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SESSION 5

Financial Projection of Health Coverage

Ronald M. Wolf

Burton D. Jay

MR. RONALD M. WOLF: I want to present just a few general overview comments in three areas. First, I would discuss some ways to distinguish between long and short projections. Second, I'll discuss some particular issues that I see the actuary faces in doing long-term health projections. And, third, I'll discuss some keys to success, some things that if kept in mind and done will lead to a more satisfactory result at the end.

Long-term projections are for periods of more than five years. You may ask yourself what's so sacred about five years? Where does the five years come from?

Burt will be discussing the draft of the *Dynamic Financial Condition Analysis Handbook*, and in that handbook, at least in its current draft form, it lists five years as being an appropriate projection period for that type of analysis really for two reasons. One is five years is long enough for a trend to emerge if you're projecting a line of business that has secular trend. Five years should be long enough for the trends that you think will emerge. And, two, five years time is long enough to test a change. If you want to do something about your projection, if results aren't too good in the first few years and you want to change that, a five-year period should be about long enough to effect a change. I question the second point, though, or at least ask you to ask the question whether five years might be long enough on a longer-tail health line like long-term care and disability income.

Another distinguishing characteristic (long versus short) might be that results as present value may be needed. If we're doing a long-term projection, we may be looking to produce present values of certain types of earnings. This would typically be for an actuarial appraisal type of analysis or perhaps for an economic value-added financial analysis.

In our long-term projection we need to consider whether we want to include new business or not. We need to first make the decision whether it's included or not, and then once we answer that question, decide on how many years of new business, how much new business, how fast is it going to grow, and so on? Typically when I have worked in the actuarial appraisal area, we will include new business certainly for no more than a ten-year period and usually a five-year period.

Finally, in a long-term projection versus short, would we include or exclude group one-year term or should we even do a long-term projection for group one-year term? If we're talking about a pricing-type projection, I would think not. The pricing horizon for group insurance is usually less than five years. As far as a financial projection, again for purposes of appraisal or value-added, my practice is usually to project group insurance, group life and health, for no more than a ten-year period.

Switching gears somewhat, what are some of the issues that we need to face in particular when we're talking about long-term health projections? One question would be, if we're projecting a line that has secular trend, how long in the projection should that trend be recognized?

You might ask, "Why is this a question at all?" It's been my experience that projecting a high trend rate over a long period of time is liable to produce distorted results. For example, if the trend rate is higher than the lapse rate, you may end up with your stream of premiums growing, and that probably is not a logical result for in-force business. Generally speaking, high trend rates wouldn't be sustainable over a long period of time. You could produce distorted profit margins and a distorted situation in market share.

My practice would be for health coverage that has secular trend to project trend for five years, and once the projection or the claims have reached that level after five

years, I would assume there would be no more trend from that point forward. Your practice in that area may vary, and perhaps we can have some discussion about that.

Returning to new business, if we've decided that the purpose for which we want to do a projection should include new business, the questions are, how many years are we going to project the new business, and what is the volume of new business we're going to project? We should be wary when someone in the marketing department, for example, gives us some optimistic projections as to how much new business is going to be written in the future.

Here's a point that I think is quite important. Before performing a long-term health projection, we should determine the current status of pricing, competitiveness, loss ratio, and underwriting cycle. Now what does that mean? It means where is our book of business now? If we're in an underwriting cycle and we're currently underpriced, we need to know that, because that situation is going to drive a lot of our numbers coming out early in the projection. If we don't get it right first, we're probably not going to get it right for the long term either.

Some pricing analysis is in order to start out a projection where we have secular trend in particular. You can compare your rates to what you might regard as a standard or manual rate, together with a competitive analysis, as a guide to see how your projection should look in its early years.

The next consideration in performing long-term health projections is to employ appropriate platform and methodology. In driving a projection overall, one needs to make a decision as to whether that model is going to be cell based, plan and age specific, for example, or whether we're just going to take all of our premiums, put them in one lump and project them forward. What is the basic driver of the projection going to be?

In the health projection, the projection of claims is going to be very important, if not most important. Early on we need to make a decision as to how we're going to project claims. Is it going to be based on a loss ratio applied to premiums? Is it going to be at a more fundamental level where we're actually using claim incidence and termination rates to drive our claims going forward? This is a key question that needs to be addressed up-front.

When you get some initial results from your projection, test the results for general reasonableness. Also, perform some sensitivity analysis using changes in key assumptions. If you're like me, when I do a projection, I tend to get wrapped up in it. I always try to discipline myself, to set the numbers aside, maybe let them cool off a little bit, and then come back and look at the work I've done to see if I like it, in terms of how the premiums are flowing, how the loss ratios are flowing, and the like.

I suggest we utilize applicable literature and peer review in planning before we start, along the way, and at the end. Some examples of sources that we can use to do that, whatever type of work we're doing, are the applicable actuarial standards of practice. Recently some health practice notes have been published. Make sure you look through these to see if there's something that's applicable to the work that you're doing. Finally, consider the *Dynamic Financial Condition Analysis Handbook*. It's not yet out. It is in draft form.

As far as peer review, I think that ties in with a remark I said earlier, that is, step back from your work, let it cool off a little bit, take a look at it yourself. Then, identify someone who works with you in your area who hasn't been involved in this particular projection, and ask that person to take a fresh look at it. Maybe the person can see some things, or ask some questions that you haven't been able to ask yourself.

Finally, in communicating your results, let's say you're done with your projection, you like the results, and you have to communicate them to management. It's important to do that well, and here are some tips.

Consider "what if" versus "what you think." That's a little cryptic. Let me try to explain that. I've seen projections done where many sets of numbers on different assumptions are performed. The way the work is communicated, the reader is left to take his or her pick as to which of the projections the preparer thinks is the most reasonable or best estimate. In some situations where it's hard to get a handle on your assumptions, perhaps that's appropriate. If it is, you should so state in your communication versus "what you think." If you have a baseline set of assumptions and a baseline projection that is your best estimate and some variations around it, you should communicate that as your position.

In your communication I think it's important to communicate your key assumptions, how they were developed, where they came from, and what their variability might be. Obviously you have to find the right level of detail and not be too wordy about that, but using appropriate assumptions is critical.

Finally, one thing I like to do (and I think is usually well-received by the boss) is to use an executive summary. Put your key points up-front. Don't go through a long development of assumptions, show a lot of numbers, and then get to your key results at the end. Put your key results in terms of results, key assumptions, and procedures up-front. That should allow you to communicate more effectively to your management or whoever is receiving your report.

I believe it's now Burt's turn to tell us about the *Dynamic Financial Condition Analysis Handbook.*

FINANCIAL PROJECTION OF HEALTH COVERAGE

MR. BURTON D. JAY: I am going to tell you a little bit about a project that a group of us have been working on for about a year-and-a-half now. It's entitled the *Dynamic Financial Condition Analysis Handbook.*

The process described in the handbook is intended to include reference to "dynamic solvency projections." Dynamic solvency projections are now required for companies operating in Canada. The original name of our handbook was the *Dynamic Solvency Handbook*, but in spring 1994 we decided to change the name because we think its purpose has become more general than that originally envisioned and more general than the type of dynamic solvency projection that is required in Canada. We also wanted to avoid the suggestion of a regulatory requirement in the U.S., which does not exist. The Society, or our committee, does not have a position on that. We think that there are important reasons to do analyses of dynamic solvency condition whether or not it is required by law.

The subject of the handbook differs from techniques required of the valuation actuary when conducting the asset adequacy tests described under Section 8 of the new model regulation. It involves future surplus analysis rather than merely the adequacy of reserves. Generally the projection period relates to management's planning cycle. Regarding the length of a projection period, the planning cycle is the appropriate period of time for this kind of an analysis. Projections of reserves under Section 8 are usually made for only the current in-force business and for as long as the future expected lifetime of the block of business, rather than just the planning period. The financial condition analysis that is described in the handbook includes the impact of future sales as well as current in-force business. Both processes, the valuation actuary process and the financial condition analysis, involve the projection of future assets and future liabilities but under different circumstances.

What was the origin of the handbook in the first place? In September of 1992, the American Academy of Actuaries Board of Directors adopted a position that would strengthen the role of actuaries in helping insurance companies manage the insolvency risk and increase the actuary's role in the regulatory structure. The Society of Actuaries responded to this by developing a plan of action to accomplish the necessary research and produce the needed education materials so that an actuary would be able to do that work and produce a report to management regarding the adequacy of the company's surplus. The handbook is one of the measures that were included in that plan of action, but again I would emphasize that the Society has not taken a position with respect to any requirement for an actuary to perform this analysis or produce a report or an opinion to be provided to regulators.

What is dynamic financial condition analysis as described in the handbook? The very first chapter of the handbook says that it is designed as a resource for the actuary who advises life and health insurance company management on the current and potential future financial condition of the company. Financial condition is defined as the ability of a company's capital and surplus and other items such as the Asset Valuation Reserve to support that company's future operations over an unknown and unpredictable set of economic, operating, competitive, and regulatory environments. It is hoped that the handbook will encourage more universal and more rigorous financial analysis and review whether or not it is mandated by law.

The analysis covered by the handbook can take many forms. It is not only cash-flow testing, but also it can take the form of projected statutory earnings, projected statutory surplus or projected GAAP earnings or surplus. Risk-based capital ratios could be projected or value added earnings could be projected for companies that report on that basis. The handbook describes techniques, methodology, means of developing assumptions, possible ranges of experience, and economic conditions and tools available for the actuary. The handbook is not a standard of practice, but it is

a guide to help the actuary enhance management's understanding of the risks assumed and decisions being considered. The handbook will routinely be updated when new tools or techniques are developed through research or inspiration.

The techniques described by the handbook can show management what actions coupled with what external events can get the company into trouble and what might be the effect of possible responses. It can also indicate events and actions that could greatly enhance the financial success of a company. Stated somewhat more simply, it can tell management what could sink the ship or what could make the company rich. A lot of managements are more interested in the latter. The understanding of the entire operation coupled with considerable judgment is required of an actuary doing this kind of an analysis. The end product of this effort is an internal confidential report to top management on the financial condition including future opportunities and threats.

I am going to go through the table of contents just to show how the handbook is organized, and then I will hit a couple of the sections in somewhat more detail. Chapter one is the introductory chapter. It gives many of the points that I outlined in describing what financial condition analysis is. The second chapter is the general report preparation game plan, such as, how to do the analysis and things one needs to do before actually starting. The third chapter is liability modeling: the liability side of the cash flow and how all of the related items are dealt with for all products. Chapter four is assets. It describes the many different types of assets that could be involved.

Chapter five is pensions. Chapter six is the health section, and chapter seven is the life and annuity section. Chapter eight is strengthening surplus. If we find after the analysis that we have a deficiency in the amount of surplus that we need or would like to have, the chapter describes ways that this problem can be addressed.

I will now talk about the sections that have relevance to health insurance. The first relevant chapter is chapter two on report preparation. This chapter includes how to define the objectives and select the participants to be involved in the process. Experience has shown that the exercise must involve general management in the process for it to be useful at all. If the president is not involved in the process that is a big strike against its usefulness. You need people from the investment area, the marketing area, and representatives from most of the other areas of the company to take part. It should be part of a whole company planning process, not just something that the actuary does and offers to management. It is important to relate this work to the company's business plan. In fact, this could be an integral part of the business plan. The structure and steps required to prepare the report, ideas, and suggestions are included in this chapter. Also the lines of businesses, risks, and scenarios that should be involved are discussed and suggestions are given in the chapter as to how to decide what the scope of the project is. Finally, suggestions as to how to communicate the results and identify possible management actions to lessen risks and accomplish company objectives are provided.

The next chapter that we think has a lot of relevance to health insurance is the liability modeling chapter, or chapter three. This chapter explains how to build a model that is internally and externally consistent and valid, which means that it can be tested for accuracy and appropriateness and includes the right balance between detail, accuracy, and speed or run time of the computer. The suggested steps of building a model are included in this chapter. It includes information on how to select assumptions and procedures for testing the model.

Chapter four involves the modeling of assets. This is important for health insurance, but perhaps it is less important than it is for other nonhealth products where substantial interest-sensitive funds are built up. That generally does not happen for short-term health insurance products. The focus of the chapter is largely on assets, which are not frequently used to back the liabilities of health products. You do not

normally have foreign assets or real estate backing health insurance products. It is generally believed that the C-2 risk is the primary concern for most health products. An exception might be the reinvestment risk if assets are too short or the liquidity risk on assets are too long.

Chapter six is the health insurance chapter. The chapter is divided into several sections. The first part is an introduction that defines the scope with respect to the product types covered and gives comments on the rapid environmental change taking place with many of our health insurance coverages. It relates the dynamic solvency model to the cash-flow-testing model used by valuation actuaries, referred to earlier, and introduces the risk of pricing and the repricing lag, which is characteristic of many health insurance coverages.

The next section is product issues. It lists the products covered by the health insurance chapter and describes their general characteristics. It emphasizes the wide variety of coverages from group administrative services only and medical to long-term care and long-term disability and the modeling complexities of such a variety of products. Other complexities described include the unbounded claim amount on some of the coverages such as major medical. Claim amounts seem to get higher and higher every year. Rate approvals are often required. The unknown impact of health care reform is discussed. That is certainly a big concern for all of the medical care coverages that we are modeling. There is a lack of industry experience data for many of the coverages; long-term care is a good example of this. We are just beginning to get some of the earliest industry experience on long-term care. Products sold for the last four or five years are priced on general census noninsured information. The chapter then discusses special risk coverages such as travel accident, dread disease, cancer, transplant, and student accident insurance.

The next part of the chapter is modeling issues. It talks about the seasonal claim patterns, claim patterns correlated with other events such as inflation and

unemployment (factors that may be less important for life insurance coverages), the effects of underwriting and antiselection, the effects of reinsurance arrangements, and the effects of the changing state and federal programs. How does one model a block of major medical over any planning horizon? We do not know what the situation will be for that product in the next six months let alone five years or any normal planning horizon. The modeling factors take into account experience trends, rate reaction time, claim size assumptions, the effect of various levels of new business, the effects on claims and persistency of rate changes, and the effects of changes in volume on expense structures. The next section outlines in more detail the risk associated with the various group and individual coverages with suggestions of how they might be dealt with in dynamic financial condition analysis.

While the handbook will be over 300 pages long, it is still far from a complete sourcebook. Dozens of additional references are cited in the handbook for people who want more reading on many of the specific areas. New research is underway right now that will augment the material in the handbook when that research is complete. Nevertheless, I believe the handbook will become an important reference to an actuary who is practicing or wants to learn to practice in this emerging area.

MR. WOLF: I have just a few comments as to how some of the things that Burt mentioned in the handbook might apply or be appropriate for long-term health projections.

How does the handbook draft speak to long-term health projections? I guess if we wanted to be a little dogmatic or rigid about it we could say not at all, because one of our premises has been we're differentiating short and long term as five years or less/more than five years and the handbook talks about projections for those purposes being over management's planning horizon, which is typically no more than five years. I think, however, there are a couple of things that do help us when we're doing long-term projections, which are in the handbook or which are emphasized there.

One factor that the handbook does mention in a number of places as being very important is this issue of sensitivity testing. Don't just look at one set of results. See how sensitive your results are to changes in key assumptions. Let me read just a couple of portions of the draft of the handbook as it stands now to try to emphasize it for you. One portion says, "The report should not be an absolute statement or probabilistic statement about financial condition. Instead it should be a 'sensitivity analysis' of the insurer's financial condition describing various events which could occur, their financial impact, and possible management responses." So emphasis is given to sensitivity testing. Another portion very shortly says, "The focus of dynamic financial condition analysis is sensitivity testing." There's a pretty heavy emphasis in the handbook on sensitivity testing, and I think that should be done as well for long-term health projections.

Finally, the handbook emphasizes the "importance of a current status of pricing, competitive position, and your ability and speed to rerate if you're not in good position at the model start date." Remember the point I made earlier about knowing where your business is at your model start date. Is it overpriced? Is it underpriced?

That might have some bearing as to how your projection works or should work coming out of the chute. That is mentioned in the group and health section of the handbook. Let me just read the portion to you briefly: "Obviously, in general, the dynamic solvency model will be highly sensitive to the underlying growth and profitability assumptions. However for products written on a term basis, the key drivers are rerates on business in force and rating policy on newly written business. The key assumption on rerates is the quickness with which your company can react to changes in projected claim levels to maintain profitability." So you must not only ask and answer the question, "Where is your business now financially?" but also if the business isn't where you want to be, what is it going to take and how long is it going to take to get there or in fact can you get there? That is something else that is emphasized in the handbook, and I believe it helps us and speaks to us in doing long-term health projections.

MR. MICHAEL A. SHUMATE: My question specifically relates to projections for annual statement purposes and not for management purposes. I'm concerned about rate increases. To what extent is it reasonable to project rate increases into your model for future periods specifically relating to the reluctance of regulators to grant such rate increases, and the current concern about whether there will be caps on long-term-care rate increases? Is it reasonable then to project such rate increases into your model? You suggested that you should put trends in your model for five years. Is it then also reasonable to put rate increases into your models for that sort of period? This is specifically for valuation purposes for the end-of-year statement with regard to your valuation actuary. Also, this is for a Section 8 opinion, not for projecting for management purposes or anything else.

MR. JAY: This is something that has come up in a different context for us. We're in the process of converting to a GAAP accounting basis, and one of the questions in making the projections that are required of that is to what extent do we need to take into consideration laws that have been suggested or that we think may pass but

haven't actually become law yet, such as the rate increase caps on long-term care? We have some community rating of various levels on a state-by-state basis, but do we need to assume that that's going to expand in the projections that we make for our Section 8 tests or even a complete governmental takeover of the Health Deliverance Committee? To what extent do you think a valuation actuary needs to take these unpassed laws that we think might happen into effect?

FROM THE FLOOR: Getting back to the same question, the scope of the Section 8 opinion is such that it is specifically supposed to exclude catastrophic events. Who 20 years ago could have thought that Bill Clinton would have been elected and tried to put us all out of business? So the question still becomes for Section 8 opinions only -- and I'm not talking about strategic analyses or anything else -- do you put in catastrophic effects such as no more rate increases on long-term care, the dissolution of entire blocks of business because of national concerns, national political frenzies, or whatever? And do you take into account not getting strategic rate increases because of political pressures in certain states for Section 8 purposes when, in fact, you are specifically told to leave out catastrophic events?

MR. WOLF: I think in all cases whether we're doing projections for pricing purposes, for management information, or for cash-flow testing, we always need to be able to support the assumptions that we're using. So in this case, if your company has a history of not receiving the rate increase that you want or receiving it on a delayed basis, you need to take that into account in setting your assumption.

In terms of catastrophic events, I guess the way I would handle something like that would be to look to my memorandum in support of my cash-flow-testing opinion and deal with that on the basis that it is something that may occur. It's possible out there in the environment, but it's so unknown at this point in time that even a sensitivity test might not be quantifiable. At least that gives the reader some notice that you considered the possibility of it rather than just ignored it.

MR. W. KEITH SLOAN: Ron just said part of what I was going to say. If I were involved in the Section 8 opinion for a company that had a line of business that could be subject to vast changes of a political nature, I would definitely bring it up in the memorandum. The other point is that at the 1993 symposium I described a procedure that does work in getting data for evaluating your problem with rate approvals. You keep track, state by state, of your rate filings, not only whether you get them, but also how much you get them and how long it takes. It does work.

MR. ROBERT B. CROMPTON: My question is not totally unrelated to what we've said before. As background, most of the short-term coverage projections that I've seen have been a premium momentum, morbidity-equals-loss-ratio-type of approach so that all these issues of rate increase sufficiency and trends all kind of mashed together and are implicit in the assumptions. I've always preferred to see a cell-based type of projection so that at least you're forced to think through the issues of rate increases separately from morbidity trend. I wanted to ask, does anybody do a cell-based projection for short-term coverages, and if so what would be a typical number of cells included in that projection? Then a second question unrelated to that, does anybody do gains-by-source analysis for short term coverages? A cell would be any sort of, I guess, fundamental unit such as a pricing parameter. That is, we might think of H-sec cells or issue state cells or issue age cells, rather than having just premiums lumped together. Premiums are developed from something more fundamental than that.

MR. JAY: One of the analyses that we've made on our major medical business at Mutual of Omaha is by duration, and we've noticed a trend that we can measure, depending on the duration of the major medical business, but not only the duration but also a secular trend by the calendar year of issue. The third duration experience of something issued in an earlier year would be different than a third duration experience on something issued this year measuring by loss ratio. So we have kind

of a two-dimensional grid that we follow, and we are able at least for a few years to keep those cells separate.

MR. RICHARD S. MATTISON: I have two questions. One, when testing for dynamic financial condition, do you include the statutory reserves and the release of reserve margin when you're evaluating solvency risk and needed surplus? The second question is in terms of the recent health risk-based capital C-2 modeling, was that done on a basis that is consistent with the draft handbook?

MR. JAY: I will address the first part of the question. As I understand the question it was to what extent should reserve increases be taken into account in the dynamic financial condition analysis? I think it depends on the purpose of the analysis. It may be useful to project pure cash-flow items, but the more common approach would be projecting statutory earnings or GAAP earnings into the future. You'd use the increase in statutory reserves or the increase in GAAP reserves as appropriate. I think it's going to become more and more common in the future not only to include those reserve increases but also increases in risk-based capital that may be associated with the business from time to time in the future.

I will comment on how consistent dynamic financial condition analysis is with the model for the health risk-based capital. In general the health risk-based capital model is a stationary population model, which implies that the new issues offset the terminations every year so that the status of the in force remains the same over time. We believe that, at least for coverages that have large reserves, such as long-term care or disability, the precise way would be to have a decrement of the increase in reserve and an increment of the increase in tabular interest in the numerator of the calculation of loss ratios. However, we found with a stationary population it didn't make a lot of difference, and in some cases we were unable to collect data with reserves. We've received only claim experience. That is what we had to use, but we think that with the stationary population that that is not inappropriate.