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SOA International Experience Survey—
Embedded Value Financial Assumptions

Charles Carroll[1], William Horbatt and Dominique Lebel[2]

Starting in 2003, the Society of Actuaries International Experience Study Working Group has been conducting surveys of published embedded value (EV) financial assumptions.[3] This article updates the survey with 2009 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 38 companies centered in Asia, Australia, Canada and Europe, many of which are active internationally. This compares to a total of 23 companies included in last year's study. The authors decided to include a number of smaller, regional companies in this year's study, which accounts for the increase in the number of companies. Two companies were dropped because they were acquired; one company did not publish an EV report this year; and 18 companies were added.

COMPANIES INCLUDED IN SURVEY

Aegon	Allianz
AMP	Aviva
AXA	Chesnara
CNP	Dai-Ichi
Delta Lloyd	Eureko
Fortis	Generali
Groupama	Hannover Re
Himawari	Ind. Alliance
Irish Life & Perm KBC	Legal & Gen
Lloyds TSB	KBC
ManuLife	Mediolanum
Mitusi	Munich Re
Old Mutual	Prudential UK
Royal London	SCOR
SJP	SNS Real
SONY	Standard Life
Swiss Life	T&D
Uniqa	Vienna
Vital	Zurich

FOOTNOTES

[1] Charles would like to thank Peter Duran for his assistance in interpreting the EV report for Mitsui Life

[2] Dominique would like to thank Grant Fredricks for his assistance in gathering the data for this article.

[3] International News, Issue 34, October 2004, Society of Actuaries, p. 19 - this can be found at: *http://library.soa.org/library-pdf/ISN0410.pdf*, International News, Issue 36, July 2005, Society of Actuaries, p. 28 – this can be found at: *http://library.soa.org/library-pdf/ISN0507.pdf* and International News, Issue 40, November 2006, Society of Actuaries, p.8 – this can be found at: *http://soa.org/files/pdf/ISN0611.pdf*, International News, Issue 46, December 2009, Society of Actuaries, p. 7 – this can be found at: *http://soa.org/library/newsletters/international-section-news/2009/december/isn-2009-iss46.pdf*

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.

Each financial assumption presented in this article is the average value of the assumption reported by all companies in their 2009 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.

Financial Assumptions from Survey

Financial assumptions presented in this article include

(1) Discount rate – for companies with traditional embedded value (TEV) calculations, 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 TEV discount rate that when used to discount "real world" cash flows, would produce the MCEV;
(3) Equity return[4] – the total return on common stock investments;
(4) Property return[4] – the total return on investments in real estate;
(5) Fixed return[4] – the yield on a corporate bond 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 commonly 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; and
(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	29
WACC	9

- A methodology is considered market consistent if conceptually each cash flow is valued consistently with traded instruments that display similar risks. Thus under the MCEV approach each cash flow is theoretically 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 Table 1 are the RDRs inferred from the MCEV calculation. That is, they are discount rates that would develop the MCEV value using TEV techniques and assumptions. Many companies that publish MCEV results do not publish implied discount rates.
- Companies that explicitly set risk discount rates are referred to as calculating traditional embedded values. A common method used by these companies to set the risk discount rate is the company's own weighted average cost of capital (WACC).

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.

FOOTNOTES

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

Table 1: Average 2009 Explicit and Implicit Discount Rates

Country	Companies	Traditional Discount Rate (1)	Companies	Implied Discount Rate (In Force) (2)	(New Business) (3)
Africa					
South Africa	0	NA	0	NA	NA
America Latin					
Argentina	0	NA	0	NA	NA
Bolivia	0	NA	0	NA	NA
Brazil	0	NA	0	NA	NA
Chile	0	NA	0	NA	NA
Columbia	0	NA	0	NA	NA
Guatemala	0	NA	0	NA	NA
Mexico	1	12.5%	0	NA	NA
Panama	0	NA	0	NA	NA
Peru	0	NA	0	NA	NA
Uruguay	0	NA	0	NA	NA
Venezuela	0	NA	0	NA	NA
America North					
Bermuda	0	NA	0	NA	NA
Canada	3	7.7%	1	7.2%	7.2%
U.S.	4	7.9%	2	28.1%	24.1%
Asia/Pacific					
Australia	1	8.7%	1	6.7%	6.4%
China	2	11.0%	0	NA	NA
Hong Kong	2	7.1%	1	7.5%	5.5%
Indonesia	1	13.8%	0	NA	NA
Japan	2	5.8%	1	6.7%	3.4%
Malaysia	1	9.5%	0	NA	NA
New Zealand	1	9.2%	1	6.7%	6.4%
Philippines	1	15.8%	0	NA	NA
Singapore	1	6.8%	0	NA	NA
South Korea	1	8.4%	0	NA	NA

Table 1: Average 2009 Explicit and Implicit Discount Rates (Continued)

Country	Companies	Traditional Discount Rate (1)	Companies	Implied Discount Rate (In Force) (2)	(New Business) (3)
Taiwan	1	7.5%	0	NA	NA
Thailand	1	13.0%	0	NA	NA
Vietnam	1	16.8%	0	NA	NA
Asia/Mideast					
India	1	14.3%	0	NA	NA
Isreal	0	NA	0	NA	NA
Turkey	1	15.0%	0	NA	NA
Europe Central					
Bulgaria	0	NA	0	NA	NA
Croatia	1	9.7%	0	NA	NA
Cyprus	1	7.7%	0	NA	NA
Czech	1	8.3%	0	NA	NA
Greece *	1	8.3%	0	NA	NA
Hungary	2	12.0%	0	NA	NA
Poland	2	10.3%	2	6.5%	6.3%
Romania	3	15.2%	0	NA	NA
Russia	0	NA	0	NA	NA
Slovakia	2	8.4%	0	NA	NA
Europe Western					
Austria *	0	NA	0	NA	NA
Belgium *	0	NA	1	8.2%	7.9%
Denmark	0	NA	0	NA	NA
Finland *	0	NA	0	NA	NA
France *	3	7.3%	3	9.0%	7.8%
Germany *	0	NA	3	6.2%	5.6%
Ireland *	2	7.2%	2	5.5%	5.5%
Italy *	0	NA	3	6.8%	6.7%
Lichtenstein	0	NA	0	NA	NA
Luxembourg *	0	NA	0	NA	NA
Netherlands *	4	7.3%	1	8.1%	8.1%
Norway	1	7.4%	0	NA	NA
Portugal *	0	NA	0	NA	NA
Spain *	1	8.4%	1	8.4%	8.4%
Sweden	0	NA	0	NA	NA
Switzerland	0	NA	1	4.9%	5.0%
UK	4	7.9%	3	8.2%	7.8%

* euro currency zone

A few observations can be made concerning Table 1 when compared to similar data published last year:[5]

- Traditional and implied discount rates generally increased.
- Other than for Thailand, where the average discount rate increased from 9.5- to 13.0-percent, the average traditional discount rates did not change by more than 1.8 percent. While it should be noted that only one company in our survey reported discount rates for Thailand in 2009 (compared to two in 2008), the increase in the average discount rate is relatively consistent with the increase in the risk-free return.
- Other than for the United States, the implied discount rates did not change by more than 2.2 percent. The implied discount rate for the United States increased significantly, but this was caused by the very high implied discount rates for one company. It should be noted that only two companies in our survey reported implied discount rates for the United States in 2009 (compared to one in 2008).

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 book value, 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.

FOOTNOTES

[5] See footnote 1

Table 2: Average 2009 Financial Assumptions

Country	Companies	Equity Return	Property Return	Fixed Return	Government Return	Inflation	Income Tax Rates
		(4)	(5)	(6)	(7)	(8)	(9)
Africa							
South Africa	2	12.7%	10.7%	NA	9.2%	7.7%	34.7%
America Latin							
Argentina	0	NA	NA	NA	NA	NA	NA
Bolivia	0	NA	NA	NA	NA	NA	NA
Brazil	1	NA	NA	13.2%	NA	4.5%	40.0%
Chile	0	NA	NA	NA	NA	NA	NA
Columbia	0	NA	NA	NA	NA	NA	NA

Table 2: Average 2009 Financial Assumptions (Continued)

Country	Companies	Equity Return	Property Return	Fixed Return	Government Return	Inflation	Income Tax Rates
		(4)	(5)	(6)	(7)	(8)	(9)
Guatemala	0	NA	NA	NA	NA	NA	NA
Mexico	1	NA	NA	NA	6.5%	4.2%	40.0%
Panama	0	NA	NA	NA	NA	NA	NA
Peru	0	NA	NA	NA	NA	NA	NA
Uruguay	0	NA	NA	NA	NA	NA	NA
Venezuela	0	NA	NA	NA	NA	NA	NA
America North							
Bermuda	0	NA	NA	NA	NA	NA	NA
Canada	6	8.0%	8.6%	4.7%	3.9%	1.7%	27.4%
US	15	8.2%	6.7%	6.3%	3.8%	2.5%	30.0%
Asia/Pacific							
Australia	3	8.9%	7.7%	6.9%	5.7%	2.8%	30.0%
China	3	10.2%	NA	5.3%	6.1%	3.5%	25.0%
Hong Kong	5	9.2%	NA	7.1%	3.7%	2.3%	16.5%
Indonesia	1	NA	NA	NA	10.3%	6.0%	NA
Japan	9	5.0%	3.8%	2.4%	1.7%	0.2%	36.0%
Malaysia	2	12.4%	NA	NA	6.5%	2.8%	16.4%
New Zealand	2	9.2%	8.2%	6.7%	6.2%	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	10.4%	6.5%	NA	5.5%	2.8%	23.1%
Taiwan	2	NA	NA	NA	5.5%	2.3%	NA
Thailand	2	NA	NA	NA	6.8%	3.0%	NA
Vietnam	1	NA	NA	NA	10.3%	6.0%	NA
Asia/Mideast							
India	1	NA	NA	NA	9.3%	5.0%	NA
Isreal	1	NA	NA	NA	2.7%	NA	NA
Turkey	1	15.0%	NA	NA	9.0%	5.0%	20.0%
Europe Central							
Bulgaria	0	NA	NA	NA	NA	NA	NA
Croatia	1	NA	NA	NA	5.7%	NA	20.0%
Cyprus	1	6.4%	5.4%	3.4%	2.9%	3.8%	25.5%
Czech	6	7.4%	6.9%	NA	4.4%	2.5%	18.9%
Greece *	2	8.2%	7.2%	5.2%	4.7%	3.3%	25.0%
Hungary	5	12.0%	12.0%	NA	8.0%	3.0%	20.1%

Table 2: Average 2009 Financial Assumptions (Continued)

Country	Companies	Equity Return	Property Return	Fixed Return	Government Return	Inflation	Income Tax Rates
		(4)	(5)	(6)	(7)	(8)	(9)
Poland	7	9.8%	7.8%	NA	6.3%	2.8%	19.0%
Romania	4	14.7%	15.4%	13.4%	10.6%	4.9%	16.0%
Russia	0	NA	NA	NA	NA	NA	NA
Slovakia	3	7.9%	6.4%	4.4%	3.8%	3.0%	19.0%
Europe Western							
Austria *	2	NA	NA	NA	NA	2.0%	25.0%
Belgium *	4	7.5%	6.6%	4.6%	3.8%	1.5%	34.0%
Denmark	0	NA	NA	NA	NA	NA	NA
Finland *	0	NA	NA	NA	NA	NA	NA
France *	13	7.4%	5.4%	4.7%	3.5%	2.3%	34.3%
Germany *	11	7.3%	5.4%	4.6%	3.6%	2.2%	31.5%
Ireland *	8	7.1%	6.1%	4.2%	3.9%	3.0%	12.5%
Italy *	9	7.4%	4.9%	NA	4.0%	2.2%	32.7%
Lichtenstein	1	NA	NA	NA	NA	NA	13.0%
Luxembourg *	2	6.6%	5.6%	NA	NA	NA	22.0%
Netherlands *	7	7.1%	6.0%	4.1%	3.6%	2.1%	24.9%
Norway	1	7.6%	6.6%	4.1%	NA	3.6%	NA
Portugal *	1	NA	NA	NA	NA	NA	26.5%
Spain *	6	7.4%	6.6%	5.1%	3.8%	2.2%	30.0%
Sweden	3	6.7%	5.7%	NA	3.7%	2.4%	28.0%
Switzerland	5	7.3%	4.3%	2.3%	NA	1.2%	21.4%
UK	17	7.8%	6.8%	5.2%	4.4%	3.6%	27.8%

* euro currency zone

A few observations can be made concerning Table 2 when compared to similar data published last year:[6]

- Equity, property, fixed and risk-free return assumptions generally increased. Inflation assumptions also generally increased, while tax rate assumptions generally decreased.
- Equity return assumptions in Romania and Hong Kong increased the most (2.4- and 2.2-percent respectively).
- Property and fixed-return assumptions in Romania increased the most (4.8 percent for each), but our survey includes data for only one company.
- While most countries showed increases or relatively small decreases in average risk-free returns, Mexico showed a 2.0 percent decrease, but again our survey includes data for only one company.
- Similarly, while most countries showed small changes in average inflation, South Africa showed a 2.2 percent increase, but again our survey includes data for only one company.
- The biggest decrease in tax rate assumptions (-9.6 percent) occurred in Malaysia, where our survey includes data for only one company.

FOOTNOTES

6 See footnote 1

It should be noted that several companies calculating MCEVs as of year-end 2009 adjusted their risk-free rates by including an illiquidity premium adjustment resulting in a higher risk-free return.

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 return, and
- 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 traditional embedded value discount rate over the risk-free return, and
- 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.

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)**
Africa					
South Africa	NA	3.5%	1.5%	NA	1.5%
America Latin					
Argentina	NA	NA	NA	NA	NA
Bolivia	NA	NA	NA	NA	NA
Brazil	NA	NA	NA	NA	NA
Chile	NA	NA	NA	NA	NA
Columbia	NA	NA	NA	NA	NA
Guatemala	NA	NA	NA	NA	NA
Mexico	6.0%	NA	NA	NA	2.3%
Panama	NA	NA	NA	NA	NA
Peru	NA	NA	NA	NA	NA
Uruguay	NA	NA	NA	NA	NA
Venezuela	NA	NA	NA	NA	NA
America North					
Bermuda	NA	NA	NA	NA	NA
Canada	3.8%	4.3%	4.8%	1.0%	2.2%
US	4.1%	4.0%	4.1%	2.9%	1.5%

Table 3: Investment Premiums and Other Marginal Relationships (Continued)

Country	Traditional Risk Premium	Equity Premium	Property Premium	Credit Spread	Real Return
	(10)=(1)-(7)**	(11)=(4)-(7)**	(12)=(5)-(7)**	(13)=(6)-(7)**	(14)=(7)-(8)**
Asia/Pacific					
Australia	3.0%	3.0%	2.0%	0.5%	2.7%
China	4.9%	6.2%	NA	1.3%	2.6%
Hong Kong	3.4%	5.0%	NA	NA	1.6%
Indonesia	3.6%	NA	NA	NA	4.3%
Japan	4.1%	3.5%	NA	NA	NA
Malaysia	3.0%	5.9%	NA	NA	3.8%
New Zealand	3.0%	3.0%	2.0%	0.5%	3.2%
Philippines	6.5%	NA	NA	NA	4.3%
Singapore	2.6%	6.0%	NA	NA	2.5%
South Korea	2.9%	NA	NA	NA	2.8%
Taiwan	2.0%	NA	NA	NA	3.3%
Thailand	6.3%	NA	NA	NA	3.8%
Vietnam	6.5%	NA	NA	NA	4.3%
Asia/Mideast					
India	5.0%	NA	NA	NA	4.3%
Isreal	NA	NA	NA	NA	NA
Turkey	6.0%	6.0%	NA	NA	4.0%
Europe Central					
Bulgaria	NA	NA	NA	NA	NA
Croatia	4.0%	NA	NA	NA	NA
Cyprus	4.8%	3.5%	2.5%	0.5%	-0.8%
Czech	4.0%	3.0%	2.4%	NA	1.4%
Greece *	3.6%	3.5%	2.5%	0.5%	1.4%
Hungary	4.0%	4.0%	4.0%	NA	5.0%
Poland	4.0%	4.0%	NA	NA	3.2%
Romania	4.6%	3.8%	2.5%	0.5%	6.1%
Russia	NA	NA	NA	NA	NA
Slovakia	4.6%	4.1%	2.5%	0.5%	0.8%
Europe Western					
Austria *	NA	NA	NA	NA	NA
Belgium *	NA	4.2%	2.7%	-0.5%	1.3%
Denmark	NA	NA	NA	NA	NA
Finland *	NA	NA	NA	NA	NA
France *	3.9%	3.6%	1.8%	0.7%	1.0%

Table 3: Investment Premiums and Other Marginal Relationships (Continued)

Country	Traditional Risk Premium	Equity Premium	Property Premium	Credit Spread	Real Return
	(10)=(1)-(7)**	(11)=(4)-(7)**	(12)=(5)-(7)**	(13)=(6)-(7)**	(14)=(7)-(8)**
Germany *	NA	3.1%	1.9%	-1.0%	1.1%
Ireland *	3.0%	3.2%	2.3%	0.1%	0.8%
Italy *	NA	2.3%	0.6%	NA	1.7%
Lichtenstein	NA	NA	NA	NA	NA
Luxembourg *	NA	NA	NA	NA	NA
Netherlands *	3.7%	3.6%	2.5%	0.5%	1.6%
Norway	NA	NA	NA	NA	NA
Portugal *	NA	NA	NA	NA	NA
Spain *	4.6%	4.6%	4.6%	1.3%	1.8%
Sweden	NA	3.0%	2.0%	NA	0.9%
Switzerland	NA	NA	NA	NA	NA
UK	3.6%	3.4%	2.5%	1.0%	0.5%

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

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

- Equity and property premiums and real returns generally increased, while credit spreads generally showed decreases and risk premiums were mixed.
- While equity premiums did not change much overall, Turkey (+3.0 percent) saw a relatively large change.
- Spain (+2.3 percent) saw the most significant change in property premiums.
- The largest changes in real returns occurred in Mexico (-2.2 percent) and Hong Kong (+2.2 percent).
- No country showed an increase in credit spreads. The largest decrease was the United States with a decrease of 3.2 percent.
- While risk premiums did not change much overall, Taiwan (-2.3 percent) saw a relatively large change.

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 companies are calculating the values of options and guarantees following stochastic approaches. Twenty-eight of the 38 companies surveyed disclosed some level of stochastic market assumptions in their 2009 embedded value reports. Averages of several of these assumptions are shown in Table 4 (volatility may also be referred to as standard deviation). While not strictly a stochastic assumption, we included illiquidity premium in Table 4.

Table 4: Sample Stochastic Assumptions

	Risk Free		Equity		Property		Liquidity
Country	Rate	Volatility	Rate	Volatility	Rate	Volatility	Premium
Africa							
South Africa	9.0%	NA	12.7%	26.2%	10.7%	14.1%	0.50%
America Latin							
Argentina	NA	NA	NA	NA	NA	NA	NA
Bolivia	NA	NA	NA	NA	NA	NA	NA
Brazil	NA	NA	NA	NA	NA	NA	NA
Chile	NA	NA	NA	NA	NA	NA	NA
Columbia	NA	NA	NA	NA	NA	NA	NA
Guatemala	NA	NA	NA	NA	NA	NA	NA
Mexico	NA	NA	NA	NA	NA	NA	NA
Panama	NA	NA	NA	NA	NA	NA	NA
Peru	NA	NA	NA	NA	NA	NA	NA
Uruguay	NA	NA	NA	NA	NA	NA	NA
Venezuela	NA	NA	NA	NA	NA	NA	NA
America North							
Bermuda	NA	NA	NA	NA	NA	NA	NA
Canada	4.0%	NA	NA	NA	NA	NA	NA
U.S.	4.2%	15.9%	8.2%	26.0%	4.9%	14.2%	0.48%
Asia/Pacific							
Australia	6.4%	NA	NA	NA	NA	NA	NA
China	NA	NA	NA	NA	NA	NA	NA
Hong Kong	3.6%	24.7%	6.6%	26.9%	5.6%	28.5%	0.50%
Indonesia	NA	NA	NA	NA	NA	NA	NA
Japan	1.3%	20.1%	5.3%	24.7%	3.8%	23.2%	0.20%
Malaysia	NA	NA	NA	NA	NA	NA	NA
New Zealand	NA	NA	NA	NA	NA	NA	NA
Philippines	NA	NA	NA	NA	NA	NA	NA
Singapore	NA	NA	NA	NA	NA	NA	NA
South Korea	5.4%	11.7%	10.4%	29.4%	6.5%	13.8%	NA
Taiwan	2.3%	NA	NA	NA	NA	NA	NA
Thailand	4.6%	NA	NA	NA	NA	NA	NA
Vietnam	NA	NA	NA	NA	NA	NA	NA

Table 4: Sample Stochastic Assumptions (Continued)

	Risk Free		Equity		Property		Liquidity
Country	Rate	Volatility	Rate	Volatility	Rate	Volatility	Premium
Asia/Mideast							
India	NA	NA	NA	NA	NA	NA	NA
Isreal	2.7%	NA	NA	NA	NA	NA	NA
Turkey	NA	NA	NA	NA	NA	NA	NA
Europe Central							
Bulgaria	NA	NA	NA	NA	NA	NA	NA
Croatia	NA	NA	NA	NA	NA	NA	0.25%
Cyprus	NA	NA	NA	NA	NA	NA	NA
Czech	3.7%	14.8%	6.5%	28.3%	5.4%	15.0%	0.25%
Greece *	NA	NA	NA	NA	NA	NA	NA
Hungary	7.2%	14.4%	NA	NA	NA	NA	0.25%
Poland	5.8%	17.3%	NA	NA	NA	NA	0.25%
Romania	NA	NA	NA	NA	NA	NA	0.25%
Russia	NA	NA	NA	NA	NA	NA	NA
Slovakia	NA	NA	NA	NA	NA	NA	NA
Europe Western							
Austria *	4.0%	14.4%	NA	28.8%	NA	NA	0.23%
Belgium *	3.9%	14.7%	7.3%	27.9%	6.1%	22.3%	0.38%
Denmark	NA	NA	NA	NA	NA	NA	NA
Finland *	NA	NA	NA	NA	NA	NA	NA
France *	3.6%	15.5%	7.2%	28.2%	4.9%	18.4%	0.25%
Germany *	3.7%	15.4%	7.4%	28.1%	4.9%	14.6%	0.15%
Ireland *	4.0%	10.6%	4.7%	26.5%	4.7%	25.7%	NA
Italy *	3.6%	15.6%	7.2%	26.8%	4.5%	14.8%	0.16%
Lichtenstein	NA	NA	NA	NA	NA	NA	NA
Luxembourg *	3.6%	14.4%	6.6%	26.3%	5.6%	29.6%	0.20%
Netherlands *	4.2%	7.4%	7.5%	24.3%	6.5%	19.2%	0.39%
Norway	NA	NA	7.6%	25.4%	6.6%	6.2%	NA
Portugal *	3.5%	14.0%	NA	28.0%	NA	15.0%	0.25%
Spain *	3.6%	15.4%	6.6%	26.5%	5.6%	19.6%	0.19%
Sweden	3.7%	NA	6.7%	NA	5.7%	NA	NA
Switzerland	2.7%	16.7%	8.1%	23.5%	3.7%	11.5%	0.13%
UK	4.2%	9.7%	6.4%	25.0%	6.6%	14.6%	0.44%

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

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:

- Not surprisingly, illiquidity premiums and volatilities were lower as of year-end 2009 vs. year-end 2008. For example, in the United States the average liquidity premium declined from 1.48 percent at year-end 2008 to .5 percent at year-end 2009.
- Property volatilities and illiquidity premiums vary significantly from country to country, while volatilities of equities show much less variation by country.
- In last year's study, we found that companies used implied volatilities as of a wide range of dates in 2008 rather than simply using those as of year-end 2008. This was due to the high implied volatilities as of year-end 2008. In this year's study companies for the most part used implied volatilities as of year-end 2009.

New 2009 Disclosures

The CFO Forum's Market Consistent Embedded Value Principles specify that the residual cost of non-hedgeable risks should be reflected in the calculation of EV. Non-hedgeable risks consist of certain non-financial risks, such as mortality risk and operational risk, and certain financial risks not reflected in other components of the EV. (The other components of EV are the present value of future profits, the time values of options and guarantees and frictional cost of capital.) Twenty-three of the companies in the study mentioned their basis for calculating the provision for the cost of non-hedgeable risks in their EV disclosure statements. Seventeen of the 23 indicated that they used the cost of capital approach. Under this approach, a cost based on a certain percentage of capital is assessed each year. The cost of non-hedgeable risks is then the present value of this stream of costs. The percentage applied to the amount of capital is somewhat arbitrary since there is no standard approach to quantify non-hedgeable risks. The percentages disclosed by the companies in the study ranged from 0.75- to 7-percent per year. The definition of the amount of capital used in the calculation also varied. Several companies indicated that they used an amount of capital based on their internal economic capital models specifically related to non-hedgeable risks. Other companies appear to apply the percentage to the total amount of required capital. For the six companies that did not specifically mention the use of a cost of capital approach, the disclosures varied. Some simply mentioned that the cost of non-hedgeable risks was included. Some indicated that the cost of non-hedgeable risks was reflected in other aspects of the calculation, such as the choice of experience assumptions for lapse and mortality.

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. ☐

Charles Carroll, FSA, MAAA, FCA is consultant to New York Life Insurance Company in New York, N.Y. He can be reached at charles_carroll@ nyl.com.

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.

Dominique Lebel, FSA, MAAA, FCIA, is a senior consultant at Towers Watson in San Francisco, Calif. He can be reached at Dominique.Lebel@ towerswatson.com.