SOCIETY OF ACTUARIES International Section

International News

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Actuaries
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International
News
ISSUE 49 DECEMBER 2009

This newsletter is free to section members. A subscription is $20.00 for nonmembers. Current-year issues are available from the communications department. Back issues of section newsletters have been placed in the SOA library and on the SOA Web site (*www.soa.org*). Photocopies of back issues may be requested for a nominal fee.

Editor's Note

By Carl Hansen

As some readers may have noticed, *International News* is consistently one of the longer newsletters put out by an SOA section. I am sure this has made for some interesting reading as you are sitting on a long flight to some exotic destination. We are working to have more concise issues in the future, but we keep getting excellent articles that the editorial staff thinks people will want to read. Since the International Section represents a very diverse group of people, we try to include something of interest for everyone. Also, many of you have communicated that the newsletter is a good way to keep informed about section activities. This issue is certainly a good example:

- We have five more articles from our annual Country Feature competition, highlighting Singapore, Canada, South Korea, China, and Latin America. Thank you to the remaining authors for your patience in waiting until the April 2010 issue to see your articles printed.
- Several articles address issues of a more technical nature, such as International Financial Reporting Standards, low interest rates, and pensions for expatriates.
- We offer some updates on activities sponsored by the International Section for continuing education and surveying local assumptions.
- Some less technical articles on life experiences make the reading a little lighter.

We also introduce you to the three newly elected International Section Council members and we have some words from Mike McLaughlin, the incoming SOA President.

I encourage all readers to continue contributing articles, whether the article is for the Country Feature competition, or just some material that you want to share with an internationally minded audience. However, please do not be concerned if you think your article is too short! □

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Chairperson's Corner

By Bosco Chan

Some two thousand years ago, a man voiced a few words whose truth has rung down through the centuries:

> There is a time for everything, and a season for every activity: a time to keep and a time to throw away, a time to tear down and a time to build, a time to plant and a time to uproot.

As my term in the International Section Council comes to an end, I am pleased to announce that the section council elected a new team of council officers for the 2009-2010 section year. With clear visions, in depth knowledge of the section's operations, and commitment to align section service with members' needs, I am confident that the new council and the new officers will build upon the accomplishments of the last twelve months and continue to expand our international involvement.

In case you are not aware of our new additions, our members elected Alycia Slyck, Genghui Wu, and Michael Lockerman to be new council members in August. They became official council members after the Boston Annual Meeting in October. They will contribute in executing the council's decisions to better serve you in the next three years.

On behalf of our members, I would like to extend our thanks to Alistair Cammidge and Carl Hansen who completed their three-year service on the council. They are great peers and our section has benefited from their contributions in various ways.

In addition to the out-going council members as mentioned above, I would like to thank Alan Cooke, Darryl Wagner, Joanna Chu, Joe Chou, Peter Duran, and Rich de Haan for their contributions and accomplishments on planned projects and additional initiatives that arose during the past year. These include organizing overseas IFRS seminars, recruiting and appointing new ambassadors in several countries, offering trial membership to overseas ASAs, organizing various professional development sessions and receptions during SOA meetings, sponsoring the 2009 Country Feature Article Competition, developing an on-line membership survey, sponsoring newsletter publication and distributing free copies to universities, providing support to International Experience Studies. The International Section assisted SOA on redesigning the section's Webpage, in marketing the new Social Insurance and Public Finance Section, and helped other actuarial bodies in recruiting speakers or identifying article reviewers.

Last, but not least, I would like to thank Martha Sikaras and Jill Leprich. Martha Sikaras has been our section's SOA Staff Partner for many years. Her knowledge of our section's long history helps us focus on exploring tactics and approaches for adding value. Jill Leprich is our section's SOA Project Support Specialist. She has impressive telephone manner and very organized mindset. As a result of her support, the council is able to relieve the enormous volume of administrative work and coordination with various SOA departments. Without them, the last three years would have been very different.

At the end, I would like to give my best to the incoming council, and wish the council and you another year of success! □

Newly Elected International Section Council Members

Michael Lockerman,
FSA, MAAA, director, PricewaterhouseCoopers, New York, N.Y.

Professional Background: I am an auditing and consulting actuary specializing in IFRS reporting, including conversions, fair value reporting and transaction support.

Society of Actuaries Activities: I was a presenter of U.S. GAAP for International Insurers for several years in Asia, Europe and South America and am currently assisting in developing material for a similar IFRS session that will begin later this year. I have contributed to the Actuarial Practice Forum and International News newsletter, and have presented at several SOA meetings for the International and other sections.

Relevant Experience: I formerly worked in Asia for several years and continue to spend a great deal of time there. I have also had the privilege to work with and assist several national actuarial organizations.

Why are you interested in leading your section? I enjoy learning and teaching about the various insurance products around the world as well as their relationship to the local culture and the unique challenges they present to practitioners trying to apply international accounting guidance. With this perspective, I want to assist the International Section in disseminating lessons already learned in some countries to others facing similar challenges.

Alycia Slyck,
ASA, MAAA, valuation manager, Manulife, Tokyo, Japan

Professional Background: Responsible for Valuation, Plan, Forecast, and Source of Earnings Analysis (U.S. GAAP and Canadian GAAP basis). Directly communicate earnings results to senior management.

Society of Actuaries Activities: Member of the International Section and Actuaries without Frontiers (AWF).

Relevant Experience: Organize and coordinate quarterly processes to ensure effective and timely results to executive management, the regional office and corporate actuarial.

Why are you interested in leading your section? I can provide a voice to international actuaries and help move the council agenda forward through my leadership skills, which I have developed through my current management role and global experiences. I have a great deal to contribute and am highly motivated to become involved in issues facing actuaries abroad.

Genghui Wu,
FSA, FCIA, MAAA, FRM, vice president and actuary, Prudential Financial,
Newark, N.J.

Professional Background: I worked in roles of business development actuary specializing in international markets in past years, and recently as corporate actuary, overseeing our international business across the organization.

Society of Actuaries Activities: Assistant editor for International Section newsletter; Member of FM and FAP exam committees; Active member for Education and Research, Financial Reporting, Investment, and Product Development Sections.

Relevant Experience: For many years, I have worked with large global insurance organizations and, fortunately, gained enough front riding experience by business involvement in various markets outside of the United States, with relationships and understanding in different geographic regions, including Asia, Europe, Latin America, and the Mid East. I am a member of the Global Association of Risk Professionals, a member of the Chinese Actuary Club, and was a moderator for the China Financial Reporting seminar in 2005 in Beijing.

Why are you interested in leading your section? In a period of global economy integration, we have definitely seen an uplifting degree of correlation among global markets relative to the past. This brings to the International Section opportunities with the broader capability of stronger influence, but at the same time, responsibilities with the greater demand of effective communication. I think the mandate of the International Section needs to be geared more towards emerging markets where the needs for guidance and assistance are increasing. My diverse international experience and commitment of addressing local counties' needs as well as developing practical solutions will make valuable contributions to enhance and achieve the mandate of the section and Society of Actuaries. □

S. Michael McLaughlin, FSA, CERA, FIA, MAAA, is global leader, A&IS at Deloitte Consulting in Chicago, Ill. He can be reached at *mmclaughlin@soa.org*.

A Global Opportunity

By S. Michael McLaughlin

Thank you for inviting me to write an article for *International News!* As a member of the SOA, and now as president, I have always appreciated the International Section's mission of encouraging and facilitating international issues and areas of practice.

I've taken special interest in this mission because of the international aspects of my own life and career.

I grew up in Jamaica and studied at the University of the West Indies and then at the University of Waterloo in Canada.

I was working as a computer programmer at British-American Insurance Company in Kingston, Jamaica when I learned about the profession. I worked on a few actuarial projects because I was the only programmer who could (at least partially) read actuarial formulas! That impressed my bosses, who suggested I take the actuarial exams. At the time, all actuarial students in Jamaica the Institute of Actuaries exams, and so that was the path I followed. I received my FIA in 1977.

Photo Credit: Michelle Thompson

Karaoke at the International Section reception in Orlando, Florida.
Pictured: Rich de Haan, Mike McLaughlin, Bosco Chan, Alistair Cammidge, Cathy Lyn and Darryl Wagner

I also lived in the Bahamas for three years. Those were wonderful days, although I had to trade off between studying for exams or going out in the boat! A few years later I moved to the United States, and now I've been in Chicago for over 20 years! Quite a climate change!

I also like to joke that I speak two languages—English and American!

One of the reasons I wanted to become an actuary is because our credentials are widely recognized around the world. I'm glad that I've been able to study and work in different countries. It's been a rich experience. I've gained an awareness of and respect for many different cultures over the years.

Many of you who know me know that I am a champion of actuaries moving into enterprise risk management and the Chartered Enterprise Risk Analyst (CERA) credential.

The CERA was launched in 2007, and it is the only new credential since the SOA's inception in 1949. The adoption of the CERA demonstrates the importance of risk management to our profession!

> "Our profession is truly blazing a trail. I haven't yet seen another global credential formed by consensus among multiple organizations."

Actuaries worldwide have recognized the importance of enterprise risk management and the benefits of the credential as well. This was brought to the forefront in mid-November when we signed a treaty to establish the CERA as the globally recognized ERM credential.

This collaboration involves 14 actuarial associations in 12 countries—a first for our profession! The countries include: Australia, Canada, France, Germany, Israel, Japan, Mexico, Netherlands, South Africa, Sweden, the United Kingdom and of course, the United States.

The Treaty of Recognition and Accreditation coordinates the various signatory organizations. Provisions of the treaty include a common global syllabus, a thorough quality assurance protocol, and marketing and branding standards.

The designation will be awarded through the qualified participating associations and will incorporate and adopt the name of the CERA credential. It will recognize actuaries globally who meet stringent education requirements in ERM and are governed by a strong code of professional conduct.

This is a significant endorsement by the global actuarial profession of the need for an international ERM credential. It sends a strong message to employers and candidates that the actuarial skill set provides significant insight and risk management expertise, especially in this time of increased globalization.

As you can imagine, this is an ambitious endeavor! Our profession is truly blazing a trail. I haven't yet seen another global credential formed by consensus among multiple organizations.

The signatories of the global CERA treaty. Shown from left to right: Ralph Blanchard, Casualty Actuarial Society (U.S.); Malcolm Campbell, Svenska Aktuarieföreningen (Sweden); Nigel Masters, Institute of Actuaries (United Kingdom); Tsutomu Igarashi, Institute of Actuaries of Japan; Mike McLaughlin, Society of Actuaries (U.S.); Eberhard Mueller, Deutsche Aktuarvereinigung e.V. (Germany); Fred Rowley, The Institute of Actuaries of Australia; Bob Howard, The Canadian Institute of Actuaries / Institut Canadien des Actuaires (Canada); Juan Carlos Padilla, Colegio Nacional de Actuarios A.C. (Mexico); Peter Doyle, Actuarial Society of South Africa; Ragjish Sagoenie, Het Actuarieel Genootschap (Netherlands); Ronnie Bowie, Faculty of Actuaries (United Kingdom); Thomas Behar, Institut des Actuaires (France).

Our profession has the opportunity with ERM to apply our skills much more broadly than before, to help our clients, employers and the public. It is exciting to see the CERA evolve into a truly global credential. Now, actuaries around the world will have even more in common.

This is a great time to be an actuary, and I look forward to serving as your president. My travels will take me to many destinations, and I hope to meet as many of our members as possible in the year to come. □

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William R. Horbatt, FSA, MAAA, is a consulting actuary with Actuarial Consortium in Short Hills, N.J. He can be reached at *Horbatt@ActuarialConsortium.com.*

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SOA International Experience Survey—Embedded Value Financial Assumptions

Charles Carroll, William Horbatt, and Dominique Lebel[1]

COMPANIES INCLUDED IN SURVEY

Aegon	Allianz
AMP	Aviva
AXA	CNP
Fortis	Friends Provident
Generali	Hannover Re
HBOS	Industrial Alliance
ING	Irish Life & Perm.
Legal & Gen	Lloyds TSB
ManuLife	Munich Re
Old Mutual	Prudential UK
Standard Life	Swiss Life
Zurich	

INTRODUCTION

Starting in 2003, the Society of Actuaries International Experience Study Working Group has been conducting surveys of published embedded value (EV) financial assumptions.[2] This article updates the survey with 2008 data.

The purpose of this survey is to provide international actuaries with benchmark assumption data. Since many companies make this information publicly available, no formal data request was issued. Instead, the survey was based on reports published on the Internet by 23 companies centered in Asia, Australia, Canada and Europe, many of which are active internationally.

Each financial assumption presented in this article is the average value of the assumption reported by all companies in their 2008 embedded value reports. If no companies reported a specific assumption in a given country, then that assumption is labeled "NA" to signify that data is not available. Some companies vary assumptions by calendar year, while other companies use a single assumption; if a company varies an assumption by calendar year, the value for the earliest period is used in this study.

LIMITATIONS

Readers should use judgment when interpreting the results of the survey and note that:

- When comparing one assumption to another, it should be noted that different companies might be contributing data to different assumptions, so that differences between variables may reflect differences between companies, rather than differences between the assumptions.
- Some cells include data from many companies, while others include data from as few as one company.

FINANCIAL ASSUMPTIONS FROM THE SURVEY

Financial assumptions presented in this article include

1. Discount rate—the rate used to calculate the present value of future distributable earnings.
2. Implied discount rate—for companies with market consistent embedded value (MCEV) calculations, the traditional embedded value (TEV) discount rate that when used to discount "real world" cash flows, would produce the MCEV.
3. Equity return[3]—the total return on common stock investments.
4. Property return[3]—the total return on investments in real estate.
5. Fixed return[3]—the yield on corporate bonds portfolio held by an insurance company.
6. Risk free return—typically the yield on a 10 year bond offered by the local government or the 10 year swap rate (swap rates are com-

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[1] Dominique would like to thank Erin Ingalls for her assistance in gathering the data for this article.

[2] *International News*, Issue 34, October 2004, Society of Actuaries, pp 19 *http://www.soa.org/library/newsletters/international-section-news/2004/october/isn0410.pdf*, *International News*, Issue 36, July 2005, Society of Actuaries, pp 28 *http://www.soa.org/library/newsletters/international-section-news/2005/july/isn-2005-iss36-horbatt-lebel.pdf* and *International News*, Issue 40, November 2006, Society of Actuaries, pp 8 *http://www.soa.org/library/newsletters/international-section-news/2006/november/isn-2006-iss40.pdf*, *International News, Issue 43, November 2007, pp 22 http://www.soa.org/library/newsletters/international-section-news/2007/november/isn-2007-iss43.pdf*, *International News*, Issue 46, December 2008, Society of Actuaries, pp 7 *http://www.soa.org/library/newsletters/international-section-news/2008/december/isn-2008-iss46.pdf*

[3] Note that for companies on an MCEV basis the expected returns on assets are those that are used to derive the implied discount rate.

"Traditional discount rates generally increased from last year as did implied discount rates."

monly used as risk free yields for MCEV purposes).

7. Inflation—the rate used to increase future expenses and, possibly, revalue policy terms that are tied to inflation.
8. Tax rates—income tax rates by jurisdiction.

These results are presented in two separate tables. Table 1 provides the number of companies contributing data as well as discount rates for TEV companies and the implied discount rates for MCEV companies. Table 2 contains the rest of the financial data.

When reading Table 1, several thoughts should be kept in mind:

- The methodologies followed by the companies to determine discount rates were as follows:

Methodology	Number of Companies
MCEV	16
CAPM	4
WACC	2
Other/Unknown	1

- A methodology is considered market consistent if each cash flow is valued consistently with traded instruments that display similar risks. Thus under the MCEV approach each cash flow is discounted using a risk discount rate (RDR) appropriate for valuing similar cash flows in the market.
- Companies following MCEV strictly speaking do not have risk discount rates that are comparable to those used by companies employing a more traditional approach. For companies employing an MCEV methodology, discount rates in the table above are the RDR inferred from the MCEV calculation. That is, they are discount rates that would develop the MCEV value using TEV techniques and assumptions.
- Companies that explicitly set risk discount rates are referred to as calculating traditional embedded values (TEV). Two common methods used by them to set the risk discount rate are the capital asset pricing model (CAPM) and the company's own weighted average cost of capital (WACC).
- Under CAPM many companies assume a level of volatility that matches the broad market (i.e., Beta is equal to 1), which results in a discount rate that is equal to the risk free rate plus an average equity risk premium. Other companies employing CAPM methodology may vary discount rates by product line and/or territory to reflect the higher Beta associated with riskier business.

When reading this and other tables, it should be noted that some companies use identical assumptions for multiple countries (on the basis that this results in immaterial differences), and this practice would tend to dampen differences between countries.

CONTINUED ON PAGE 10

SOA International Experience Survey… | from Page 9

Several observations can be made concerning Table 1 when compared to similar data published last year[4]:

- Traditional discount rates generally increased from last year as did implied discount rates.
- The number of companies reporting traditional discount rates decreased from last year, which is consistent with the fact that several companies moved from a TEV to an MCEV basis.

[4] Last year's study can be found in International News, Issue 46, December 2008, pp 7 *http://www.soa.org/library/newsletters/international-section-news/2008/december/isn-2008-iss46.pdf*

Table 1: Average 2008 Explicit and Implicit Discount Rates

Country	Companies	Traditional Discount Rate (1)	Companies	(In Force) (2)	(New Business) (3)
America Latin					
Argentina	1	27.8%	0	NA	NA
Chile	1	10.6%	0	NA	NA
Colombia	1	16.6%	0	NA	NA
Mexico	2	13.1%	0	NA	NA
Peru	1	14.2%	0	NA	NA
Uruguay	1	16.7%	0	NA	NA
America North					
Canada	3	6.9%	1	6.6%	6.6%
US	6	6.4%	1	17.1%	11.0%
Asia / Pacific					
Australia	2	7.6%	2	7.3%	6.7%
China	3	9.7%	0	NA	NA
Hong Kong	3	5.7%	1	9.1%	6.9%
Indonesia	1	15.3%	0	NA	NA
Japan	4	5.4%	1	6.7%	3.1%
Malaysia	2	8.9%	0	NA	NA
New Zealand	2	8.9%	1	6.8%	5.6%
Philippines	1	15.8%	0	NA	NA
Singapore	1	6.9%	0	NA	NA
South Korea	3	8.6%	0	NA	NA
Taiwan	4	6.9%	0	NA	NA

Table 1: Average 2008 Explicit and Implicit Discount Rates (cont.)

Country	Companies	Traditional Discount Rate (1)	Companies	(In Force) (2)	(New Business) (3)
India	2	13.6%	0	NA	NA
Turkey	1	22.9%	0	NA	NA
Europe Central					
Bulgaria	1	11.0%	0	NA	NA
Czech	3	7.9%	0	NA	NA
Greece *	1	7.3%	0	NA	NA
Hungary	3	12.0%	0	NA	NA
Poland	3	9.0%	1	6.0%	6.0%
Romania	2	12.9%	0	NA	NA
Russia	1	15.9%	0	NA	NA
Slovakia	3	8.3%	0	NA	NA
Europe Western					
Austria *	1	7.4%	0	NA	NA
Belgium *	2	7.3%	1	9.4%	9.6%
France *	3	7.8%	3	8.1%	7.0%
Germany *	1	7.4%	3	6.6%	5.5%
Ireland *	2	7.2%	2	5.3%	5.3%
Italy *	1	7.4%	2	6.8%	6.4%
Luxembourg *	1	7.3%	1	6.7%	6.2%
Netherlands *	4	7.4%	0	NA	NA
Portugal *	1	7.4%	0	NA	NA
Spain *	3	7.6%	1	9.7%	9.7%
Switzerland	1	6.3%	1	7.1%	6.0%
UK	3	7.7%	4	7.9%	7.0%

* euro currency zone

CONTINUED ON PAGE 12

SOA International Experience Survey… | from Page 11

- However, not all of the companies on an MCEV basis disclosed their implied discount rates.
- Implied discount rates for new business are generally lower than those for the in force portfolios, due to the lowering of interest rate and other guarantees for new business.

The second table presents the balance of the financial assumptions used in embedded value calculations. Note that:

- Equity and property returns normally include both cash income (that is, stockholder dividends and rental payments) and asset value appreciation (or depreciation), and these yields may be reported net of investment expenses. Alternatively, equity returns may represent a fund appreciation prior to any fees or charges made against the fund. In all cases, equity and property returns will be influenced by company investment strategy.
- Fixed returns reflect the investments in an insurer's bond portfolio. Amortized book yields are typically used in countries where book profits are based on amortized cost while current market redemption yields are used when profits are calculated using market values. Companies generally do not disclose whether the fixed income returns are net of defaults or investment expenses.
- The inflation assumption may differ from general inflation (for example, the increase in a consumer price index).
- Tax rates are dependent upon individual company circumstances (for example, the existence of tax loss carry forwards) and thus these rates cannot necessarily be applied to other companies.

Several observations can be made concerning

Table 2: Average 2008 Financial Assumptions

	Country	Companies	Equity Return (4)	Property Return (5)	Fixed Return (6)	Government Return (7)	Inflation (8)	Income Tax Rates (9)
America Latin								
	Argentina	1	26.2%	NA	21.7%	21.7%	NA	NA
	Brazil	1	NA	NA	NA	NA	NA	40.0%
	Chile	1	11.0%	NA	7.2%	6.5%	NA	NA
	Colombia	1	15.0%	NA	10.5%	10.5%	NA	NA
	Mexico	2	12.6%	NA	9.2%	8.3%	4.0%	40.0%
	Peru	1	12.6%	NA	8.3%	8.1%	NA	NA
	Uruguay	1	15.1%	NA	10.6%	10.6%	NA	NA
America North								
	Canada	5	7.6%	8.6%	5.2%	2.9%	1.6%	29.3%
	US	13	7.1%	5.0%	7.0%	2.5%	1.4%	34.9%
Asia / Pacific								
	Australia	5	8.8%	6.9%	4.7%	4.9%	2.8%	30.0%
	China	3	8.8%	NA	3.7%	4.8%	3.5%	25.0%

Table 2: Average 2008 Financial Assumptions (con't)

Country	Companies	Equity Return (4)	Property Return (5)	Fixed Return (6)	Government Return (7)	Inflation (8)	Income Tax Rates (9)
Hong Kong	6	6.9%	NA	4.7%	1.9%	2.3%	16.5%
Indonesia	1	NA	NA	NA	10.3%	6.0%	NA
Japan	5	5.8%	1.5%	2.8%	1.5%	0.6%	36.0%
Malaysia	3	10.6%	5.5%	4.5%	5.4%	NA	26.0%
New Zealand	3	9.2%	6.7%	5.6%	5.4%	3.0%	NA
Philippines	1	NA	NA	NA	9.3%	5.0%	NA
Singapore	1	10.2%	NA	NA	4.3%	1.8%	NA
South Korea	3	9.1%	5.5%	6.0%	4.7%	2.8%	22.0%
Taiwan	4	6.2%	1.8%	3.6%	2.6%	2.1%	25.0%
Thailand	3	7.6%	2.9%	4.5%	4.5%	3.0%	NA
Vietnam	1	NA	NA	NA	10.3%	6.0%	NA
Asia / Mid East							
India	2	12.3%	NA	8.8%	8.5%	5.0%	NA
Turkey	1	21.3%	NA	16.8%	16.8%	NA	NA
Europe Central							
Bulgaria	1	11.4%	NA	7.3%	6.9%	NA	NA
Croatia	1	NA	0.0%	NA	NA	NA	NA
Czech	4	8.2%	6.3%	4.3%	4.1%	3.0%	19.0%
Greece *	1	6.8%	NA	3.2%	3.2%	NA	NA
Hungary	3	12.3%	9.8%	8.8%	8.1%	3.0%	20.0%
Poland	4	8.9%	5.8%	5.3%	4.9%	3.0%	19.0%
Romania	2	13.1%	NA	8.7%	8.6%	5.0%	16.0%
Russia	1	15.8%	NA	11.3%	11.3%	NA	NA
Slovakia	3	8.6%	5.6%	4.6%	4.2%	3.0%	19.0%
Europe Western							
Austria *	2	7.8%	4.5%	NA	3.8%	NA	NA
Belgium *	6	7.3%	5.6%	4.3%	3.7%	1.4%	34.0%
France *	10	7.1%	5.6%	5.2%	3.7%	1.7%	34.3%
Germany *	8	6.9%	5.0%	5.6%	3.6%	1.7%	30.3%
Ireland *	5	6.7%	5.0%	NA	3.7%	2.4%	12.5%
Italy *	7	6.5%	4.4%	NA	3.9%	2.6%	32.3%
Luxembourg *	5	6.9%	5.7%	4.3%	3.7%	2.0%	25.8%
Netherlands *	8	6.9%	5.5%	6.0%	3.6%	1.7%	25.5%
Portugal *	2	7.8%	4.5%	NA	3.8%	NA	NA
Spain *	7	7.1%	5.7%	4.2%	3.6%	2.4%	30.0%
Sweden	2	6.2%	5.2%	NA	3.5%	1.8%	28.0%
Switzerland	5	6.6%	4.1%	3.0%	2.6%	1.4%	22.1%
UK	13	7.1%	5.9%	5.8%	3.6%	3.0%	28.1%

* euro currency zone

CONTINUED ON PAGE 14

SOA International Experience Survey… | from Page 13

Table 2 when compared to similar data published last year[5]:

- Investment yields generally decreased across all investment classes as did inflation.
- Investment yield increases were found in some South American and Eastern European countries.
- Most of the decreases are attributable to decreases in swap or government bond yields.

It should be noted that several companies calculating MCEVs as of year-end 2008 adjusted their risk free rates by including an illiquidity premium adjustment resulting in a higher risk free return. These illiquidity premiums were not included in any of the analyses contained in this article.

INVESTMENT PREMIUMS AND OTHER MARGINAL RELATIONSHIPS

Investment premiums are the additional yield an investor is expected to receive by purchasing an asset other than a government bond.

- Equity Premium—the excess yield from investing in common stock over the risk free return
- Property Premium—the excess yield from investing in real estate over the risk free eturn
- Credit spread—the excess yield from investing in a mix of corporate and government bonds over the risk free return

In addition the following two marginal relationships may be of interest:

- Risk premium—the excess of the embedded value discount rate over the risk free return
- Real return—the excess of the risk free return over inflation

Table 3 presents the marginal relationships derived from Table 2. The column numbering continues the numbering in the prior table.

[5] Last year's study can be found in International News, Issue 46, December 2008, pp 7 *http://www.soa.org/library/newsletters/international-section-news/2008/december/isn-2008-iss46.pdf*

Table 3: Investment Premiums and Other Marginal Relationships

Country	Traditional Risk Premium (10)=(1)-(7)**	Equity Premium (11)=(4)-(7)**	Property Premium (12)=(5)-(7)**	Credit Spread (13)=(6)-(7)**	Real Return (14)=(7)-(8)**
America Latin					
Argentina	6.1%	4.5%	NA	0.0%	NA
Chile	4.1%	4.5%	NA	0.7%	NA
Colombia	6.1%	4.5%	NA	0.0%	NA
Mexico	4.8%	4.5%	NA	1.1%	4.5%
Peru	6.1%	4.5%	NA	0.2%	NA
Uruguay	6.1%	4.5%	NA	0.0%	NA
America North					
Canada	3.9%	4.8%	5.5%	2.6%	1.4%
US	3.6%	4.6%	2.8%	5.1%	-0.1%
Asia / Pacific					
Australia	3.6%	3.8%	1.8%	-0.4%	2.9%
China	4.9%	5.8%	NA	0.7%	2.1%
Hong Kong	3.6%	5.0%	NA	3.0%	-0.4%
Indonesia	5.0%	NA	NA	NA	4.3%
Japan	4.0%	4.3%	0.2%	1.1%	0.8%
Malaysia	3.6%	5.3%	1.3%	0.3%	NA
New Zealand	3.6%	3.8%	2.0%	0.3%	1.7%
Philippines	6.5%	NA	NA	NA	4.3%
Singapore	2.6%	6.0%	NA	NA	2.5%
South Korea	3.9%	4.3%	0.9%	0.8%	1.6%
Taiwan	4.3%	4.5%	0.3%	1.8%	1.5%
Thailand	5.0%	4.3%	0.5%	0.2%	3.8%
Vietnam	6.5%	NA	NA	NA	4.3%
Asia / Mid East					
India	5.1%	4.5%	NA	1.0%	4.3%

CONTINUED ON PAGE 16

SOA International Experience Survey… | from Page 15

Table 3: Investment Premiums and Other Marginal Relationships (cont.)

Country	Traditional Risk Premium (10)=(1)-(7)**	Equity Premium (11)=(4)-(7)**	Property Premium (12)=(5)-(7)**	Credit Spread (13)=(6)-(7)**	Real Return (14)=(7)-(8)**
Europe Central					
Bulgaria	4.1%	4.5%	NA	0.4%	NA
Czech	3.9%	4.2%	2.3%	0.0%	1.5%
Greece *	4.1%	3.6%	NA	0.0%	NA
Hungary	3.9%	4.2%	2.7%	0.2%	4.0%
Poland	3.9%	4.1%	1.5%	0.0%	1.9%
Romania	4.3%	4.5%	NA	0.0%	3.5%
Russia	4.6%	4.5%	NA	0.0%	NA
Slovakia	4.1%	4.4%	0.9%	0.0%	0.4%
Europe Western					
Austria *	3.6%	4.0%	0.8%	NA	NA
Belgium *	3.9%	3.7%	1.8%	0.8%	2.4%
France *	4.2%	3.4%	1.9%	1.6%	2.0%
Germany *	3.6%	3.5%	1.6%	1.8%	1.8%
Ireland *	3.3%	3.1%	1.4%	NA	1.2%
Italy *	3.6%	2.5%	0.4%	NA	1.3%
Luxembourg *	4.1%	3.2%	2.0%	0.6%	2.0%
Netherlands *	4.0%	3.3%	1.9%	2.7%	1.9%
Portugal *	3.6%	4.0%	0.8%	NA	NA
Spain *	4.1%	3.5%	2.0%	0.9%	1.3%
Sweden	NA	3.0%	2.0%	NA	1.4%
Switzerland	3.6%	3.9%	1.4%	0.4%	1.2%
UK	4.0%	3.5%	2.4%	2.2%	0.6%

* = euro zone
** = calculated including only companies with complete data

A few observations can be made when comparing Table 3 to last year's results:

- Credit spreads between non risk-free asset classes and risk-free yields generally increased, reflecting the turmoil in the financial markets.
- Some of the largest spread increases occurred in North America where risk free yields decreased the most.
- Spread decreases were scattered and primarily occurred in Europe and Asia.

Please note that the data is relatively sparse outside of Western Europe and North America, so observations and conclusions could be different if additional data was available.

STOCHASTIC MARKET ASSUMPTIONS

A number of European companies are calculating the values of options and guarantees following stochastic approaches in order to comply with European CFO Forum guidelines[6] for embedded value calculations. Fourteen of the 23 companies surveyed disclosed fairly detailed stochastic market assumptions in their 2008 European embedded value (EEV) reports. Averages of several of these assumptions are shown in Table 4 (Note that some companies refer to volatility as standard deviation).

Note that some companies reported volatility without reporting yields. Some companies determined volatilities from historical market experience while others measured the implied volatility in current derivative prices, which may result in significant differences between companies.

Some observations can be made regarding stochastic and other elements of EV calculations this year:

- More companies are disclosing stochastic assumptions as they deal with calculating the value of options.
- Prior to year end 2008, most companies calculating MCEVs used implied volatilities as of the valuation date. At year end 2008 however, due to the high implied volatilities observed, a wide range of implied volatility assumptions were used including using implied volatilities as of end of June, August or September of 2008 or using average volatilities during 2008.

SUMMARY

The SOA International Experience Study Working Group (IESWG) publishes this survey to enhance the knowledge of actuaries about current international market conditions and practices. Practices continue to evolve and we wish to encourage an open discussion on appropriate methodologies and further disclosure of both assumptions and the thoughts behind their formulation.

The IESWG intends to update this survey annually. We invite additional companies to provide data, on a confidential basis, to be included in this and future surveys. Please contact Ronora Stryker *(rstryker@soa.org)* or Jack Luff *(jluff@soa.org)* at the Society of Actuaries for further information. □

[6] See *http://www.cfoforum.nl/* for more information on the European CFO Embedded Value and Market Consistent Embedded Value Guidelines

Table 4: Sample Stochastic Assumptions

		Stock		Property		Bonds		
	Companies	Yield	Volatility	Yield	Volatility	Yield	Volatility	Type
Australia	2					4.4%		Swap
Czech	2		24.6%			3.7%	11.6%	Swap/Government
Europe	12	6.7%	27.8%	5.7%	13.9%	3.9%	11.6%	Swap/Government
Hong Kong	1		39.7%		21.9.%			
Japan	4	4.9%	30.4%			1.7%	8.5%	Swap/Governmentw
So. Africa	2		29.2%		15.6%	7.7%	25.9%	Swap
So. Korea	2		36.4%			4.6%	11.8%	Government
Switzerland	5		26.7%		16.4%	2.6%	13.7%	Swap
UK	9	5.8%	30.0%	5.8%	15.6%	3.5%	9.6%	Swap/Government
US	11	7.1%	27.0%		16.9%	3.0%	17.2%	Swap/Government

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2009 Asian International Financial Reporting Seminars

By Peter Duran, Bill Horbatt, Michael Lockerman and Darryl Wagner

The International Section successfully sponsored seminars on Financial Reporting in Asia for the fourth consecutive year this September. The first seminar, co sponsored by the Society of Actuaries and the Financial Reporting Section, took place September 7–9 in Hong Kong, followed by one day "mini" seminars in Bangkok, Manila and Saigon (HCM city) which were co-sponsored by the local actuarial societies. Over 70 professionals attended the Hong Kong seminars while over 150 actuaries attended the one day country sponsored seminars.

The focus of this year's seminars shifted from the previous U.S. GAAP emphasis to International Financial Reporting Standards (IFRS) combined with U.S. GAAP. The first one and a half days of the Hong Kong seminar presented an introduction to U.S. GAAP and how it can be applied right now to companies reporting under U.S. GAAP and/or IFRS (under Phase I of the IFRS insurance contracts guidance). The second one and a half days considered advanced topics in IFRS and U.S. GAAP like purchase accounting and fair value, as well as up to the minute presentations on the evolution and current status of Phase II of the IFRS insurance project. The three country seminars condensed the material from the three day Hong Kong seminar to present an overview of international financial reporting.

The three local seminars were particularly rewarding since they demonstrate the growing relationship between local actuarial societies and the International Section. Two of the countries have partnered with the section to conduct experience studies, which are now in their second year, under the SOA International Experience Study initiative that originated within the section.

Bangkok seminar organizers and speakers

Seminar in Manila

The International Section would like to thank both the speakers, who contributed countless hours preparing and traveling to the seminars, as well as our local partners that made the seminars possible. We are looking forward to continuing this progress in the years ahead. □


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A Jump-Start for Improving Risk Management:

A Case Study of ALM Development in the Korean Insurance Industry

By James E. Backus and Ki-Hong Joo

At this time of economic distress, companies throughout the world are intensely focused on upgrading their risk management capabilities, as are their home country regulators. This article explores one example of how a part of this transformation was accomplished for several major Korean insurers.

PROJECT HISTORY

The authors became involved in this process by being in the right place at the right time. Our employer, Transamerica Reinsurance, had taken the decision to significantly expand its international operations, and our business unit had recently reviewed and affirmed the value of its consultative services in developing new reinsurance sales and wished to emphasize that value in our future sales activities. At about the same time, the devaluation of the Thai baht had prompted a significant sell-off of Asian currencies, leading to higher interest rates and substantial insurer disintermediation. Samsung Life, the largest life insurer in South Korea, recognized that U.S. insurers had gone through similar conditions in the late 1970s, and began contacting U.S. organizations for the purposes of obtaining an ALM model. Finally, one of our team members was a Korean national who had recently worked at Samsung Life's New York office. Following from this confluence of good luck, we began talks with Samsung about their needs in this area.

Samsung's initial goal was to purchase an ALM model that is capable of modeling their insurance products and investments. While the major actuarial consulting organizations had proprietary ALM models, none persuaded Samsung that they could either create a new model from scratch or fit their existing model to Samsung's requirements without substantial costs and several years. We at Transamerica were straightforward in our advice as well, noting the substantial costs and time needed for developing an ALM model for them, but we were willing to work with them by providing advice they could use in developing their own model. We proceeded on that basis.

We agreed to provide a series of two-week intensive seminars in ALM concepts, starting in Seoul in August, 1998. The authors were joined at various times by other Transamerica professionals, including Marsha Wallace of the Los Angeles home office and Qing Wang of the Reinsurance Division in Charlotte, who each brought a deep understanding of risk management techniques and their own unique perspectives. Samsung provided a team of roughly two dozen professionals, with about half coming from Samsung Life Insurance Company and half from the Samsung Research Institute, the strategic planning arm of the Samsung *chaebol*. Samsung's life insurance team included experienced representatives from the actuarial, investment and underwriting departments, while the research team included staff with operational and analytical backgrounds that included a broad range of financial institutions.

We started by demonstrating how book value accounting typically fails to identify embedded risks such as ALM risk and optionality. We then proceeded to review the generally accepted theoretical framework for financial economics, including DCF valuation, Miller-Modigliano capital structure irrelevance, Markowitz efficient portfolio selection, Sharpe ratios, duration and convexity matching, arbitrage-free modeling,

One of the early seminar teams. L-R: Yi Yu Mun, Kim Won Kuk, Joo Ki Hong, Oh Ji Young, Marsha Wallace, Kim Kwang Bin, Jim Backus

and risk-neutral pricing, all of which are equally applicable in both the United States and Korea. Finally we addressed practical implementation issues. These included the analysis and selection of appropriate assumptions, consideration of Korean accounting requirements, and development of simulation models for pricing, EVA, DST, and ALM risk. The modeling activities consumed the overwhelming majority of resources and represented, along with appropriate governance policies, the ultimate deliverable.

Our project with Samsung was finished in 2001. After completing this initial project, we were able to work in a similar manner with Kyobo Life in 2001, Korea Life in 2002, and NACF in 2002 and 2003. The main point of the workshops continued to be providing these companies with the same risk management capabilities used by U.S. insurers for managing interest rate and related risks. However, we also looked forward to learning a bit more about the Korean insurance market. The issues we addressed were primarily those needed to implement U.S. practices in Korea, but it was also necessary to review a number of gaps in U.S. practices that needed to be addressed in order to fit the Korean insurance industry.

SOME UNEXPECTED CHALLENGES WE FACED

There were a number of aspects of the organization that U.S. practitioners may take for granted that were not present in the Korean market. In order to achieve the project's "number one goal" of developing and implementing an ALM model, we needed to first convince the companies that changes in these other areas were needed, even when they didn't seem to directly address the company's risk management goals.

Pricing methodology: We planned to explain how the company's pricing models would need to be modified in order to accommodate the needs of risk management, ALM and related measures such as EVA. However, at the time, embedded margins in the companies' reserves were large and the typical process for introducing a new product was to demonstrate that individually, each of the mortality, interest rate and expense assumptions was more conservative than the statutory requirement, rather than developing a specific pricing model. Thus we instead introduced pricing models using PVDE and modified those as needed.

Performance measurement: Performance evaluation was focused on comparing the actual levels of investment income to the level provided in the reserves. Changes in the investment climate occur too quickly for this approach. We discussed the shortcomings of this approach and recommended comparing investment income instead to performance benchmarks taking current market conditions into account.

Accounting and reporting: Each of the local companies had adopted a functional business organization, with underwriting, marketing, and investment managers reporting at the executive levels. Profitability reports were prepared for regional sales offices by taking pro rata allocations of investment income and home office expenses. As a result, it was not possible within the given structure to determine the profitability of individual products or product lines. We described the necessary accounting changes needed to be able to determine product line profitability.

CONTINUED ON PAGE 22

A Jump-Start … | from Page 21

Segmentation and investment income allocation: Related to the above, each of the companies organized their investment departments by type of investment (equities, bonds, real estate, etc.), and when we recommended realigning the investment functions with the products they supported there was some resistance based on expectations that doing so would increase costs, even without segmentation, because, for example, there would need to be a portfolio manager for each combination of investment type and product line, where there was currently just one for each investment type (bonds, equities, real estate, etc.). There was even greater resistance when we discussed segmenting the general account due to the significant support needed from the accounting function.

Limited investment choices: The main asset categories available to the Korean companies were bonds, equities, real estate, and consumer and business loans. The most liquid government bonds were only available in maturities up to five years, and while longer corporate bonds were available, their supplies were very limited. Conversely, there were many insurance products covering the whole of an individual's lifespan, and so getting a reasonable duration match between the liabilities and the supporting bonds was difficult. We identified two ways to work around this: (a) by buying equities that had a demonstrably large price sensitivity to long term interest rates, or (b) by entering private contracts with companies involved in producing industrial assets with very long lives, whose future profitability would be sensitive to changes in interest rates.

Capital requirements: At the time, the companies were required to hold nominal amounts of capital that did not depend on their business mix or risks, and (as implied earlier) capital requirements were not considered in evaluating new products. We explained how capital requirements have evolved historically in the United States and how they affect pricing. This included a review of how rating agencies work and how they influence the optimal amount of capital for a company. One of the conceptual challenges in these discussions was explaining the relationship between reserves, required capital, segmentation, earnings, and distributable earnings/free cash flow.

GAPS IN U.S. PRACTICE

Although many U.S. companies probably have addressed these issues, at the time they presented challenges to us in explaining U.S. risk management practices.

Products that never produce a loss at issue: While it is commonly recognized that PVDE rather than IRR is the most appropriate measure of product profitability, IRR continues to be used as a filter on many new product introductions. This approach breaks down when combined initial reserve and capital requirements are less than the initial net premium. In such circumstances, traditional analysis would suggest that the company write as much new business as possible. This is not always a useful answer.

Goals other than profit maximization for shareholders: One assumption underlying the standard analytical framework is that a company's goal is to maximize shareholder value. In the Korean market, several of the larger insurers were held by *chaebol* with many different business interests, including for example in Samsung's case both electronics and shipbuilding. In some cases, the goals of the owners are not necessarily to maximize the insurer's value but to maximize the *chaebol's* value. While this may also be present in the United States, the

"The dominant local firm recognized risk management as a crucial strategic requirement and went about developing its own capabilities; other local companies then followed suit taking advantage of any learning generated by the front-runner."

analytical framework doesn't address this issue particularly well.

Strategic use of both sides of the balance sheet: Our initial attempt to address asset allocation was based on the U.S. expectation that the investment department would invest whatever funds the insurance operations provided. When the insurer has other sources of business income, such as consumer finance, the funds available for investment will also be affected by those other activities, and for strategic reasons the company may wish to continue lending to consumers even when additional such loans increase the ALM risk of the combined business. Conversely, the company also will need to be able to respond to a decrease in demand for consumer loans without increasing its ALM risks.

THE RESULTS

At the completion of our work each of the four companies had developed its own ALM model in Excel. The primary disadvantage of Excel, being subject to accidental changes, was offset by the transparency of the calculations, the widespread availability of already-trained users, and what we might call the "open license" affect (allowing each user to see all of the formulas and being able to share recommendations for improvement). Each of the companies developed a graph showing how the risk and expected profitability of its major product lines was influenced by its asset mix. Each could show how these graphs changed in response to changes in assumptions regarding policyholder premium and lapse behavior, investment market conditions, crediting rate strategy and dividend policies. Based on these graphs, each was able to recommend an approach to general account segmentation, with an appropriate investment strategy for each segment. As part of the conclusion, each company also provided recommendations for short–term portfolio changes that would reduce the company's ALM risk without waiting for the segmentation and other infrastructure changes.

An important but unstated goal was also achieved: the development of a knowledgeable risk management staff. This was an outstanding success. It would be difficult to track down everyone who was involved in the project, but many of the people have expanded their roles in risk management activities. For example, the photograph on page 21 shows, several key people from Samsung Life near the end of the project, including Mr. Yi Yu–Mun, now the chief actuary for Samsung Life, Mr. Kim Won–Kuk, now manager of the risk management team for Hungkuk Life, Mr. Kim Kwang–Bin, now manager of the risk management team for Mirae Asset Life, and Ms. Oh Ji–Young, now a risk management consultant. Many of the participants from Kyobo Life, Korea Life and NACF have followed similar career paths.

SUBSEQUENT CHANGES

Much has changed in Korea since 2003.

Variable products: Variable annuities have been introduced, including both guaranteed death and living benefits. (It's interesting to note that this means the necessary technology for general account segmentation is available.)

Capital requirements: Korean regulators have introduced capital requirements. There is now a two–year grace period for companies to move from the existing EU–style capital requirements to a basis similar to that of the U.S.

CONTINUED ON PAGE 24

A Jump-Start … | from Page 23

Accounting practices: Companies must change from US GAAP to IFRS by 2012, which will also require mark–to–market information for substantially all business.

Governance: All Korean insurers must have a qualified risk management team and appropriate risk management practices.

We believe that Samsung Life, Kyobo Life, Korea Life and NACF were better positioned to manage these changes as a result of our work.

RELEVANCE TO TODAY'S ENVIRONMENT

These memories have started to fade, and many of the techniques involved and the contacts developed are no longer on the front lines (or at least not on the *same* front lines). However, the overall course of the project may be a useful guide generally for companies or regulators intending to tighten up their risk management practices. Here are some areas relating not to the technical aspects of risk management but to the management of the process:

Senior management commitment: Projects such as this, which combine elements of execution, strategic planning and corporate governance, often fail due to lack of commitment at senior levels. Samsung Life, for example, had assigned a staff of about two dozen professionals, a larger group than many U.S. life insurers of comparable size would have involved in their own ALM analyses. This high level of commitment may have been the most important factor in the success of the project.

Follow the industry leader: Our opinion is that rolling out best practice to new markets is most often done when an established international organization enters those markets. Certainly global firms, such as Aegon, Axa, ING or Swiss Re, bring their risk management policies with them when entering a new market, typically by acquiring a local firm and developing the necessary procedures to integrate their acquisition into their own particular organizational culture. This approach has much to recommend it, such as starting from a well-defined set of requirements and having an existing pool of expertise to draw upon. This project followed a different approach: the dominant local firm recognized risk management as a crucial strategic requirement and went about developing its own capabilities; other local companies then followed suit taking advantage of any learning generated by the front-runner.

Principles-based training: Samsung was clear from the beginning that they wanted to understand the details of the analyses. This was probably an area where Excel had an advantage over the major actuarial models—it was transparent and already familiar to the team. Regardless of the modeling platform used, it is important that the process be performed by persons knowledgeable about the technical underpinnings.

Free market capitalism and democracy: No, we can't take any credit for this, but as regulations are being rewritten in response to current market turmoil, they should be limited to the essentials necessary to have an orderly and secure insurance market. At the time of partition, North Korea had more factories and better farmland compared to its poor cousin in the South. Now, 60 years later, the roles couldn't have reversed any more dramatically. □

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Tales from My First year Working Internationally

By Doug Andrews

As an actuary who has resided in Canada all my life, I have often wondered what it would be like to work internationally. In 2008, I got my opportunity to find out. That was the year that I completed my transition from traditional actuarial work as a pension and investment actuarial consultant for a major firm to academia, teaching actuarial science.

In April 2008, I made the first of my three trips to Serbia to teach an actuarial science course to actuarial students, regulators and university lecturers. Prior to my visit, Harry Panjer and Rob Brown, both professors at the University of Waterloo and former presidents of the Society of Actuaries and the Canadian Institute of Actuaries, had been to Serbia to teach. I was excited, particularly when I learned that the Deputy Governor of the National Bank of Serbia (NBS) was coming to make the introductory remarks before my first class. My excitement was somewhat dimmed when I learned through the translator what the Deputy Governor had said about actuaries. The gist of her remarks were that in the financial crisis that hit Serbia during the early part of this century, the NBS, which is the national regulator and supervisor of financial institutions, found that a number of the insurance companies that failed had certificates signed by actuaries testifying to their solvency. The NBS took the dramatic step of abolishing the actuarial profession (for the purposes of certification). In recognition, that such an action was not a long term solution; the NBS developed the outline of a program of actuarial education, consistent with the guidance of the International Actuarial Association (IAA). The next step was to find actuaries who were prepared to come to Serbia to lecture. I have taught pensions twice and health economics and health insurance once.

The pension mathematics taught was primarily in respect of defined benefit pension plans. It was difficult for students to relate this to their own experience. Although the Serbian social security pension system is defined benefit, based on points, it is financed using a Paygo approach. Occupational pension plans are defined contribution. In some ways, it was difficult for me to relate the Serbian context to my experience. For example, in North America, salary scales are often developed by examining the historical pattern of salary increases over many years. Due to its period of hyper-inflation in the early 1990s, Serbia does not have an orderly progression of salaries. Salaries are only now returning to the levels they were just prior to the period of hyper-inflation. Inflation was so severe that the NBS museum has a 500 billion dinar note, which they claim is the largest denomination ever issued.

In February 2009 I taught the course in health economics and insurance. I also had the opportunity to present a special lecture to employees of Republic Health Institute (RHI). My talk was consecutively (as opposed to simultaneously) translated, which is a slow process, especially if one uses humour. One must wait until the translator finishes to see if anyone laughs. Serbia is opening its health insurance market to private insurers to provide parallel and supplementary coverage for certain services. Although RHI is the government body in charge of public health care provision, a department within RHI has been established to compete privately against other private insurers. However, the private insurers perceive an uneven playing field. The department of RHI will use the RHI offices throughout Serbia to deliver services. Many citizens do not distinguish the department of RHI providing private services from the government

"I recommend international work experiences for those looking for adventure, who are flexible and adaptable, and who enjoy meeting new people."

body charged with providing public health care, so they do not understand why they would purchase insurance from a private insurer.

Serbia is a fascinating country to visit. It has a long history of invasions by various countries—traditionally by Austrians, Hungarians and Turks, but at the end of the 20th century it was bombed by the United States and other NATO forces. Belgrade, the capital city, has an enormous fort high on the hill overlooking the place where the Danube River and the Sava River meet. The fort dates back over six centuries. It would have provided a secure fortress against land and sea attacks. From the architecture, one can see that Belgrade was a beautiful European city rivalling Paris, Berlin and Bucharest, but one can also see the effects of the bombing. One theory is that the bombed out buildings serve as a reminder of the devastation wreaked by the West and as a sign that the West needs to make financial reparations. Belgrade is an old city with a labyrinth of streets that do not follow a grid. It has a main pedestrian promenade with many outdoor cafes, open during warmer weather. The streets often open to monuments or small parks. The Serbian language is similar in appearance to Russian, so it can be difficult for an English speaker to get around.

The Serbs I met were very friendly and welcoming. They tend to be very animated and have a good sense of humour based in scepticism, probably in part due to all the things they've been told over the years by the various invaders. They are pragmatists rather than idealists. The following experience illustrates this characteristic.

I attended the local bridge club. There were 10 tables in play in the downstairs of what appeared to be a very nice house. There was also a large bar that did active business at all times. The people were all very friendly to me. The bidding was conducted in English, French, Serb or some combination. The only thing that I disliked was that almost everyone coming to my table smoked. Many were carrying 2 packs of cigarettes for fear of running out in the few hours they were playing. When I was asked how I liked the club, I responded that I really liked it—the people were friendly, the bar was a great attribute and the bridge was good. I went on to say that the only thing I didn't like was the smoke and that in Canada we had passed a law over 10 years ago that one could not smoke in the clubs and that it made a big difference. My hosts smiled and replied "yeah we passed that law too!"

Beginning in May 2008 and continuing through the summer, I was fortunate to be awarded a grant by the Actuarial Education and Research Foundation of the SOA, which enabled me to live in Washington, D.C. while I was a Visiting Scholar at the National Academy of Social Insurance (NASI). It was a very exciting time to be in Washington with the Democratic race to select a presidential candidate still going strong, followed by the presidential campaign. Of the approximately 100 TV channels I could pick up, at any given time at least 45 channels were discussing some aspect of the candidates, their families, the election, etc.

The principal task I completed was to help NASI organize a one day conference for "interns," i.e., students working in Washington, D.C. for the summer. The focus of the conference was social security, its funding and viability. Over 100 interns attended. I made a

CONTINUED ON PAGE 28

Tales from … | from Page 27

presentation, providing an international perspective on the U.S. Social Security system. Steve Goss, chief actuary at the Social Security Administration, gave a very clear explanation of the options for Social Security with respect to raising taxes, cutting benefits, or some combination. Haeworth Robertson, a former Social Security actuary, attended and spoke from the floor. The interns were divided into groups to discuss the options and present their recommendations. A number of actuaries acted as experts to facilitate the group discussions, including Alice Wade, Joe Applebaum and Anna Rappaport.

While in Washington, D.C. I had two additional opportunities to give presentations on international health care comparisons. One presentation, entitled "Ten Questions Every Actuary Should Be Able to Answer Regarding the Canadian Health Care System" was delivered to a conference of the International Association of Black Actuaries.

In October 2008, I started my current job as Senior Lecturer at the University of Southampton teaching actuarial science. The University of Southampton is one of the United Kingdom's significant research universities. It has a strong actuarial science program for undergraduate students. Successful students can graduate with as many as eight exemptions from the Institute of Actuaries' examinations. Much of the credit for this program is attributable to the efforts of Gerry Kennedy, the programme coordinator. There are approximately 100 undergraduates admitted each year to the mathematics with actuarial science or economics with actuarial science programs.

Southampton is in the southern part of the United Kingdom and is a port city. The Titanic sailed on its final voyage from Southampton and last fall the Queen Elizabeth II left Southampton—its home base—to make its home in Dubai as a luxury hotel. Southampton is reputed to have the best weather in England; although that is a comparative, not an absolute, statement about good weather. However, my Canadian colleagues will be interested to know that there was only one day of snow in Southampton last winter. Thankfully, it snowed on the day after I had left England to teach in Serbia, because they closed the airport hours after I departed. The University was closed for two days. From pictures I've been shown, there must have been almost a full one inch of snow!

There are a number of actuaries that work in the south of England, in the vicinity of Southampton, most of whom participate in the Bournemouth Actuarial Society (BAS). The University of Southampton has hosted a number of meetings of the BAS. We are centrally located, have lots of room for meetings, and it gives our actuarial students an opportunity to meet actuaries and hear guest speakers. One guest speaker was Andrew Smith who had participated on a committee organized by the Institute of Actuaries to study asset models in an attempt to learn from the modelling mistakes made in this financial crisis. Andrew talked about the extent of the analysis of asset returns as well as the stochastic modelling done. At one point he quipped that the models gave results 10,000 years into the future and even at that point in time the Institute of Actuaries and the (Scottish) Faculty of Actuaries had not merged.

Over the past year, I have enjoyed my experience working internationally. I have had many different experiences and met a lot of new people. However, working internationally is not always fun. It can involve a lot of travel, including delayed or missed airplane flights, and long periods of separation from family and friends.

I recommend international work experiences for those looking for adventure, who are flexible and adaptable, and who enjoy meeting new people. □

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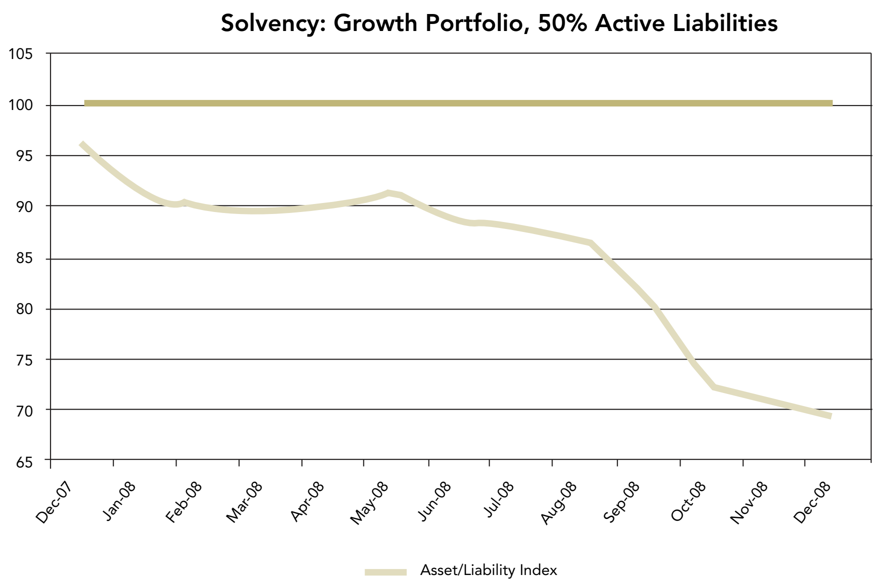
Canada-Pension Grief & Relief

By Geoffrey Melbourne

In the 1990s, Jamaica, my country of birth (and residence for most of my life), went through a financial sector meltdown afflicting its indigenous financial institutions, including banks and insurance companies (which manage large blocks of pension assets). The resolution of the crisis was multi-faceted, including multi-lateral support, "bailout" institutions and regulatory reform. The latter involved new legislation and regulations (e.g., the Insurance Act and the Pensions Act), and a new regulator in the form of the Financial Services Commission. The Canadian model and experience was a beacon in Jamaica's regulatory reform (especially in relation to the insurance sector). Fast forward to 2008 and the beacon is in the process of reforming its multi-jurisdictional pension regulatory environment, as it is widely felt that the status quo is not working effectively.

FIGURE 1



Source: *http://www.watsonwyatt.com/canada-english/news/press.asp?ID=20364*

Like other global stock market indices, the S&P/TSX Composite Index, plummeted in 2008, with a calendar year return of negative 33 percent compared to the positive return of almost 10 percent in 2007. On the other hand, long-term Government of Canada benchmark bond yields, a key metric in determining pension plan solvency, declined by over 70 basis points in 2008. On the interest rate front, there was some redemptive good news in the following areas:

- For indexed plans, long-term Government of Canada real return bond yields actually increased by over 10 basis points in 2008.
- On an accounting basis, where high quality corporate bond yields are the pertinent metric, financial market turmoil and related widened corporate yield spreads over treasuries resulted in decreased pension benefit obligations to offset some of the investment losses.
- The prescribed standard for determining lump sum commuted values from pension plans was changed, with one of the changes allowing a higher yield spread over treasuries than obtained previously.

Nonetheless, the overall effect of the foregoing factors was a significant decline in defined benefit pension plan solvency ratios in 2008, with Watson Wyatt's Pension Barometer estimating a drop for the typical plan from 96 percent at the beginning of the year to 69 percent (73 percent after allowing for the new lump sum commuted value standard) at the end of the year (see Figure 1 to the left).

These reduced solvency ratios require significant increases in contributions at a time when many companies are facing financial stress and business issues such as reduced customer

> "There are obviously valid concerns on either side, with plan sponsors facing huge funding issues in tough economic times, and some members facing under-funded benefits sponsored by companies which are bankrupt or against the ropes"

demand, tighter debt markets and collections challenges. The increased contribution requirements are also competing with corporate capital investment plans.

Canada's pension regulatory system is complex, with Canada Revenue Agency governing tax issues through the Income Tax Act, the province with the plurality of active members governing funding issues, and the province of employment of each member governing minimum benefit standards—some industries (such as banking, broadcasting and air transportation) fall under federal rather than provincial jurisdiction. Most jurisdictions have relief measures to ease the heavy contribution requirements imposed on plan sponsors. For the most part, the relief involves extending the amortization periods for pension solvency deficits (from the standard period of five years), subject to conditions like member consent or letter of credit security for deferred contributions in some cases.

In addition, several jurisdictions are considering permanent reform measures to sustain and improve the pension system. To my mind, the Alberta-British Columbia report is perhaps the most innovative, as exemplified below:

- It was a joint effort of two provinces, and recommended harmonization of pension standards between them, as well as the exploration of the viability of uniformity across Canada. Any baby steps towards harmonization would represent a huge improvement over the hop-scotch approach prevailing at present.

- It included a number of recommendations to overcome restrictions on the use of surplus, and thereby encourage stronger funding of pension plans.

- It recommended that plan sponsors be allowed to use letters of credit to fund solvency deficiencies.

A plan sponsor wish list for permanent reforms, given the current environment, might include longer amortization periods for pension solvency deficits (without conditions), higher interest rates to determine pension solvency liabilities and other approaches to mitigate the impact of solvency funding requirements, and no elevated priority for pension claims in bankruptcy. Labour asks would include more security for accrued pension benefits, both within ongoing pension plans (longer amortization periods would be a negative) and in the form of a guarantee fund (only Ontario has such a fund for benefits up to a modest limit), and greater transparency and disclosure to members. There are obviously valid concerns on either side, with plan sponsors facing huge funding issues in tough economic times, and some members facing under-funded benefits sponsored by companies which are bankrupt or against the ropes. Hopefully any reforms will reflect a happy medium.

Some financial gurus have highlighted the role of various financial models in the recent financial and economic tsunami. Although financial economics as a defined term seems to have waned in prevalence in actuarial literature over the last couple of years, terms such as LDI and ERM seem to have increased in popularity, and plan sponsors should be re-assessing their ability to bear the risks imposed by their pension plans (especially investment risks), recognizing how low and real the bottoms can be and the correlation that those bottoms might have with other

CONTINUED ON PAGE 32

Canada-Pension … | from Page 31

risks facing their businesses. The models used to make these assessments in the past may not have the right answers for today's reality, or their results may require different interpretation.

The demise of defined benefit pension plans has been accompanied by a greater reliance on defined contribution plans, both at the occupational and individual levels. Defined contribution plans were by no means immune to the market crash in 2008, and while no funding issues for companies would have emerged as a result, workforce and HR issues likely will arise. Individuals relying on defined contributions plans for a significant portion of their retirement income may now be facing serious challenges with their retirement planning, especially at the older ages. Although legal challenges to companies regarding their sponsorship of defined contribution plans have probably been modest so far, who knows what the future might portend, especially without some of the safe harbour protection available to sponsors in other countries.

Some stakeholders, from both the corporate and labour sides, believe that the main avenue for improved retirement income security on a large scale basis is an expanded Canada Pension Plan (employment earnings based), which with its residence based counterpart—Old Age Security—is designed to replace about 40 percent of national average wages (CAD$46,300 for 2009). Interestingly, equities represented 57.5 percent of the CPP investment portfolio as at December 31, 2008, with significant allocations to real estate and infrastructure as well—an investment return of negative 13.7 percent was earned for the 9 months ended December 31, 2008 (negative 18.6 percent for the fiscal year ended March 31, 2009). However, no threats to the long-term sustainability of the fund were anticipated. There are other versions of this "CPP-plus" theme, with for example, Alberta and British Columbia proposing their "ABC Plan" at the provincial level, and Canadian life insurance companies which control most of the DC market arguing that any such supplement should be managed by them rather than at governmental levels.

Canada is widely perceived to have a relatively strong banking sector (which has emerged somewhat unscathed relative to the experience in other countries), a sustainable social security system and a culture lower on the risk tolerance spectrum than some other industrialized countries. There are definitely fundamental issues with defined benefit plan sponsorship and management relative to the expectations of stakeholders in this generation, but hopefully reasonable compromises can be achieved to preserve (and dare I hope expand?) this important leg of retirement income security, and maintain Canada's reputation for sound financial sector management.

This article was originally prepared in March 2009 when the impact of the market crash was much fresher. Since then, the Bank of Canada [http://www.bank-banque-canada.ca/en/mpr/pdf/2009/mpr230709.pdf] has forecast an end to the recession with growth expected for the 3rd quarter of 2009 (unemployment was expected to continue to rise). Furthermore, following negative investment performance for the typical pension plan in January and February 2009, investment returns have been strong in subsequent months, but with a relatively minor impact on the typical solvency ratio (from 73 percent at the start of the year to 75 percent at June 30, 2009) per Watson Wyatt's Pension Barometer [http://www.watsonwyatt.com/canada-english/news/press.asp?ID=21692]. Pension plans are therefore definitely not yet out of the woods—sponsors and other stakeholders continue to face great challenges and the need for reform and compromise remains as great as before. □

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Can There Be More than One "Fair Value"?

By Patricia Matson, Albert Li, and Hui Shan

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For many companies in the United States, significant changes in their accounting practices are appearing in the horizon, given the proposed IFRS conversion roadmap from the U.S. Securities and Exchange Commission (SEC) on November 14, 2008. For U.S. Subsidiaries of certain foreign filers, International Financial Reporting Standards (IFRS) is currently the basis upon which they prepare their financial statements, as the parent company is domiciled in a location for which IFRS has been adopted. In light of the increasing focus on IFRS for U.S. insurers, as well as the significant issues that have arisen with respect to the application of fair value to various types of contracts issued by insurance companies, the purpose of this article is to compare and contrast existing and near future differences in fair value requirements between generally accepted accounting principle in the United States (U.S. GAAP) and IFRS. The focus of this article is on fair value requirements as they relate to actuarial valuations of insurance contracts (including certain contracts classified as investment contracts), and therefore ignores implications on investments held by insurance companies.

For insurance companies, fair value accounting for insurance liabilities has been a major concern and challenge. Under current U.S. GAAP guidance, there are specific instances in which fair value accounting is required with respect to actuarial valuations, including:

- Embedded derivatives in certain annuity contracts,
- Embedded and freestanding derivatives related to certain reinsurance contracts,
- Valuation of insurance contracts for which the fair value option (per FAS 159) has been elected, and
- Fair valuations required for purchase accounting and goodwill impairment testing.

The U.S. GAAP guidance that governs how fair value should be determined is contained in Financial Accounting Standard No. 157, Fair Value Measurements (FAS 157).

Unlike U.S. GAAP, current IFRS guidance does not contain a single pronouncement governing how fair value is to be performed. Instead, the requirements for performing fair value are contained within the individual pronouncements that require fair value. For insurance contracts that meet the definition of a financial instrument, this guidance is currently contained within International Accounting Standard 39, "Financial Instruments: Recognition and Measurement" (IAS 39). However, the IASB has issued an exposure draft called "Fair Value Measurements" (FVM ED), which will pro-

"In calculating fair value for GMAB feature under FAS 157/FVM ED and IAS 39, there are some specific differences of particular interest to valuation of insurance contracts."

vide comprehensive guidance where fair value is determined to be the appropriate accounting across all other IFRS guidance. Many of the concepts in the proposed FVM ED are similar to FAS 157.

This article shows a comparison of application of FAS 157 (and the similar FVM ED) and IAS 39 to valuing one of the most common insurance contracts that requires fair value: a Guaranteed Minimum Accumulation Benefit (GMAB) feature embedded in a variable annuity. Note that for purposes of this article, we have assumed that such a feature would be classified as a FAS 133 embedded derivative under U.S. GAAP, and as an IAS 39 embedded derivative under IFRS. We realize this treatment may be different in practice, but is used to illustrate the differences in the fair value concepts. In addition, we have focused on the main differences between FAS 157/FVM ED and IAS 39, and largely ignored differences between FAS 157 and the FVM ED. These differences are relatively less significant for valuation of insurance contracts.

In calculating fair value for GMAB feature under FAS 157/FVM ED and IAS 39, there are some specific differences of particular interest to valuation of insurance contracts:

1. Whether and how to reflect reporting entity's credit risk,
2. Whether and how to incorporate risk margin,
3. Method for determining equity return scenarios, and
4. Time zero value.

Each of these is discussed in further detail below.

Credit risk: FAS 157 states that the fair value of a liability should reflect the non-performance risk relating to that liability. Non-performance risk includes, but may not be limited to, credit risk of the liability. Adopted IFRSs do not at present use the term 'non-performance risk.' However, IAS 39 requires the fair value of a financial liability to reflect the credit quality of the instrument.

In particular, FAS 157 states that "discount rates should reflect assumptions that are consistent with those inherent in the cash flows." Hence, in a present value technique, if cash flows do not reflect credit risk, discount rates should incorporate credit risk; if cash flows have already been adjusted for credit risk, discount rates can be risk free. In contrast, IAS 39 does not specifically mention reflection of credit risk in cash flows. IAS 39 defines "credit risk" as an input to valuation techniques, which can be reflected in discount rates in measuring fair value. In particular, IAS 39 states "The effect on fair value of credit risk (i.e., the premium over the basic interest rate for credit risk) may be derived from observable market prices for traded instruments of different credit quality or from observable interest rates charged by lenders for loans of various credit ratings."

In our GMAB example, we have adopted representative credit-adjusted discount rates as of December 31, 2008 (referred to as "adjusted discount rates," versus "unadjusted discount rates" that do not have a component for own credit risk).

CONTINUED ON PAGE 36

Can There Be More than One … | from Page 35

Risk premium: Paragraph B2 of FAS 157 notes that one element of a fair value calculation using present value techniques is "the price for bearing the uncertainty inherent in the cash flows (risk premium)." Thus, if there is significant uncertainty in cash flows, a risk premium should be considered, which would increase the present value of expected liability cash flows as a result. FAS 157 states that "unobservable inputs shall reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk)." Beyond this, FAS 157 provides very little specific guidance on how a risk premium should be determined. Since most actuarial inputs cannot be calibrated to observable market prices, it is appropriate that a risk premium is considered for those items which could significantly affect the present value of cash flows.

IAS 39 mentions a dealer's margin for the initial recognition of the financial instrument. Specifically, IAS 39 states "the entity has a practice of taking delivery of the underlying and selling it within a short period after delivery for the purpose of generating a profit from short-term fluctuations in price or dealer's margin," which is a margin built in the actual price. However, for valuation purpose, IAS 39 does not specifically mention a risk margin or risk premium component.

In our GMAB example, under FAS 157, we added a risk premium to the lapse assumption. We did not add any risk premium to the mortality assumption since mortality assumption does not have a material impact on the GMAB fair value. We did not incorporate any risk premium for IAS 39 valuation.

Equity return method: Both FAS 157 and IAS 39 generally require the use of market observable inputs to the valuation (for example, risk free rates would typically be used). However, unlike FAS 157, which requires use of observable market inputs to the maximum extent available, IAS 39 appears to explicitly allow for use of historical market volatility in the valuation. Paragraph AG82, item (f) states "Measures of the volatility of actively traded items can normally be reasonably estimated on the basis of historical market data or by using volatilities implied in current market prices."

In our GMAB example, we stochastically modeled annual equity returns for the guaranteed term of 20 years in order to project variable account values, fees, and claims. The mean equity return was assumed to be the observable risk-free rate for both FAS 157 and IAS 39. We used a term structure for volatility assumptions, which used actual implied volatility for five years for both FAS 157 and IAS 39. For IAS 39, the volatility graded to a long term value of 15 percent, based on historical volatility data, in year 10 and remains at 15 percent thereafter. For FAS 157, we used a long term implied volatility of 36 percent extrapolated from actual implied volatilities.

Time zero value: FAS 157 defines fair value as equal to exit price, whereas IAS 39 specifies that fair value is exit price, but in the absence of observable market data, transaction price is assumed to be fair value at initial recognition only. Therefore, under FAS 157, a gain or loss at issue can occur. For our GMAB example, the time zero value for both FAS 157 and IAS 39 are zeros, meaning that the actuarial present value of collected rider fees is equal to the actuarial present value of guaranteed benefits. However, this occurs for different reasons. Under IAS 39, actual rider fee is used and a margin is added to the lapse rate such that time zero value is zero. Under FAS 157, the lapse rate margin is pre-determined as a market participant 'risk premium,' as required by FAS 157. The ascribed fee is then solved for such that

> "If there is significant uncertainty in cash flows, a risk premium should be considered"

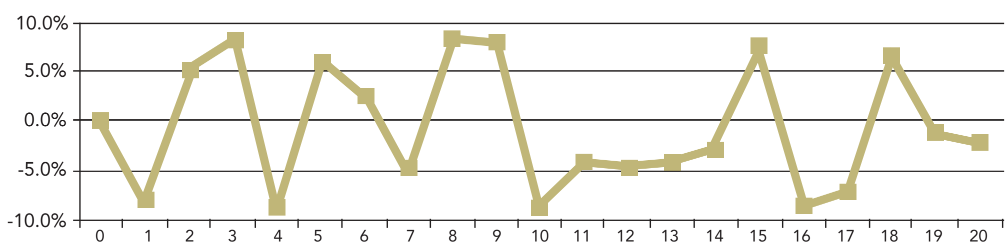
time zero value is zero (this is a typical approach used for GMABs).

Here are some of the general assumptions used in our modeling exercise:

- 50 year old male with initial deposit of $100K
- GMAB benefit guaranteed at $100K in 20 years
- Annuity rider fee = 30 bps of account value
- Lapse assumption = 6 percent for all years
- Mortality table: 1996 US Annuity 2000

The fair value calculation was performed using our risk neutral stochastic model at annual intervals from time zero to year 20 under both FAS 157 and IAS 39. The actual equity returns experienced from year 1 to year 20 are arbitrary inputs, designed to demonstrate how the fair valuation moves over time in a sample volatile market environment. The following graph shows the equity market movement that drives the account value growth in our example:

Actual Market Movement



We modeled the following sensitivities to the fair value progression over the 20 year period:

- Sensitivity 1: credit-adjusted discount rate (where the credit adjustment is on average around 450 basis points), market drop of 20 percent in year 1

- Sensitivity 2: same time zero calculation as in Sensitivity 1. Instead of an extreme market drop of 20 percent in year one, beginning year two, future volatility assumption increased—45 percent was used for IAS 39 from year two through five and then the volatility graded down to 15 percent from year five through 10; volatility remained at 45 percent for all years for FAS 157.

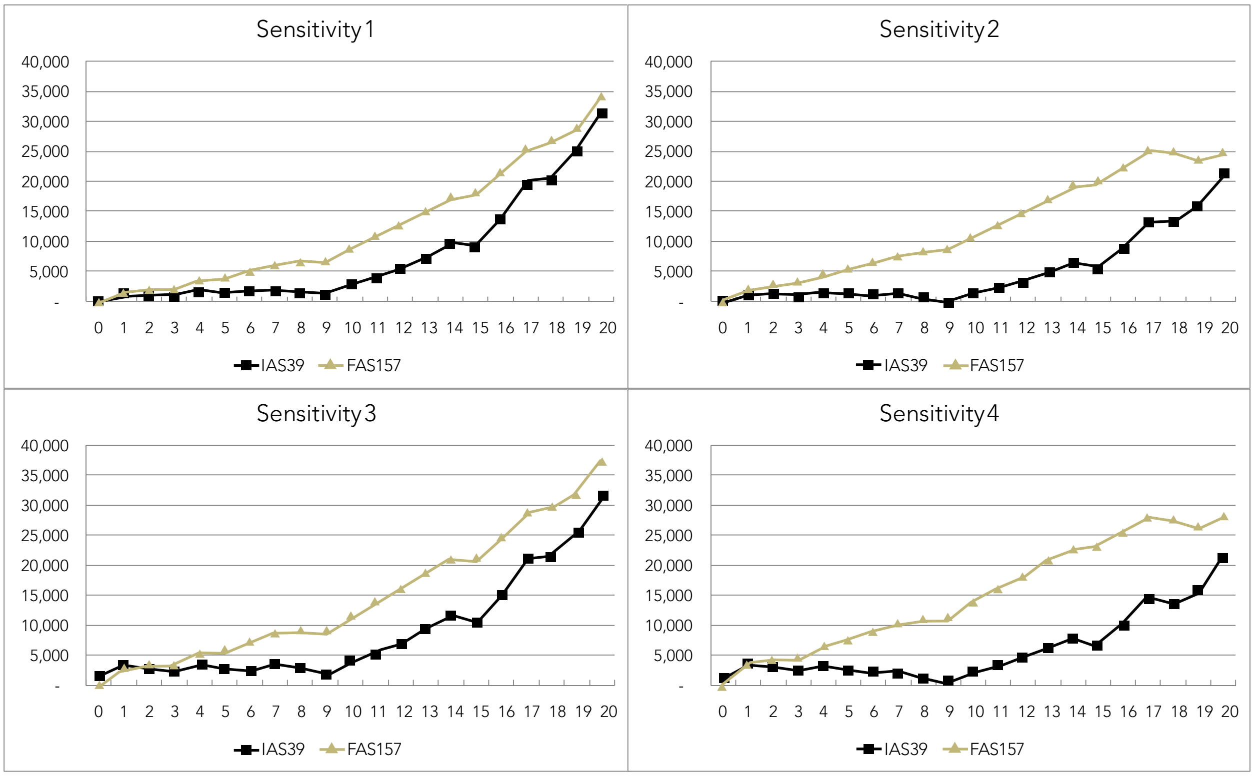
- Sensitivity 3: same assumptions as in Sensitivity 1. Instead of a fully market observable credit adjustment to the discount rate, we used a spread of 100 basis points. Under FAS 157, we recalculated a higher ascribed fee to maintain the zero inception value. Under IAS 39, we used the actual rider fee. This resulted in the present value of claims exceeding the present value of fees, and so we recognized a loss at time 0.

- Sensitivity 4: same time zero calculation as in Sensitivity 3. Instead of an extreme market drop of 20 percent in year one, beginning year two, future volatility assumption increases similar to that in Sensitivity 2 were reflected in modeling.

CONTINUED ON PAGE 38

Can There Be More than One … | from Page 37

The following is the comparison of fair values under the two measurement regimes:



OBSERVATIONS

The fair values of the GMAB liability under IAS 39 are consistently lower than those under FAS 157 for most of the periods because of the lower implied volatility structure assumed when compared to FAS 157. The difference is magnified in the increasing volatility sensitivities (2 and 4), since the difference in volatility assumptions is further magnified. The use of a lower credit spread (sensitivities 3 and 4) slightly increases the liability, but does not significantly impact the results for either FAS 157 or IAS 39. The reason this is the case is that under FAS 157, we ascribe a higher fee at issue to offset the impact, and under IAS 39 the impact is largely taken as a loss at issue, so does not impact the liability.

CONCLUSION

Clearly the individual facts and circumstances of each company and each valuation will drive the choice of assumptions regarding volatility and nonperformance risk. As a general rule, use of more implied volatility data as a discrete input to comparable valuations (which may result under FAS 157/FVM ED as compared to IAS 39) will create higher liabilities in the current environment, as well as more volatile liabilities if you hold all other assumptions constant and consistent between valuation bases. Introduction of credit spreads representing a market participant's view of non performance (versus a more stable, long term credit spread measuring probability of non performance) will result in lower liabilities in the current market environment, but will also drive more volatility if you hold all other assumptions constant and consistent between valuation bases. □

The 2nd ASHK Risk Management Regional Conference "Post Financial Crisis: A New World?"

The economic climate is changing by the day and the financial turmoil has further raised the importance of risk management. Driven by demands of the profession, the Actuarial Society of Hong Kong (ASHK) has decided to launch the 2nd Risk Management Regional Conference. To be held at the Grand Hyatt, City of Dreams in Macau, the event will commence with an evening Happy Hour drink on January 31, 2010, followed by a full day and a half agenda on February 1–2, 2010.

A distinguished panel of high quality speakers will address this year's theme: "Post Financial Crisis: A New World?." It is expected to be a very top notch event with practitioners and overseas pioneers in related field sharing the forefront of developments in risk management. Mark your calendars and make sure you are here!

The official conference Web site will be launched shortly. For more information on the conference in the meantime, please visit the ASHK Web site at *www.actuaries.org.hk.*

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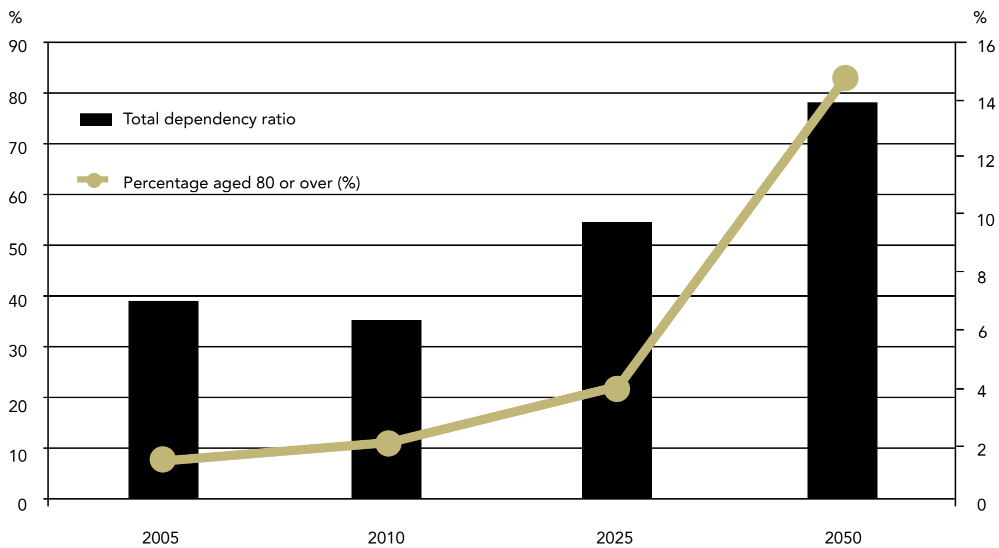
Singapore Long-Term Care Plan—ElderShield Government Sponsored, Privately Sold

By Jill Hoffman

In 2002, the Singapore Government Ministry of Health launched a long-term care plan, called ElderShield, as part of the health care system to meet the needs of the aging population. As the United Nations data shows, the elderly population in Singapore is projected to grow. The following graph shows the dependency ratio (the number of children & elderly / population aged 15-64) as well as the percentage of population that is over age 80. In Singapore, it is not uncommon for the elderly to be living with their grown children. In fact, for those aged 80 and older, only eight percent live alone.

Projected Singapore Statistics



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: the 2006 Revision and World Urbanization Prospects: the 2005 Revision.

That does not eliminate the need for LTC as more and more prefer to be self-sufficient or contribute to the household expenses that their care may entail.

Singapore is an island nation, located at the tip of the Malaysian peninsula. It gained independence from Malaysia in 1965, and was originally founded as a British trading colony in 1819. The 2008 estimate for the GDP per capita, according to the CIA World Factbook is US$52,900, making it one of the top ten prosperous countries in the world. By way of comparison, the United States is US$48,000 and Canada is US$40,200. It currently has a population of 4.6 million and a life expectancy of 79.3/84.7 for males/females. It enjoys a tropical climate, and the author finds it an enjoyable, easy and pleasant place to work and live.

The Government of Singapore has several social schemes in place to raise the standard of living of its population. This includes subsidized government housing, called Housing Development Board (HDB) flats, where the occupant owns the apartment and can receive a low mortgage interest rate. The government social scheme is via the Central Provident Fund (CPF), where employees and employers contribute towards the employee's retirement. The CPF allows tax free deductions to pay for schemes like Medisheld (serving hospitalisation and surgical needs), CPF Annuity (serving retirement needs) and Dependents Protection Scheme (serving term needs). The ElderShield plan is to make up the existing shortfall where government provides a subsidy for nursing home care. The philosophy of financing health care in Singapore emphasizes

"ElderShield was launched in 2002, designed by the Government, but priced, sold and managed by private insurers."

personal responsibility and family support, with the community and government helping the indigent and poor who cannot afford to pay for their basic health care needs.

ElderShield was launched in 2002, designed by the government, but priced, sold and managed by private insurers. At plan launch, all CPF members (Singaporeans and permanent residents) aged 40 to 69 were automatically enrolled. This broad base reduces anti-selection. After plan launch, all CPF members that turn 40, or are new CPF members aged 40-69 are automatically enrolled. This means that approximately 50,000 new entrants per year. A member has up to three months to opt-out of the program. Premiums are paid via the Medisave account (a subset of the CPF). This is non-taxable monies.

The benefit trigger is upon severe disability, that is, the recipient is unable to perform three of the six defined activities of daily living (ADL). The ADLs are dressing, toileting, washing, feeding, mobility, and transferring. At plan launch in 2002, the monthly cash benefit was S$300 per month up to 60 months. In 2007, there was a re-pricing and the benefit increased to S$400 per month up to 72 months. Benefits will cease on recovery but can continue with a relapse, for a maximum total payout of either 60 or 72 months. The benefit coverage period is for life.

As mentioned earlier, premiums are paid from the Medisave account and are payable until age 65. Single premium was initially offered in 2002 as well as regular premium, but in 2007, only regular premium was made available. Premiums are fixed for a five year period, at which time the government will conduct a review of the sustainability of the current premium level, and insurers will tender bids to continue supporting the ElderShield product. Initially, only two insurers supported the product, Great Eastern Life and NTUC Income. At 2007, these two insurers continued as ElderShield insurers and Aviva joined at that time, writing new business (i.e., those turning 40 that year).

Coverage is automatic for most. The only people not eligible for auto-cover are those who are already unable to perform three of the six ADLS. Instead these people are covered under Interim Disability Program for the Elderly (IDAPE) for a reduced payout. Those that opt-out and later apply for cover are subject to underwriting. These people may possibly be declined for cover. As the graph shows though, the opt-out rate has been steadily decreasing as Singaporeans see the value of this coverage.

Claims are assessed by a joint panel of doctors appointed by insurers. However, if additional costs are required for verification this will be borne by the insurers. An "Eldershield Arbitration Panel" exists for purpose of claims. From 2002 to 2006, a total of 2,366 claims were paid, with a rate of acceptance of 84 percent.

As the ElderShield plan is still relatively young—only six years in existence—time will tell if this will be a profitable plan to the insurers and a valuable benefit to those insured. It certainly has had a successful beginning. □

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Have You Recently Considered Reviewing Your Marketing Mix? The UL Story

By José L. Berrios

BACKGROUND

Did you know that Universal Life (UL) products are alive and well in many countries in Latin America? I am a consultant and have worked in many countries in Latin America and have seen quite a few product designs and have designed/priced products according to market specifications. What I can say is that there is a wide range of interesting product designs and features, some pretty good and some not so good (from the consumers and company's point of views). What it is interesting is how the UL product has become popular among companies and consumers and has done well in "unsophisticated" markets of Latin America relative to the more "sophisticated" markets of the United States of North America (U.S.), Europe and Asia. Perhaps some of the discussion below will shed some light if you are re-considering your product mix strategy for Latin America.

PRODUCT DESIGNS

Starting with the U.S. design of the early days, (front-end loaded) this structure eventually made its way to the south and soon customers started to complain about the loads and fees. What is called the "hybrid" UL (front & back end loaded) product eventually became the norm. That design has prevailed for quite some time. In terms of margins, most companies rely on mortality charges for profits since it tends to be the most significant source. Surrender charges are secondary, and interest spreads less significant, with a typical negative expense margin (yes, the field force is well compensated).

With regards to the mortality margin, some countries require the use of their own country-specific mortality table (which in general is more generous than the normal 80 CSO tables, especially at older ages), so some sort of adjustment is needed on the other margins. Some old products have generous interest guarantees, depending on the currency of the product (I've seen ranges from the teens down to 4.5 percent; local currency products typically have been influenced by inflation, historically high in some countries). The new designs have much lower guarantees, thanks to the Sept. 11 market crash (3 percent to 3.5 percent for U.S. currency), and in many cases there are no guarantees (i.e., a "Variable" UL product).

In the early introductions of the UL products in Latin America, the product was "imported" by foreign insurance companies and basically the designs were a copy of the U.S. prototype. With time, local companies designed their own flavors, in most cases being a term contract with a side fund (or funds) making them much more competitive in terms of price (cheaper) and compensation (lower). One thing to keep in mind in Latin America is that the price component of the marketing mix is very important; consumers are not willing to pay a lot of money for insurance and in many countries "discounts" are the norm in order to retain the business. In some countries the product design can be very complicated; the products have features such as dividends, discounts, COI bandings, gender offsets, automatic face amount increases, education type designs (parent plus children), all sorts of surrender penalties, etc. These make the products sometimes very confusing and hard to administer and model.* The typical product might have many riders

*Local actuaries in some countries are very "creative" and can cost your company a lot of money. A very flexible actuarial software package is required in order to model these products; otherwise some of the features may be mispriced.

CONTINUED ON PAGE 44

Have You Recently Considered … | from Page 43

that customers really do not need, but make the product look "sophisticated."

PRICING

The typical foreign-owned company that operates in Latin America has several disadvantages: 1) Some companies price their product with a significantly higher cost of capital mandated by the home office, compared to local competitors, 2) Require a significantly higher return on investments due to country risk, company ratings, etc. 3) In some cases, and due to specific guarantees, reserve requirements are higher than the local competition (later discussed under Local Regulations).

Due to these complexities, some foreign companies have found themselves in a pricing-bind. The local companies do not have the same capital requirements and are happy to price a product with a lower IRR because the market demands a low price, or there are restrictions on the Cost of Insurance rates, or can operate with much lower expenses.

In general terms, price is a significant decision component for the insurance customer of any product that is offered by several suitors in the market place, and typically, life insurance is not on the top list of priorities for a consumer. Therefore, for some product designs, a lower return is a trade off for customer loyalty and retention. A reasonably priced product (from a U.S. or European perspective with high double digit IRRs) means lower sales and probably lower persistency. The pricing targets, relative to the market and the competition, is a key factor in the success of the product design, launch and achieving a decent level of sales (volume is key in most markets). Unlike the U.S. perspective when companies started sales of UL plans in the early 1980s with fat margins and then those margins were squeezed overtime, the inverse is the case in Latin America; a company has to start with relatively lower margins (what the market can bear), gain the client and market trust, and then make up for the lower margins as the markets mature and demand complementary products. In any case, for the Latin American culture, the price is typically a big factor in the purchase decision.

INSURANCE MARKETS

In some countries, insurance companies have been able to "transform" their products to meet specific market needs; for example in Chile, UL products are now used as a legal retirement savings vehicle with a limited insurance amount (called APV, *Ahorro Previsional Voluntario*, or Voluntary Savings Plan). Companies have also created an Educational Savings Plan (basically insurance on the parent with a savings component to fund education at maturity of the policy when the child enters the university), and a host of other interesting marketing packages that attempt to emphasize the savings nature (typically for Retirement) of the product rather than the Insurance component. Re-packaging of the UL product makes it more appealing to customers and easier for the sales force to market.

These market practices open up a lot of opportunities to improve persistency and cross-sell other types of products, such as disability, health, auto and homeowners insurance, creating the need for a multi-line company, or finding a complementary joint-venture partner. If you are only in the life business, you may want to think that customers in the long run will need a comprehensive solution. A clear example of that is the Mexican market, where the most recognized companies basically offer an integral solution for customers, not just life or retirement savings insurance, but all sorts of products. Brazil is the opposite—too much P&C and pension funding and not enough life—but I'm hopeful that that market will eventually change.

> "A new product launch should be considered a big event for the company since it is an important event for the sales force. A good product launch is a very good way to keep the sales force happy and make them wear your company's hat (in Spanish we say "*camiseta*", or jersey, which symbolizes being part of a soccer team)."

PROMOTION AND DISTRIBUTION

I have seen some very well executed (as well as poorly executed) ads and promotions about UL products. Several M&A activities have forced companies to change their message and focus, some very successfully and some not so. Promotion is a big ticket item to gain the client's trust. In some markets the clients are really the sales force and in some others it is the ultimate customer who buys the product. Also, don't assume all markets are the same just because they speak the same language. Cultural differences are critical to understand; you really have to do your homework first. The use of language can be a very funny thing in the Spanish language and history shows several years ago some foreign auto manufacturers made big flops when they literally translated their message from their language to Spanish and they either insulted people or the message made no sense. Even today, translations of movie titles from English to Spanish can be hysterical. For movies it does not matter, but for life insurance it does, and it might not be funny. Your company should not make the same mistake. Rely on local expertise when getting your marketing pieces developed—for example, even if you already have it working in Mexico it does not necessarily mean that it will work in Colombia. The use of Spanish across the region is different from country to country and small language differences might carry significant meaning differences among countries.

In general, the sales force has a significant convincing power to "switch" policies for their clients, so whichever company cultivates them will have the business. Since laws are lax on policy churning in Latin America, you are stuck with this *modus operandi*. The brand name is important, but the field force has a significant power to make or break the sale since they usually work as independent producers for many companies and can select where to place the business.

A new product launch should be considered a big event for the company since it is an important event for the sales force. A good product launch is a very good way to keep the sales force happy and make them wear your company's hat (in Spanish we say "*camiseta*," or "jersey," which symbolizes being part of a soccer team). The launch should include some sort of breakfast, or lunch (best is breakfast since most agents will attend a breakfast and then go to work), have the typical "give-away" goodies (product info folder, pens, cups, hats, ties, etc), and a clear overview of the **benefits** of the product, **target** market, **competitiveness, bonus** news, some sort of **special announcement** that the agents and managers are expecting, etc). This presentation should be done by the **Senior** Marketing Staff (important invitees from the home office are always impressive). I have assisted in several launches and I always bring my camera to have someone take pictures of the consultant/actuary (me) with the best producers, that way they feel they are part of the show.** Your key marketing guy should be a **numbers person**, not just sales, sales, sales, and above all, must be a tough (but nice) person to deal with the sales force.

REINSURANCE AND OFFSHORE ACTIVITY

You would be amazed that some markets produce pretty significant face amounts (over USD $1 million) and yes, some reinsurers are making money on the excess above their client's retention. That is all I will say about that.

**In fact the best producers should become a part of the show during the product design and pricing. I always recommend involving them in the development process—the best producers are your allies and will be selling the new product after all.

CONTINUED ON PAGE 46

Have You Recently Considered … | from Page 45

EXPERIENCE DATA

Experience studies are less prevalent in certain markets due to volume and credibility of the data. But as in any business, a judgment call is typically required and your pricing actuaries at the home office may need to get used to living with uncertainty. The local actuaries are well accustomed to living with limited data and uncertainty and because of that, the chances are that local companies get their products faster to the market than the excessively bureaucratic foreign companies. What is important is to have a sound process in place so that the business is well administered, well underwritten, well controlled (in particular with retention), and the rest of the numbers will come sooner or later and will tell you if the actual experience is close to what was assumed; or you may need to tweak or completely re-price the product. That is the life of the pricing folks, nothing new there. In all situations, however, **from the start,** your company should monitor the expense margin, otherwise you may be surprised to find out some sort of special **compensation** (bonuses, special deals, etc.) was paid to the sales force that was never priced for (hard to believe, but it does happen). Persistency is another item to watch, as new product introductions induce the agents to look for existing customers as their best candidates for a "cannibalization fest." You can't be careful enough—state the rules of the game and keep an eye on the doughnut.

LOCAL REGULATIONS

Many countries do not have specific regulations about UL products, in particular with regards to reserves such as in the United States (CRVM, guidelines for embedded guarantees, etc.), so in some cases the laws will not fit and in some countries the authorities require companies to hold the fund value (again, with the premise that the product is a term plus a side fund), which for the typical US UL design it can put a burden on the company's capital and should be reflected in pricing. In other cases you may be able to convince local authorities that CRVM is sufficient, but first call me to discuss!

Finally, in many countries, the insurance authorities that approve products are understaffed and/or lack the depth or don't have the time or means to fully appreciate the complexities and/or beauty of a true UL product. That means that you might expect to deal with several iterations in the filing process. When this happens, your best resource is to ask for help from an expert that knows the ins-and-outs of the filing process that can deal with these nuances in order to have a timely product approval. In some countries, the norm is file-and-use, but it is best to have the insurance authorities blessing before the launch to avoid surprises later on (product recalls and such). In any case, yes, the lawyers are also a necessary evil besides the actuary.

SUMMARY AND CONCLUSION

The illustrative exhibits below show: 1) the Annualized Premiums issued by product line for Chile (APV and Other Insurance are representative of the UL business), 2) the Policy Count for Mexico (Flexible Premium is representative of the UL business, Trad with Investment Funds are basically Term plus Side Fund). In other countries that split is not published officially, but most of the new sales are a form of UL product (true UL or Term plus Side Fund). Appreciating the numbers and popularity of the UL product is what keeps it alive and well in Latin America. Well run companies are making good profits in Latin America from sales of UL products and these companies have figured out how to make it under the given market conditions. Common sense and perseverance is a key ingredient for success in a vast market that will be developing over time and benefit companies, as the financial services industry landscape changes in the near future. □

> "Well run companies are making good profits in Latin America from sales of UL products and these companies have figured out how to make it under the given market conditions."

Chile Sample Data

Source: Superintendencia de Valores y Seguros (Government Supervisory Office)

Data as of December, from 1/1 to 12/31 of each year.

DIRECT ANNUALIZED PREMIUM IN PESOS (millions)

				% Growth	
	2006	**2007**	**2008**	**2007**	**2008**
INDIVIDUAL BUSINESS					
Burial Insurance	95.27	208.50	285.66	119%	37%
Disability Insurance	46.45	45.57	193.11	-2%	324%
Term Life	19,585.76	23,081.97	26,023.61	18%	13%
Personal Accident	17,569.49	19,971.07	23,739.92	14%	19%
APV (Retirement)(2)	62,132.23	89,476.12	106,153.61	44%	19%
Family Protection	25,686.96	28,093.84	31,100.96	9%	11%
Whole Life	5,330.86	4,981.63	5,047.25	-7%	1%
Health	12,127.21	14,849.30	19,439.83	22%	31%
Payout Annuities	16,626.40	22,701.61	30,609.59	37%	35%
Endowment	30,409.15	27,625.66	29,369.15	-9%	6%
Other Insurance (non-retirement)	1,986.46	657.65	611.73	-67%	-7%
Pure Endowments	-	1,206.20	1,183.01		-2%
Other Insurance (1)	129,156.43	150,686.96	164,610.74	17%	9%

(1) Insurance with an Investment Fund (Author's note: UL and Term plus Funds)

(2) Insurance with a Retirement Fund (Ahorro Previsional Voluntario, Voluntary Savings Plan for Retirement, typically a true UL product)

CONTINUED ON PAGE 48

Have You Recently Considered … | from Page 47

Mexico Sample Data

Source: AMIS (Mexican Association of Insurance Companies)

Data as of December of each year.

NUMBER OF INDIVIDUAL POLICIES IN FORCE

Year	Total	Traditional	Trad with Investment Funds	Flexible Prem (UL)	Family Protection
1997	2,891,105	521,820	1,073,009	1,285,893	10,383
1998	3,300,321	916,429	993,524	1,380,793	9,575
1999	3,745,996	1,196,329	980,046	1,491,190	78,431
2000	4,071,977	1,494,815	895,963	1,587,086	94,113
2001	4,536,093	1,759,696	969,837	1,706,247	100,313
2002	4,932,634	2,022,572	1,044,796	1,753,933	111,333
2003	5,389,257	2,262,887	1,178,732	1,837,250	110,388
2004	5,718,367	2,851,556	884,734	1,858,654	123,423
2005	6,127,078	3,166,994	838,073	1,965,633	156,378
2006	6,657,171	3,537,192	866,200	2,055,100	198,679
2007	6,252,820	3,104,702	834,609	2,078,224	235,285

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The Development of China's Actuarial Education and Its Twenty Years' Cooperation with the SOA

By Guangyao Liu

Thirty years have passed since China began to introduce reform policies which have allowed for a more open society. The Chinese economy has gained great development in diverse areas, in which the domestic insurance industry has experienced the fastest growth. From 1978 to 2008, the number of insurance companies has grown from one to 130. Premiums have hit RMB 978.4 billion and total assets have soared to RMB 3.3 trillion. The growth rate of the insurance industry in China has accelerated, which can be seen from the accumulation of total insurance assets. It took 24 years for the industry to accumulate RMB 1 trillion in assets, another three years to grow to RMB 2 trillion, and only one year to grow by another RMB 1 trillion.

Development of actuarial theory and principles has greatly contributed to the fast growth of the insurance business. By the end of the 1980s, actuarial policies and practices had not been developed for China's market and there were no actuaries in the insurance industry in China. Actuarial Science developed in the past two decades in China. During this period, two Chinese versions of life tables were published, an improved actuarial monitoring system was put in place, and a product development system was established. The past 20 years witnessed the Chinese insurance industry moving from being monopolized by the central government to a more open market. Actuaries are a key factor in this industry, and they will play a great role in accelerating the industry's development.

When talking about the development of Chinese actuarial science, the Society of Actuaries (SOA) is definitely a chapter to review. It was the SOA that helped China to develop the first batch of actuaries and thus drive the growth of actuarial science. Twenty years ago, only a few people in China knew about actuarial science. Among them, only one person predicted the role actuarial science would play in Chinese insurance in the future and he dedicated himself to actuarial science. Dr. Kailin Tuan is a tenured professor at Temple University in the United States. At an SOA annual meeting in Montreal, Canada in October 1987, an agreement was reached on a proposal put forward by Dr. Tuan regarding the introduction of actuarial science education to China. One month later, Harold G. Ingraham, Jr—president of SOA at that time—and Dr. Tuan visited Nankai University and signed a cooperation protocol agreement. The main content of this agreement was that the SOA would sponsor Nankai University's offering of actuarial science courses for postgraduate students. The sponsorship was carried out in three stages, with three years for each stage. In the first phase, SOA dispatched actuaries to give lectures at Nankai University. The courses included theory of interest, actuarial mathematics, life modeling, risk management, and other relevant courses. Fifteen students attended the program. Three years later, graduating with a degree, some of them went to the Chinese insurance monitoring office as policy makers for state oversight of China's actuarial system, some took positions as college actuarial teachers to impart knowledge to students from other universities, and some became the industry pioneers for the few insurance companies in China.

Apart from introducing actuarial courses to China, the SOA set up the first actuarial exam center in

CONTINUED ON PAGE 50

The Development of China's … | from Page 49

China, at Nankai University under the sponsorship of Manulife in 1992. The center was convenient for students taking SOA exams, which improved the development of actuarial talents. Later, the SOA expanded its exam centers to Fudan University in Shanghai, Hunan College of Finance and Economics in Changsha, Renmin University of China in Beijing, Sun Yat sen University in Guangzhou, University of Science and Technology in Hefei, and Ping An Insurance Company in Shenzhen. So far, China is where the SOA has established the most exam centers in Asia. The cooperation between the SOA and Nankai University was so successful that people referred to the partnership as the Nankai SOA Cooperation Model.

The fast development of China's insurance industry and the increasingly important role that actuaries play boost the demand for local actuarial talent. In order to meet the demand of insurance companies, many Chinese universities offer relevant courses. Currently, about 20 universities have set up actuary majors with thousands of students studying the subject. Most of these universities offer postgraduate programmes in actuarial science such as Fudan University, Nankai University, Central University of Finance and Economics, Peking University. A small number of them also offer undergraduate programmes like Shanghai University of Finance and Economics and Hunan University. The majority of students take exams from at least one of the actuarial exam systems. The number of students that take SOA exams is the largest.

Similar to U.S., Chinese insurance companies consider the result of exams as an important criteria in recruitment of actuaries. For example, a life insurance company generally requires that an actuarial graduate pass the first four SOA exams when it recruits a candidate to do the valuation. As the number of actuarial graduates increases, the number of new actuarial jobs cannot meet the demand of graduates, so many companies take passing the first four SOA exams as the prerequisite for an entry level job. According to statistics, there are about 1,000 people doing actuarial work in the field of life insurance. A great majority of them are working for life insurance companies. By the end of 2008, the number of FSAs and ASAs in China was 215 and 165 respectively. The Chinese insurance market has become the ninth largest insurance market in the world with regard to the total premium income. However, compared to western developed countries, China's insurance industry is still in its infancy. More and more actuarial graduates who study abroad and actuaries who work abroad choose to go back to China. They bring dynamism to the domestic actuarial industry. Because of their overseas education or work experience, they are highly valued by the company.

China never stops constructing its own actuarial education and exam system while at the same time introducing foreign actuarial systems and examinations. China's first local actuarial exam was set up in 1999. Among the first 43 fellows, 16 of them graduated from Nankai University, and about 30 of them were SOA candidates as well. When establishing our own actuarial exam systems, we always take the SOA as our blueprint. On May 9, 2008, China finally got its own actuarial organisation, the China Actuary Association (CAA), which now has more than 140 fellows (FCAA) and more than 800 associates (ACAA). The new exam system of the CAA will begin in Spring of 2011, also consisting of two levels which are Fellow and Associate. Associate level contains eight exams and one professionalism education course.

> "On May 9, 2008, China finally got its own actuarial organisation, the China Actuary Association (CAA), which now has more than 140 fellows (FCAA) and more than 800 associates (ACAA)."

Exam Path to Become an Associate Member of the CAA

Subject Name	Code	Subject Name	Code
Foundations of Mathematics	A1	Life Actuarial Science	A 5
Financial Mathematics	A2	Non-life Actuarial Science	A 6
Actuarial Models	A 3	Accounting and Finance	A 7
Foundations of Economics	A 4	Actuarial Management	A 8

The Fellow level is divided into two fields which concentrate in life and non life separately. Fellow level for the life field contains three compulsory exams (FC1, FC2, FL1) and two optional ones (chosen from FC3, FC4, FL2, and FL3). Fellow level for the non life field contains four compulsory exams (FC1, FG1, FG2, FG3) and two optional ones (chosen from FC2, FC3, and FC4). A second professionalism education course is needed for both fields.

Exam Path to Become a Fellow Member of the CAA

Code	Subject Name	Remarks
FC1	Insurance Law and Other Relevant Laws	Compulsory
FC2	Corporate Finance of Insurance Company	Compulsory
FC3	Health Insurance	Optional
FC4	Investment Science	Optional
FL1	Actuarial Practice of Individual Life and Annuity	Compulsory
FL2	Asset Liability Management	Optional
FL3	Employee Benefit Plan	Optional
FG1	Advanced Non-life Actuarial Practice	Compulsory
FG2	Non-life Pricing	Compulsory
FG3	Non-life Reserve Valuation	Compulsory

Thanks to Mr. Yi Wang from Nankai University and Ms. Xueyun Huang, ASA, SOA China Ambassador, for their contributions to this article. Special thanks to Mr. Paul E. Herrin for his kind review of the article. □

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Expatriate Localization: A Chinese Solution

By Stan Feng

Editor's Note: This article first appeared in Mercer's Global Retirement Perspective at http://www.mercer.com/globalretirement *in early 2009. It has been reprinted here with permission.*

China has experienced significant economic growth over the last 30 years, during which its economy has grown faster than that of any other country in history. Foreign investments have been one of the major driving forces behind the explosive growth. These investments can be chronologically divided into three stages. During the 1980s, foreign investments were small and restricted to export-oriented joint ventures with local Chinese firms. In the 1990s, foreign companies were allowed to establish wholly owned foreign enterprises and manufacture goods for sale in the domestic Chinese market. Since 2001, when China entered the World Trade Organization (WTO), more foreign investments have flowed in, particularly to the industries that were previously restricted, such as financial services, automotive and telecommunications. Today, over 90 percent of the Fortune Global 500 companies have made investments in China.

As multinational companies (MNCs) have increased their investments in China, the number of foreign workers in China has increased. In particular, with a shortage of local talent in China, particularly at the middle- to senior-management level, many multinationals have been using expatriates to fill key positions. Based on government statistics, the number of foreign workers in China more than doubled between 2003 and 2006, and as of the end of 2008, the total number of foreign workers with working permits (including Hong Kong or Taiwan residents) was more than 300,000.

Foreign workers in China can be categorized into the following groups:

- Expatriates from Western countries: hired in North America or Europe and transferred to China

- Expatriates from other Asia Pacific countries: hired within Asia Pacific but outside Greater China and transferred to China

- Expatriates from Hong Kong or Taiwan: hired in Hong Kong or Taiwan and transferred to China

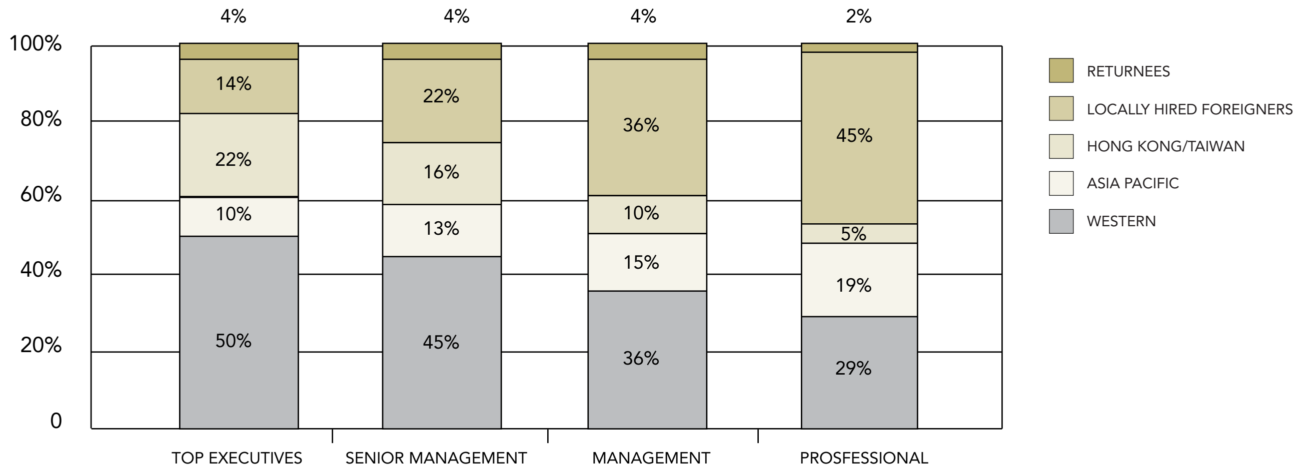
- Locally hired foreigners: hired directly in or transferred to China with a package different from that of expatriates and local employees

- Locally hired Chinese returnees: holders of Chinese passports with a foreign residency/green cards and hired in China

Based on Mercer's latest survey, the profiles of the foreign workers are summarized in the chart on page 53.

> "Local market practice and products are still developing, and there is no one-size-fits-all approach. Companies have to analyze their own situations to design appropriate solutions"

Profile of Foreign Worker (by Positions) in China



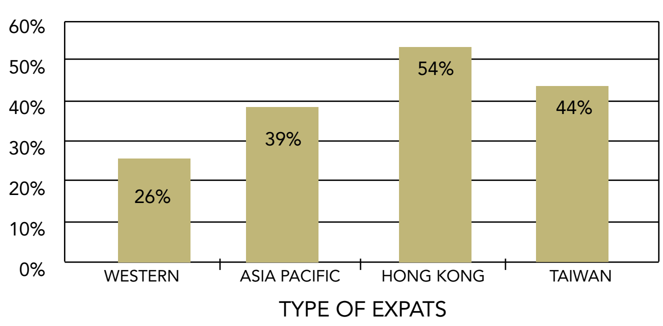
Source: 2008 Mercer China Expatriate Survey

THE TREND OF EXPATRIATE LOCALIZATION

China's economic growth provides opportunities for these foreign workers to grow professionally. This, coupled with improved living conditions in major cities in China, has resulted in many expatriates extending their assignments. As the total cost of an expatriate package is easily 50 to 200 percent higher than that of a locally hired foreigner, we have observed an increasing trend among MNCs to review their expatriate arrangements and look for more efficient ways to deliver the compensation and benefits by taking advantage of the ever-growing range of alternatives available locally.

Based on Mercer's 2008 expatriate survey, managing expatriation costs and localization are among the top issues of surveyed participants for all categories of expatriates. According to the survey (see chart below), 26 percent of companies will consider localizing expats from western countries, and as many as 54 percent of companies will consider localizing expats from Hong Kong.

Companies Considering Localization in China



CONTINUED ON PAGE 54

Expatriate Localization … | from Page 53

With the economic downturn that began last year, there has been even more pressure on companies to take actions to reduce costs through localizing expatriate packages. A Mercer survey conducted in February 2009 found that 57 percent of surveyed Asia Pacific participants are considering localizing expatriate packages (where possible), an increase from 39 percent a year ago, and 33 percent of surveyed Asia Pacific participants are considering a reduction of expatriate allowances and perquisites.

With an increasing focus on cost containment and finding local solutions, it has become more important than ever for MNCs to understand the benefit variation among different segments of foreign workforces; prevalent market practices; tax rules; locally available health benefit options; and retirement and savings options.

THE RETIREMENT BENEFIT

While considering localizing the expatriate package, elements such as cash, allowances and risk benefits (such as health care and insurance) are relatively easy to replicate; however, retirement benefits present greater challenges.

Expatriates working in China are typically put on a home country payroll and covered by the home country social security and retirement plans. When companies localize expatriates, they typically move them to a local payroll. Often the home country regulations or retirement plan rules make retention in a home country retirement plan impossible for a localized China-based employee. Some companies overcome this by administering a split-payroll arrangement in order to keep the localized expatriate on the home country retirement arrangement, but the cost and administrative complexity can be high.

In China, foreigners are generally excluded from the statutory social security system. In addition, while there is growth in the newly introduced company-sponsored retirement plan "Enterprise Annuity (EA)," the coverage of foreigners is not specifically allowed by the regulations. This makes the inclusion of expatriates in the local arrangement difficult. In addition, with tax rules applied differently between Chinese citizens and foreigners in China, and the statutory restrictions of foreigners participating in the investment savings products, offering retirement and savings arrangements in China can be tricky.

So what are the options available to MNCs? Generally there are four broad solutions:

1. *Cash Pension Allowance*—Instead of offering a formal pension plan for employees, the employer provides a cash allowance, paid along with salary.

2. *Book Reserve Plan*—A non-funded plan is provided and benefits payment is deferred until termination or retirement.

3. *Onshore Pension Plan (non EA)* —The employer covers employees through a pension product offered by a licensed provider. Typically, the products are offered by the insurance and trust companies.

4. *Offshore Pension Plan*—The employer covers the expats' pension provision by including them in an offshore pension plan. Examples of offshore coverage may include a Hong Kong plan, a global third country pension plan or a regional arrangement.

The following table summarizes some of the key features of the approaches on pg 54.

	Cash allowance	Book reserve	Onshore plan	Offshore plan
Tax effectiveness	Employer: pre-tax deduction Employee: immediate individual income tax (IIT)	Employer: tax deductible at payment Employee: IIT deferred to payment	Employer: might be deductible Employee: IIT at contribution or vesting	Employer: likely not tax deductible Employee: likely IIT at contribution
Investment & products	N/A	N/A; notional interest might be credited	Limited to China capital market and less sophisticated products	Access to international capital markets and sophisticated products
Flexibility	Very flexible	High degree of design flexibility	Less flexible (generally DC)	Design will depend on number of members covered and service provider
Costs	None	Soft costs related to plan management	In line with market charges	Can be expensive – depends on the size and the type of offshore arrangements
Administration	None	Usually self-administered, can become complicated with complex designs.	Administration usually bundled with pension provider, level of service in line with market maturity	Administration usually bundled with pension provider, but foreign exchange remittance for contributions and domicile of contracts can be challenging.
Ease of implementation	Good *	Good	Typically not an issue as there is no need to file the plan with any regulatory body	Nature of the product may require the involvement of legal, finance, and HR departments; expect lengthy implementation process.

*Although cash is the easiest to implement, it may be difficult to eliminate it if an actual plan is implemented in the future. So a company should specifically state that this is a cash allowance in lieu of a retirement plan.

CONTINUED ON PAGE 56

Expatriate Localization … | from Page 55

FINDING THE RIGHT SOLUTION FOR YOU

Expatriate localization is an emerging trend in China. Local market practice and products are still developing, and there is no one-size-fits-all approach. Companies have to analyze their own situations to design appropriate solutions. Companies need to consider:

- **Demographics**. What is the profile of your expat population in terms of size, position, age, nationality, residency, and salary, among other factors?
- **Internal company considerations**. In what stage of development is your company in China? What are your tax and HR philosophies (for example, internal equity across various employee groups)? Is it possible to retain expats in the home country pension plan and social security system, or do local plans exist that are more appropriate?
- **External market considerations**. What are the common pension benefits provided by other companies for expats at different levels? Are the expats under labor contracts or prior pension agreements?

Any of the above considerations alone may not dictate what type of retirement provision to offer, but they will serve as a useful reference to search for the best solution. For example, the higher the number of expats who need to be localized, irrespective of their positions, the more likely a company will offer a noncash retirement and savings provision. If a company has only a small number of expats in China, but has expats spread across other Asian countries without pension coverage and regional mobility is high, an offshore regional retirement and savings solution may be the best solution.

With the rapidly changing regulations and new product developments, solutions can be found that balance the cost and the needs of the company and its expatriates. □

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An Actuary's Experience at Woodstock for Capitalists

By Steven Chen

Price is what you pay. Value is what you get.
—Warren Buffett

I was at Qwest Center, somewhere at the top level, near the last row of the seating section. The 2009 Berkshire Hathaway annual shareholders meeting was going to start in less than an hour, but the stadium was already full of people. I spent a long time securing a seat. In fact, I woke up at 6 a.m. in hopes of getting a good seat.

The Berkshire Hathaway annual shareholder meeting is a six hour Q&A session. Shareholders from all over the world come to Omaha to pose questions to Warren Buffett and Charlie Munger. In the past, there were usually a handful of questions directly related to Berkshire and its operations. Last year there were practically none. So this year Buffett wanted to steer the discussion back to Berkshire's business. Instead of taking all the questions from audience, half of the questions would be selected by three financial journalists from questions submitted through emails beforehand.

It is a tradition that the annual meeting starts with a movie. This year, the video had Warren caddying for Tiger Woods and giving him advice on playing golf. Then different Berkshire companies showed up in the movie. In another scene, Warren was selling mattresses, and the customer was asking why and he said something like, "Well, you know, after the rating downgrade, the board thought I'd better get to work." There were many parts of the video that were so funny that the audience burst into laughter.

The video then switched to the Buffett's congressional testimony on the Salomon Brothers scandal: "Lose money for the firm and I will be understanding. Lose a shred of reputation for the firm and I will be ruthless." That line inspired resounding applause.

When the movie was over, the Q&A session began. Most of the shareholders probably had written the questions out beforehand and read them into the microphone. Before they got to whatever they intended to ask, everyone offered thanks, usually to "Mr. Buf-

An Incomplete List of Berkshire Companies

- Borsheims Fine Jewelry
- Clayton Homes
- Dairy Queen
- GEICO Auto Insurance
- Iscar Metalworking Companies
- Marmon Holdings, Inc.
- MidAmerican Energy Holdings Company
- Nebraska Furniture Mart
- NetJets
- See's Candies
- Shaw Industries

CONTINUED ON PAGE 58

An Actuary's Experience … | from Page 57

fett and Mr. Munger." Buffett was clearly the one who ran the show. But before he finished answering a question, he would always ask his partner, who was seated silently at the table, "Charlie, you have anything to add?" Munger would occasionally decline by saying "Nothing to add" or "Nothing on that one, either." It was so clear to me that the two value each other's opinion very much. Just like Buffett once said, "Charlie and I are Siamese twins practically."

1ST QUESTION: DERIVATIVES

The annual meeting started with some heat. The 1st question was in fact highly anticipated: it was about Berkshire's derivative business. Since derivatives had taken down AIG, people were worried who the next victim would be.

Carol Loomis from Fortune magazine asked whether Buffett thought large derivative positions were appropriate for a highly rated insurance company, given that he had referred to derivatives as financial weapons of mass destruction. Buffett started by saying that his job was to make money over time. Berkshire had arranged the derivative contracts to have very minimal collateral posting requirement. Even under the chaotic conditions of the fourth quarter of 2008, Berkshire only posted less than 1 percent of the market value. Furthermore, he recently repriced the derivative contracts. Now in order for Berkshire to make a payment, the S&P index had to fall below 950 instead of 1,500 with the tradeoff that the duration of those contracts were shortened to 10 years from 18 years.

Buffett's Favorite Book on Investing

In his book "The Intelligent Investor," Ben Graham—the father of value investing and Buffett's teacher—wrote the following. "Basically, price fluctuations have only one significant meaning for the true investor. They provide him with an opportunity to buy wisely when prices fall sharply and to sell wisely when they advance a great deal. At other times he will do better if he forgets about the stock market and pays attention to his dividend return and to the operating results of his companies."

However, he still believed that derivatives did pose problems to the world on a macro basis. He would only use derivatives if he believed that contracts were mispriced. Unfortunately, as a result of mark to market accounting, the value of these derivatives could swing by billions of dollars on a quarterly basis. But he believed odds were very good that the equity puts would end up making money. (In the first quarter of 2009, Berkshire posted a derivative loss of $1.5 billion. In the second quarter, it posted a derivative gain of $2.4 billion.)

He also felt that it was his duty to explain to shareholders the rationale for these transactions. In fact, in his 2008 letter to shareholders, he devoted an entire section of almost five pages to explain these derivatives.

DISCOUNT CASH FLOW MODEL

An audience member asked whether Buffett and Munger employed the use of complex free cash flow analysis to determine discounted cash flow and ultimate valuation. Buffett answered that if you needed a computer or calculator to understand a company then you should not buy the shares. It should be so cheap that it screamed at you.

Buffett further said that people relied too much on the false precision based on the projection of probabilities of X standard deviation events. Probability for certain events simply could not be calculated. Munger added that some of the worst financial decisions ever made were made based on fancy spreadsheets. People started to believe too much in their projections. He even joked that business school taught this so that they could have something to do.

BYD—HOT CAR COMPANY

Andrew Sorkin of the New York Times asked whether the Berkshire's latest investment on BYD, a Chinese car company, was a true value

"Derivatives did pose problems to the world on a macro basis, they should only be used if the contracts were mispriced."

investment or a speculative venture capital investment. Buffett passed the question to Munger. He joked that Munger always got very excited talking about BYD so Buffet might have to calm him down. Munger started by saying that BYD was not an early stage venture capital company. What the company had achieved was a "damn miracle." BYD achieved a leading position in lithium batteries off a base of zero and then decided to go into the auto business with no experience. They were making cars basically from scratch—everything but the glass and the rubber. Munger also complimented the BYD CEO Wang Chuan-Fu and said that he was hiring the smartest engineers in China. He was not going to bet against 17,000 Chinese engineers. He had never in his life felt more privileged to be associated with something than he felt with BYD.

MidAmerican, a unit of Berkshire Hathaway, invested $232 million in BYD in September 2008. Since then, BYD's stock had surged more than five-fold. The company aims to start selling an electric powered vehicle in the United States next year.

HOW TO BE A SUCCESSFUL INVESTOR

Another audience member asked what Buffett would teach new value investors. He said that he would teach two things. First of all, an investor needs to know how to value a business. Secondly, an investor needs to understand market fluctuation.

Buffett reminded people to always stay in their circle of competence, that certain companies did not lend themselves to easy valuation. A good understanding of accounting is useful because it is the language of business. He believed that investment was simple but not easy. He then joked that you did not need extraordinary intelligence to succeed as an investor. If you have an IQ of 150, you can sell 30 points to someone else. Both Buffett and Munger considered modern portfolio theory, efficient market hypothesis and beta irrelevant to successful investing.

FINANCIAL CRISIS

It is not hard to imagine that a number of questions at the meeting were related to banks. One reason is that we are having one of the worst financial crises in our history. The other reason is that Buffett is one of the best industry experts. He has made long-time investments in American Express, Wells Fargo and US Bancorp to name a few. He did not even do any due diligence when he invested $5 billion in Goldman Sachs. When he was answering questions about banks at the meeting, he referred to the letter to shareholders written by Jamie Dimon, the CEO of JP Morgan, on at least two occasions. He thought the letter was very well written and provided lots of good insights.

Buffett's Letter to Shareholders

Buffett has been encouraging CEOs to write insightful letters to shareholders. Compared to most letters which are just fancy tables with meaningless graphics, Buffett spent lots of effort on his own annual letter and it is considered as a must-read in the business world.

I later read Dimon's letter, which is actually 28 pages long. This is an enormous amount considering that Citigroup's letter is only four pages and Bank of America's letter is only nine pages. In his letter, Dimon described JP Morgan's 2008 performance by line of business and reviewed many critical events such as the purchase of Bear Stearns. He also discussed where the industry went wrong and what the implications for the future might be.

CONTINUED ON PAGE 60

An Actuary's Experience … | from Page 59

Further Reading

Warren Buffett's Letters to Berkshire Shareholders
http://www.berkshirehathaway.com/letters/letters.html

Morningstar Woodstock for Capitalists 2009 Blog
http://socialize.morningstar.com/NewSocialize/blogs/berkshire/archive/2009/05/02/woodstock-for-capitalists-2009-blog.aspx

Matthews, Jeff (2008). *Pilgrimage to WARREN BUFFETT's OMAHA*, McGraw-Hill.

WHAT DO KIDS CARE ABOUT?

An 11-year-old boy from New Jersey asked how inflation would affect his generation and what the best protection against inflation would be. Buffett suggested that the best protection is your own earning power. If you are the best at what you do, you would command a given part of others goods and services regardless of inflation. The second-best protection is a wonderful business: a business that people will patronize regardless of inflation and does not require high capital investment.

TIME TO SHOP

The annual meeting was over around 3 p.m. I was actually feeling a bit tired. But I was also excited to visit the 194,300-square-foot exhibition hall filled with the products of Berkshire subsidiaries.

I started with Dairy Queen and got myself a Blizzard treat. Then I visited the Clayton house. Clayton was showcasing its new i-house. I checked out the bedroom, living room, bathroom and kitchen. It felt exactly like a conventional house but it was much cheaper.

There was a big crowd at the BYD station. Wang Chuan-Fu, the CEO, was there. He was smiling, shaking hands and answering questions. He looked really happy. Why not? BYD was not even known to many Chinese people, but now people living in Omaha know his company.

I also stopped by at the NetJets booth. NetJets pioneered the concept of fractional jet ownership. Buffett advertised this idea of "Come to Omaha by bus; leave in your new plane." Too bad I could not do that.

The most popular product was definitely See's Candy. Almost everyone had a bag. See's Candy even made two types of special boxes for the shareholders meeting with one type featuring a comic figure of Buffett on the cover and the other type featuring a comic figure of Munger. In the end, I noticed there were more Buffett boxes left.

CONCLUDING REMARKS

Paul Larson, the Morningstar newsletter editor, said that going to the Berkshire annual shareholders meeting was like going to church: "there may not be a whole lot of new information, but it is good to come here and to reaffirm the constant beliefs you have." ☐

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Taiwan's Low Interest Rate Showdown

By Steve Miles and Don Shapiro

INTRODUCTION

Taiwan has been a low interest rate market since 2002, when the highest rate available on 10 year government bonds fell below 2.5 percent. By mid 2008 it appeared that the low interest rate era might be over, as government bond rates climbed above 2.5 percent, but by year end those hopes were dashed as interest rates fell again.

The persistent low interest rate environment has created significant problems for the Taiwan insurance industry due to a large block of existing business that had been sold at very high interest rates. In the 1980s and 1990s, companies typically sold policies that guaranteed returns of 6.5 percent—and in some cases as high as 10 percent—with existing policyholders able to continue investing under the original terms. The renewal premiums on these policies have been invested at low interest rates.

The consequent losses from this business are substantial. The hope was that as investments matured, they would be reinvested at higher rates—and that these returns, along with profits from selling future business, would be enough to finance the losses on the past business. However, these hopes have not materialized as interest rates have remained low.

Now, a number of players have grown tired of waiting and have decided to exit the Taiwan market. The sellers have been European companies subject to IFRS reporting standards, market consistent valuations, and Solvency II requirements. The buyers are Taiwanese companies who use a more traditional approach of "best estimate" valuations and come under relatively weak local reporting standards. Both sides talk about the transactions in highly positive terms. The European companies claim they are adding value to their operations and releasing significant capital by transferring guarantees to local companies. For their part, the local companies refer to the opportunity to gain economies of scale and add value by undertaking a more realistic investment strategy.

But first, some facts about the market.

THE ENVIRONMENT

Taiwan is a market with a regulatory regime based on the detailed regulation of interest rate pricing and valuation. Maximum interest rates are set for each of these items and the rates of interest used are the same for pricing (yes, using commutation formulae!), valuing policy liabilities and determining surrender values. These rates are effectively locked in at policy issue.

However, around the turn of the century an intense product war occurred in Taiwan, resulting in many products being priced on the assumption of continuing high interest rates. When interest rates subsequently dropped significantly, premiums could not be invested at the required rates of return. The result is what the industry refers to as "bad bank" or "negative spread" business, in which investment returns are insufficient to support the guarantees given to customers. A typical example of the situation is shown in the first chart on page 63, but as stated above, some pricing rates were even higher, as much as 10 percent!

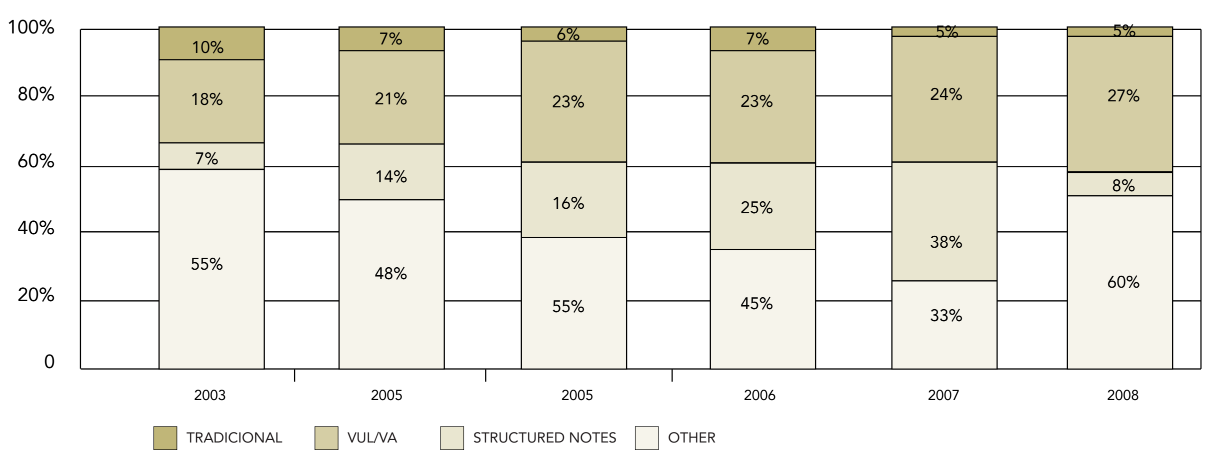
> “Now, a number of players have grown tired of waiting and have decided to exit the Taiwan market.”

Year	Pricing Interest rate	Valuation Interest rate	TW 10-Year Gov’t Bonds
2000	6.75%	6.25%	5.25%
2001	6.00%	5.75%	3.90%
2002	4.00%	4.00%	2.25%
2003	2.75%	2.50%	2.62%
2004	2.50%	2.00%	2.40%
2005	2.50%	2.00%	1.78%
2006	2.50%	2.50%	2.03%
2007	2.50%	2.50%	2.58%
2008	2.50%	2.50%	2.41%
2009	2.25%	2.25%	2.25%

Fitch Ratings has estimated the industry wide gap in Taiwan to be NT$900 billion (US$26.5 billion). If that seems like a huge number, the general opinion in the industry is that the estimate is probably too conservative, with the real figure possibly being several times as large. Total non linked assets for the Taiwan life insurance industry are around US$250 billion.

Understandably, the players in this market have tried to transfer investment risk to customers, and new product sales showed a strong trend away from Traditional products until the impact of the global financial crisis was felt in 2008.

Taiwan Product MIx



Despite this trend, local companies are still willing to purchase existing blocks of in force business from willing sellers, as recent history has shown.

THE SELLERS

ING, for example, sold its Taiwan life insurance business to Fubon Financial Holding for the equivalent of US$600 million (EUR 447 million) in a deal announced last October. Paid partly in shares, ING now holds a 5 percent stake in Fubon. On the transaction ING booked a loss of EUR 292 million. The company had been operating in Taiwan since 1987, originally through its U.S. subsidiary, Life of Georgia; it later expanded by acquir-

CONTINUED ON PAGE 64

An Actuary Experience … | from Page 63

ing Aetna's operations in 2001. While bowing out of the insurance sector in Taiwan, ING remains active in the market in wholesale banking, fund management, and real estate.

In February, Prudential U.K. announced the sale of the bulk of its PCA Life Assurance unit in Taiwan to China Life (the Taiwan entity, not the mainland Chinese company of the same name) for a token NT$1 (about 3 US cents), and in addition will buy a 10 percent share (valued at around US$64 million) in the local company, which is controlled by the influential Koo family. The British insurer will continue to market insurance in Taiwan through its banking and telemarketing channels, and Barry Stowe, chief executive of Prudential Asia, leavened the news of the sale to China Life with a series of press comments about the importance of the Taiwan insurance market within the region.

Aegon announced its departure in late April this year, just slightly more than a year after opening a new headquarters building in Taipei with some fanfare. The Hague based company is selling the Taiwan unit for EUR 65 million to the Zhongwei Co., a holding company formed by the heads of Meifu Development and Taiwan Glass. Aegon estimated that it would take a charge of about EUR 300 million on the sale.

Perhaps Prudential best summarized the issue in its announcement of the sale, where it said:

"As an EU domiciled company, Prudential adheres to the European Union Insurance Group Directive (IGD), under which it is required to carry significant economic capital reserves against this back book. On completion of this transfer there will be a net increase in Prudential's IGD surplus of approximately £800m, further strengthening its already robust IGD position. The Group's embedded value as reported under the European Embedded Value (EEV) principles will increase by £90m after restructuring costs. The transfer will have an estimated one off IFRS negative impact of £595m including restructuring costs to be reported on completion. There is no impact on Prudential's dividend paying capacity." (Note £800m = USD1,280m, £90m = USD144m, £595m = USD952m, assuming £1 = USD1.60).

Prudential's calculations would have been based on risk neutral market consistent assumptions, typically using a government bond rate as the basis for calculating risk free values. One of the principles of risk free values is that value is not affected by the asset mix.

THE BUYERS

China Life also believed it got a good deal when it promoted the benefits to be gained from the extra sales force and economies of scale. Like other local companies, China Life publishes a traditional embedded value where discounted values are based on best estimate assumptions. Typical assumptions used for recently published embedded values have been:

"There is an additional factor for embedded values in Taiwan. How do you discount the negative earnings from the existing business written at high interest rates?"

	Cathay Life	Shin Kong	Fubon	China Life
	2008	2008	2008	2007
In Force Investment Return Assumption	3.45% ~5% and 5.3% (yr 5+)	5%	3.66%~5.36%	5.05%
NB Investment Return Assumption	3.45% ~5% and 5.3% (yr 5+)	5%	3.04%~5.36%	5.05%
Discount rate	10% then 11% (yr 5+)	10%	10%	12%
Value of In Force % Assets	9%	3%	4%	4%
Value of 1yrNB as % sales	16%	12%	5%	5%

Under the approach used for traditional embedded values, the extra income expected from using riskier assets, with a higher expected return, increases value—even if the risk discount rate is adjusted. Whilst creating value from investing in riskier assets is not necessarily the intention of a traditional embedded value methodology, it is normally the result. Indeed Fubon (which bought ING) recently announced that it will be selling some of the bond investments in the ING portfolio and investing in real estate.

There is an additional factor for embedded values in Taiwan. How do you discount the negative earnings from the existing business written at high interest rates? Discounting at a risk adjusted rate of interest reduces the value of the negative spread.

At the time of writing, AIG's company in Taiwan, Nan Shan Life is reported to be under consideration for purchase by a number of suitors. However the regulator has informed overseas suitors that they must have a local partner for their bid. According to newspaper reports, the three local partners left in the bidding process are Cathay Financial Holding Co., Fubon Financial Holding Co. and Chinatrust Financial Holding Co. After this transaction well over 90 percent of the negative spread should be in the hands of local companies.

THE WINNERS?

The recent global financial crisis has called into question how markets price assets and risks. Whilst markets are not perfect estimators of the intrinsic value of an asset, they are accepted by many commentators to be the "least worst" model that we have. Financial reporting should reflect business behavior, not drive it, but events in Taiwan seem to suggest the opposite.

Who will the winners be? Certainly the sellers have been able to release capital and increase their embedded values. For the buyers to be winners, they need to achieve what seem to be optimistically high returns or significant economies of scale so their reinvestment assumptions and value of new business assumptions can be realized. And if the buyers become losers, who will pick up the bill?

We have seen how the Japanese market approached the problem of negative spread by reducing policyholder benefits for negative spread business. Although this does not seem to be on the government agenda at this stage, there is talk of this being an eventual option—and this option would be much easier to introduce as a measure to save locally owned rather than overseas owned companies. □

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