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The trends in the next decade will certainly change business as we know it. We will have to be reactive to the environment in which we operate, but we also need to be proactive in shaping that environment. The panel will discuss:

- The current business environment
- Economic and demographic trends that will affect the environment and markets over the next decade
- Directions corporations will take in the 21st century
- The profile of the actuary who can meet these needs

MR. WILLIAM C. CUTLIP: Our panelists include a great group of thinkers who approach the analysis of the future financial security system from diverse backgrounds and focuses. Our first speaker is Bob Patin. Bob is chairman and president of Washington National Corporation. Bob has had an interesting and varied career in insurance and management fields. Bob started his career with Connecticut General, now CIGNA, where he spent 16 years working with products, broker dealers, reinsurance, and strategic planning. In 1980, Bob assumed the presidency of Puritan Insurance, part of the General Electric Capital Corporation, leading the helm of a life, property/casualty and reinsurance company. In 1985, Bob and several friends organized the Harbor Group, a consulting group dealing with strategic planning, management and labor relations. In 1988, Bob was lured back into the corporate world to head Washington National. If you followed the dynamic changes there, you can see what an impact Bob has had.

Our second speaker is Bill Hsiao. Bill is an FSA and a member of the Society's Board of Directors. Bill has had some very nontraditional actuarial roles. He also started his career as an actuary at Connecticut General where, as it turns out, he remembers a young hot shot named Bob Patin. Bill earned his FSA while at Connecticut General, and then joined the Social Security Administration as deputy chief actuary working for Bob Meyers. After three years there he entered Harvard and earned his Ph.D. in economics. He has remained at Harvard for the past 16 years as professor of health systems, economics. Bill has focused on health-care systems of advanced and developing nations working in the areas of structure, control of health-care costs, universal insurance coverage, and efficiency. He pioneered the resource-based relative value system in the U.S. He serves as chief advisor to the Taiwan government in its

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planning for national health care. He also works with China, the Philippines and Cyprus. He has served as an advisor to the World Bank, the U.S. Congress and the Nixon and Carter administrations.

Our third speaker is Peter Nicholson, senior vice president and executive assistant to the chairman of the Bank of Nova Scotia in Toronto, Canada. Peter has had an interesting career in education, government and business. Peter's undergraduate degree is in physics and he has a Ph.D. in operations research from Stanford. He taught in the computer science department at the University of Minnesota. He returned to his native Canada in 1973 to join the federal government in Ottawa. In 1978 he was elected to the legislature in his home province of Nova Scotia. His private sector career included a stint in the East Coast fishing industry. He joined the Bank of Nova Scotia in 1984, where he serves as an economic troubleshooter. One of his key jobs was helping the bank successfully manage solutions to the Third World debt problem. Peter is currently a member of the Prime Minister's National Advisory Board on Science and Technology. He chairs the recently founded Field Institute for Research and Mathematics at the University of Waterloo.

Bob Patin will speak first on changes impacting the insurance industry. Bill Hsiao will follow with a discussion of changing demographics and the economy and government direction resulting from that. Peter will follow with a presentation on North American economic prospects. I will clean up with some ideas on how these changes will impact actuaries and how we can prepare for them.

MR. ROBERT W. PATIN: What is tough is the art of prediction, particularly applying macroeconomics to specific industry impacts. I envy John Naisbitt, our keynote speaker. If John's wrong, it's caused by later assumptions and he will write a new book. If I'm wrong dealing with those assumptions, I get the book thrown at me and I'm out of work. We have to speculate, don't we, because that sharpens the focus on the alternatives. It frames the questions and the challenges. It creates tension, intellectual tension, but it all comes down to your assumptions and there are problems as you know with assumptions. Mortimer J. Adler, author of *Ten Philosophical Mistakes*, said, "If the original hypothesis or assumption is wrong, all of our subsequent decisions compound the error."

There are a number of assumptions being made in this industry that are fundamentally and absolutely wrong: assumptions about what we are, who we will compete with and the race for capital and others. The dilemma with assumptions is that they have a way of turning into self-fulfilling prophecies. We must remember that the world never seems to end or begin for the same reason twice in a row. John Naisbitt is extrapolating. So are we. We act on extrapolated philosophies and prophecies. We must note this: those who act on a premise about the future, automatically change it. We must both do what John suggests, and that is look ahead. We must also be extremely skeptical about the pace of change, its component parts and our role in it.

I do believe that John is right in his mostly positive outlook for the world, the United States and Canada. I think that's part of the law of macroeconomics and the continuing hunt, the innate human and societal drive for freedom and improved quality of life. I must tell you in all honesty that I do not believe it is so positive for the U.S.

and Canadian insurance industry, and that it is an assumption around which we can make corporate strategy decisions.

What are your corporation's assumptions about the future? Do you have them? Even if you can't articulate them I guarantee you, you have them. If you don't think you have them or you aren't turning them into scenario planning, it's just a matter of time until your competitors figure that out. Then assumptions about survival become very suspect. As an example, most of this industry is still making an assumption that we are and will be the insurance industry, but are we? As the title of this seminar indicates, perhaps we are part of the financial security system industry. What is that? Or maybe it's just the money allocation industry, which is what I think it is. What about the walls between institutions that historically have been Chinese walls? Are *they really that or in this day and age are they merely becoming membranes? Our* assumptions will determine our behavior in this regard and our behavior will determine our success and even survival.

Let me talk with you briefly about the systemic nature of issues. There is another study that's emerged around the world. It's called systemic thinking. It is the new organization of trying to figure out what is going on in a complex society. It basically emerged from therapy in families. Years ago, therapists found out that when they had a problem with a member of a family, they couldn't just simply treat that member. They had to treat the family because the family was all connected. I would encourage you to learn a great deal more about the laws of systemic thinking. Basically it says we focus on symptoms and not causes in making major decisions. It is true in every industry. It is true with almost every individual. The theory is that symptoms, those things that we see, are generally far removed in time and space from real causes. The world is always complex and what's happening today is internal and external connectivity is becoming increasingly diverse, increasingly confusing and complex. Whether we like it or not, we are connected to the behavior of our internal competitors, our distributors, our investors, legislatures, doctors in hospitals, vendors and so on. Then we add customers and old and new external competitors; it is all connected and we have to understand it systemically. This connected complexity will make any corporate decision increasingly hard to get right. In a complex system, one set of assumptions may be all that you get. This is particularly true with corporate strategy.

My objective is to frame some of the macro issues.

Capital structure dilemmas and dynamics. The whole financial intermediation industry is producing lower returns despite greater risks and is claiming a steadily decreasing share of society's resources. Available capital in the future is going to cost all of us more because of the risk, and there will be less of it. Capital is going to come from abroad more often. There are going to be many more demutualizations. It has to happen. The capital isn't there. There will be a glut of capital offerings in the next 5-10 years and your pace of getting your share will be critical. Supply is going to dry up and then it's going to reappear. If your assumption is that capital is always available at a reasonable price, I encourage you to check your assumptions.

Asset side impacts. First of all, it is not all better on the asset side. It is somewhat better on the asset side. Some of the worst real estate dilemmas are yet to come

and yet to impact this industry. The behavior of organizations outside this industry, particularly banks, is going to impact that significantly before this is all over. The key here is, do not count on all that capital for allocation to your businesses. It's not going to be there.

There are going to be increasingly sophisticated, internally based investment dynamics. The biggest companies are going to be outsourcing parts of their portfolios to niche investors. Many others are going to outsource most, if not all of their investment operations. Margin pressure, increasing world investment complexity, and opportunities and risks are simply going to demand that.

International markets. There is a requirement to define all markets, every single market we are in, as international markets and as international systems. Not understanding domestic markets as a part of international markets is eventually going to cause you to bleed to death from a thousand foreign cuts. International liberalization and deregulation efforts are skyrocketing. Fifty-five nations were represented at the Seventh Annual International Conference of Insurance Regulators earlier this year. Recently, real growth in life premiums has been substantially greater in many other countries, and the savings rates are higher. Markets in many other countries are less price competitive and here's the connection. They're going to have the capital with those margins to come over here. Alien insurers now control 12% of the U.S. nonlife market and 8% of the life market. Predictions are that these percentages will increase to 20% on the nonlife market and 15% on the life market by the end of this century.

Power shift disadvantages. This is the role of manufacturer versus distributor versus customer. This is going to continue. The distributor in the insurance industry has an inordinate amount of power over the manufacturer. Think of this as a triangle with a circle in the middle. One of the corners of the triangle is the manufacturer, another is the distributor and the other is the customer. The circle in the middle is profit, and it is tied to three corners by rubber bands. The idea in long-term economic models is to keep the profit circle in the middle so that one corner doesn't gather too much power, because when that happens, the other two corners are pulled inward and the market or the system collapses. Over the course of the last 20 years, distributors in the insurance industry have accumulated so much power that manufacturers aren't getting adequate returns; in the long run that is going to hurt customers. In the future, it is absolutely critical that we find ways in this industry to cut costs and make distribution more effective. Simply take away their power. That is going to be very, very difficult.

Information. Information is going to become more of a competitive advantage. Winners will devote increased efforts in dollars to maximize the strategic value of information. They're going to build databases, targets of opportunity and relationships. Customers are going to give business in the future to those who make them smart and make them efficient. What are your technology assumptions and what are your technology strategies? Do you have a corporate technology strategy? Does it parallel your business assumption? Are they connected?

Legislation/regulation. We are going to face complex legislative and regulatory dynamics in a world where we are no longer favorites. This industry has become an

easy target and often by our own hand. We have caused what has happened to us. Perhaps there won't be any major federal regulation unless we have another real scare, but that's not yet settled. We no longer have the clout to declare regulators as ours, and at one point in time this industry did. Capital regulations are going to have a huge leverage impact on our options, and we should anticipate negative tax decisions relative to some more products unless we rebuild better bridges to those who will decide that. It doesn't take much to blow regulatory confidence and it takes years to rebuild it. The effort of having to do that distracts us from the customer.

The great insurance drive of 1986. The industry has often acted like a herd, and not to our betterment. Remember when everybody had to be in mutual funds, and junk bonds, and the consecutive series of price reductions, and on and on? We still talk to each other too often. You as actuaries talk to each other too often. You do not talk to outsiders often enough. We simply drink our own bath water. In the future there will be less dialogue. There will be more discreet strategies. We will indeed study the behavior of the herd of which we are a part and we will go our own ways more and more. We should even anticipate more discreet lobbies. The question I have for you is what will you assume about industry behavior? Your survival may depend on it. This could be chaos.

Change. Change occurs, but change in relationship to our own industry and its behavior is going to be increasingly interesting in the years ahead. Massive change is going to suggest exit to many companies. Although enormous personal barriers exist, this is the last refuge for most of senior management in this industry. They know it, and more importantly, they are acting on it.

Markets. Markets will continue to unbundle and will disrupt existing broad product-based strategies. There will be continued and increasing customer fragmentation and a continued refinement of strategies to chase them. Some of what we will jump to will not be very rewarding. As our friends say here, "You call this a niche?"

Competition. Some very well-heeled competitors are coming -- the banks. In some cases, insurance companies are inviting banks, thinking that this is for their corporate benefit. In some cases we actually believe that we are trapping them in our system. For the moment we have skills and abilities that they don't and markets and regulations that protect us. Over time regulations are simply going to go away. We just remember that banks are very sophisticated at getting to broad-based groups of customers and they have been developing these strategies and skills for some time.

Requirements for success. What will we do about all of this? First, old strategies aren't going to work. We have to have a regular strategic reassessment process. You important people have to demand that your corporations have effective corporate strategies. Please, don't study your competitors in this process. They're the last people you study. You study people who make money. You figure out how they make money, and you study the things that are their critical success factors. Then you mimic them or, more importantly, you become better at it than they are.

Also, don't cast your strategic assumptions too far into the future. The pace of change is different from what we think it is. Keep a low and continuously circling orbit.

I encourage you to build effective structures that follow strategy. First strategy; then structure. Structure creates behavior and the structure of this industry today creates and sustains its behavior. We are going to have to thoroughly reexamine our organizational, capital, compensation, communication, and all other structures if we are going to win. Financial services have traditionally been vertically integrated. This is no longer fully optimal for the insurance industry. Consider new affiliations and new structures including radical outsourcing. Many firms out there do things that we regard to be integral to our business, they do things much better than we do, and they have better human resource opportunities because they can offer career paths to a lot of people. Reexamine your structure and what you should own and what you should farm.

Have the courage to shift power. We have to face the distribution cost in this industry and if we don't face it, I guarantee you others outside this industry are simply going to find ways to bypass it.

MR. WILLIAM C. HSIAO: I would like to share with you what I believe will be the respective roles of the government and the private sector in the financial security market in the 21st century.

I'd like to begin by looking at a total economic pie. In the United States, the economic pie can be measured in terms of gross national product (GNP). The United States has had slow growth in the GNP and this situation is unlikely to change according to all the economic forecasts regardless of whether it's done by the government or by private business sector. Basically, we're going to see a period of slow economic growth for the next decade or longer where the GNP, even under fairly good circumstances, will grow maybe 2-2.5% per year. If you take away the growth in the population, our economic pie will only grow somewhere between 1-1.5%. Prior to the 1970s, our per capita income had been growing somewhere in the 2% per year range after inflation. The economic pie for each one of us, on the average, will be growing at a very modest rate.

A portion of this economic pie is being consumed for financial security. Health care is one of the growth sectors, but putting it another way, it's taking a larger share of our income. A forecast made by the U.S. government predicts that by year 2000 health-care costs in the United States will amount to $1.6 trillion and will consume 16% of our GNP, instead of roughly 12.4% right now.

Let's look at the other side of financial security -- retirement. In 1990, we had roughly five workers for every retired person, but this ratio will decline as we go along because of demographic shifts. By the year 2030, the age-dependency ratio will drop from the five for one in 1990 to three for one. In other words, roughly 40 years from now for every retired person there will be only three workers to support his or her retirement income.

Let's look at Social Security. In 1990, the total cost of the Social Security program amounted to about 13% of the taxable payroll. By 2030, 40 years from now, this percentage is estimated to increase to 25% of the total taxable payroll.

What does this add up to? The financial security portion of the economic pie is going to squeeze out the other programs or other spending that the government would like to do or what we as individuals would like to do. Therefore, I think the choice for the government is that it will have to try to enlarge this economic pie as much as possible by shifting its focus and resources from providing direct financial security for people toward job creation and economic growth. At the same time, there is a consensus emerging among the experts and the public that the government has to take a major role in controlling the health-care cost inflation.

Today all the political leaders have been informed by the experts in this field, as well as by public opinion, that the government has to take a much stronger role in setting macro policy in controlling health-care cost inflation. The government is going to try to reduce its direct role of providing financial security, but at the same time, use its power to try to hold down the growth in areas such as health-care costs.

Since the government cannot intervene directly in providing financial security, it's likely to take on a role of regulating the market to make sure the people who need financial security can obtain it, can buy it or can save for it through the private market.

What's the implication for the actuaries then? There is going to be much greater opportunity for the private sector to provide financial security products. At the same time, because of foreign competition, the world economy is becoming globalized, and the free trade zones are being established. The government may intervene with more regulation to make sure the market is competitive. Then you and I can expect greater competition in the financial security industry.

Foreign markets are going to be opened up. I have more political leaders in the foreign countries where I travel ask me how they should invite the insurance industry, or banking industry or other industries to their country. What speed, what form and what kind of conditions do they need to set up before these institutions can come in and operate efficiently and in a competitive manner? I think the international market is the opportunity of the future.

We are going to see more rapid change in distribution systems, the capital needed and technology. I'm in a university. We used to say that knowledge changes completely every 15-20 years. Today we believe the knowledge cycle has shortened down to every 5-8 years. In other words, you have to learn a totally new set of scales every 5-8 years if you want to stay ahead. That's why, at my university, one of the most flourishing sectors of education is continuing education.

So what should the actuaries be prepared for? First, the new actuaries for the 21st century should be forward looking. If you are devoting all your time and attention to the present or the past, then the future will pass you by very rapidly. To anticipate the future you have to be well read. You have to understand other fields such as economics and social conditions. You have to understand the culture that shapes other nations. Besides solving today's problems, which is part of your job, you have to also spend your time and energy preparing for the future.

Second, since the future comes so rapidly, you have to position yourselves to lead rather than follow. Help lead government action so the government will provide the proper environment for the private sector to grow in a healthy way.

Third, this is the age of consumerism. Consumers are better informed and better educated. The market is becoming more competitive. There are more products made available to the consumers so you have to design products and distribute your products in such a way to satisfy the consumer.

Last but not least, an actuary has to be mentally agile. Now what does that mean? Well, we already saw a videotape on chaos theory. That is something new. Mathematics makes new breakthroughs almost every six months. Statistical methods advance every few months. A professor of statistics and mathematics usually spends, on the average, something close to 4-6 hours a day reading professional journals. That's how rapid the technology and methods are advancing. You have to have that mentality and keep up with these new advances.

Stay intellectually flexible. A part of intellectual flexibility is the ability to look at your adversaries as partners in a new light. For example, most of the insurance executives treat government as an enemy. Let me say, in this new era you may have to look at the government as a partner, a partner that you can help and shape who will create this proper environment in which you can operate. On the manufacturing side, this whole idea of industrial policy is founded on this principle of government and private sector partnership. I was recently in Japan where the government and the financial security industry also form a partnership. These are the flexibilities you and I must preserve to function well in the 21st century.

In conclusion, we are living in an age of change. I have tried to look at just one aspect -- the respective role of the government and the private sector in the financial security area. I will predict it's going to be an age of opportunity for you and me. To seize this opportunity the actuaries, as the scientists and engineers of the financial security market, must have the basic skills that enable them to move along with change. We also have to broaden our views not only by markets but also by the role of the government and role of the private sector. In other words, we have to look outward. So, to be successful, you will have to be a perpetual student.

MR. PETER J. NICHOLSON: My objective will be to supplement some of Mr. Naisbitt's themes by focusing specifically on the global economic context: where we've been, why we are where we are and where we seem to be headed. I'm going to be taking a view of events from a sufficiently high altitude so I hope that the border between our two countries, Canada and the United States, can scarcely be distinguished.

Despite differences of size and style, the dominant economic trends and concerns in our two countries are remarkably similar. In Canada, as here, the public discourse is dominated by concerns related to trade and international competitiveness, by an anxiety over sliding educational performance, by a new obsession with ballooning public sector deficits, and by a rising sense of alarm over the daily litany of layoff notices from companies that were once considered pillars of stability. So perhaps, as a consequence of all these worries, there is also a similar public disillusionment with

established political leadership at all levels. Therefore, I believe that what I have to say finds equal relevance in our two countries even though some of the evidence on which I will draw refers specifically to the situation in Canada.

Let me begin with some observations on where our economy has been and set the scene in a way that I hope has particular relevance for this audience. I would draw your attention first to the surprising positive correlation that exists between economic dynamism and the overall health of populations. Back in 1960, life expectancy in Japan was significantly lower than in Canada, and Canada, in turn, lagged slightly behind New Zealand. Thirty years later, Japan has long since forged ahead and now boasts the highest life expectancy in the world. Meanwhile New Zealand, with a stagnant economy, has experienced only a relatively modest increase in expectancy. Canada's life expectancy, which is trended between the two, is correlated with a similarly intermediate economic performance. I don't pretend to be familiar with all the data and theorizing about these very intriguing trends. No doubt there are many in this audience who could shed light on the underlying causes of what at this stage is only a fascinating correlation. If, in fact, there is a deep causal connection, one conclusion is that the best policy to promote a healthy population is to maintain a dynamic and competitive economy.

What do we mean by competitiveness? Competitiveness is our ability to produce goods and services that meet the test of international markets while our citizens earn a standard of living that is both rising and sustainable over the long run. So the test of this definition of competitiveness is, as the TV ad says, "How have you been doing?"

It will come as no surprise to learn that the 1980s did not make most of us much better off, although a small proportion profited from it spectacularly. At the end of the so-called booming 1980s, the average Canadian family was slightly less well off, at least in terms of purchasing power, than it had been a decade earlier. I believe that the pattern in the U.S. has been broadly similar. For example, the real average wage rate in the United States has been stagnant since approximately the mid-1970s and has recently been declining as low paying jobs assume an increasing share of the employment mix. Although most of us have been feeling a bit poorer lately, what may be surprising is that this stagnant trend is more than a decade old.

This seems to support the contention of those like MIT professor, John Sturman, who heads the Systems Dynamics Lab there, that the industrialized world is now in the declining phase of an economic long wave that began in the early 1950s and probably peaked sometime in the mid-1970s. The significance of the long wave hypothesis for understanding and forecasting the most fundamental trends in the economy is going to be a recurrent theme in everything I have to say. The evidence for such a cycle with a period of perhaps 50-60 years is rather compelling and can be traced over at least the past two centuries. If the hypothesis holds up this time around (and I would stress that this is still an "if"), we should expect to reach the trough of the present wave toward the end of this decade and define the rising phase of the cycle very well established by the middle of the next.

Now returning to the defining characteristics of competitiveness, we can state with confidence that the only source of sustainable increase in the nation's standard of

living is a steady increase in productivity; that is, the ability to squeeze more output from a given unit of input. It is not surprising, therefore, that the stagnation of real incomes in North America has been mirrored in very low productivity growth. During the 1980s, Japan led at 2%, roughly 10 times the average productivity growth in the United States. Productivity in Canada, meanwhile, didn't grow at all during that period. Despite an outpouring of academic research, there is still no clear understanding as to why productivity growth began to stagnate internationally in the mid-1970s. Some of the lag in both Canada and the U.S. is, no doubt, due to the phenomenon of "convergence."

Countries like Japan that have been behind, are able to boost productivity more rapidly during their catch-up phase. There's a reason. It's because they can benefit by adapting techniques already developed in the more productive societies. Part of the explanation for the lag also relates to demography as the baby boom brought very large numbers of relatively unskilled and, therefore, less productive new entrants to the labor force. There nevertheless remains a large unexplained residual that probably reflects the difficult process of adjustment to fundamentally new ways of doing things. History is punctuated by periods where one dominant technology gives way to a dominant successor technology. For example, the steam engine gave way to the electric motor. Inevitably, there is a decline in productivity as the new techniques are being learned and as the obsolete capital is only gradually being replaced.

Today we are in the throes of such an adjustment as information technology in the most general sense replaces technologies based on cheap energy and the internal combustion engine as the dominant source of growth and innovation. It's tempting to speculate that this period of transitional adjustment and the associated slump in productivity is one of the key forces driving the economic long wave through its declining phase. In any event, it seems inevitable that a new burst of productivity, particularly in the service sector, will accompany the revolution of information technology, and this, of course, has already begun to happen. One of the distressing accompaniments as we all know is the radical downsizing of corporate middle management and to understanding unemployment of white-collar workers.

Much of the attention of economic policymakers during the past 20 years has been taken up with the fight against inflation. Because inflationary expectations have become so firmly embedded, the realization has been slow to dawn that we have recently entered an era where the forces of disinflation now dominate those of inflation in North America and in many other industrialized countries (Germany, for very particular reasons, is an exception). It is not only consumer prices that have flattened. Whether it is the value of my house in downtown Toronto, or an office tower on Wall Street, or a slide of Tokyo's Nikkei index, the deflation of asset values has also become widespread globally and, in some sense, more significant than the deflation in consumer and producer prices.

This has thrown into reverse the self-reinforcing spiral of rising debt and asset values that was the defining characteristic of the financial boom of the 1980s. Speaking recently in Tokyo, U.S. Federal Reserve Chairman, Allan Greenspan noted that the deflation in asset values means that the current recession is unlike any seen since the end of the second World War. He went on to say that the economic models designed to fit the data and experience of the past 40 years are of much less use in

guiding policy and forecast. This explains to me at least why conventional predictions of both the timing and strength of economic recovery have consistently fallen well short of the mark for almost two years now.

For those who accept the long wave theory of economic cycles, the deflationary forces now gripping most industrialized economies are a predictable accompaniment of the final phase of the downturn. This, frankly, is too mystical an explanation for my taste. I believe we are entitled to an explanation of the mechanics that underlie this unfamiliar phenomenon. I would suggest that there are three principal deflationary drivers: global competition, the fiscal paralysis of governments and the unprecedented indebtedness of the private sector.

Global competition has entered a qualitatively new phase, reflecting the triumph of market capitalism in Asia, Latin America and still in a fragile form in the former Soviet Bloc. This ideological framework has been complemented by the progressive liberalization of world trade. Competition is also enhanced by the increasing mobility of financial capital and technology primarily through the agency of the transnational corporation and global capital markets.

All of these factors have combined to create an environment of unprecedented global competition that has forced corporations everywhere to cut costs to the bone often by laying off all but the most essential employees. The laid off workers are also laid off consumers. The very process by which the economy is becoming more competitive, is simultaneously undermining the consumer confidence on which economic recovery depends. This then is the first major deflationary factor.

The second deflationary factor, which I have labeled fiscal paralysis, is the inevitable consequence of many years of undisciplined public finance. Despite the conservative rhetoric of restraint in both our countries, the record shows that the financial impact of the public sector continues to increase. Each recessionary peak rises higher than its predecessor. This is particularly evident in Canada, though I think you will find it in the U.S. as well. Meanwhile, governments have been extremely reluctant, less so in Canada than in the U.S., to impose the taxes necessary to finance the spending demands of a population that is dominated by interest group politics. The resulting deficits are a severe drain on national savings that are already far from adequate particularly here in the U.S. This raises the cost of capital and, thus, crowds out potential private investment on which productivity growth and, thus, the growth in our standard of living ultimately depends. Government deficits in both Canada and the U.S. have now increased to the point where fiscal stimulus, in my view, is unlikely to be effective in kick starting the economy and likely it would simply flood the engine. Discouraging private sector investment and further convincing consumers of significant tax increases were inevitable. The ineffectiveness of a stimulative fiscal policy is, thus, the second major deflationary factor.

The third and final factor derives from the weak balance sheets of individuals and corporations. Private sector debt now stands at record levels relative to the size of the economy. The process of unwinding this overhang will be protracted and probably will continue to drive down the market values of many assets. In 1980, private sector debt was approximately 98% of the gross domestic product (GDP) in Canada, and about 107% in the U.S. In the 1980s there was a fundamental shift in

the willingness of borrowers and lenders alike to accept much higher debt ratios. As a result, by 1990, private sector debt had skyrocketed to more than 120% of GDP in Canada and almost 135% in the United States. What is important to understand, is that this represented a very significant departure from the trend of recent decades.

To put it bluntly, the 1980s was the decade when governments, businesses, and consumers in the industrialized world went on financial steroids. The liberalization of competitive conditions in the global financial industry meant that virtually any project could be financed somewhere. Debt levels and assets values, primarily in the real estate and stock market, predictably inflated to unsustainable heights. It's important to understand that the rising debt levels and inflating asset values are but two sides of the same coin. This is because the expectation of rising asset prices gives lenders confidence that an increasing cushion of collateral will be available to secure larger and larger debts. Those debts, in turn, finance the bids for assets and, thus, sustain the rising spiral.

This process of debt-financed asset inflation was a global phenomenon in the 1980s. Nowhere was the process more aggressively engaged in than Japan where, to take just one example, land prices reached such stratospheric heights that by the end of the 1980s the total market value of real estate in Japan was by some estimates four times the value of all the real estate in the United States. Clearly, something in the financial world had become completely disconnected from reality. Now the process has gone into reverse. Today the momentum of declining assets values reduces the expected future value of collateral and, consequently, the eagerness of lenders to supply fresh credit. This further undermines asset values and sustains both the unwinding of the overhang as well as the stubbornly sluggish performance of the economy. This then is the third and final significant deflationary factor.

There are those who will see in these circumstances an uncomfortable parallel with the late 1920s and early 1930s, but it's unlikely that the adjustment this time around will follow such a painful and disruptive course as it did then. For despite the excesses of the modern welfare state that we all wish to decry and its associated safety nets, we should at least be thankful that these are still effective in maintaining aggregate demand in the economy. It's important to keep a sense of perspective in these impatient times. While it is true that the economy has been stuck in the doldrums for at least the past two years, the downturn has been relatively mild by the standards of past recessions and the economy today is certainly not shrinking. Clearly then, some patience is called for because what was excessively inflated in the 1980s must be deflated in the 1990s and, inevitably, this is going to take time.

Let me venture some speculation as to what lies ahead. On balance I'm persuaded, though not yet completely convinced, that historians will look back on the period since the mid-1970s as one of the classic declining phases of an economic long wave that runs its course every 50-60 years. I believe that our era will be seen as a period of transition to a new economy based around information technology as the dominant source of growth and innovation. It will also be seen as a period when financial excesses were purged and the stage was set for a new era of sustained expansion and prosperity.

I remain optimistic. Basically I see two fundamental drivers of global prosperity as we move into the 21st century and up the ascendent phase of the next long wave. The first, to which I alluded earlier, will be the application of information technologies in vastly more efficient and productive ways to virtually all aspects of our economic and cultural life. This will revolutionize productivity throughout the service sector which now provides more than 75% of all jobs in the economy. This revolution of productivity will be all the more important since the service sector has lagged well behind manufacturing in measured productivity despite huge investments in computerization, communications and other forms of information handling. Now investments of this kind are finally starting to pay off as society collectively masters the learning curve and as the infrastructure of networks and communicating databases becomes universally established. In this process, tens of millions of new jobs will be created in North America provided, of course, that we are able to equip our young people with the required skills and discipline. Such then are the bright prospects for the industrialized world and for its knowledge workers.

What about the outlook for developing countries? Here we can already foresee the second fundamental driver of the next wave of global prosperity. At least in large parts of Asia, Latin America and, one hopes, Eastern Europe, there is realistic prospect that more than a billion citizens will join the ranks of a truly industrialized society during the next 10, 20 or 30 years. Provided we have the wit and courage to keep our markets open, these nations will rapidly expand their exports and, this is key, will, in the process, acquire the purchasing power to be truly effective consumers of those goods and services that we, in the highly developed countries, can produce most efficiently. It creates a win/win situation based on global comparative advantage which, when taken together with the impending revolution and information technology, promises to propel the ascendent phase of the next long wave.

As economists never tire of reminding us, there is, of course, no such thing as a free lunch. Two very significant challenges must be overcome en route to this potential golden age. The first is to ensure that the industrialization of the developing world does not lay waste to the physical environment and provoke a backlash from mother nature that we all know could be cataclysmic. Fortunately, there are good grounds for optimism. Technology, together with an acute and growing sensitivity to environmental risks, particularly on the part of young people who will inherit the 21st century, justifies confidence that the challenge of sustainable development will be met successfully.

The second challenge, which is already upon us, is to cope with the human cost of adjustment to a world where laws of market competition work inexorably to equate wage levels with skill levels on a global basis. There's a heck of a lot of justice in this, but where does it leave the middle-aged North American assembly line worker who was displaced by a youngster in southern China? Or where does it leave the retail clerk who may eventually be replaced by a computerized interactive TV right in your own living room? These are questions that cannot be avoided in democratic societies like ours which simply will not tolerate a widening gap between those who are able to benefit from a technological globalized economy and those who cannot. Therefore, a failure on our part to deal creatively with this problem of social adjustment can only guarantee increasing political strife and the risk of a retreat into self-defeating protectionism; a protectionism that could plunge the world into

depression just as it did in the 1930s. I happen to believe we have learned our lessons this time and we will not fall prey to that particular folly again. The challenge posed by global competition and technological adjustment does really remain to be faced, and it can only be overcome through the development of both our nation's human resources in the context of a total commitment to lifelong learning.

My last word is that those with an eye on the horizon will see a world brimming with opportunities. I believe that the history of past cycles of technological change and of the economic long wave suggests that a new era of sustained prosperity is all but inevitable. We should, nevertheless, be mindful of the enigmatic words of Justice Oliver Wendell Holmes who said that, "Frequently it takes a great deal of effort to bring about the inevitable." We have our work cut out for us.

MR. CUTLIP: Well, you've had a chance to get a picture of the future of our globe from John Naisbitt. Now the panelists have given you a picture of the issues that are going to affect our business in the future. Let's delve a little bit more deeply into how actuaries in particular will need to be prepared. Bill Hsiao talked about the new actuary as a forward-looking, consumer-oriented, mentally agile leader. What kinds of things will the new actuary be doing in the future? What opportunities will be there? What skills are going to be necessary for us to be able to keep up with the changes?

Let's take a look at our historical actuarial paradigm. How have people perceived actuaries and how have we perceived ourselves? As very technically focused people. Our historical paradigm has been concentrated on our basic education. We typically have held actuarial insurance jobs either in companies or as consultants. We generally went into one field of practice and stayed there and our energies were spent on very technical issues.

The historical paradigm has been shifting in the past few years more toward our future actuarial paradigm, and the changes are going to escalate even more dramatically. The future paradigm is a very dynamic picture, a mixture of positioning and opportunity for actuaries. There will be more nontraditional jobs -- jobs that are focused outside the insurance as we know it. There will be continual learning. Some of that has come about already through regulation or actuarial standards, particularly in the pension and valuation areas. There will be a continuing demand for this just to keep up with the changes.

Technical knowledge will be an important part of the dynamic actuary of the future. We will need to have a broader perspective rather than a singular technical focus, without losing sight of the fact that it is our technical knowledge and our intellectual foundation that really separates us from others who deal in risk measurement.

Communication will be absolutely essential. It used to be that we could leave communications to those who were in the consulting business because those in insurance companies were sheltered from having to deal with anyone other than actuaries. As we actuaries find ourselves thrust more into business roles as opposed to strictly technical roles, we will have to be able to talk to other people in ways that they understand to communicate the technical knowledge that we understand. Actuaries will also have the opportunity to deal with risk outside insurance. This will take us into other fields and create new opportunities for us.

We will need more knowledge about business and how it operates, and we will have the opportunity to help develop new businesses. The future actuary will also be working with integrated practices. Health actuaries can't simply think about morbidity and health regulations anymore. Take a look, for example, at the results of *FAS 106* and the necessity to reserve for retiree medical benefits. In order to do the best actuarial job one will have to have knowledge of morbidity, changing health-care costs, investments, and the retirement and mortality element of pensions. Some of the issues that we are beginning to face now just don't fall neatly into lines of business as we've known them.

What kinds of skills are we going to have to build to make sure that we can be part of the future of the actuarial paradigm? First we'll need a good solid foundation with basic skills. Layered onto that will be the need for additional future skills. The basic skills will include those that we've always known and work with such as math, logic, analysis, problem solving, and model construction -- the kinds of skills that we've gotten through our basic education and through our initial experiences in our careers.

Future skills that we will need in order to be successful are exciting. They will include innovation, the need to see things in new ways and the ability to create new ways to handle risk. We'll need to be able to implement change, not only see it and suggest it, but do it in a way that will have practical applications for accomplishing what the goals are. We'll need very good human relations skills. We'll need to be able to motivate people, communicate with them and negotiate with them so that we can make sure we are understood and that our work can be fully realized. We'll each need to be a perpetual student, even more so than in the past with more discipline to keep up with change. We'll need to have an awareness of the world, an awareness of what the social, political and economic environments are and how they can likely change the results of our work. We also will have to have business talents. Those kinds of talents that will let us manage our time well, conceptualize, be good decision makers, and apply strategic thinking to our work.

What kinds of opportunities are out there for us? Political interface: helping to change the health-care system, working to identify how much funding will be needed for programs and how that funding might come about. Litigation support: helping cut through legal jargon by providing good estimates of economic values in various situations. Environmental and population issues: measuring the growth that will be occurring and what the fallout from that growth will be. City planning: providing the needed demographic work combined with the economic estimates in modeling. Management consulting: looking at how business operates and how risks can be measured, how they can be covered, and how they can be turned into profit. Database marketing: bringing in demographics, statistical work and economic values to identify what kinds of markets work best for business, where these markets might be located, and how they could be approached.

There is a bright, exciting and growing future for actuaries. We will have to know what is changing. We will have to change along with it. It will be hard work for us. We will have to pick up some skills that may be foreign to us now, but the effort we put into it will be worth it for us individually and as a profession.