experience is equal to the expected assumption in the reserve.

Adding the NAIC earnings emergence turned out to be quite interesting. There are a couple of points to note. First, because of the floor on the NAIC reserve, there is quite a bit of strain at issue. The earnings are quite negative. They then crossed over and were above the PPM reserves for a number of years and went back and forth a couple more times. I think this is actually what you'd expect. The PPM reserve is doing is releasing something each year to cover your expected costs—your mortality costs, your dividends, and so on. On the NAIC basis, many of the assumptions that you expect are going to be different from what's in the actual reserve. For example, in this case, we were using an internal mortality table that has a different pattern than the 1980 CSO. Your dividend scale is probably quite a bit different than the sort of implicit dividend in an NAIC reserve; therefore you are going to get quite a different pattern on the two bases.

CHART 2
EARNINGS



Finally, with U.S. GAAP we ended up with the largest positive earnings right at issue. Then, the pattern became quite similar to NAIC line. I assume this is because we started with a net level premium reserve for U.S. GAAP and then amortized the DAC. The pattern would be closer to an NAIC basis than a PPM basis, which is based on totally different assumptions.

The last thing to cover is what happens if you change an assumption on each of these three bases. In Chart 3 I assumed that the expected mortality was going to improve by 3% each year starting in policy year 11. We're going to reflect this in the reserve at the end of policy year ten. As I mentioned earlier, what happens under PPM is the entire present value of this improvement will come into earnings when we change the reserve at year ten. In this case, it was $2.9 million. Therefore, that hits earnings in year ten. Now, in theory, after year ten, you'd have a slightly bigger in-force each year because there would be better mortality. Therefore, you would be releasing a little more of your margins, but the difference really wasn't large enough to show up in a chart. The earnings are essentially the same in all years except for year ten where you include the present value of the whole mortality improvement. Again, after year ten, you're assuming your experience emerges as expected, but now the expected is 3% better.

If you do the same thing on an NAIC basis, your reserves don't change (Chart 4). What happens is this mortality improvement just comes in at 3% a year from year

11 on. With a 3% mortality improvement the reserve is that much bigger than it was before, but it comes in a year at a time.

CHART 3
ASSUMPTION CHANGE - PPM

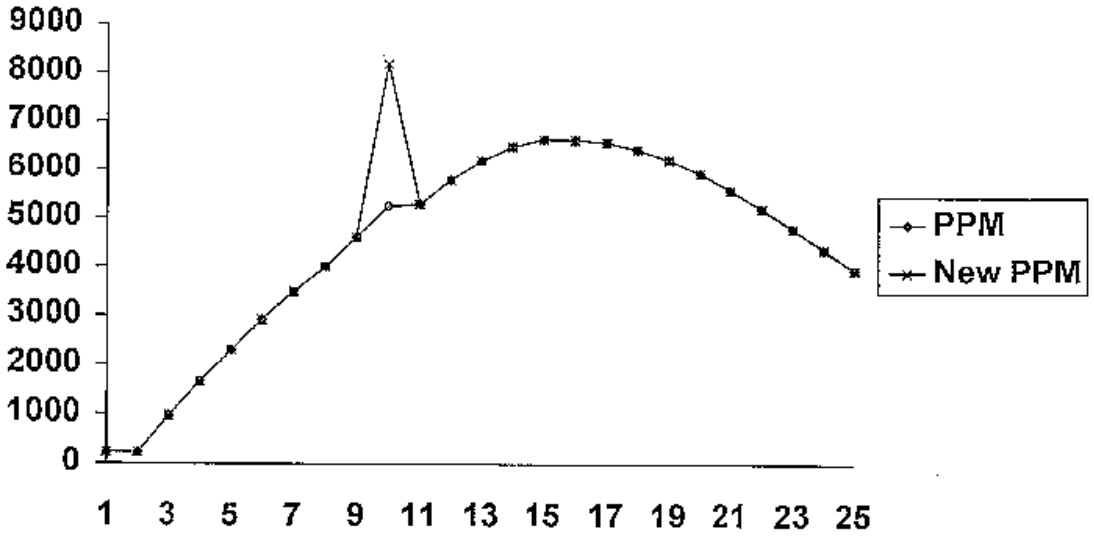


Chart 5 reflects it in U.S. GAAP. The following calculation had to be done. First of all, your gross GAAP earnings, that is, the earnings based on the net level premium reserve, would improve after year ten from this mortality improvement. Therefore, you have to recalculate this DAC amortization ratio. You're still amortizing the same expenses, but your profits are higher. Therefore, your DAC amortization ratio goes down. In this case, it was only enough to change it from 42% to 41%. Your profits haven't changed after year ten, but you've amortized less DAC. The difference between the unamortized DAC before and after using the 41% versus the 42% now comes into earnings at year 10. This is worth $943,000 versus the $2.9 million change you saw under PPM. The rest of the difference comes in years 11 and onward. You get the improvement from the mortality, but it's now net of the change in the DAC amortization. The result on the U.S. GAAP basis is somewhere in between the PPM impact and the NAIC impact. Therefore, you do get a bit of a spike in year 10 where you reflect the change in the DAC. After that, you get a smaller gain from mortality than you did under the NAIC basis because you've already taken a bit of it into account with the DAC. It's quite interesting. The two extremes are the NAIC and the PPM and U.S. GAAP is somewhere in the middle.

CHART 4
ASSUMPTION CHANGES - NAIC

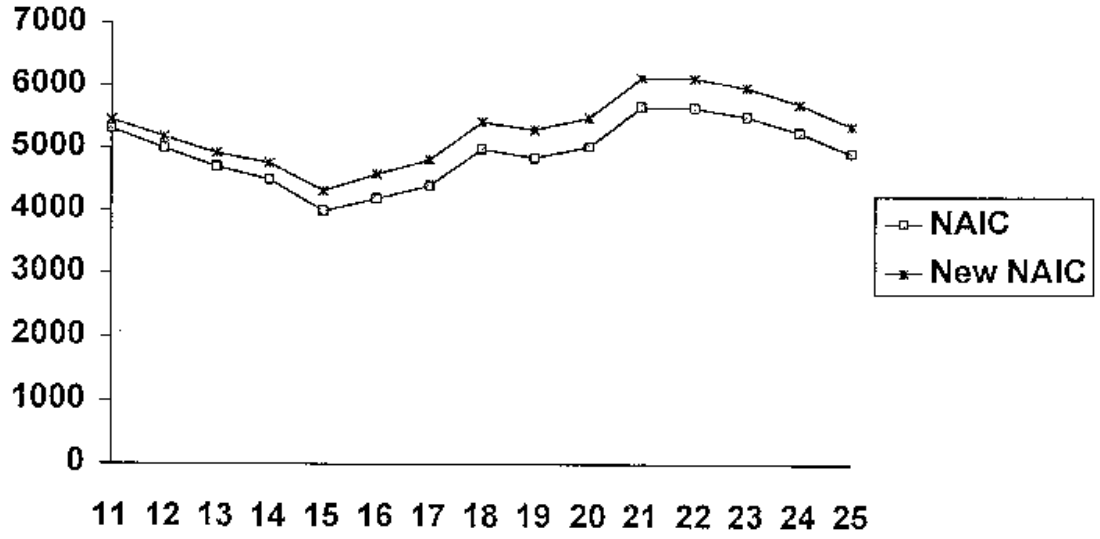
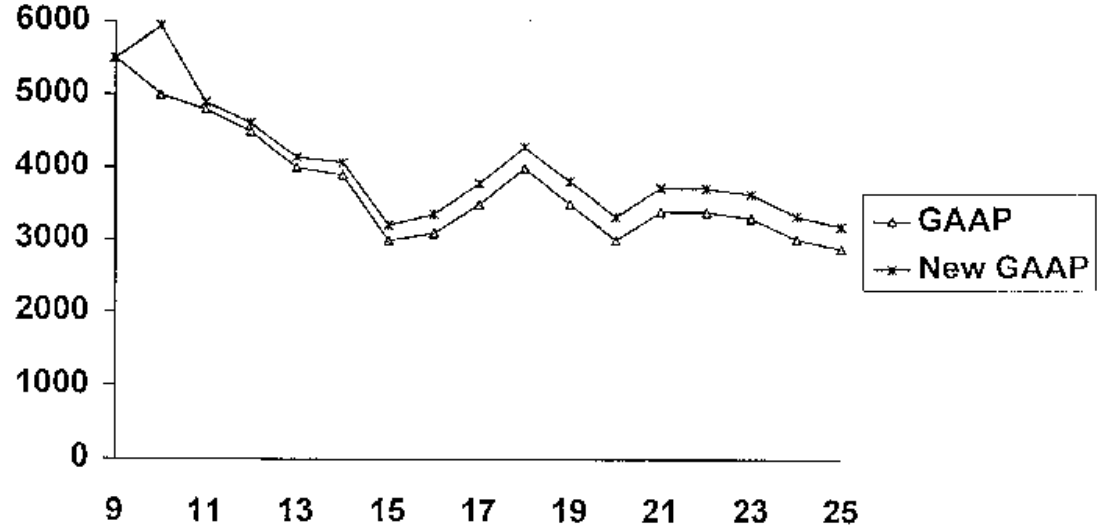


CHART 5
ASSUMPTION CHANGE - US GAAP



Mr. MacKinnon: I did a universal life example, and I'm just trying to outline some of the consistencies between Canadian statutory, U.S. GAAP, and U.S. statutory. The U.S. GAAP is done sort of on an issue-year block, although the actuary still has to do projections on an individual policy level in order to make the thing work. However, the Canadian statutory and U.S. statutory reserve are calculated at a policy level. You have to develop expected policyholder variables for Canadian

statutory. The expected policyholder variables are COI charges, credited rates, and expense charges, and these are often selected as of the current valuation date. In Canada, your projections have to start with expected policyholder variables that equal the current policyholder variables.

We are going to do some projections. I will try to do some parallels between Canadian statutory (i.e., GAAP) and U.S. GAAP in terms of projections. In calculating the Canadian GAAP reserve, we project the fund from the valuation date forward using policyholder expected variables. To calculate the U.S. GAAP reserve, we project the estimated gross margins, which essentially are the before-tax profit assuming the reserves equal the fund value. The U.S. statutory method is a complicated method whereby we have to project the guaranteed maturity fund from issue using a series of calculated guaranteed maturity premiums that would make the policy endow under the guaranteed COIs and the guaranteed credited rates. We have to define *R* as being the ratio of the actual fund to the guarantee maturity fund (GMF).

One of the key things with UL in Canada is you develop what are coined reduced PADs. These are PADs applicable for non-UL policies but reduced to reflect the fact that poor experience can be passed onto the policyholder through increased COIs or reduced credited rates. To the extent that this is possible, you must pay attention to policy guarantees. Now we do some present valuing, and the Canadian reserve is obviously the present value of the benefits, expenses, and premiums using these valuation assumptions increased by the reduced PADs. The U.S. statutory method will develop a CRVM reserve on the projected GMF assuming the guaranteed minimum pension is paid, and then trued up through the multiplication of the *R* factor. In a sense, the U.S. statutory reserve is like a CRVM reserve on a permanent plan with policy guarantees in place trued up to reflect the difference between the current fund through the *R* factor. To calculate the U.S. GAAP reserve we, of course, must redevelop the DAC at every valuation, and that's done through recalculating the DAC amortization rate. The DAC amortization rate is recalculated by taking the present value at issue of the actual margins to the valuation date and the expected margins thereafter and then amortizing the DAC over the margins. Here I say the GAAP net reserve which equals the account value less the DAC.

Now we are going to look at some earnings charts. Chart 6 shows a fixed premium UL policy with the Canadian GAAP earnings versus U.S. statutory. You notice that the Canadian earnings are relatively level, apart from the first year, whereas the U.S. statutory reserves are negative for a few years and then positive thereafter. The level Canadian earnings reflect the release of PADs, and the initial strain at issue reflects the fact that the first-year relief through a negative first-year reserve is not enough to offset the negative cash flow in the first year.

CHART 6
U.S. STATUTORY VERSUS CANADA EARNINGS

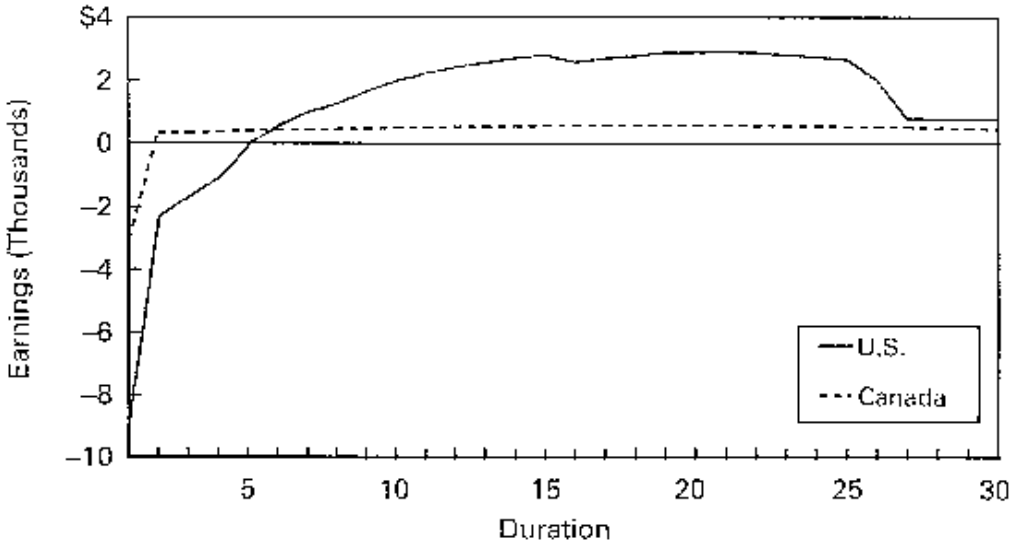


Chart 7 is Canadian GAAP and U.S. statutory reserves, and we can see the conservativeness. Not only do Canadian reserves start below the U.S. statutory reserves, but they also don't increase as rapidly as indicated by the slopes. At least for a while, future profit levels will certainly be higher in the U.S. statutory statement as opposed to the Canadian GAAP statement. It's just going to take us a while to get there under the U.S. statutory statement, and we'll have to bite the bullet in terms of earnings for a couple of years.

Chart 8 shows U.S. GAAP earnings versus the Canadian earnings. The U.S. GAAP earnings follow the estimated gross margins where estimated gross margins exclude acquisition expenses. If I had put a line representing the estimated gross margins on this chart, it would essentially run parallel to the U.S. GAAP earnings line. Therefore, it would be significantly higher. For this example, the DAC amortization rate was somewhere around 80%. Therefore, U.S. GAAP earnings become about 20% of the estimated gross margins. The Canadian reserve has PADs in it. As a result of the addition of the PADs, the reserve has a reduced ability to offset the negative cash flow in the first year. You'll note, however, that the Canadian earnings surpass the U.S. GAAP earnings by the fourth duration, and then the differences will continue to grow larger. We only have ten durations here. If we went out further, you'd see that the difference between the two lines would grow.

CHART 7
U.S. STATUTORY VERSUS CANADA RESERVES

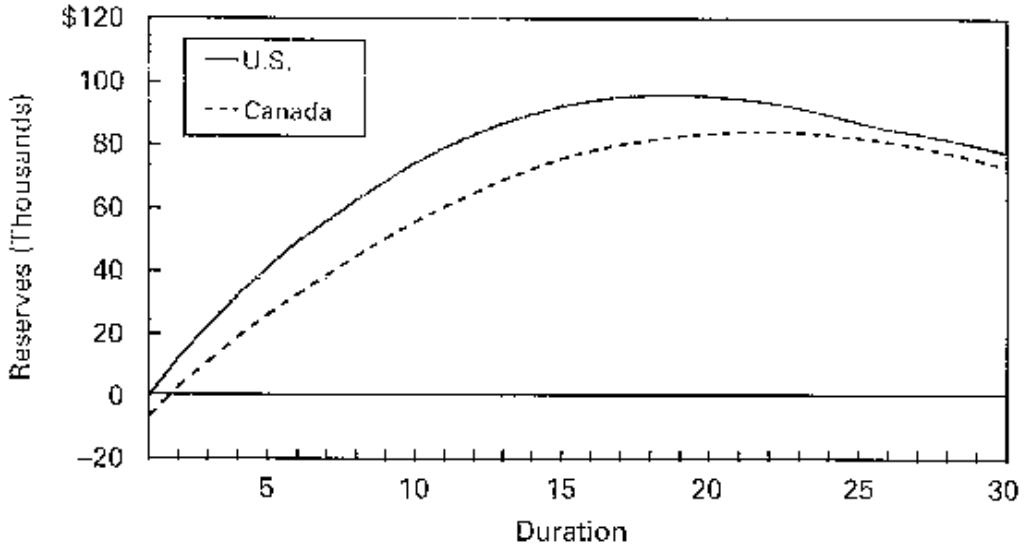
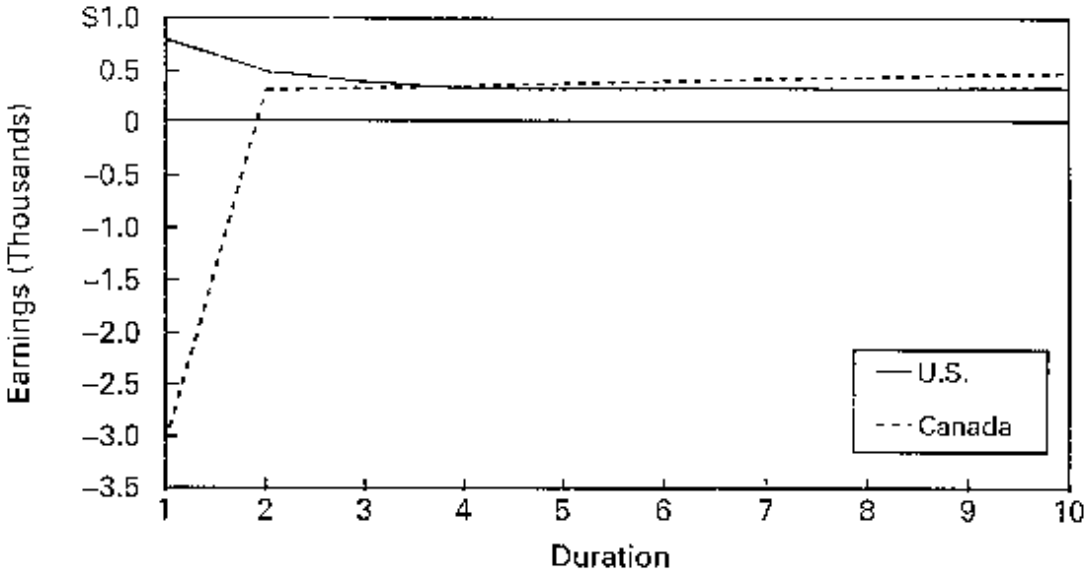


CHART 8
U.S. GAAP EARNINGS VERSUS CANADA EARNINGS



When comparing U.S. GAAP net of DAC reserves to the Canadian GAAP reserves, the lines are almost parallel. Again, if we went further past ten years, we'd probably see these lines converging. Therefore, you can presumably force the Canadian GAAP reserve to equal the U.S. GAAP reserve at issue, and I'm just going to try to walk you through how we might be able to do that. As you know, the net U.S. GAAP reserve is the fund less the DAC. Chart 9 demonstrates both the fund value and the net U.S. GAAP reserve. So the difference is obviously the DAC, and the

DAC eventually runs to zero, as with the difference in these two lines had I run this chart to maturity.

CHART 9
FUND VERSUS U.S. GAAP RESERVES

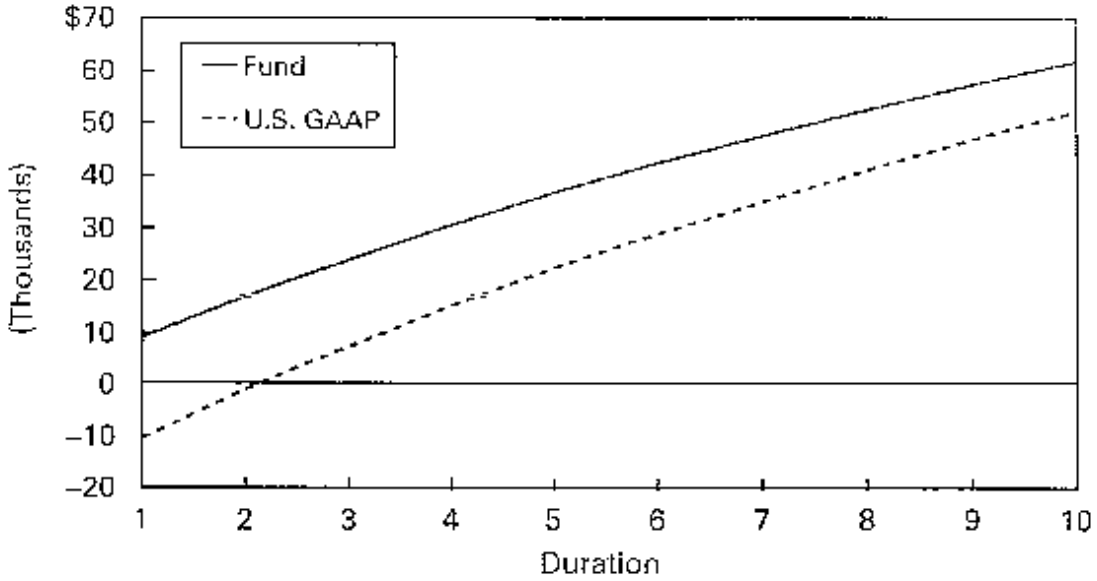
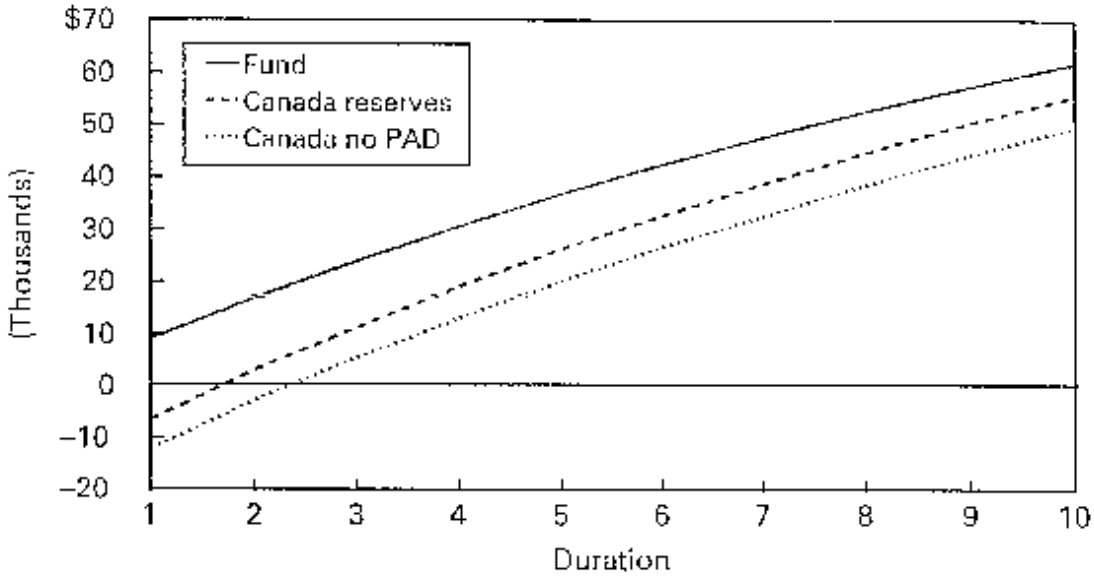


Chart 10 demonstrates the same concept but in a Canadian context. I've also shown on this chart the no-PAD Canadian reserve. This should be less than that first year net U.S. GAAP reserve for a profitable product. So if we set the difference between the fund and the Canadian reserve with PADs to be equal to the DAC, then, by definition, our first-year Canadian GAAP reserve will equal our first-year U.S. GAAP reserve. If we define the difference between the fund and our Canadian reserve with PADs to be the fund less the Canadian no-PAD reserve plus the PADs, it really comes down to the fact that whatever PADs you set will determine whether or not your first-year Canadian GAAP reserve will equal your first-year U.S. GAAP reserve. The subsequent reserves will be equal only to the extent that the PADs released from the Canadian GAAP reserve will be equal to about 20% of the estimated gross margins in terms of the U.S. GAAP reserve. You could probably invent a product and invent some assumptions where that technically could happen, but I didn't try to attempt that.

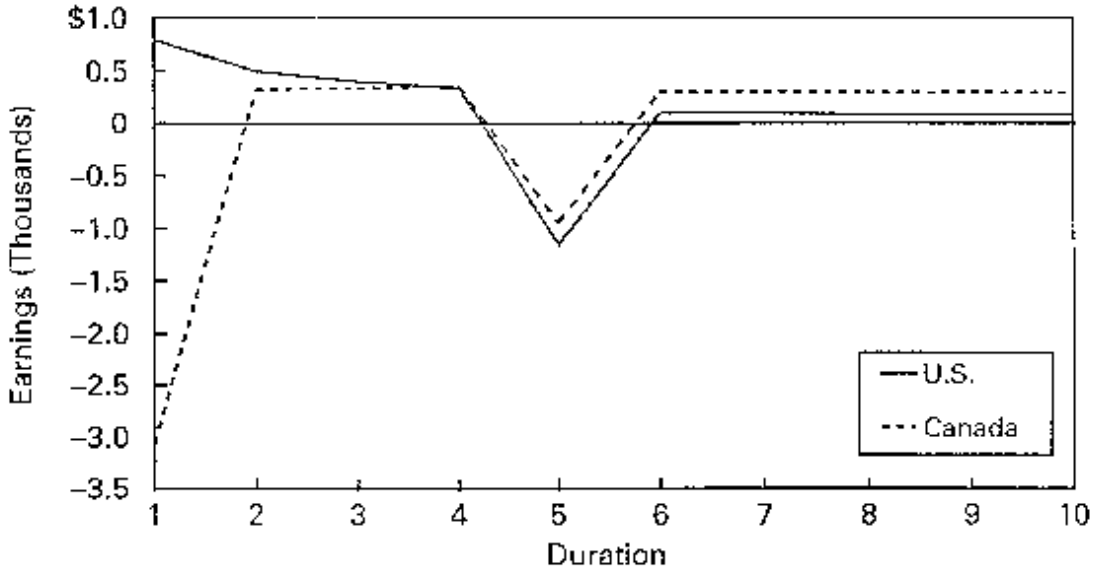
CHART 10
FUND VERSUS CANADA RESERVES VERSUS
CANADA NO PAD RESERVES



As a final example, I've attempted to unlock both Canadian and U.S. GAAP with unlocking occurring at duration five (Chart 11). The earnings hit in year five is fairly similar in the two methods. The hit is a little more severe for U.S. GAAP, but I wasn't sure why. I think it might be the fact that when I originally projected it I had Canadian GAAP earnings greater than U.S. GAAP earnings in the fifth duration before the unlocking. Therefore, the same seems to hold true after the unlocking. Second, the restated DAC is really developed both retrospectively and prospectively, whereas the restated PPM reserve is developed strictly prospectively. So the chances of these two having the exact same hit to earnings is going to be rare, but it's fairly interesting that they're quite close.

Mr. Wharram: I'm going to do an example of an annuity. I chose as my annuity a two-year GIC or two-year deposit. The deposit is $1,000, and it earns 5% interest. Two years later, it matures to $1,102.50. Our investment people went out and got us a 7% zero-coupon bond which matches that pretty nicely. Here are some assumptions I used. I said there would be 60-basis-point acquisition expenses. I don't know if that's real or not, but that's what I used. I said 50 basis points was deferrable, and ten basis points was not deferrable. I used a 25-basis-point maintenance expense. I used surrender charges of 2% in the first year and 1% in the second year on this product.

CHART 11
U.S. GAAP VERSUS CANADA EARNINGS: UNLOCKING

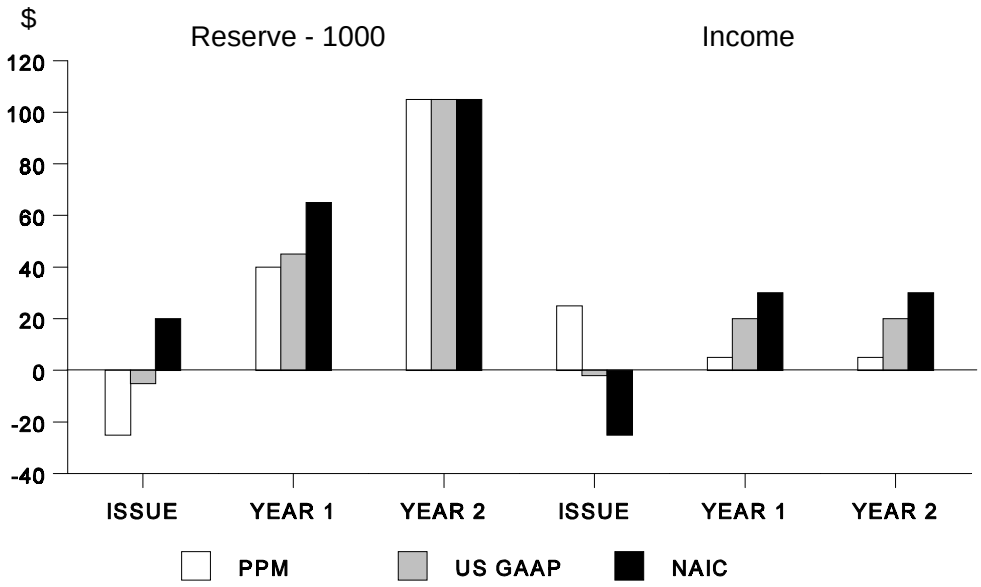


I then calculated a PPM reserve, and I said I need PAD for margins of 40 basis points. Because the cash flows are very well-matched, I didn't actually do a whole bunch of scenarios and the cash-flow valuation method. I just did a gross-premium valuation. The initial reserve turned out to be $975 which consists of the present value of the maturity value at 7% because that's what my assets are earning, plus the present value of maintenance expense, plus the present value of my PADs. At issue I get a profit of $19 which is the difference between the $1,000 I receive and the $975 plus the reserve I set up and the six of acquisition expenses that I have. On the renewal years, the profit will simply be the PAD release which is 40 basis points or $4.

Chart 12 shows annuity results for PPM, U.S. GAAP, and NAIC. The reserve minus 1,000 is on the left-hand side. Let's first look at the PPM bars. If you look at the reserve over the three years, it's close to $1,000 all three years, and if you would try to chart the PPM in this piece of presentation software, you get a straight line, and that doesn't display very much. So I subtracted a thousand from each of the reserves, and what you can see is that at issue the reserve is $25 less than a thousand, and at maturity it's $102.50 more than a thousand. The income on this one is probably unrealistic. Maybe our investment people couldn't actually get a 7% asset, but I assumed they did. If they got a 6% asset, it would look different. In this case we made a big profit at issue, and I've separated at issue from the actual first-year result. In the rest of the first year, you get the release of the PAD, which is

four. It's the same as you'll get in the second year. You have a high profit at issue and small renewal profit.

CHART 12
ANNUITY RESULTS, NAIC



Now let's look at the U.S. GAAP bars in Chart 12. I must remind you that this is a *FAS 97* product. It's an accumulation annuity. The reserve at issue is the account balance, which is $1,000 less any deferrable acquisition expenses. I'm talking about the net GAAP reserve. In fact, you have an asset and liability, but being an actuary, I don't worry about that. The income at issue is a negative one, and that's because you receive $1,000, you set up a reserve of $995, and you have expenses of six. In order to calculate the DAC in renewal years, you need to know what the spreads are. The spread is the difference between the earned rate and the credited rate, which is 200 basis points, the expense loads charged, which are zero, and the actual maintenance expenses that you have, which are 25 basis points. In fact, in this example, because the account value grows, the spread will grow slightly in the second year. It won't show up on this chart. It's not very large. The renewal income is in proportion to the spreads because the spreads are what they are, and the DAC amortizes in proportion to the spread, and the difference is your income. The U.S. GAAP reserve is $5 less than $1,000 at issue, and then grows to the same amount as the PPM. You'll see the profit at issue is a small negative number and then a larger positive number in the renewal years mostly made up of the 200-basis-point spread on the assets. It's quite a different pattern than the PPM.

Now let's look at the NAIC bars. I'll remind you that the reserve ignores actual acquisition expenses, renewal profits, and renewal loads that you would use in GAAP, or spreads that you would release under PPM. You discount everything at a prescribed valuation rate. It isn't actually 4%, but I pretended it was for this example. What you discount is each future cash surrender value to the valuation date. If you do the arithmetic, you'll note that because, in this example, the 4% valuation rate is less than the rate at which the cash surrender value grows, it grows at 5% interest, plus the surrender charge goes down by 1% a year. It's growing at about 6% a year. The largest of these discounted future cash values is, in fact, the maturity value discounted for two years at 4%.

Why am I doing that? Well, that's what CARVM says to do. It says to look at each of the future cash values or the current ones and discount them back to the valuation date. Under this approach the initial reserve is $19 more than $1,000. So your initial earnings will be –25. That's the $1,000 you receive, your six of expenses, and then the reserve you set up. Since the reserve increases in the future years will be lower than they are under any of the other methods, you will expect renewal profits to be higher than under any of the other methods. You'll get a high initial reserve, a big strain at issue, and then large renewal profits.

Mr. Kunesh: Paul, I'm a little confused about your annuity example. You did not include a PAD in the discounting of the maturity value. You used a full 7%. Is that correct? If that is correct, why is that?

Mr. Wharram: You would, in fact, put in default costs somewhere in PPM. I didn't do that. So, I'll say that what we got was a two-year treasury earning 7%. If you had used a two-year corporate bond or bullet earning 7%, then you would have to take off your expected default costs, and you'd put a PAD on those.

Mr. Kunesh: Where is the 40-basis-point PAD being used?

Mr. Wharram: The 40 basis points were used when I calculated the initial reserve. The initial reserve was the present value at 7% of the maturity value, plus the present value of maintenance expenses, plus the present value of the PAD of the 40 basis points. It's all in there. You would have the present value of default costs if you have a default or a credit risk and any other benefits or expenses that you can think of.

From the Floor: The one thing that strikes me about the Canadian system is it seems very dependent on the selection of the PADs. I'm curious as to what kind of guidance there is on that and how you go about it. Because it is a statutory

valuation system, how do you go about ensuring consistency among companies and also ensuring that the companies aren't taking advantage of this apparent freedom?

Ms. Mathews: The CIA did publish a PAD paper which suggests the ranges that your PAD should be in and also includes a list of questions that you should ask yourself about each assumption to help decide whether it's a high-margin or a low-margin situation. Then you would select the PAD at the appropriate point in the range. You also have to submit some testing of up-fronting of profits. I guess if you tend to use a PAD that's at the very low end of the range, you'll see a lot of profit being up-fronted, and you have to discuss this in the appointed actuary's report. So that's certainly one check on that.

Mr. MacKinnon: I might add that when the Office of the Superintendent of Financial Institutions (OSFI) gave it's okay to go with this policy premium method, it also said it wanted two other things. It wanted to see dynamic solvency testing done every year, and they want to see your MCCSR as well, which is like an RBC. So the company does have to go through a target surplus calculation or formula that they have to submit to OSFI, and they have to do the stress testing as well. That really gives a lot more information about how well they're actually setting their PADs, and how susceptible they are to future changes in assumptions.

Mr. Wharram: There's also a couple levels of peer review, I guess you could call it. One is the OSFI reviews your actuary's report where you display what your PADs are and it will let you know if it doesn't like something in there. Your external auditors come and they talk to you about your expected assumptions on your PADs. So if they're looking at more than one company, they'll have some comparison in the back of their mind.

Mr. Kunesh: Knowing what you know about the U.S. marketplace and regulatory structure, do you see a system similar to PPM working in the U.S.?

Mr. Wharram: I'd hate to see 50 of them, and that would be my concern. If we introduce that, we'd have 50 PPM type valuations on top of 50 current valuations because we can't throw out the old until we've had a few years with the new.

From the Floor: Wouldn't you have 1,700 of them because every actuary would do his or her own thing?

Mr. Wharram: What do you have when you do your actuarial opinion and memorandum? You use your own assumptions in that. So, in a lot of ways, PPM is much like doing your asset adequacy analysis testing.

Mr. Thomas C. Foley: I just want to make sure that if there are people interested in U.S. statutory, they are aware that the American Academy of Actuaries is currently involved in a begin-with-a-clean-sheet, reduced statutory valuation project that the Life and Health Actuarial Task Force has asked them to do. If you want to get involved in this process, now is the time.

From the Floor: Always figure there's something behind everything. How do you do your taxes? I understand you use these reserves for tax purposes in Canada.

Ms. Mathews: Actually, they were different. As I understand it, there was a more prescribed methodology for tax reserves up until a couple of years ago, and as of 1996, they're on the same basis. That's my understanding.

From the Floor: So you basically can control the amount of tax you pay. Do you adjust your dynamic solvency testing you're going to expect because that's going to reflect the facts? Do you adjust your MCCSR for the fact that you have all kinds of assumptions floating around. Every actuary can do their own thing. Do you adjust that reserve or the surplus risk-based capital type structure to reflect the fact that you may have very low or very high assumptions. I mean I don't know how you build a system when you have consistency in the structure. How do you know what you have when you're all done? I said maybe part of it seems like you're being very heavily driven by earnings and very heavily driven by the ability to control your taxes.

Mr. MacKinnon: There is a compliance form that you have to fill out and send to the CIA. It has a disciplinary board that makes sure that everybody's really following the CIA guidance, and I think that's one of the constraints they're putting on the system right now.

Ms. Mathews: There's a lot more judgment required, and the actuaries have a lot more responsibility for setting assumptions under this methodology.