

**Society of Actuaries' Research Project on  
Financial Reporting for Insurance Contracts under Possible  
Future International Accounting Standards**

*Research Regarding the Modeling of Certain Life and Health Insurance Products  
Offered by U.S. Insurers for the Purpose of Measurement of Liabilities under the  
International Accounting Standards Board's Discussion Paper Proposal and U.S.  
GAAP*

**Report of Findings**

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## Executive Summary

This report summarizes the results of a research project undertaken by the Society of Actuaries (1) to provide insight into the possible effects of the International Accounting Standards Board's (IASB) *Discussion Paper* describing its *Preliminary Views on Insurance Contracts* (Discussion Paper) and (2) as technical support to the Financial Reporting Committee of the American Academy of Actuaries in drafting its response to the IASB's invitation to comment on its Discussion Paper regarding the future financial reporting of insurance contracts. The research was conducted by PricewaterhouseCoopers, with the assistance of actuarial task forces (ATFs) from 13 insurers, reinsurers, and consulting firms.

The objectives of this project include an assessment of the extent to which practical models can address some of the key issues involved in applying the IASB's preliminary views in a meaningful and understandable manner. This report presents comparisons of selected U.S. GAAP values to corresponding values of the proposed International Financial Reporting Standard (IFRS) results, particularly relevant because most of the products are currently measured by GAAP, and the Financial Accounting Standards Board (FASB) is currently considering joining the IASB in phase II of the IASB's project on revising its current financial reporting standards for insurance contracts.

This research project addresses life, health, and annuity products, and not property and casualty insurance products. The life, health, and annuity contracts selected to be modeled are actual contracts and are believed to be representative of those currently offered by U.S. insurance companies (U.S. contracts). Eighteen ATFs from 13 insurers, reinsurers, and consulting firms (several firms had more than one ATF) modeled separate product category groupings. Particular focus has been placed on the presentation of the resulting pattern of net income for new business under two reporting bases emphasized in the Discussion Paper. In most cases the illustrated results assumed that no assumption changes are made and that the actual experience that emerges is equal to that expected at the valuation date; when differences arise, the proposed Discussion Paper results will show the effect of changes in assumptions immediately, while U.S. GAAP in most cases spreads their effects over time.

The following are some of the principal findings of the project:

- Income expected to be reported under the Discussion Paper proposal can differ significantly from that resulting from the application of U.S. GAAP, particularly at the time of contract issuance, although the overall pattern of resulting liabilities after the first year are broadly similar.
- The direction and extent of the initial profit or loss under the Discussion Paper proposal can differ significantly from U.S. GAAP results, depending on type of contract, product design, and underlying profitability of the product.
  - Products that derive a significant portion of their income from investment returns tend to show lower income in year 1 under IFRS than under U.S. GAAP, while those with alternative sources of income tend to portray more of a year 1 gain than under GAAP. The losses appear to be in part due to the fact that prices for these contracts anticipate that investment returns will be greater than that of spot rates that are used in the discounting of IFRS liabilities for these contracts. The sources of profits appear to be derived in part from the inherent profitability of the contracts.
  - An important element in determining the timing of reported income is the amount and pattern of release of risk margin used. For the purpose of this project, risk margins were based on a cost of capital method, reflecting factors similar to that used in determining U.S. regulatory risk based capital. The paper also shows expected sensitivities with the Discussion Paper's Implementation A (a no-profit at issue variation), higher and lower levels of capital, and a higher cost of capital.
- Our analysis showed that the impact of the discount rates based on a swap curve compared with a U.S. Treasury spot curve, at least at December 31, 2006, does not create a significant difference in income.

The U.S. products selected to be studied in this project are thought to be representative of the major products issued in the United States and represent actual products that are or have been issued. However, the results shown cannot be assumed to apply identically to all insurers without

modeling, as both prices and expected experience vary, in some cases significantly, for the products modeled. In most cases existing models and methodologies were either applied or adapted. If the models had been developed from scratch to satisfy the preliminary views as expressed in the Discussion Paper, resulting values would likely differ from those shown in this paper. For example, values for the first 20 contract years rather than those from the entire contract period were used in the IFRS calculations prepared by the ATFs. In addition, it is important to note that, because of a lack of available information or measurement methodology, not all of aspects of the Discussion Paper proposal were modeled; for instance, entity-specific operating expenses were used, no explicit margin for provision for services was provided for, and credit characteristics of the liabilities were not reflected.

## **1. Background**

An international financial reporting system for insurance contracts (note that “policy” and “contract” are used interchangeably in this report) has been under development for the last 10 years. In 2005 an interim reporting system, referred to as Phase I and implemented in International Financial Reporting Standard (IFRS) 4, *Insurance Contracts*, was adopted for use in Europe and certain other jurisdictions. This financial reporting system primarily relies on what previously were local financial reporting standards that related to insurance contracts, which would be U.S. GAAP for most insurance companies in the United States. In May 2007 the International Accounting Standards Board (IASB) released their *Discussion Paper with Preliminary Views on Insurance Contracts* (Discussion Paper). This paper includes an invitation to comment on the IASB’s preliminary views regarding its proposed accounting model for insurance contracts and other related preliminary views.

In the United States the Financial Accounting Standards Board (FASB) redistributed the Discussion Paper to its U.S. GAAP stakeholders in August 2007 as part of an invitation to comment (ITC) on whether it should add this project to its agenda. Based in part on the responses it received, it will determine in 2008 whether to pursue a joint project on insurance contracts with the IASB.

The American Academy of Actuaries (AAA), the organization that represents the actuarial profession on public policy issues in the United States, has been closely monitoring the results from this project and reflected preliminary results in its comments on both the Discussion Paper to the IASB and on the ITC of the FASB. The AAA expects to include relevant real-life examples of the expected effects of the IASB proposal on typical U.S. products in future discussions.

### **1.1 Purpose of the Society of Actuaries Project**

In an effort to better understand the potential effect of the proposed accounting model described in the Discussion Paper, the AAA asked the Society of Actuaries (SOA) to conduct research that incorporates modeling of new business and in-force books of business to illustrate the expected effects of the Discussion Paper on life and health insurance and annuity contracts commonly offered by U.S. insurers. The SOA commissioned PricewaterhouseCoopers to conduct a research study to meet that objective. This report describes the results of that study.

The focus of this research is to develop baseline illustrative financial statement results using the accounting model proposed in the Discussion Paper. In addition, corresponding values using current U.S. GAAP standards were also developed, which may be particularly relevant to the FASB’s deliberations regarding whether it should join the IASB in a joint insurance contracts project.

In order to gain understanding and insight into the proposed methodology, alternative approaches in several key areas (described in the Discussion Paper) and alternative expected approaches are also shown.

The objectives of this research include providing background information regarding possible implications of the proposals in the Discussion Paper on U.S. products to members of relevant financial reporting committees of the AAA, as well as to facilitate the education of SOA members on the proposals. Through this research study and resulting report, the SOA hopes that the results of this study will also prove useful to the IASB and the FASB in their deliberations.

### **1.2 Key Aspects of the SOA Project**

The following sections describe the process followed in the course of the research conducted and the products modeled. As many aspects of the proposed accounting model are subject to interpretation or are still being researched by IASB staff, it was also deemed important to involve many different industry participants in the project.

#### **1.2.1 ATFs and the Researcher**

To conduct this project, actuarial task forces (ATFs) consisting of life/health actuarial volunteers were formed. These were composed of individuals from insurance and reinsurance companies and consulting firms who either offer the products studied or whose company clients do. Each product was modeled by at least one ATF, and in most cases by more than one. In addition, in some cases more than one ATF came from a single insurer or firm. The products modeled are described in

Section 1.2.4. The insurers and firms who participated as at least one ATF are given in the Acknowledgments of this report.

The research was conducted and this paper was prepared by PricewaterhouseCoopers (PwC) actuaries Sam Gutterman, Jennifer Liang, Tracey Polsgrove, and Randy Tillis, all FSAs and MAAs. *The opinions expressed and conclusions reached by the researchers are their own and do not represent any official position or opinion of the Society of Actuaries or its members, members of the ATFs, or PricewaterhouseCoopers LLP.*

### **1.2.2 Process Followed**

Results were considered separately for in-force books of business and for new business. The projection period studied was for contracts issued during 2007 or in force on December 31, 2006. Participants were asked to provide U.S. GAAP income statements and balance sheets, baseline IFRS results (described in Section 2), the underlying cash flows, alternative IFRS results, and, in some instances, sensitivities to the IFRS results.

To protect the confidentiality of the insurers, the results presented in this report have been unitized, combined, and otherwise altered in a way to preserve the substance of the results, yet at the same time protect company-specific data.

For many of the product lines modeled, the baseline IFRS results provided either were based on a single set of expected cash flows (for products with relatively predictable cash flows without significant options or guarantees) or were based on probability weighting (the results were the weighted average of a number of scenarios). For some of the alternative IFRS results presented below, the alternative results were provided by the ATFs, while in other cases the researchers calculated them. The researchers provided the discount rates to be used or ensured that the rates were used consistently by the ATFs.

The predominant part of the modeling used as the basis for the calculation of the research results shown here was prepared by the 18 ATFs, who modeled one or more of the 10 contract types described in Section 1.2.4. Some of the ATFs were able to model in-force portfolios and new business (assumed to be sold in 2007), while others were able to model only one or the other.

The ATFs were asked to provide expected cash flows, reflecting the risk characteristics of the portfolios modeled and their expected expense levels. They provided the researchers with descriptions of the products modeled and the assumptions used to estimate future cash flows. They also provided resulting U.S. GAAP balance sheets and income statements, as well as expected cash flows for use in the calculation of values resulting from the proposals described in the Discussion Paper and certain additional relevant information (e.g., cash values and company-generated economic capital, if available).

In performing the analysis all results were determined on a pre-income tax basis. Taxes not based on income, such as premium taxes or modeled taxable items (expenses such as payroll tax), are reflected. Income tax under IFRS is addressed in the determination of deferred tax assets or liabilities (according to IAS 12 or FAS 106), the calculation of which is outside the scope of this study.

The projection period studied was for 20 years, unless specified otherwise. For certain products this is less than is typically used in the industry for model projections. For the purposes of this project it was assumed that all policies terminated at the end of the twentieth contract year. An amount equivalent to the then net U.S. GAAP liability was included as an insurance benefit in the IFRS cash flow calculations presented here as a surrogate for the present value of expected cash flows after that time. In the use of the cost of capital method, this simplification may result in a somewhat understated risk margin; that is one reason why two sets of risk margin sensitivities are shown.

### **1.2.3 Model Validation**

Prior to using the results provided by each of the product-level ATFs, baseline results were reviewed at a high level by the PwC researchers for reasonableness, including U.S. GAAP implied lapse rates, mortality rates, expenses, and interest rates. In addition, the cash flows themselves were reviewed at a high level. Each ATF was also asked to describe the validation methods they used to gain comfort with their model output.

Note that the results have not been subject to audit (except to the extent that U.S. GAAP values are those actually used, but even in this case audits may not have been conducted at the unit of measurement provided). Nevertheless, the outputs provided were developed primarily from actual models in internal use, generated, for example, for cash flow testing, pricing, or financial reporting purposes. To the extent that the ATFs reported GAAP financial results, the GAAP in-force values represent actual financial results.

PwC researchers then extended the Discussion Paper modeling by applying a consistent set of current interest rates as discount rates to the cash flows provided by the ATFs. Alternative approaches and sensitivity results were developed either by the ATFs or by the PwC researchers.

#### 1.2.4 Products Modeled

In this report the proposed accounting model was used to develop income statements and balance sheets for 10 commonly offered life and health insurance and annuity contracts offered by U.S. insurers. The contracts studied are those of actual products of these companies, reflecting actual or expected risk characteristics, for example, age, gender, and risk classification, as well as premium payment mode.

The products studied, including a brief description of their general characteristics, are the following:

- Life insurance:
  - *Term life insurance.* The term insurance contracts included are predominantly level term life insurance with a 20-year coverage period. They were or are anticipated to be sold to individuals. They do not contain cash values. The amount of premiums after the original contract period are guaranteed, with future premiums to be set at a higher level at the then attained age and in certain cases at the discretion of the company up to a maximum amount. The conversion option included in some of them is not a significant feature of these contracts.
  - *Participating whole life insurance.* These participating (par) contracts are predominantly whole life insurance contracts of various premium payment period durations. They were or are anticipated to be sold to individuals. Their policyholder dividends are based on the contribution principle (dividends returned to policyholders consistent with their contributions to built-up surplus). No dividends or shares to stockholders are reflected.
  - *Universal life insurance.* Although these contracts are predominantly flexible premium versions of this product (the amount of premiums paid do not follow a fixed schedule, although they may be subject to a minimum amount of premiums), some single-premium contracts are also included. Minimum guaranteed interest rates are credited that can vary by contract duration, with amounts in excess of that guaranteed also often payable, reflecting actual investment earnings and competitive conditions. They have monthly cost of insurance and expense loads deducted from the account balance. In most cases actual and expected costs and charges are less than those guaranteed.
  - *Variable (in some countries outside the U.S. referred to as "unit-linked") universal life insurance.* In many respects these products are similar to universal life insurance products, with their underlying assets invested in a set of separate accounts (whose assets are invested in various types of financial instruments, e.g., common stocks). The assets are all marked-to-market. They have a cash value that depends upon asset performance.
- Annuities:
  - *Fixed (general account) deferred annuities.* These are predominantly single-premium contracts sold to individuals that include both fund accumulation and income payout periods. They return a minimum interest rate during the accumulation period, with the insurer having the option of crediting interest rate in excess of that guaranteed, usually guided by investment experience and competitive conditions. At some point in time, some of these may be annuitized, that is, converted to payout annuities, although the usual conversion rate in the United States is currently very low, and as such no annuitization costs are reflected in

the results of these contracts. Underlying assets are commingled with the insurer's other general account assets.

- *Fixed (general account) immediate annuities.* These are income payout annuities sold to individuals with a variety of certain periods, for example, a level monthly benefit is paid and is guaranteed for a certain period, such as 10 years, and lifetime thereafter to the extent the annuitant (or joint annuitant) survives. Underlying assets are commingled with the insurer's general account assets. The income payout is guaranteed. They don't usually have a cash value.
- *Variable deferred annuities.* These are predominantly single-premium contracts sold to individuals. They have a cash value during the accumulation period that depends upon asset performance. The underlying assets are invested in various separate accounts (whose assets are invested in various types of financial instruments, e.g., common stocks) and that are all marked-to-market. Various minimum guarantees are provided, such as minimum death benefits of various types.
- Health insurance:
  - *Group medical expense insurance.* These contracts are sold to groups, covering medical expenses of individuals. The premiums are payable monthly, with contract periods of a year. The liability includes a claim liability, in which the payout period is relatively short in duration, with a relatively tiny unearned premium liability.
  - *Long term care insurance.* These contracts provide various assisted living benefits, predominantly nursing home and home health care benefits. Their premiums are guaranteed renewable, that is, future premiums can be modified on the basis of future experience, with regulatory approval required. They are sold to individuals. Their liability consists of both a contract liability (pre-claims) and a post-claims period. Most do not have a large cash value.
  - *Supplemental health insurance.* These provide health care benefits and include a savings element and cash value. They are sold to both individuals and groups.

Depending on model availability, ATFs provided projections for either (1) in-force books, (2) new business books, or (3) both:

- In-force models were either produced for the entity's entire in force for the product type modeled or in a few cases only selected product subtypes. They represent either a single previous year of issue or many years.
- New business models represent only products expected to be sold in the year 2007. Most were assumed to be issued throughout the year; thus, half a year of financial results are included for 2007, an exception being single-premium immediate annuities, all of which were assumed to be issued on January 1, 2007, and a portion of the participating whole life book with first quarter issuance.

### 1.3 Key Elements of the Discussion Paper

The IASB's preliminary views described in the Discussion Paper reflect a single accounting objective for use in measurement of all insurance and reinsurance contracts, referred to as a "current exit value." Three building blocks are used in the calculation of the liabilities under this proposed approach. The following are brief highlights of this proposal as it applies to the products modeled here, beginning with these building blocks.

1. *Estimates of future cash flows.* An explicit, market-consistent, unbiased, probability-weighted current estimate of future cash flows. This consists of current estimates of liability cash flows, without any "lock-in" feature. This contrasts with many current accounting models (U.S. FAS 60 and several U.S. statutory liability bases) that lock in estimates at contract inception, but are subject to annual adequacy testing at a portfolio level. Changes in current estimates are to be made on a regular basis and affect profit and loss immediately. The approach also dictates the estimation of cash flows over more than one scenario, so the cost



of any options and guarantees are reflected. There is no cash value floor. Expenses are market-consistent, that is, expenses that relevant market participants would expect to incur.

2. *Time value of money.* The time value of money is reflected by using discount rates based on market interest rates applied to the cash flows determined in block 1. The insurers' investment strategy is not relevant in the choice of the appropriate discount rate, except to the extent that the cash flows are directly related to a designated set of assets, for example, in certain participating contracts that follow a rigorous contribution methodology and for variable (unit-linked) products. Rather, according to the Discussion Paper, the discount rates are based on market-based interest rates that are consistent with the timing, currency, and liquidity characteristics of the cash flows. In the IASB's preliminary view, it is inappropriate to combine the risk margin block (3) and discount rates through the use of risk-adjusted rates. Guidance provided in the Discussion Paper is not specific as to which discount rates to use, such as risk-free government security yields or swap rates.
3. *Margin.* An explicit and unbiased estimate of a margin that an independent party would accept to bear insurance risk (risk margin) and to provide services (service margin). This third building block, relating to margins for risk and services provided determined on an explicit basis, are relatively new concepts in insurance accounting. Risk margins are intended to provide for the relative uncertainty associated with future cash flows. Risk margins are portfolio-specific, rather than entity-specific: that is, the risk margin reflects the effect of pooling of risks within a portfolio, but not diversification or negative correlation between benefits across portfolios. A margin for services provided is that amount that compensates an insurer for providing a service such as investment management. The IASB has not prescribed a specific method for developing risk margins. It describes a service margin by reference to acquisition costs but does not define what these acquisition costs are. In addition, it is difficult to determine a complete service margin that recognizes the service risk and profit that would be charged by a third party for a bundled product. The Discussion Paper and its Appendices include a list of some proposed risk margin methods and illustrative examples. The International Actuarial Association's Exposure Draft *Measurement of Insurance Contract Liability: Current Estimates and Risk Margins* further describes several of the risk margin methods.

Other measurement features included in the Discussion Paper include the following:

- Estimates of cash flows are developed on a gross of ceded reinsurance basis, accompanied by separate ceded reinsurance values. Most, but not all, of the products modeled in the scope of this project do not have a ceded reinsurance asset.
- Cash flows are developed on a pre-income tax basis, as provisions for deferred income tax assets or liabilities are treated separately.
- The credit characteristics of the insurance contract are reflected (i.e., the expected cash flows to be paid incorporate the probability that the entity will or will not be able to fulfill all of its obligations). The potential reduction in the liability would be net of the effect of guarantee funds on the contract's credit characteristics, so the Discussion Paper indicates that the effect of this factor should be relatively small in amount.
- Renewal premiums are recognized in cash flow calculations only to the extent that they provide guaranteed insurability. This may imply that certain premiums, particularly with respect to flexible premium contracts, will not be permitted to be included in the estimate of cash flows.
- To the extent that investment and insurance components are included in the same insurance contract, they are not interdependent, and they can be split on a basis that is not arbitrary, IAS 39 applies to the deposit component, while the entire liability would be calculated according to the Discussion Paper approach, that is, the value of the insurance and any service components are the residual difference. If they are not interdependent, they are unbundled.

- In participating contracts and those contracts with nonguaranteed elements, participating policyholder dividends or the nonguaranteed elements are recognized only to the extent that they represent a constructive or a legal obligation.

In the Discussion Paper, the IASB tentatively favors, by a slim margin, having these building blocks measured using a current exit value model (referred to as Implementation B in the Discussion Paper). Under the current exit value approach, the building blocks are developed based on the amount an insurer would need to pay another entity to take on the obligations with the obligations assessed with respect to the contracts' own risk and related characteristics. For example, because there is no market from which prices can be observed on a reliable basis, risk margins have been estimated with respect to a hypothetical transfer of the liabilities.

The concept underlying service margins has been refined by the IASB subsequent to the Discussion Paper to reflect the amount a market participant would demand to provide the remaining services under the contract in excess of the expected cost and assessed risk associated with providing the service and has been incorporated into the calculation of risk margins to the extent that actual or expected market prices for insurance risk and services would indicate. The IASB has indicated that it is unlikely that a service margin could be explicitly and separately measured for most bundled insurance contracts. The effect of changes in assumptions subsequent to issue on U.S. GAAP and IFRS differs because the Discussion Paper proposal would immediately affect the liabilities, whereas for GAAP the effect may be smoothed over time through a change in the deferred acquisition cost (DAC) amortization pattern or loss recognition.

An alternative measurement approach, an entry-value-type approach (referred to as Implementation A of the current exit value, "Implementation A" for short), based on the transaction price charged to a policyholder, is also presented. Under this approach, risk margins are generally determined in relation to the amount charged by the insurer for the contract.

#### 1.4 Study Limitations

The results of this type of modeling can be quite dependent on the specific markets, underwriting, product designs, competitive pricing levels, and efficiency of the portfolios modeled. As a result, although the products modeled by the ATFs represent typical products offered by U.S. life and health insurers, it would be inappropriate to assume that the income and balance sheet values shown in this report would be identical to those that would be generated by the U.S. insurance industry as a whole or resulting from any particular insurer's contracts. The products addressed here are life and health insurance and annuity contracts and do not include any property and casualty insurance contracts.

Existing models and methodologies used were either applied or adapted to the ATFs' views of how they would apply existing models to produce values developed to reflect the Discussion Paper's proposals. The results shown may differ from what insurers would derive if their models had been developed from scratch to meet the specifications of a final insurance contracts standard.

In addition, several additional limitations of this study apply and should be kept in mind:

- The ATFs that conducted the modeling attempted to measure probability-weighted cash flows. However, in some cases because of the practical limitation that primarily existing models were relied upon, deterministically derived best estimate assumptions were primarily used. As a result, to the extent that options and guarantees are included in the contracts modeled, liabilities may be somewhat understated in comparison with the expected cash flows resulting from the Discussion Paper's proposed approach with their early profits correspondingly overestimated.
- Current expectations as of a particular point in time, December 31, 2006, were applied that may not be indicative of the conditions or expectations of future financial markets or competitive situations.
- Although every attempt was made to apply the IASB's preliminary views as indicated in the Discussion Paper, in certain areas deviations were intentionally applied, either because of difficulty in obtaining relevant information or interpretations of the preliminary views that might not be made in practical application either currently or in the future when the preliminary

views become a standard, or where views were not expressed. Examples of these include the following:

- Entity-specific expenses are applied. No attempt was made to estimate what market-based expenses would be that would correspond with market-clearing prices of the contracts modeled. Although various intercompany studies are published, their results are not thought to better represent market participants' views of expenses for the contracts measured here.
  - The values of capital used in the cost of capital method for determining risk margins are proxies for economic capital. The application of the cost of capital method used for this purpose is an evolving area of practice that we expect to continue to evolve prior to the application of an IFRS standard. This is the reason that emphasis has been placed in this report on showing the effect of sensitivities to the risk margin. Therefore, the risk margins included in baseline IFRS results should be viewed as being for illustrative purposes only.
  - The baseline models reflect the cash flows associated with all expected future premiums, without distinguishing whether they are needed to ensure future insurability. For participating whole life, premiums are assumed to be paid in cash with policyholder dividends used, in part, to buy PUAs). Alternatively, to be consistent with the spirit of the Discussion Paper, PUAs might be assumed to be surrendered to pay premiums.
  - No demanded profit element in excess to the risk associated with providing service was specifically incorporated into the risk margin. However, the expected cost and associated risk for providing such service has been implicitly included in the risk margin.
  - No explicit calculation has been made to reflect the credit characteristics of the insurance contracts.
  - Although the Discussion Paper indicates that discounting the cash flows for an obligation whose amount is dependent upon a designated set of assets should be measured on a consistent basis, we have not reflected such a discounting methodology in the baseline results. Rather, this method for discounting has been included in a sensitivity result for certain products.
  - The baseline liability for participating whole life has incorporated the expected level of future policyholder dividends. It has been assumed that these represent a constructive obligation as currently defined in IFRS standards. A sensitivity is provided assuming that future policyholder dividends are not considered to be a constructive obligation.
- As indicated in Section 2.2, a single methodology with its corresponding assumptions was applied to determine risk margins for all products except variable annuities. That methodology is the cost of capital methodology, also used under Solvency II. For variable annuities, a conditional tail expectation (CTE) methodology was applied, similar to that used under the National Association of Insurance Commissioners' (NAIC) C3 Phase 2 requirements relating to regulatory standards regarding variable annuities. Other approaches might be equally acceptable.

The analysis did not include examples of a situation in which a change in assumptions occurred subsequent to contract issuance or where actual experience differed from the initial assumptions. If such a sensitivity had been illustrated, the application of the Discussion Paper proposal would have shown the difference in income in the period when such a change was made, whereas in U.S. GAAP the effect would usually be smoothed over a period of time, the extent to which depends on the product involved and how the DAC balance was affected.

The values generated were not subject to rigorous audit, although they were subject to reasonableness tests conducted by the researchers and, as mentioned in Section 1.2.3, various types and levels of validation.

## **2. Overview of Approach**

### **2.1 U.S. GAAP**

U.S. GAAP values used were primarily derived from existing internally derived values reported on the basis of currently applicable GAAP standards, as promulgated by the FASB.

Overall, universal life insurance, fixed (assets invested in the insurer's general account) deferred annuities, and variable products are measured in accordance with FAS 97 universal-life-type products. Single-premium immediate annuities are measured in accordance with FAS 97 limited payment life products. Term life insurance and the health products are measured in accordance with FAS 60, and participating whole life insurance is measured in accordance with FAS 120.

In certain cases the entities whose business the ATFs modeled do not prepare GAAP financial statements; these values were developed by the ATFs in a manner consistent with those standards. Standards that were not effective at the end of 2006 were not reflected, in particular, SOP 05-1 and FAS 157.

### **2.2 Baseline IFRS Approach**

To assess the potential effect of the Discussion Paper's preliminary views proposal, the ATFs were asked to determine baseline IFRS values. In certain respects modifications from the Board's preliminary views described in the Discussion Paper were made where the Discussion Paper proposal did not provide specific, clear, or complete guidance or where applicable values could not be reliably calculated (see Section 1.4 for a further discussion).

We chose a consistent baseline approach for all product lines for IFRS reporting illustrations. The current exit value approach (described in Section 2.2.1) was used in the derivation of IFRS income statements and balance sheets, with risk margins calculated using a cost of capital approach as described in Section 2.2.2. For this baseline, it is also assumed that there is no profit component to the service margin (i.e., the company's service-related expenses are deemed to be consistent with observable prices for the services provided by a relevant market).

Under this approach, liabilities are calculated as the discounted expected value of contractual cash flows. Note that probability distributions were not usually developed and applied to derive the expected value of cash flows, although the assumptions used represent the ATFs' current estimates of experience, believed to be consistent with the intent of the Discussion Paper proposal. The initial reporting date was December 31, 2006, with the discount rates used equal to spot rates of U.S. government securities at December 31, 2006.

The investment income earned under both U.S. GAAP and IFRS income shown in this report is based on that expected to be earned under the assets underlying U.S. GAAP liabilities. Thus, the GAAP and IFRS income statement results shown in this paper are consistent with each other. Alternatively, the investment income returns could be generated from assets corresponding to the separate sets of net liabilities, and then generated from market-based yield curves applicable to each generation of IFRS liabilities. However, to reflect such an alternative approach would be beyond the scope of this project. By including the investment results in the way we did, the differences in liabilities between GAAP and IFRS may be better compared. This is discussed further in Appendix 8.2.

An important item to note regarding the presentation of IFRS Income results for in-force business is the treatment of the gain or loss at implementation or conversion from U.S. GAAP to IFRS (which is assumed to have occurred prior to January 1, 2007). The in-force IFRS income shown in year 1 does not reflect this gain or loss, as it is deemed to be an extraordinary item or to have been previously reported prior to December 31, 2006. The difference between the existing net GAAP balance sheet and the restated IFRS balance sheet if first time adopted at that point would be captured and reflected elsewhere in the income statement presentation.

#### **2.2.1 Current Exit Value**

A current exit value is defined as the amount the insurer would expect to pay at the reporting date to transfer the remaining contractual rights and obligations immediately to another entity. This approach is referred to as Implementation B in the Discussion Paper. The current exit value approach could result in the recognition of a profit or loss at inception of a contract. Under this approach, although

the price charged to policyholders by the insurance entity may be used to test the reasonableness of the initial measurement of the insurance liability, it is not used to override an unbiased estimate of the margin that market participants require.

For simplicity we have assumed that the model inputs such as market rates and actuarial assumptions either are consistent with observable market prices or reflect portfolio-specific characteristics: that is, they are consistent with what market participants would expect for the liabilities of the business modeled. In other words, the expected U.S. GAAP cash flows are identical with those used for IFRS modeling.

### **2.2.2 Risk Margin**

For the baseline IFRS results for most of the products modeled, the risk margins are calculated using a cost of capital approach (see Appendix F9(d) of the Discussion Paper). As pointed out in the Appendix to the Discussion Paper, the risk margin under the cost of capital method would “estimate the cost of holding the capital that is required to give policyholders comfort that valid claims will be paid, and to comply with regulatory capital requirements, if any.”

Given the desire for simplicity and for a consistent approach for all products in the baseline IFRS results, we chose to estimate economic capital (the capital required to provide comfort that the insurer obligations would be satisfied reflecting the underlying risks of the obligations) for the risk margin calculation, rather than using current regulatory liability and capital requirements. An economic capital model should be used to determine the appropriate level of capital for each product for this purpose. The development of such models is a major project in itself and beyond the scope of this project. As a proxy for economic capital, we have used a factor approach applied to readily available balance sheet items. The only exception is for the variable annuity products where a CTE approach that measures the size of extreme deviation risks in the products was used to estimate economic capital due to the availability of the values from applying this approach for U.S. regulatory liability purposes by the ATFs.

A 12% pre-tax cost of capital rate was used in the cost of capital method. This is gross of the risk-free rate. That is, given the December 31, 2006 spot rates of between 4.5% and 5.5%, the net cost rate would be between 6.5% and 7.5% if investment earnings on capital were to be reflected at the risk free rate. Since such investment earnings are not reflected in the calculations, the modeled net cost of capital rate is 12%--the same as the gross cost of capital rate in this case. The choice of using a gross cost rather than a net add-on to the risk free rates was judgmentally based rather than on a theoretical principle.

In addition, factors applied to contractual values (e.g., premiums, face amount, account value) produced levels of capital that appear broadly consistent with 100% of NAIC risk-based capital (RBC), also referred to as the authorized control level, and were used to estimate economic capital in the baseline risk margin capital calculation.

Note that 100% may appear at first glance to be quite low, as it is close to the regulatory minimum level in the United States; however, in the risk margin formulation described in the Discussion Paper, only the nonhedgeable elements of economic capital should be included. Therefore 100% was felt to represent a reasonable approach to determine capital as incorporated into the cost of capital methodology for risk margins for this purpose, although it is recognized that it was selected in part as a practical expedient. Theory and practice will evolve to incorporate other methods and assumptions.

To provide an indication of the sensitivity of alternative cost values in the cost of capital method, results using an 18% pre-tax cost are also shown for each product category in chapter 3. There are currently differing views as to what constitutes a reasonable rate for this purpose, with some suggesting that a somewhat lower rate might be more appropriate. We suggest that further research be conducted in this area.

The factors selected for use are (1) account value for fixed annuities and universal life, current estimate (that excludes risk margins) for immediate annuities, long term care, par whole life, and supplemental health, including claim liabilities for long term care, (2) face amount, which in some countries is sum assured, expressed in terms of \$1,000 of insured amount, and (3) premiums. Further work outside the scope of this project is needed to better refine these calculations or the factor selections.

For variable annuities, economic capital was estimated as the difference between 90 CTE and 70 CTE as a proxy for the 100% RBC level. This also implicitly reflects the contractual guarantees of these contracts.

As described in Section 2.5, sensitivity results are presented, reflecting other levels of costs and capital and using product-specific economic capital where available from the ATFs.

Table 2.2.2-1 summarizes the economic capital proxy factors used for products whose values are provided in this report. Depending on the product line, the liability or account value was used.

**Table 2.2.2-1. Capital Factors Used to Calculate Capital for Baseline IFRS Risk Margins**

<u>Line of Business</u>	<u>Liability/ Account Value/</u>		
	<u>Claim Liability</u>	<u>Face Amount</u>	<u>Premium</u>
<b>Universal Life</b>	1.15%	0.09%	3.08%
<b>Term Life</b>		0.09%	3.08%
<b>SP Immediate Annuity</b>	1.15%		3.08%
<b>Variable Annuity*</b>			
<b>Variable Life</b>		0.09%	0.08%
<b>Long Term Care</b>	7.70%		23.87%
<b>Supplemental Health</b>	5.00%		4.27%
<b>SP Deferred Annuity</b>	1.15%		3.08%
<b>Par Whole Life</b>	1.15%	0.09%	3.08%
<b>Group Health</b>	5.00%		4.27%

\*IFRS baseline risk margins for variable annuities are based on the difference between the 90 CTE and 70 CTE results.

Once the amount of capital is determined, the risk margin at issue is calculated as

$$PV\{\sum_{t=1}^{20} r_c * C_t\},$$

where PV = present value  
 $r_c$  = pre-tax cost of capital rate that does not vary by time  
 $C_t$  = economic capital at time  $t$ .

PV incorporates discount rates that are pre-income tax and are consistent with those used to calculate the baseline liability before risk margin. For the baseline, a 12% cost of capital was assumed. As 20 years was the projection horizon used for most products, we have truncated the calculation of cost of capital at that point similar to our use of a terminal value in the liability calculation. As a result, the risk margins used are somewhat understated though this understatement may not be significant in the early policy years. We do not believe that the understatement is sufficient to distort the income shown here.

### 2.2.3 Treatment of Investment Income

An income statement includes actual investment income. To determine how much actual investment income should be included, a level of assets had to be assigned. In part to be consistent with U.S. GAAP values, an amount equal to the net GAAP liabilities (liabilities less outstanding unamortized DAC balance) was used. For a more detailed description and an example, see Appendix 8.2.

## 2.3 Alternative IFRS Approach

For most products, results for new business under an alternate IFRS approach were also calculated. The alternate approach utilized is referred to as "Implementation A" in the Discussion Paper.

Implementation A is similar to an entry value approach, in that its use does not result in a gain on a contract at inception. Note that a loss is possible at contract inception, and the first year in the income illustrations in Section 3 includes 2007 experience that may generate a gain or loss. If the application of the first two building blocks would produce a loss at issue, it has been assumed that, through application of a liability adequacy test, the risk margin would be reduced to zero, and a loss at issue would be recognized. If the resulting liability adequacy test liability (the liability that would result after the application of such a test) would include a risk margin, the liability would be the same as it would be under Implementation B. This loss at contract inception occurs on new business for three products studied: single-premium immediate annuities, long term care insurance, and deferred annuities.

For Implementation A (the alternate IFRS results presented in this report) calculations whose results are shown in this report, risk margins are expressed as either a percentage of premium, face amount insured, or interest rate. The left columns in Table 2.3-1 show, where available, the resulting percentages by the aggregate product category. A single percentage was determined for each product to produce no gain at inception of the insurance contracts. If the baseline IFRS income at issue was a loss for product, N/A ("Not Available") is indicated in the table,

The right two columns in Table 2.3-1 are shown for comparison purposes only. These represent what the baseline risk margin would be if a single factor had been used for risk margin measurement instead of the multiple capital factors used in the cost of capital risk margin calculations in this paper included in Table 2.2.2-1.

**Table 2.3-1. Single Implementation A Risk Margin Factors and Equivalent Capital Factors**

<u>Line of Business</u>	<b>Implementation A Risk Margin</b>				
	<u>Interest Rate</u>	<u>Face Amount</u>	<u>Premium</u>	<u>Face Amount</u>	<u>Premium</u>
<b>Universal Life</b>			2.14%		1.65%
<b>Term Life</b>			17.62%		6.69%
<b>SP Immediate Annuity</b>	N/A				
<b>Variable Annuity*</b>	N/A				
<b>Variable Life</b>		1.82%		0.115%	
<b>Long Term Care</b>	N/A				
<b>Supplemental Health</b>			27.47%		0.57%
<b>SP Deferred Annuity</b>	N/A				
<b>Par Whole Life</b>	N/A				
<b>Group Health</b>	N/A				

If a baseline loss occurred, the emergence of profits under the alternative IFRS approach is greatly influenced by the choice of risk margin. We explore this in more depth in the description of the sensitivity tests described in Section 2.5. Only results for new business are shown in the implementation A subsection. For products with "N/A" the implementation A results shown reflect the reduction in the implementation B margin until the margin is reduced to zero or the gain at issue is zero, whichever occurs first.

## 2.4 Model Summary

Table 2.4-1 provides the product lines and type of models whose values are included in this report.

**Table 2.4-1. Models Included in This Report**

<b>Line of Business</b>	<b>New Business</b>	<b>In Force Business</b>
<b>Universal Life</b>	Yes	Yes
<b>Term Life</b>	Yes	Yes
<b>SP Immediate Annuity</b>	Yes	Yes
<b>Variable Annuity</b>	No	Yes
<b>Variable Life</b>	Yes	Yes
<b>Long Term Care</b>	Yes	Yes
<b>Supplemental Health</b>	Yes	Yes
<b>SP Deferred Annuity</b>	Yes	Yes
<b>Par Whole Life</b>	Yes	No

Although both new business and in-force models were created for the group medical expense business submitted, we do not believe that anything could be learned from an illustration of either a baseline comparison of U.S. GAAP and IFRS income or liabilities or alternative or sensitivity variations for this product line. Therefore, we have not provided any quantitative displays of modeled values in this report.

## 2.5 Sensitivity Analysis

In addition to the presentation of results based on baseline and alternate IFRS bases, this report includes results from several sensitivity analyses. Some of these sensitivities were applied to all products, while others were conducted only on selected products.

Sensitivity tests performed on the baseline IFRS approach were:

- Replace 12% with 18% as the cost of capital rate used to calculate the risk margins
- Multiply economic capital factors used to calculate the risk margins in the cost of capital method by 300% to estimate the impact of an alternative capital measure
- Use the December 31, 2006, swap curve instead of the corresponding spot curve as an alternative basis for discounting.

Product specific sensitivity tests were:

- *Term life insurance.* Mortality levels are varied for all contract durations by 25%; that is, the mortality rates assumption was multiplied by 125% and 75%.
- *Variable annuities.* The risk margin was calculated using (1) explicit provisions for risk on key assumptions and (2) a factor applied to the standard deviation of the baseline (before risk margins) cash flows.
- *Participating whole life.* Expected future policyholder dividends were excluded from the benefit cash flows. In addition, several variations are shown; for example, variation 1 used expected yield rates rather than the current spot rates in the baseline results.

## 2.6 Figures and Tables in Sections 3 and 4

The figures in Section 3 show the amount of income or risk margins on the vertical ( $y$ ) axis, as applicable, and time since issuance of the contract for new business and from January 1, 2006, for in-force business on the horizontal ( $x$ ) axis. In Section 4 the figures show the net liability (for U.S. GAAP this is the liability minus the outstanding DAC balance) on the vertical axis. In each case a description of the calculation precedes the figure or table that describes the results shown. In addition, to provide perspective for each figure, the amount of first-year premium (for new business) or initial IFRS liability (for in-force business) related to the product shown is included. Unless



otherwise indicated, references to “IFRS” relate to baseline IFRS values. References in the figures to “GAAP” relate to U.S. GAAP values.

### 3. Income Statement Results

This section presents income statement values in graphical form generated from the modeling results for individual product categories. Three important notes regarding both U.S. GAAP and IFRS results are the following:

- The income statement includes investment income according to a consistent set of rules across product groups, described in Appendix 8.2.
- It is assumed that actual experience subsequent to the measurement dates (new business issued) equals that expected (except for Section 3.2.3, which illustrates the effect of a range of actual mortality experience).
- In-force figures including IFRS income assume that IFRS has been implemented either at the beginning of the year or prior to the period illustrated, as no profit or loss is recognized at the time IFRS is implemented. If, for example, a higher liability for an in-force book of business has already been recognized at the initial measurement date, subsequent income will be higher reflecting a release of the higher liability.

The income shown for the first contract year for new business includes both the income at issue after first-year acquisition costs and income during the remainder of that year. Baseline IFRS income is shown split between these two time periods in Section 3.11.

As described in previous sections of the report, the projection results for U.S. GAAP are shown over a 20-year period. This was done in part to be consistent across all products modeled. Note that because most companies utilize a longer DAC amortization period for certain life insurance products (often 30 or 40 years) the DAC values reflected in the U.S. GAAP results shown for certain products here reflect a longer amortization period. Many of the products have nondeferrable acquisition costs, which may result in a year 1 GAAP loss.

In the baseline IFRS new business examples, the first-year result includes the gain at issue in all the income comparisons that follow. The cash flows underlying the baseline IFRS results were based on the U.S. GAAP cash flow projections. The present expected value portion of IFRS liability (before risk margin) is based on the present value of expected cash flows. For the baseline values, the present values were determined using the risk-free (spot) rates. The risk margin under IFRS was calculated using the cost of capital formula described in Section 2.2.2, except for variable annuities. The income shown in the first policy (contract) year includes any gain or loss at issue net of acquisition costs.

#### 3.1 Universal Life Insurance

The models for this product included both in-force and new business. The product mix includes policies with a variety of premium payment patterns, including those with level premiums and high dump-in premiums (additional premium paid on a voluntary basis in excess of that regularly scheduled), with some contracts covering a single life and others covering two lives. Baseline results reflected expected premiums that will be paid.

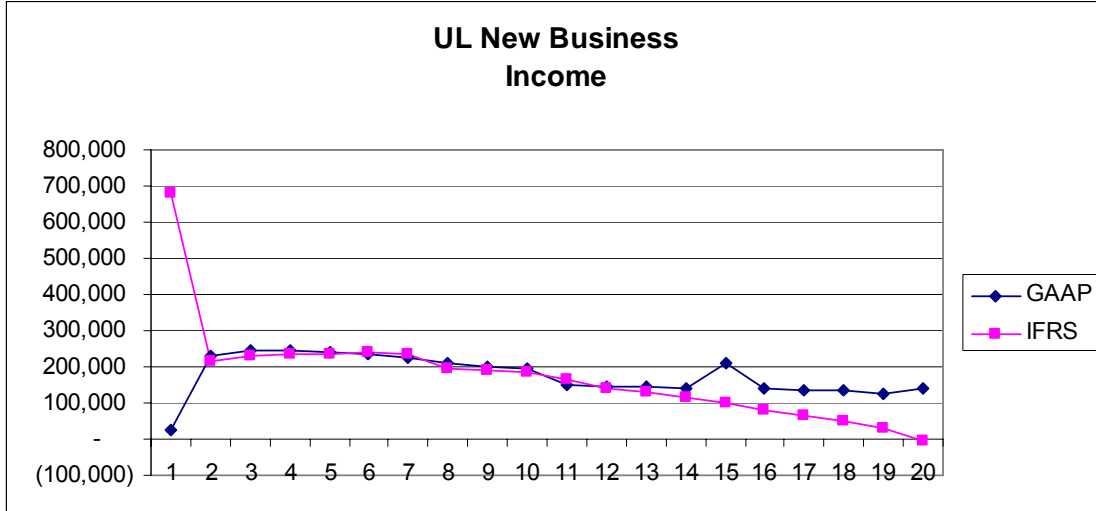
For U.S. GAAP, balance sheets and income statements were developed based on FAS 97 with liabilities equal to the contracts' account values. The amount and amortization of DAC were also calculated in accordance with FAS 97. The projections were based on best estimate assumptions for experience, including those for mortality and lapse. Therefore, the projections do not assume any unlocking of DAC.

##### 3.1.1 Baseline GAAP and IFRS Results

Figure 3.1-1 provides a comparison of the emergence of earnings for both U.S. GAAP and baseline IFRS. For new business shown in the figure, the IFRS gain at issue in the first year represents the present value of future cash flows in excess of the present value of the cost of capital risk margins. The initial loss under GAAP is primarily due to nondeferrable first-year acquisition cost. The drop in income in the eleventh contract year is due to enhanced crediting rates in certain of the product types included; this reduces the expected investment income margins after that time. The increase in GAAP profits in year 15 shown in the figure is the result of the jump in the currently expected cost of

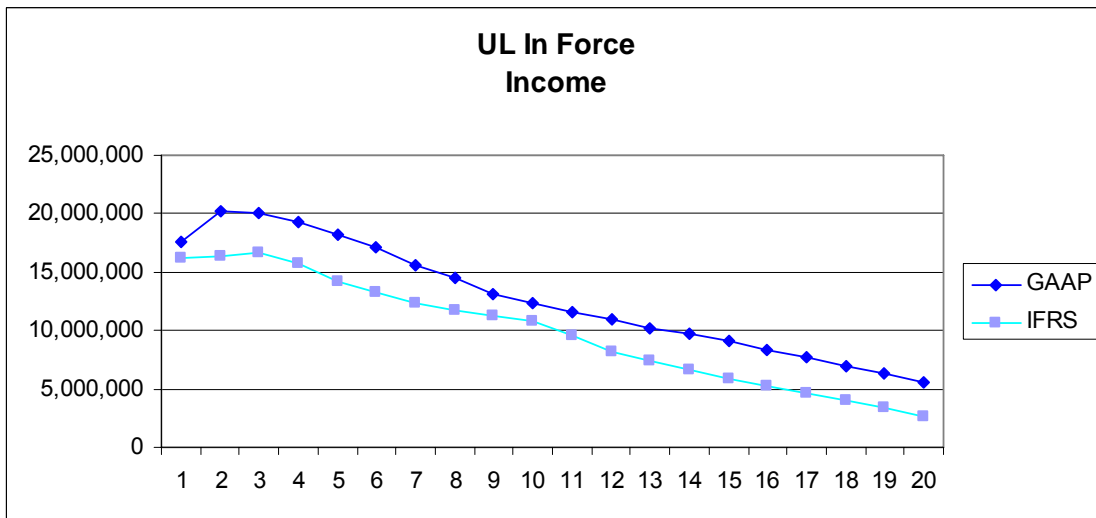
insurance (COI) charges between the select and ultimate COI schedule in certain products. As the IFRS liabilities are based on the present value of cash flows, they do not follow the same patterns.

**Figure 3.1-1. Universal Life New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$5.8 Million)



For in-force business, the first-year income shown in Figure 3.1-2 does not reflect the impact of the change in liabilities as the net GAAP liability is released and the IFRS liability is established, as mentioned in Section 2.2.

**Figure 3.1-2. Universal Life In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$380 Million)

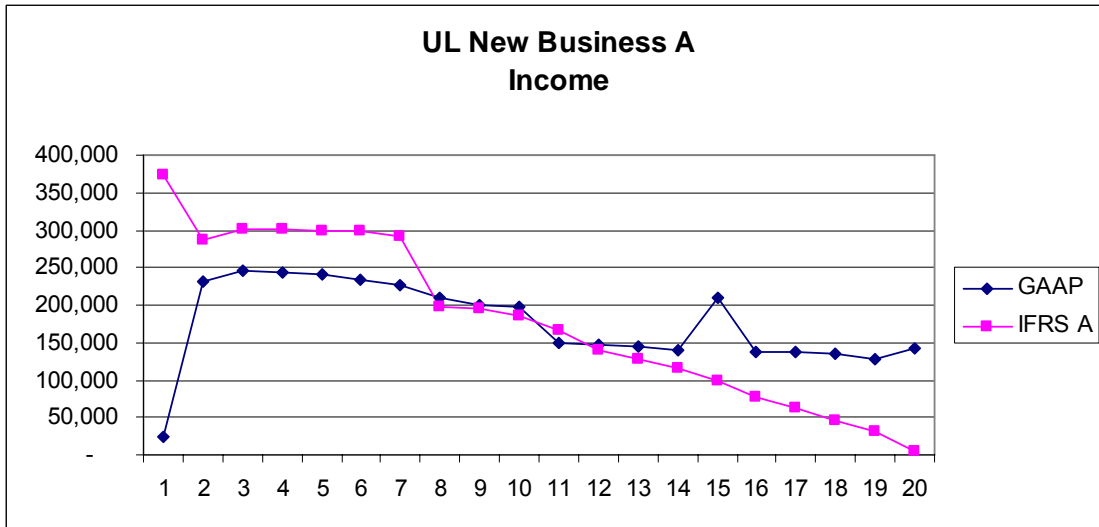


### 3.1.2 Alternative IFRS Results

The first alternative view (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at issue. Using the premium as the base over which the release of risk margin over time will occur (this amortization base, given in Section 2.2.2 for all products modeled, is used as a basis to release the risk margin), Figure 3.1-3 compares income of U.S. GAAP and Implementation A.

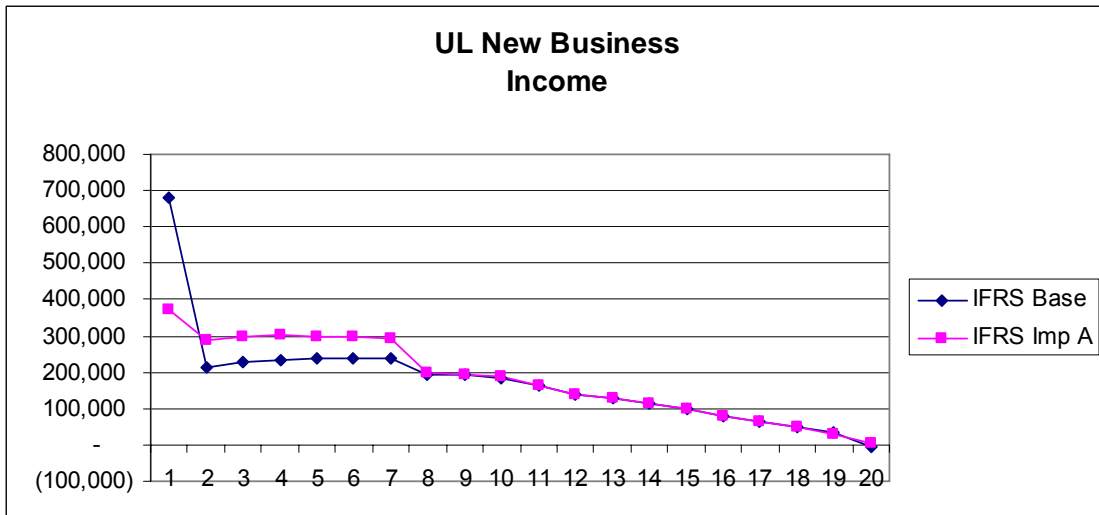
This example shows how the projected IFRS income with a margin based on premium is influenced by the product design and expected premium patterns. The product mix has a heavy concentration of single-pay and seven-pay (a premium payment pattern often used in the United States to ensure that a policy qualifies as life insurance under personal income tax rules) premium contracts, influencing the resulting changes in the level of income by duration, increasing income in the first seven years; other ways of setting the risk margin (e.g., decreasing the discount rate) would show a pattern more similar to U.S. GAAP.

**Figure 3.1-3. Universal Life New Business, Implementation A and U.S. GAAP**  
(First-Year Premium of \$5.8 Million)



Comparing the baseline results to the Implementation A results (Figure 3.1-4), we see a higher initial level of renewal profits under Implementation A that is equivalent to the difference in the level of up-front gain under the base case.

**Figure 3.1-4. Universal Life New Business, Implementation A and Baseline IFRS**  
(First-Year Premium of \$5.8 Million)



### 3.1.3 Sensitivities

A set of sensitivities was performed showing the impact of the use of 300% RBC instead of 100% in the application of the cost of capital method for determining risk margins. The results are presented only with respect to the impact of this alternative capital level on IFRS reported income. As shown in Figure 3.1-5, the effect of going to 300% RBC results in less of a gain at issue and higher income in the future as the larger economic capital is released.

Another set of sensitivities was prepared to demonstrate the impact of a different cost of economic capital as applied in the cost of capital method for determining risk margins. In this case the pre-tax cost of capital rate was increased from 12% to 18% using the baseline level of economic capital. Although there is a change in gain or loss at issue and the total impact over time is equivalent, its timing of release differs. The new business IFRS income results displayed in Figure 3.1-5 indicate a larger gain at issue under the base case (12% cost) than the 18% alternative but then have slightly lower income afterwards.

**Figure 3.1-5. Universal Life New Business, Risk-Based Capital Factor Sensitivities**  
(First-Year Premium of \$5.8 Million)

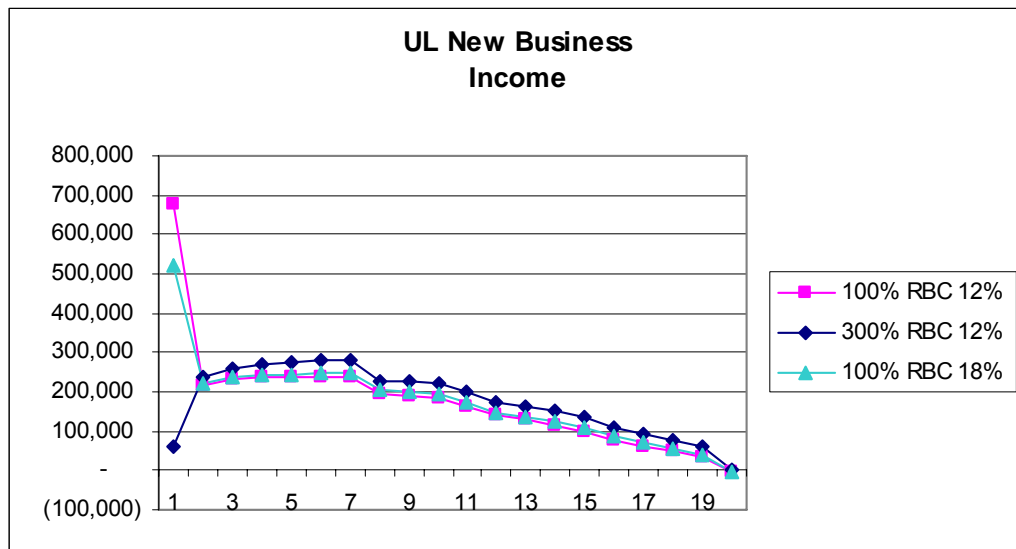
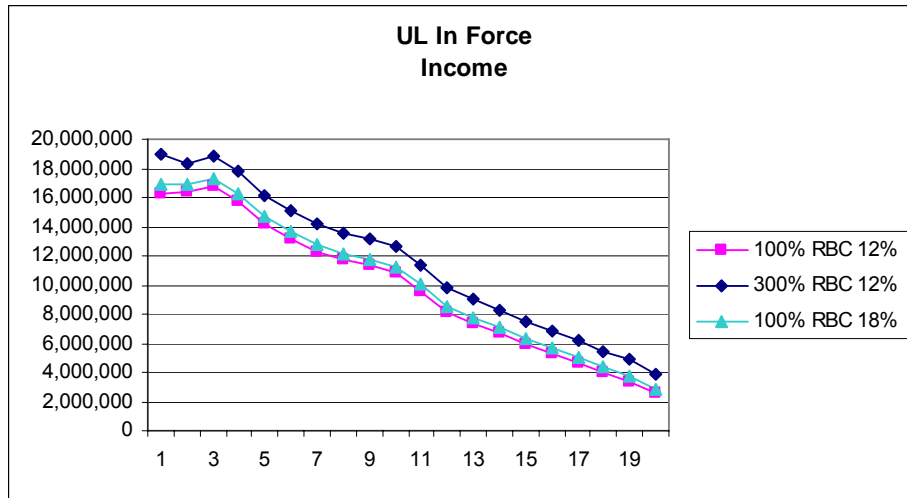


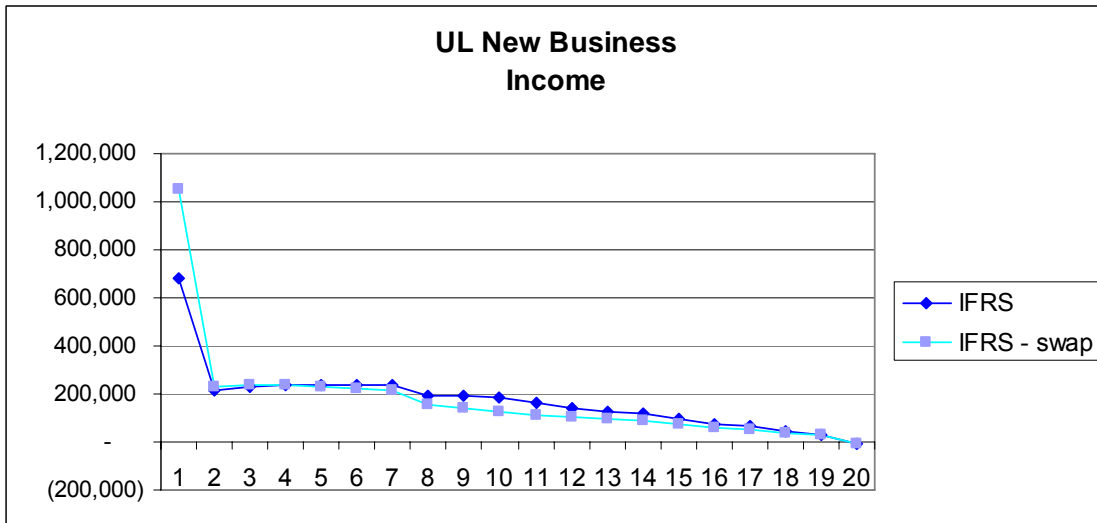
Figure 3.1-6 shows the effect on the in-force book of going to 300% RBC. Higher income in the future occurs when the larger economic capital is released. The in-force baseline IFRS results shown in Figure 3.1-6 that use a 12% cost of capital are lower than the use of an 18% cost because more gain was recognized at implementation.

**Figure 3.1-6. Universal Life In Force, Risk-Based Capital Factor Sensitivities**  
(Initial IFRS Liability of \$380 Million)



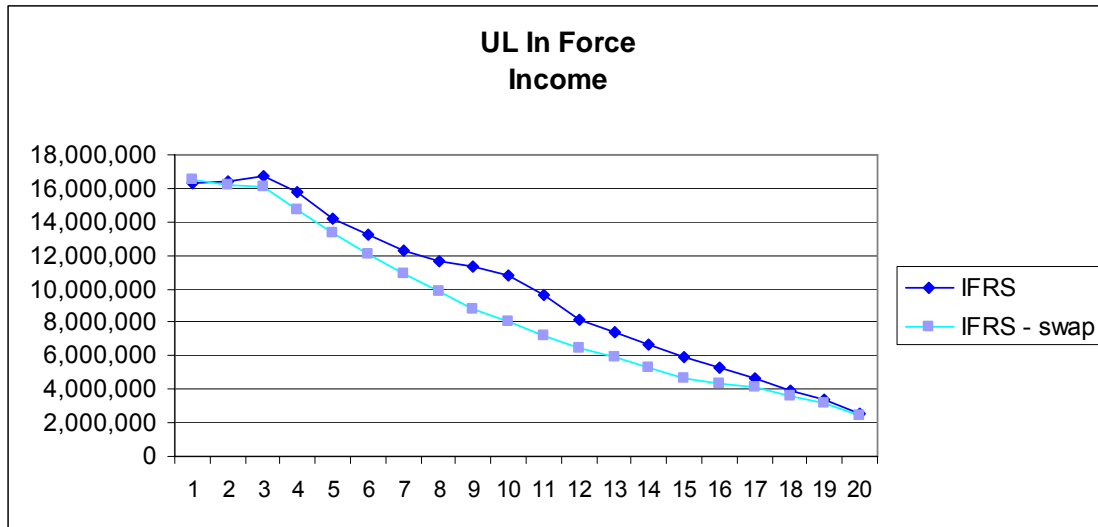
A sensitivity using the swap curve instead of the Treasury spot rates at December 31, 2006, for discounting was also developed. As shown in Figures 3.1-7 and 3.1-8, for these universal life insurance products the primary difference is evident in the at-issue gain and is released over time through lower renewal profits. There are periods in which the difference between the swap curve and the original curve at December 31, 2006, widens and contracts, which leads to the income streams coming farther and closer together, respectively (the two sets of interest rates are given in the Appendix). Overall the difference is relatively small.

**Figure 3.1-7. Universal Life New Business, Baseline Spot and Swap Rates Discounting**  
(First-Year Premium of \$5.8 Million)



**Figure 3.1-8. Universal Life In Force, Baseline Spot and Swap Rates Discounting**

(Initial IFRS Liability of \$380 Million)



**3.1.4 Unbundling**

There are several approaches to unbundling of an insurance contract (of its insurance, investment, and service components) that might be taken. The Discussion Paper proposes that unbundling will occur if investment and insurance components are included in the same insurance contract, they are not interdependent, and they can be split on a basis that is not arbitrary. If unbundling is called for, IAS 39 applies to the deposit component, while the entire liability would be calculated according to the Discussion Paper approach: that is, the value of the insurance and any service components are the residual difference. Therefore, when this approach is taken, there is no income effect of the unbundling because the total liability is equal to the Discussion Paper-determined liability.

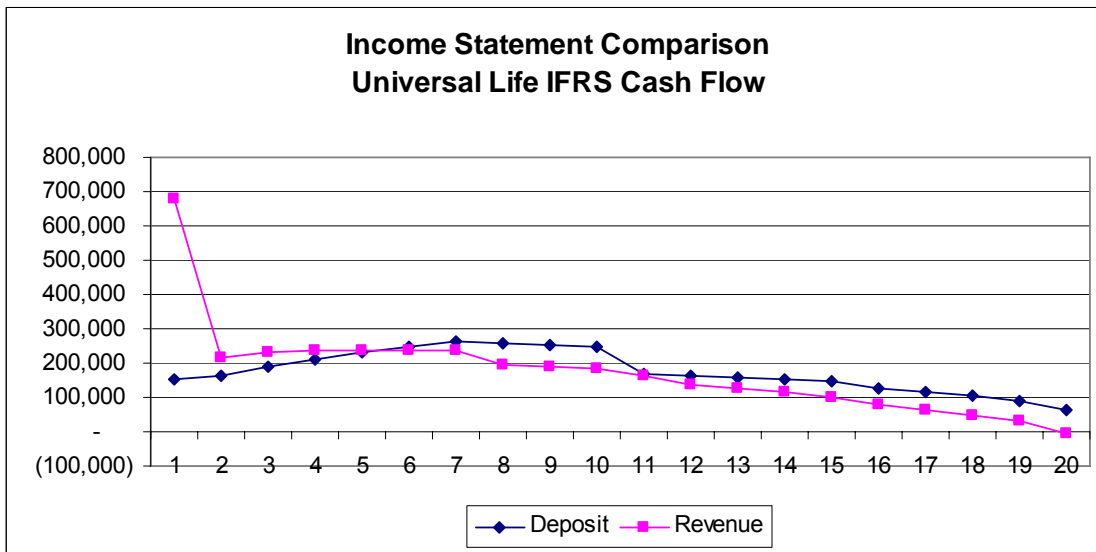
Another approach to the unbundling of contracts such as universal life and fixed deferred annuities would be to treat the contracts as if the investment component was not interdependent from the other components, such as a variable (unit-linked) contract. In this case the cash flows for the insurance and service components would be examined separately from the deposit component. This alternative formulation would treat the consideration for the deposit component as a change in liability, and the insurance and service components as a residual or margin component (we refer to this as a margin or unbundled approach). This section demonstrates such an unbundled approach. The segmentation of the liability for both unbundling approaches is given in Section 4.3.

Figure 3.1-9 portrays income where a deposit treatment is applied for the deposit component and margins for the residual insurance and service components, an approach somewhat analogous to the DAC amortization method using expected gross profits by U.S. GAAP FAS 97 universal life contracts. The treatment of the cash flows differs significantly from that of the bundled approach. In this situation, the deposit element is measured as the value of the deposit, with calculations of the other components just including cash flows of those components.

Investment income is not reflected in determining the liability, but instead is reflected as part of income. The cash flows are discounted at the same rates as described earlier. In Figure 3.1-9 “Deposit” refers to the unbundled or margin IFRS presentation and “Revenue” refers to the bundled or revenue approach.

The revenue approach markedly increases the gain at issue because it considers all expected cash flows on a combined basis and decreases in a corresponding fashion the renewal years’ income. This reduction in renewal years reflects the timing of the measured benefit cash flows. The liability interest component also increases the expense and lowers the income in the revenue presentation.

**Figure 3.1-9. Universal Life New Business, Alternative Unbundling Approach**  
(First-Year Premium of \$5.8 Million)



### 3.2 Term Life Insurance

The models for this product included both in-force and new business. The products included in this line of business include level term policies and reflect assumed and ceded reinsurance.

For U.S. GAAP, balance sheets, deferred acquisition expenses, and income statements were developed based on FAS 60, with liabilities equal to the benefit and expense liabilities. The projections were based on best estimate assumptions, such as mortality and lapse. Since it was assumed that the products were issued on a profitable basis and that no adverse change in expectations occurred, the projections assume that no recoverability issues arise.

The cash flows underlying the IFRS results were based on the U.S. GAAP cash flow projections: that is, the probabilistic weighted average cash flows required for IFRS were assumed to be equal to the best estimate scenario used to produce GAAP results. The baseline IFRS liability is based on the present value of cash flows.

#### 3.2.1 Baseline GAAP and IFRS Results

Figure 3.2-1 provides a comparison of the emergence of earnings for both U.S. GAAP and baseline IFRS. The risk margin under IFRS was calculated using a cost of capital approach as described in Section 2.2.2.

For new business as shown in Figure 3.2.1, the IFRS gain at issue in the first year represents the present value of future cash flows in excess of the present value of the cost of capital risk margin, indicating that these contracts are expected to be very profitable. The loss at issue under U.S. GAAP arises because of the existence of nondeferrable acquisition costs.



**Figure 3.2-1. Term Life New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$28 Million)

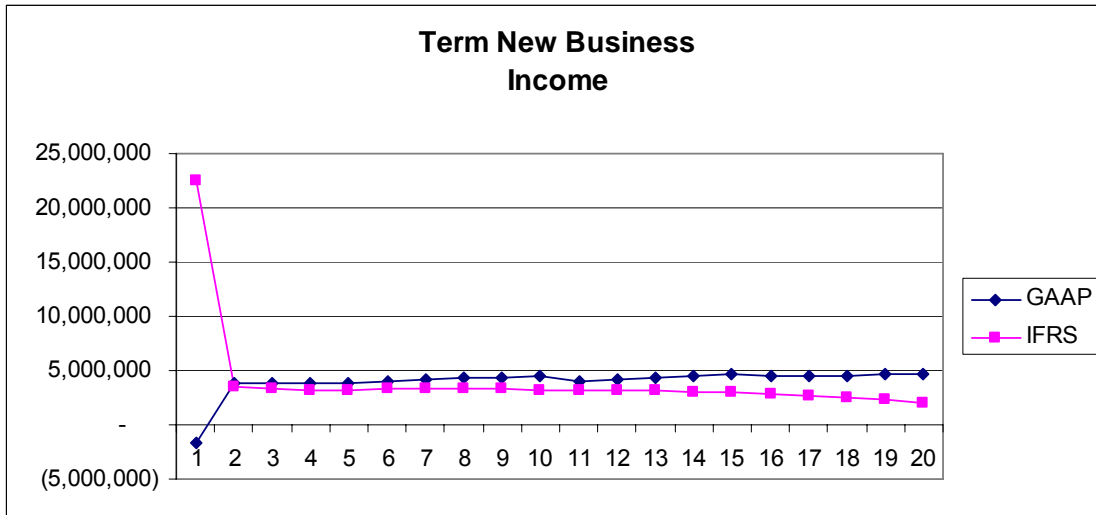
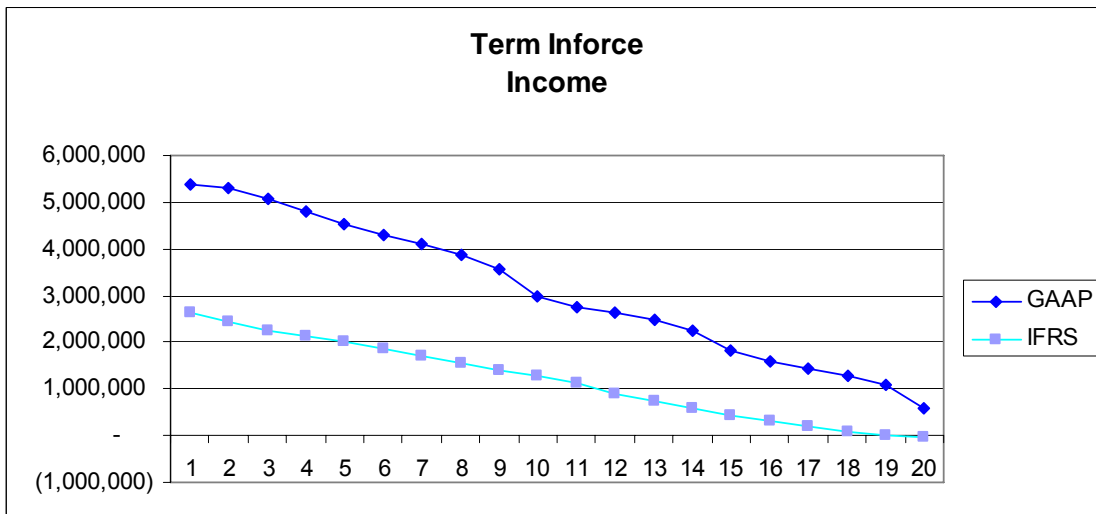


Figure 3.2-2 indicates that the in-force GAAP income exceeds that of IFRS, even though the GAAP income includes the amortization of the outstanding DAC balance. The in-force IFRS income recognizes prior gains at issue, with risk margins released after issue that are less than the GAAP income.

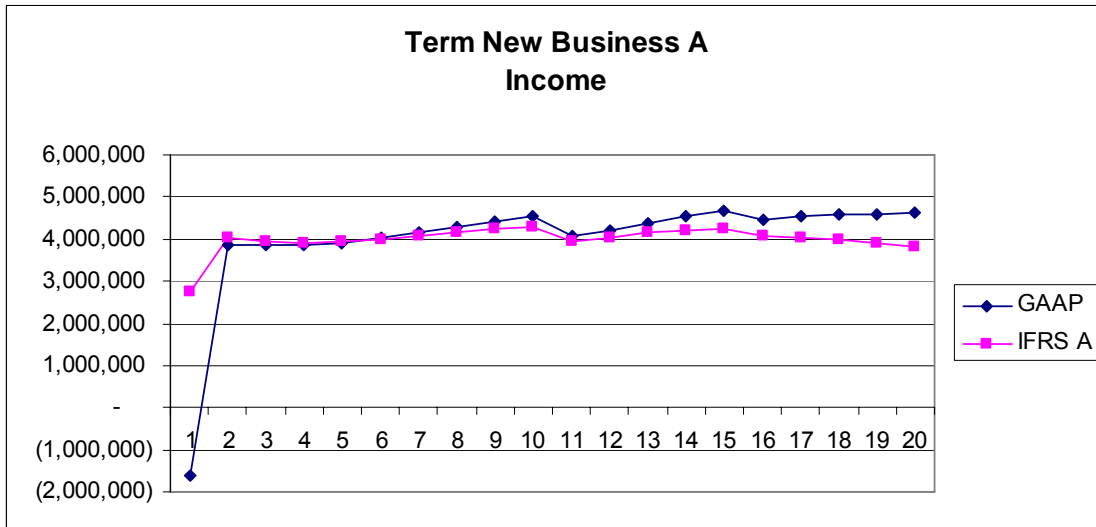
**Figure 3.2-2. Term Life In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$380 Million, an Asset)



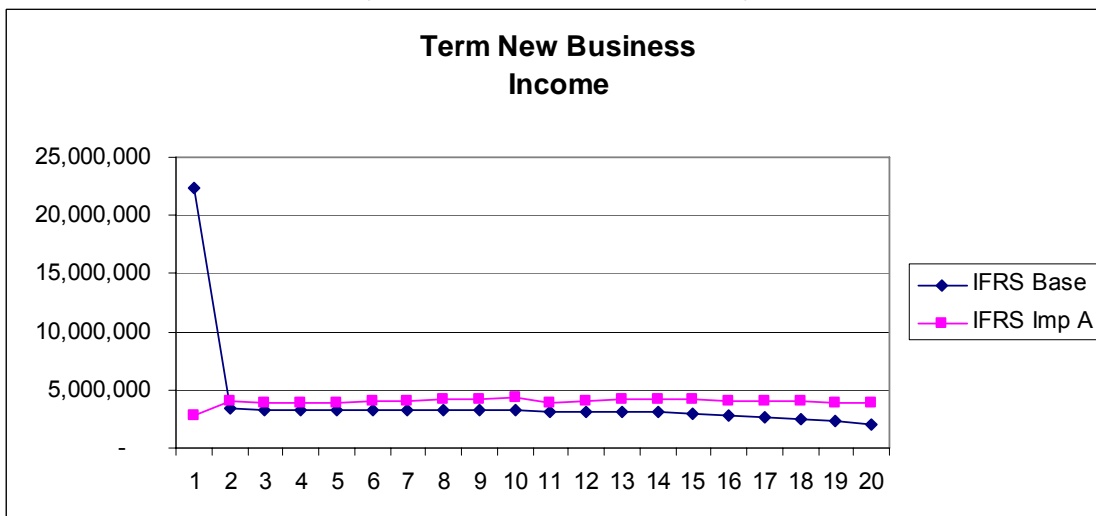
**3.2.2 Alternative IFRS Results**

The alternative approach (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at issue. This results in a release of risk margin over time that closely mimics the GAAP results. Figure 3.2-3 compares GAAP income to the income under Alternative A, while the IFRS income indicated in Figure 3.2-4 represents the release of the first-year IFRS gain at issue.

**Figure 3.2-3. Term Life New Business, Implementation A and U.S. GAAP**  
(First-Year Premium of \$28 Million)



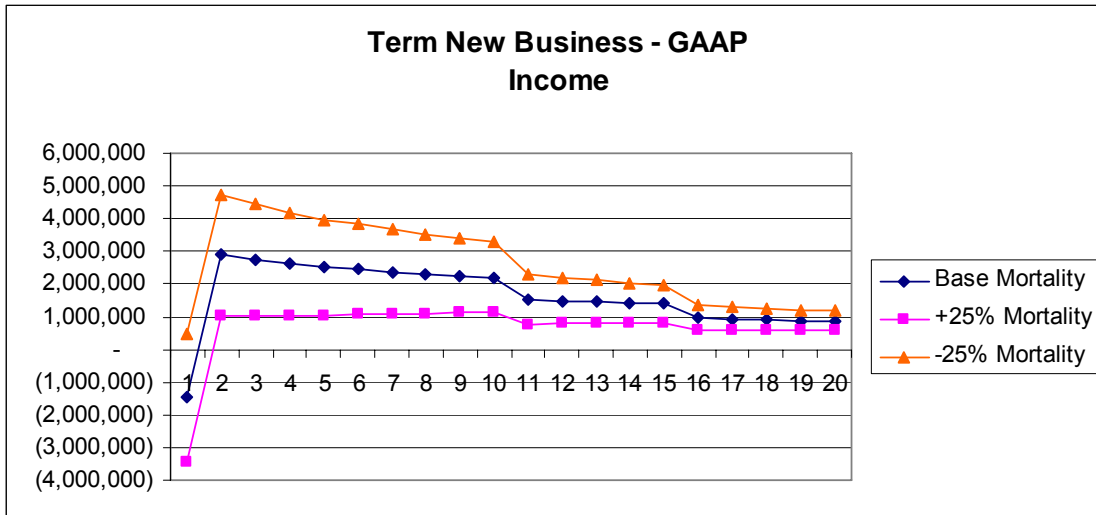
**Figure 3.2-4. Term Life New Business, Implementation A and Baseline IFRS**  
(First-Year Premium of \$28 Million)



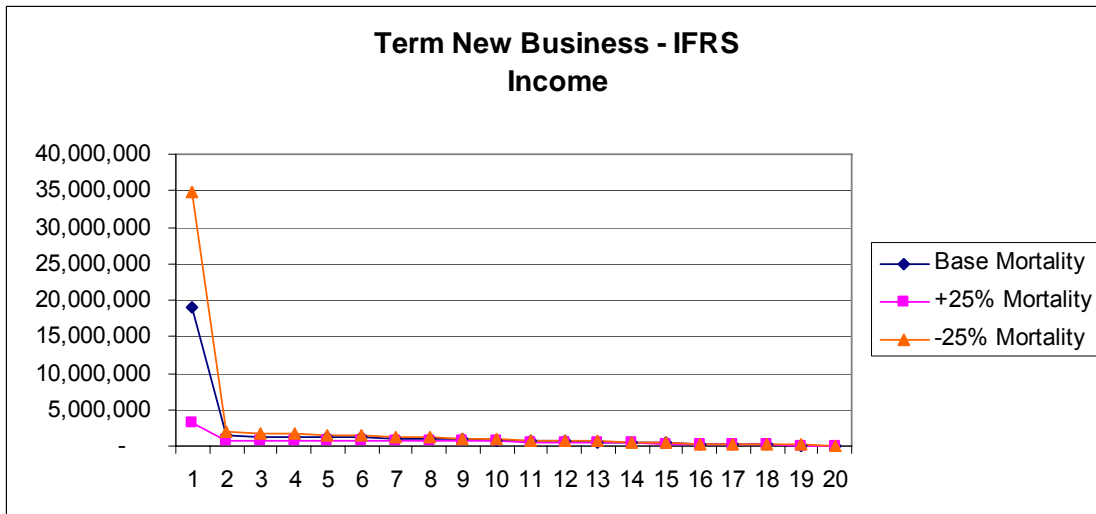
**3.2.3 Sensitivities**

For the term product line, the effect of a 25% permanent increase and decrease to the actual mortality experience is illustrated in this section. The results shown in Figure 3.2-5 compares the U.S. GAAP impacts (note that the GAAP liability remains unchanged because of its assumption lock-in feature). Figure 3.2-6 shows the relationship between the restated IFRS values, for which both the liability and experience are modified. An additional new business graph for IFRS, Figure 3.2-7, is shown so the pattern in later years is clearer. Note that if a deviation from expected experience arises after issue, a spike in IFRS income will occur; the expected change affects the GAAP net liability only to the extent that the outstanding DAC balance is unrecoverable because of adverse mortality.

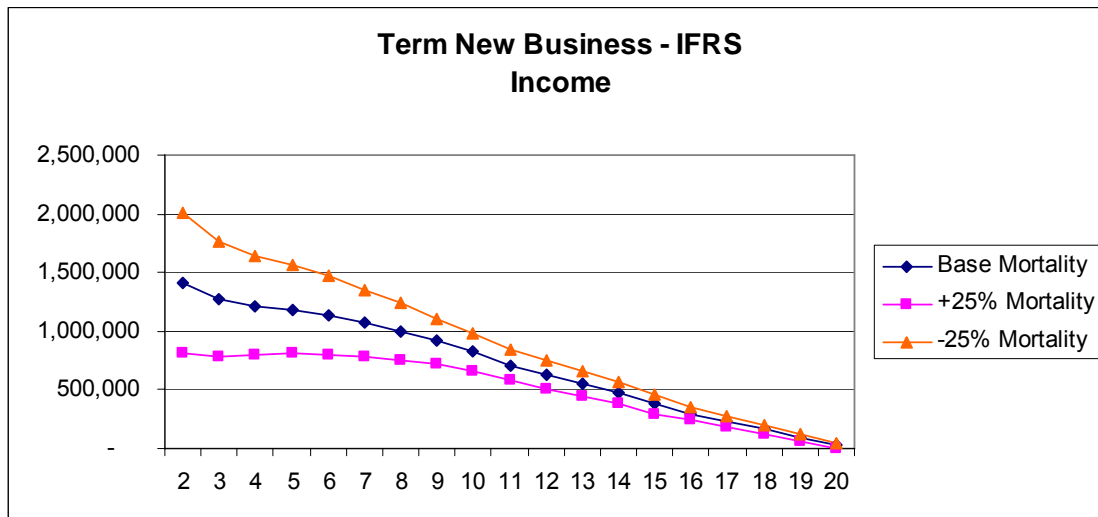
**Figure 3.2-5. Term Life New Business, U.S. GAAP, Mortality Sensitivity**  
 (First-Year Premium of \$28 Million)



**Figure 3.2-6. Term Life New Business, Baseline IFRS, Mortality Sensitivity**  
 (First-Year Premium of \$28 Million)

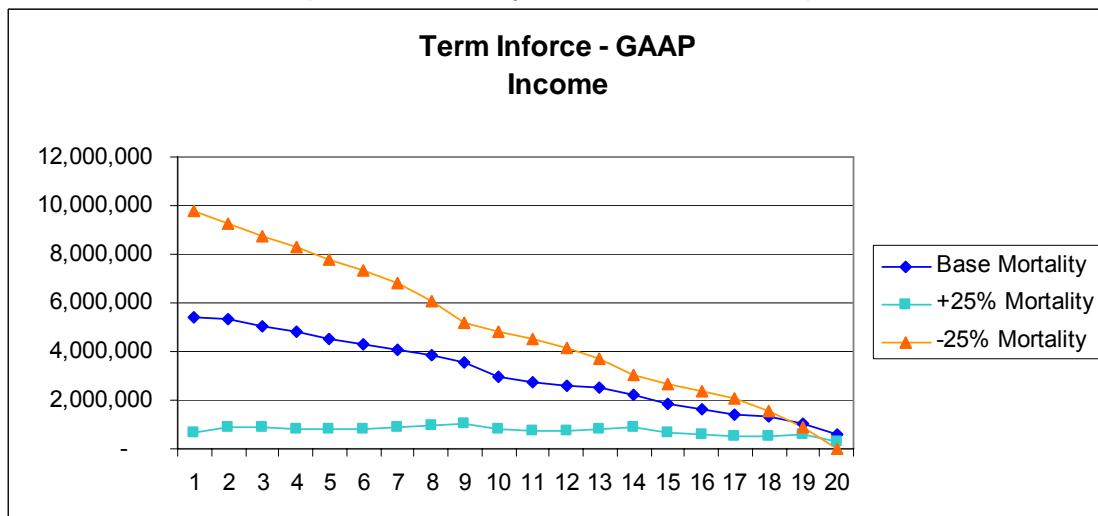


**Figure 3.2-7. Term Life New Business, Baseline IFRS, Mortality Sensitivity after the First Policy Year**  
(First-Year Premium of \$28 Million)

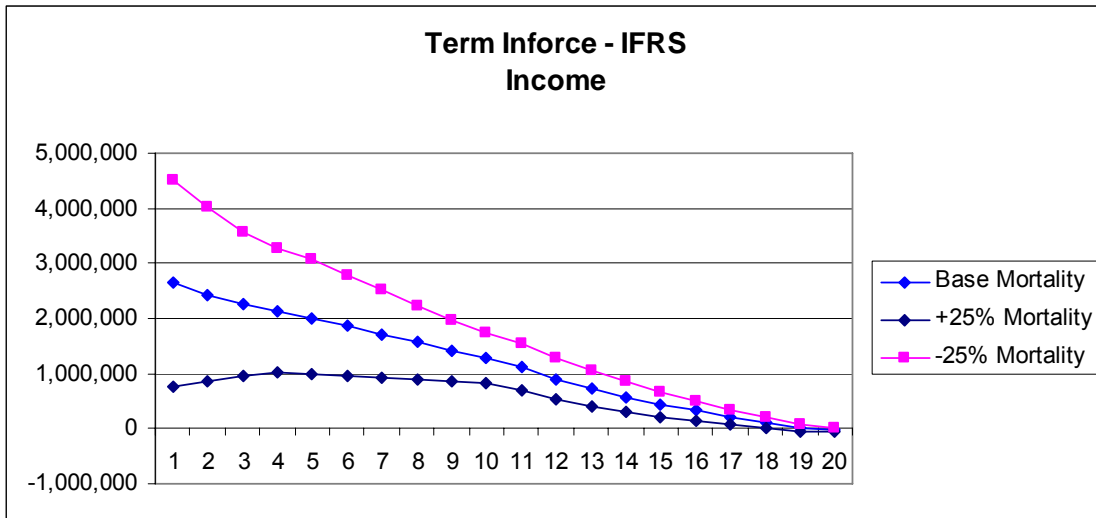


The in-force income shown in Figures 3.2-8 and 3.2-9 are subsequent to the implementation gain. As the better mortality (-25%) recognizes more of the gain at issue, the future profits are correspondingly reduced, with the opposite result holding for the mortality deterioration (+25%). There also is a secondary impact due to the changed level of capital reflecting the different amount of insurance remaining in force. Note that the change in the number of units contributed to this change in capital and not the risk factors or environment.

**Figure 3.2-8. Term Life In Force, U.S. GAAP, Mortality Sensitivity**  
(Initial IFRS Liability of \$380 Million, an Asset)

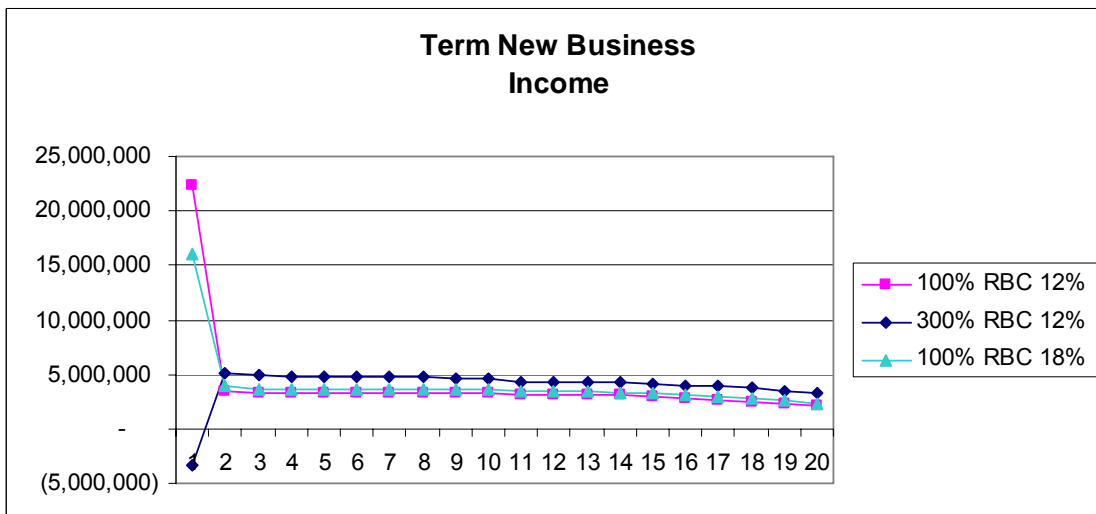


**Figure 3.2-9. Term Life In Force, Baseline IFRS, Mortality Sensitivity**  
 (Initial IFRS Liability of \$380 Million, an Asset)

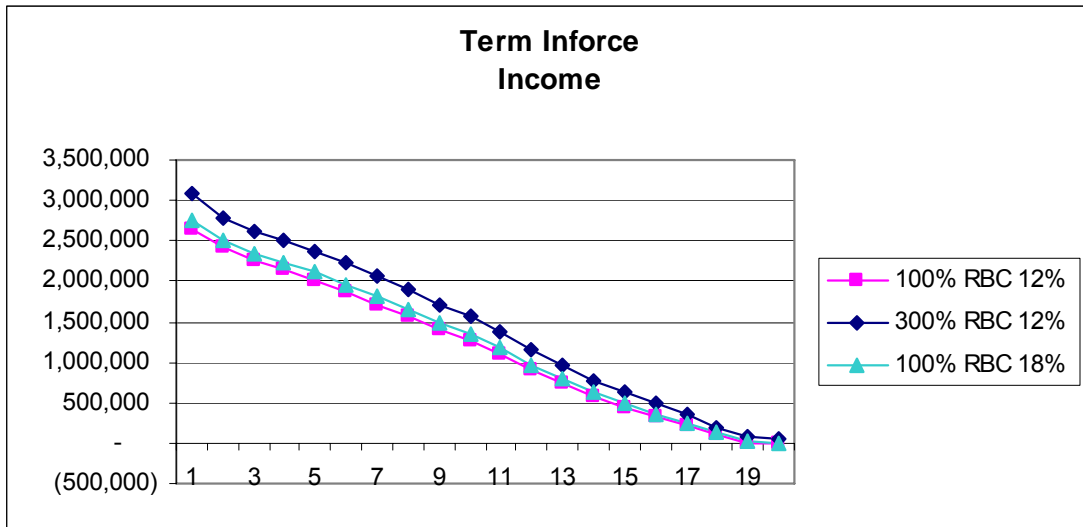


Another set of sensitivities was performed showing the impact of using 300% RBC instead of 100% RBC and the impact of using an 18% pre-tax cost of capital rather than 12%. The results are presented only with respect to the impact on IFRS. As is shown in Figure 3.2-10, the effect of going to 300% RBC causes a loss at issue rather than a gain, thus indicating the importance of establishing an appropriate risk margin. Given the new business results, the in-force relativities between the 300% and 100% RBC shown in Figure 3.2-11 are logical, with the 300% RBC experiencing a larger annual release of risk margins and thus larger in-force income. Although there is a change in the amount of gain at issue for the alternative cost, the impact in renewal years is limited.

**Figure 3.2-10. Term Life New Business, Risk-Based Capital Factor Sensitivities**  
 (First-Year Premium of \$5.8 Million)

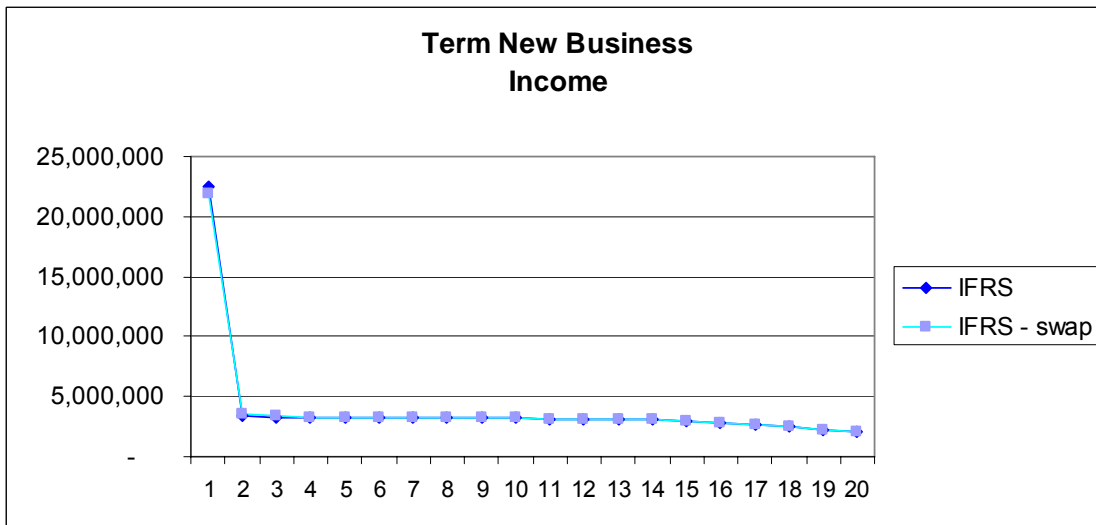


**Figure 3.2-11. Term Life In Force, Risk-Based Capital Factor Sensitivities**  
 (Initial IFRS Liability of \$380 Million, an Asset)

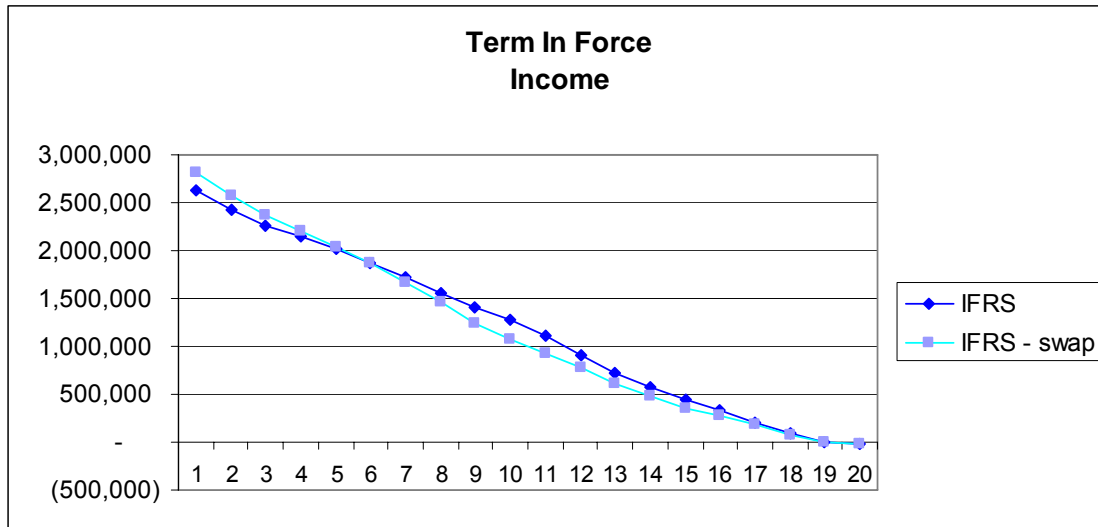


A sensitivity using the swap curve instead of spot rates for discounting was also performed with the results shown in Figures 3.2-12 and 3.2-13 for new and in-force business, respectively. For this product, and its series of cash flows, the difference primarily arises in the at issue gain and is released over time through higher renewal profits. The discount rates make only a relatively small difference for this product, which leads to the expected income streams being very close together.

**Figure 3.2-12. Term Life New Business, Baseline Spot and Swap Rates Discounting**  
 (First-Year Premium of \$28 Million)



**Figure 3.2-13. Term Life In Force, Baseline Spot and Swap Rates Discounting**  
 (Initial IFRS Liability of \$380 Million, an Asset)



### 3.3 Immediate Annuity

The models for this product included both in-force and new business. The product variety includes various certain periods with life coverage beyond the term certain period.

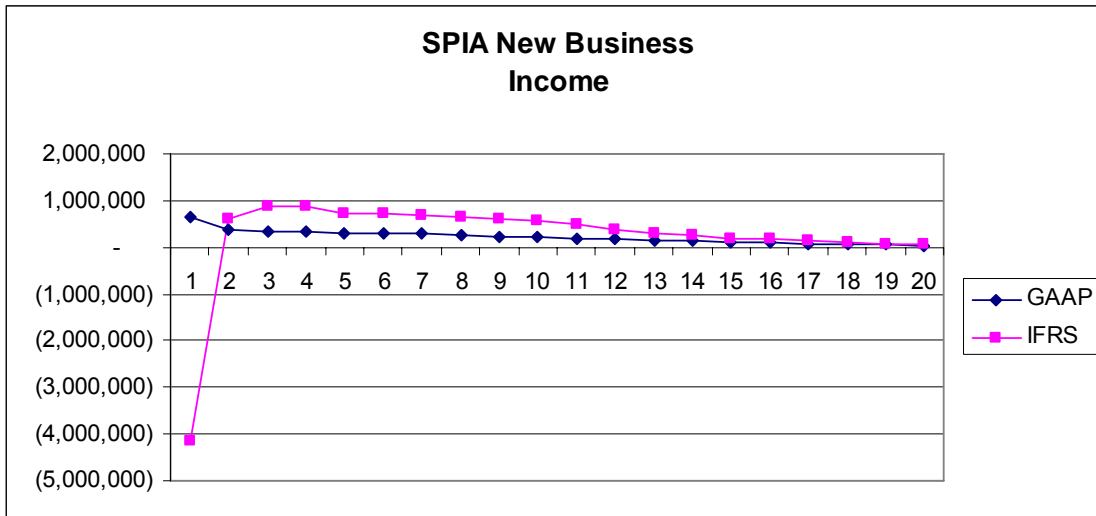
For U.S. GAAP, balance sheets and income statements were developed based on FAS 97 limited pay model with liabilities equal to benefit liabilities plus an unearned profit liability, with deferred acquisition expense written off at issue. The use of an unearned profit liability results in a break-even situation at issue. The projections were based on best estimate assumptions including a provision for adverse deviation (“pad”) for individual experience assumptions. The cash flows underlying the IFRS results were based on the GAAP cash flow projections. The baseline IFRS liability (before risk margin) is based on the present value of expected cash flows and a risk margin calculated using a cost of capital formula, as described in Section 2.2.2.

#### 3.3.1 Baseline GAAP and IFRS Results

Figure 3.3-1 provides a comparison of the emergence of earnings for both U.S. GAAP and baseline IFRS. For GAAP the first-year profit is a result of the investment earnings and release of the provision for adverse deviations during the year. The IFRS loss at issue either indicates that in the aggregate the products were either priced assuming investment earnings greater than the risk-free rates or issued at an expected loss, or reflects a more than adequate risk margin. More than likely, based on the GAAP results, the first is the case.

**Figure 3.3-1. SP Immediate Annuity New Business, IFRS Baseline and U.S. GAAP**

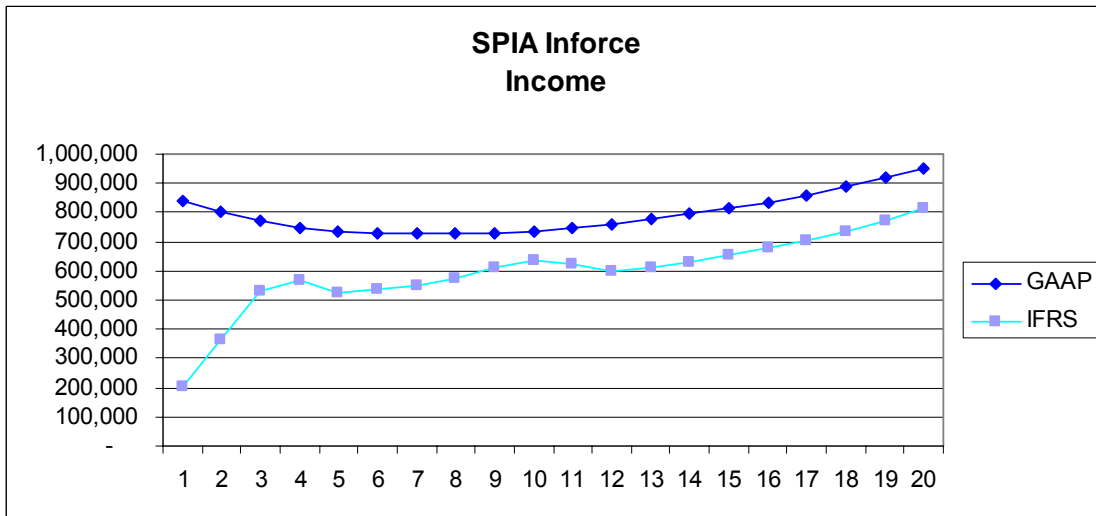
(First-Year Premium of \$117 Million)



For in-force business the lower gain in the first year shown in Figure 3.3-2 represents an increase in the total liability related to the discount of cash flows at risk-free rates instead of the higher U.S. GAAP liability interest rates that are more likely representative of the initial assets purchased to back this product group's liabilities.

**Figure 3.3-2. SP Immediate Annuity In Force, IFRS Baseline and U.S. GAAP**

(Initial IFRS Liability of \$66 Million)



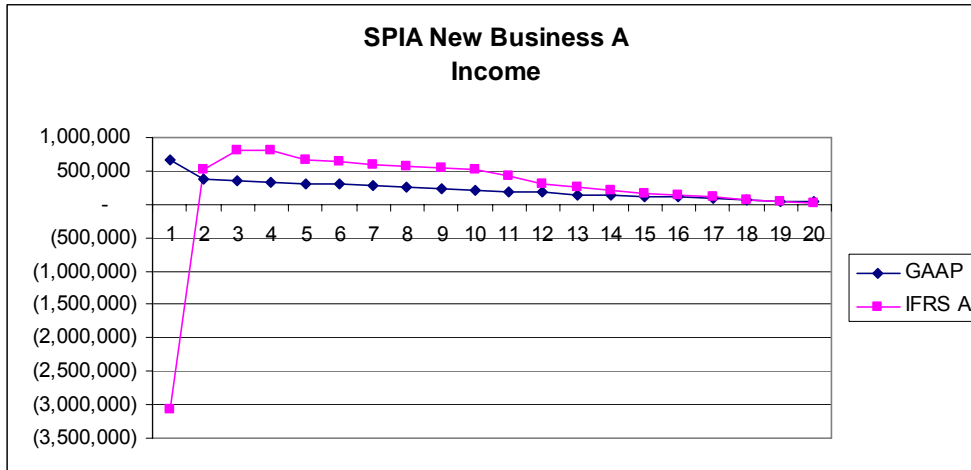
**3.3.2 Alternative IFRS Results**

The alternative view (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at issue. In the case of a resulting loss at issue, it is assumed that no risk margin would be included in the liability (see Figure 3.3-3). If the liability adequacy test liability included a risk margin, the Implementation A results would be identical to the IFRS baseline results shown in Figure 3.3-1.



**Figure 3.3-3. SP Immediate Annuity New Business, Implementation A and U.S. GAAP**

(First-Year Premium of \$117 Million)

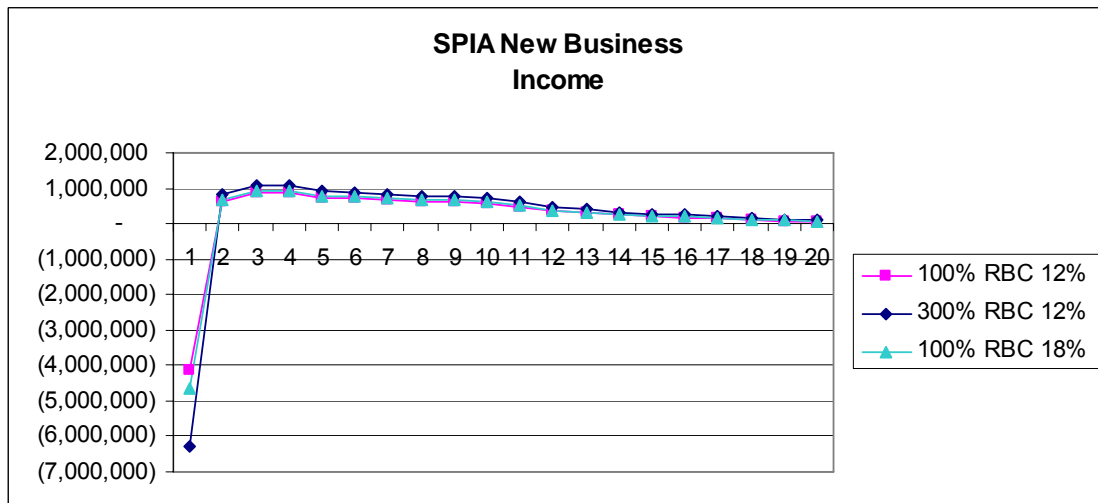


**3.3.3 Sensitivities**

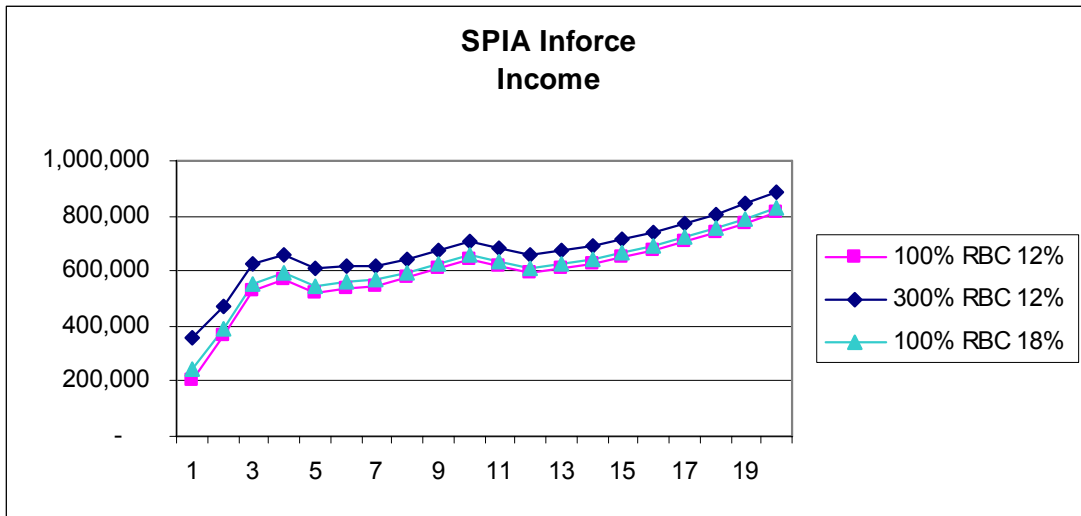
Product line sensitivities were performed showing the impact of using 300% RBC instead of 100% RBC and the impact of using an 18% pre-tax cost of capital rather than 12%. The results are presented in Figures 3.3-4 and 3.3-5 with respect to the impact on IFRS for new and in-force business, respectively. As is shown, the effect of going to 300% RBC as input to the cost of capital method of risk margins causes a greater initial loss and somewhat correspondingly higher income in the future as the capital is released. The larger reported in-force income under the lower RBC shown in Figure 3.3-5 is a result of the lower renewal income from several prior years of new business. There is relatively little difference in the size of the loss at issue due to the 18% cost; the resultant differences in the in-force book are quite small.

**Figure 3.3-4. SP Immediate Annuity New Business, Risk-Based Capital Factor Sensitivities**

(First-Year Premium of \$117 Million)

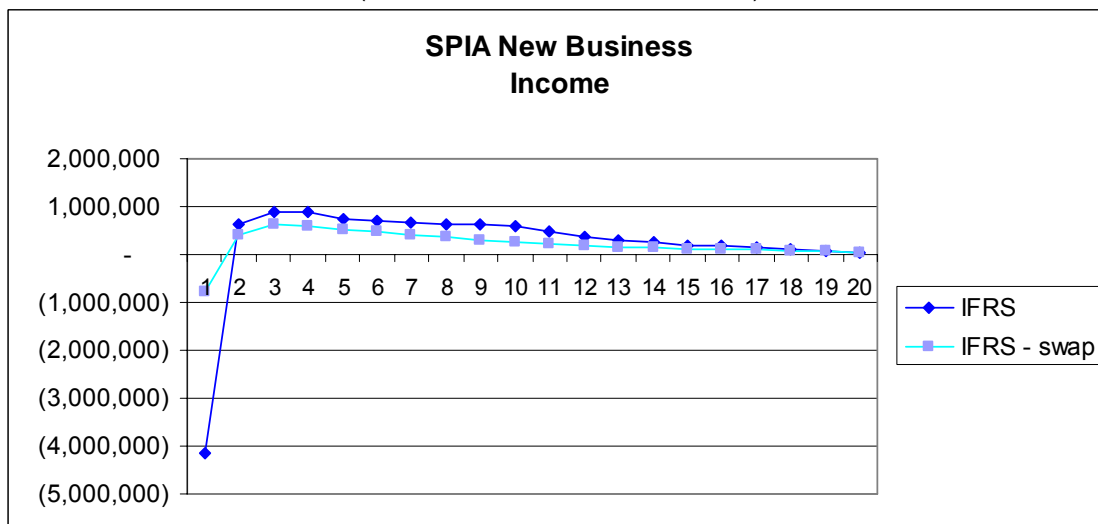


**Figure 3.3-5. SP Immediate Annuity In Force, Risk-Based Capital Factor Sensitivities**  
(Initial IFRS Liability of \$66 Million)



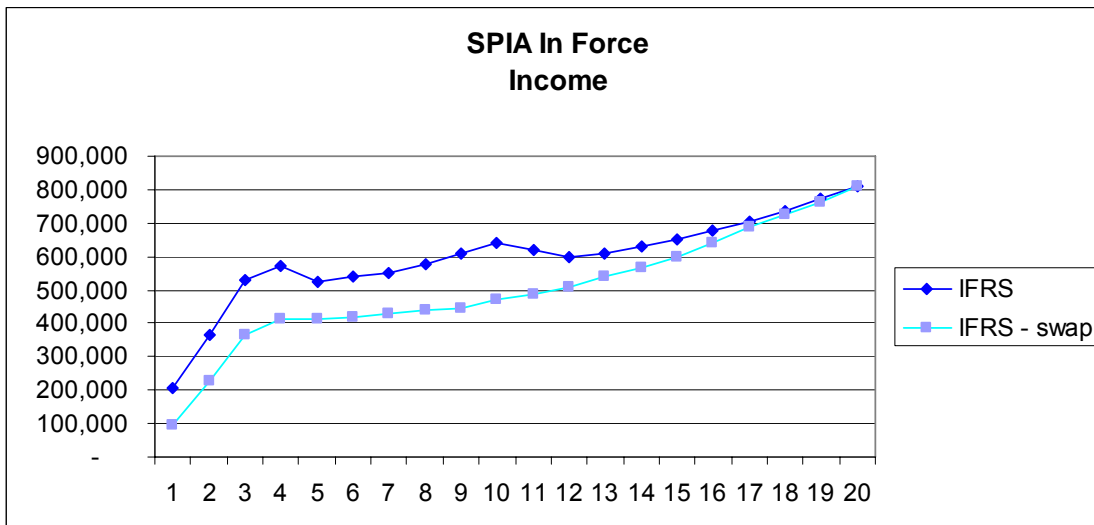
A sensitivity using the swap curve instead of the spot rates for discounting was also performed. For this product, and its relatively large amount of cash flows compared to certain other products studied in this project, the relatively large difference can be seen in Figure 3.3-6 in the at-issue loss, which is released over time through lower renewal profits. The widening and contracting of the difference between the swap curve and the original spot yields at December 31, 2006, lead to the income streams becoming farther and closer together, respectively. The in-force values shown in Figure 3.3-7 vary in a manner consistent with those of new business.

**Figure 3.3-6. SP Immediate Annuity New Business, Baseline Spot and Swap Rates Discounting**  
(First-Year Premium of \$117 Million)



**Figure 3.3-7. SP Immediate Annuity In Force, Baseline Spot and Swap Rates Discounting**

(Initial IFRS Liability of \$66 Million)



### 3.4 Variable Annuity

Only in-force books of business were available for the modeling of variable annuities. They represent standard variable annuity products that include guaranteed minimum death benefits (GMDBs), guaranteed minimum withdrawal benefits (GMWBs), and guaranteed minimum income benefits (GMIBs). The books were nearly 100% invested in the separate accounts, with only a small amount (less than 2% of total) invested in the insurers' general accounts.

The same underlying cash flows were used for both U.S. GAAP results and IFRS results. The cash flows for the books of business studied were estimated on two separate bases. One book was based on the average of the tail results (worst 30% of scenarios, i.e., at a 70 CTE level) over a large number of equity market scenarios. In these scenarios, best estimate actuarial assumptions and risk-free interest rates were the basis of the expected value of their respective assumptions. For the other book, the cash flows were based on a single equity market return scenario and best estimate actuarial assumptions.

For U.S. GAAP, balance sheets and income statements were developed based on FAS 97 with liabilities for the expected GMDB benefits based on SOP 03-1 (adopted by the AICPA) and FAS 133. The SOP 03-1 liabilities were based on projections utilizing a large number of real-world equity market scenarios. Similarly the FAS 133 liabilities were based on calculations utilizing a large number of real-world scenarios converted to risk neutral-values determined by means of deflators. Both sets of projections also include dynamic lapse and withdrawal assumptions for both GAAP and IFRS. The projections, which assume that actual results are equal to that initially expected, do not assume any unlocking of DAC will occur.

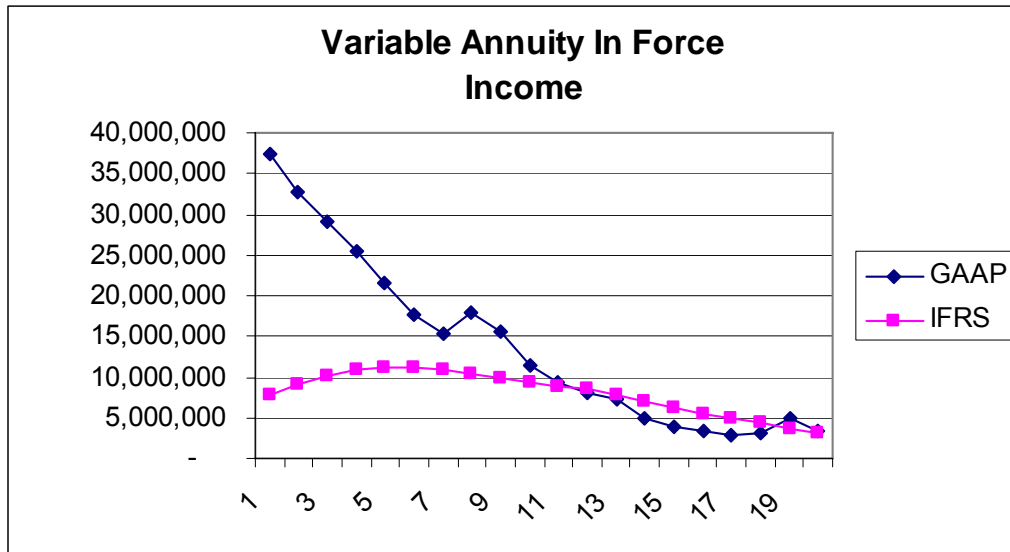
Different approaches were used to measure the expected cash flows for the books of business studied for IFRS purposes. For one book, they were assumed to be equal to the present value of the baseline set of cash flows (based on the 70 CTE); for the other, they were based on the average of a large number of real-world equity market scenarios converted to risk-neutral values by means of deflators: that is, for this book of business, the cash flows used were assumed to be equal to those of the mean of the scenarios. The baseline IFRS liability (before risk margin) is based on the present value of cash flows.

### 3.4.1 Baseline GAAP and IFRS Results

Figure 3.4-1 compares the emergence of earnings for both U.S. GAAP and baseline IFRS. The risk margin under IFRS was calculated using a cost of capital approach using the difference between the economic capital determined at a 90 CTE level and at a 70 CTE level as a proxy for economic capital at 100% RBC. We recognize that industry practice in this area is still emerging.

U.S. GAAP income is substantially larger than corresponding IFRS income. This is because the IFRS income for the in-force books in this figure does not include the gain upon implementation that would be expected for these in-force books. Additionally, the GAAP income has a “peak” in duration 9 that is due to the end of the DAC amortization period on a large book of business submitted by one of the ATFs.

**Figure 3.4-1. Variable Annuity In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$3,057 Million)



### 3.4.2 Alternative IFRS Results

The first alternative view (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at issue. For in-force business it is not clear as to whether risk margins would be calibrated to produce zero gain upon implementation of IFRS or whether companies would develop “at issue” risk margins for their legacy contracts. Therefore, in this report we have chosen to produce results under Implementation A for new business only. No new business alternative results are available for variable annuity.

### 3.4.3 Sensitivities

One ATF was able to provide sensitivity results using two alternative risk margin methodologies for their in-force variable annuity book. Risk margins for this book of business were calculated as

1. The difference between the present value of cash flows calculated using the explicit margin on each key assumption and the present value of the baseline cash flows calculated using best estimate assumptions without these margins (an individual assumption method) and
2. A factor applied to the standard deviation of the present value of cash flows in each year of the projection (a statistical moment method).

*Alternative risk margin method #1:* In the first additional risk margin methodology, a separate margin was applied to key assumptions. All expenses were increased 10%, expense inflation was

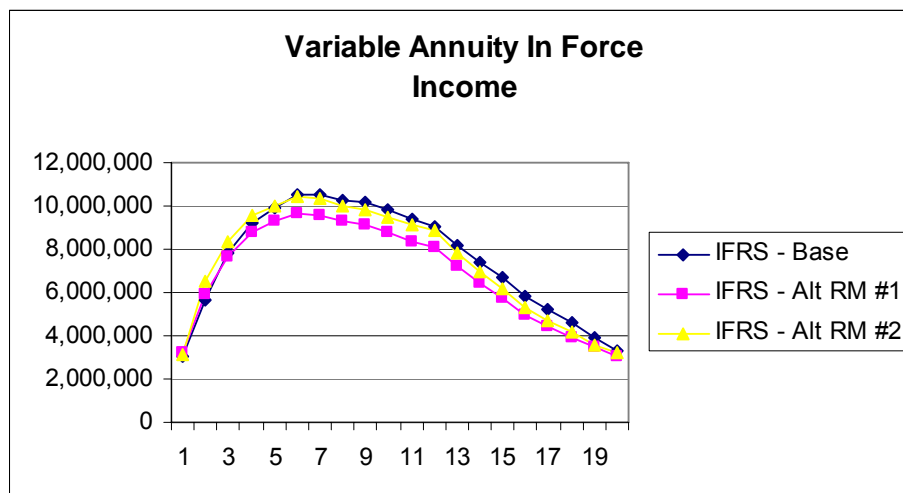
increased from 2% to 3%, mortality was increased 10%, and voluntary withdrawals were increased 10% except for the GMWB business, which was already set at the maximum withdrawal level. As the present values of the cash flows are lower when projected utilizing these margins, the difference between these and the baseline cash flows creates the total risk margin. Because in this case the risk margins calculated using the cost of capital method are greater under baseline IFRS, baseline income (which includes income on risk margins) is greater than the income in the sensitivity where the risk margins are based on the individual assumption approach. However, the pattern of income is somewhat similar.

*Alternative risk margin method #2:* For the second risk margin methodology, the risk margins were set as a factor applied to the standard deviation of the present value of the baseline cash flows. This calculation attempts to relate the risk margin directly to the uncertainty associated with the cash flows. For this sensitivity the factor applied to the standard deviation of cash flows was 35%. This is generally consistent with what many in the capital markets use to price options based on market indices.

Figure 3.4-2 compares the IFRS income for the baseline and the two alternative risk margin methods.

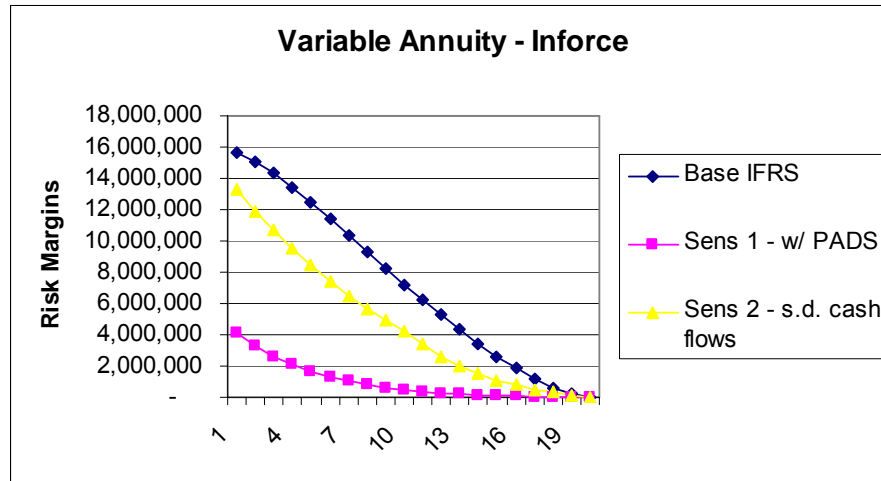
**Figure 3.4-2. Variable Annuity In Force, Baseline and Alternative Risk Margin Methods**

(Initial IFRS Liability of \$3,057 Million)



As illustrated in Figure 3.4-2, the IFRS income is driven by the size of the risk margins. Figure 3.4-3 shows a comparison of the size of risk margins under each method.

**Figure 3.4-3. Variable Annuity In Force, Alternative Risk Margins**  
(Initial IFRS Liability of \$3,057million)



Given that the risk margins calculated using the cost of capital method (baseline) and calculated using the standard deviation approach (Risk Margin Method #2) are almost three times those calculated using the individual assumption method (Risk Margin Method #1), why are the IFRS income streams so similar? This is because the presentation of IFRS income does not include anticipated gains upon implementation of IFRS for this in-force book in year 1, and the risk margin released each year is only one portion of total income.

Table 3.4-1 compares the implementation “gain” upon issue of IFRS for each of these risk margin approaches. By comparing the combined gain at issue and risk margin balances we arrive at the same initial value of the book, as should be expected. As shown below, the impact of implementation of risk margins can be highly dependent on the parameters and risk margin method applied.

**Table 3.4-1. Variable Annuity In Force, Gains at Issue under Alternative Risk Margins**

(Initial IFRS Liability of \$3,057 Million)

Risk Margin Method	Gain at Issue
Cost of capital method (Baseline)	\$84,000,000
Individual assumption method (Sensitivity #1)	\$98,000,000
Factor times standard deviation of cash flows (Sensitivity #2)	\$87,000,000

### 3.5 Variable Universal Life

The models for this product included both in-force and new business. For new business, a single variable universal life (VUL) product, typical of those available in the market today, was modeled. The new business is assumed to be 100% invested in the separate account. The in-force book contained contracts issued from 2004 to 2006 and included both single life and last survivor products. The products modeled featured a standard VUL design and did not include any secondary guarantees or guaranteed minimum death benefits. The in-force book is invested primarily in separate accounts (approximately 95%), with only a small proportion invested in the general account (approximately 5%).

For U.S. GAAP, balance sheets and income statements were developed based on FAS 97 with liabilities equal to account value. Deferred acquisition expenses were also reflected in accordance with FAS 97. The projections were based on best estimate assumptions, including those for mortality, lapse, separate account return (approximately 8.5%), and expected premium payment pattern. The projection, which assumes the actual results equal the original expected, does not assume any unlocking of DAC will occur.

The cash flows underlying the projections were based on the U.S. GAAP best estimate scenario. In addition, the probabilistic weighted average cash flows required for the baseline IFRS liability were assumed to be equal to this best estimate scenario.

### 3.5.1 Baseline GAAP and IFRS Results

The charts below provide a comparison of the emergence of earnings for both U.S. GAAP and baseline IFRS. The risk margins under IFRS were calculated using a cost of capital method as described in Section 2.2.2.

For new business, as shown in Figure 3.5-1, baseline IFRS results in lower income in all years of the projection after the first policy year. The first-year IFRS income reflects the impact of the gain at issue, that is, equivalent to the present value of future cash flows in excess of the cost of capital based risk margin. Under IFRS in this case, most of the gain is recognized at issue, and future profits are relatively low due in part to the size of the risk margin. After the first year, IFRS income reflects cash flows plus the release of the risk margin. These positive income amounts are reduced by the release, or roll off, of the baseline IFRS net asset similar, at least in concept, to the reduction of the value of business in an embedded value model.

The relatively large initial reported IFRS profit may suggest that the inclusion of a service (profit associated with services provided) margin may be appropriate to be included in the liability for this type of product. A possible alternative explanation is that the risk margin as calculated here may be understated. Reflecting the most recent IASB clarification regarding the service margin, these two alternative approaches would be equivalent, as these two factors would be combined for calculation purposes. We have not been able to examine whether this would be appropriate for variable annuity products, as the project's ATFs did not provide new business results.

**Figure 3.5-1. Variable Universal Life New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$3.2 Million)

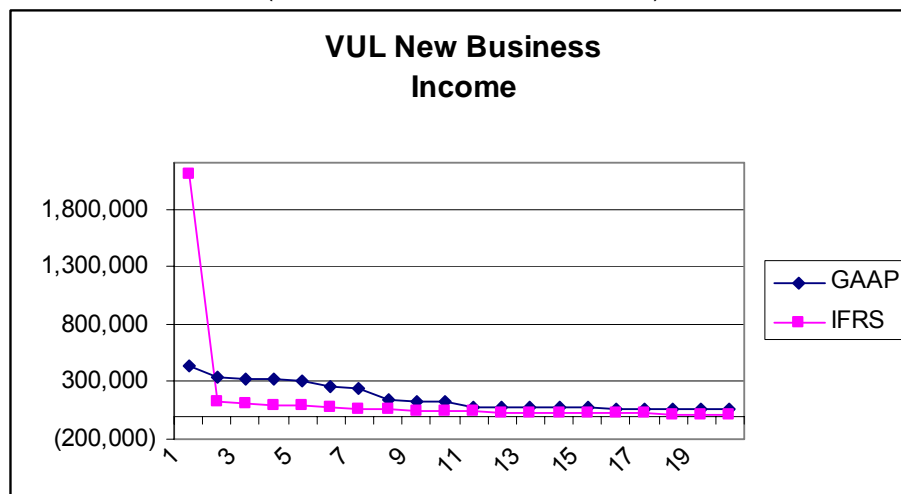
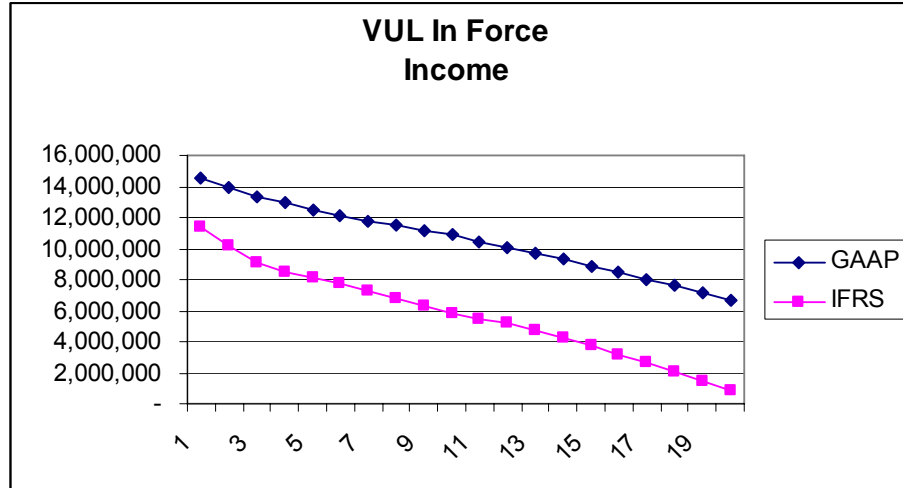


Figure 3.5.2 compares the emergence of earnings for the in-force VUL book. For this book, the present value of cash flows is positive, resulting in a baseline IFRS liability (other than its deposit component in the separate account) that is negative (an asset) in all years and is released over time. Additionally, GAAP income is higher than IFRS income in all years. This is because the IFRS income

shown does not reflect the gain that would arise upon IFRS implementation or before the initial modeling date; in other words, an up-front gain would have been reported prior to the beginning of the modeling period.

**Figure 3.5-2. Variable Universal Life In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$541 Million)



**3.5.2 Alternative IFRS Results**

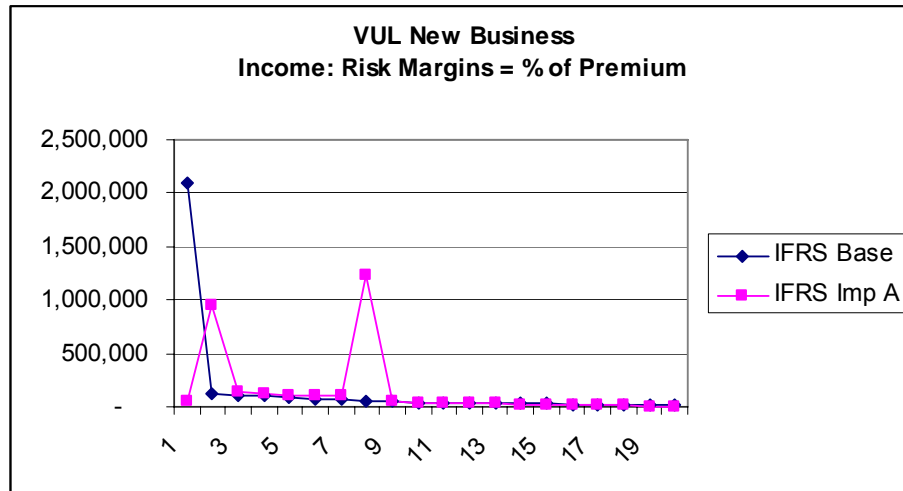
The alternative view (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at contract issue. For in-force business it is unclear how risk margins would be retrospectively calculated at the time of IFRS adoption. Therefore, we have not shown the potential effect of Implementation A on in-force business.

The Implementation A approach calibrates the risk margins to the price charged by the insurer at issue. For this report, risk margins based on a factor applied to a common balance sheet item used in U.S. risk-based capital measures were set at issue to produce no gain. Figure 3.5-3 compares the baseline IFRS income to income emergence using Implementation A with risk margins calculated as a percentage of premiums.



**Figure 3.5-3. Variable Universal Life New Business, IFRS Baseline and Implementation A**

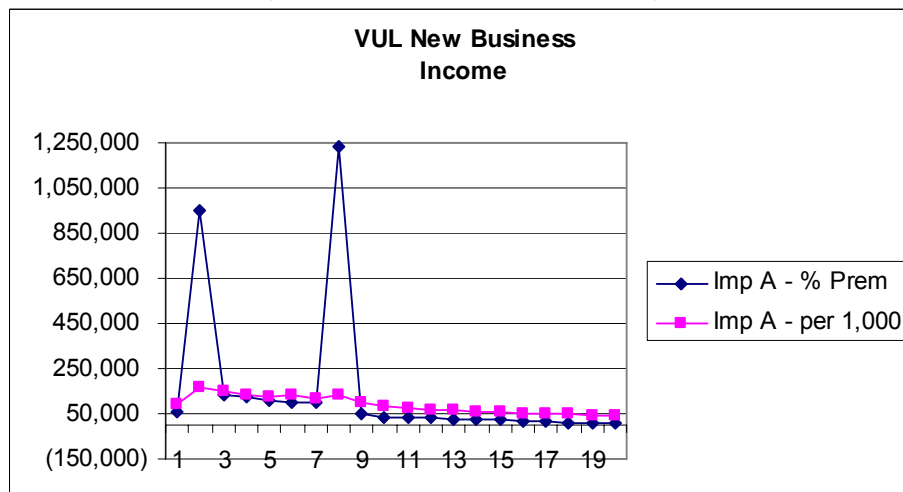
(First-Year Premium of \$3.2 Million)



Under this approach with risk margins released with premiums in this case, risk margins are larger, with IFRS income influenced by product design and premium payment patterns. The large spikes in income under Implementation A are due to a significant release of risk margins that results from the reduction in premium income after the first policy year (i.e., the first year includes single-premium dump-ins, which do not recur in years 2+) and in the later years of the projection when it is assumed that premium payments cease for those policies expected to be fully funded over 10 years, at which times a larger amount of risk margins are released. To further illustrate the effect of the choice of the base over which risk margin is released, risk margins were also calculated as a single factor applied to face amount of insurance. Figure 3.5-4 compares income emergence using Implementation A with risk margins as a percentage of premium to that with risk margins as a per 1,000 face amount. The income patterns are similar with the exception of the large spikes in the former.

**Figure 3.5-4. Variable Universal Life New Business, Alternative Total Margin Factors**

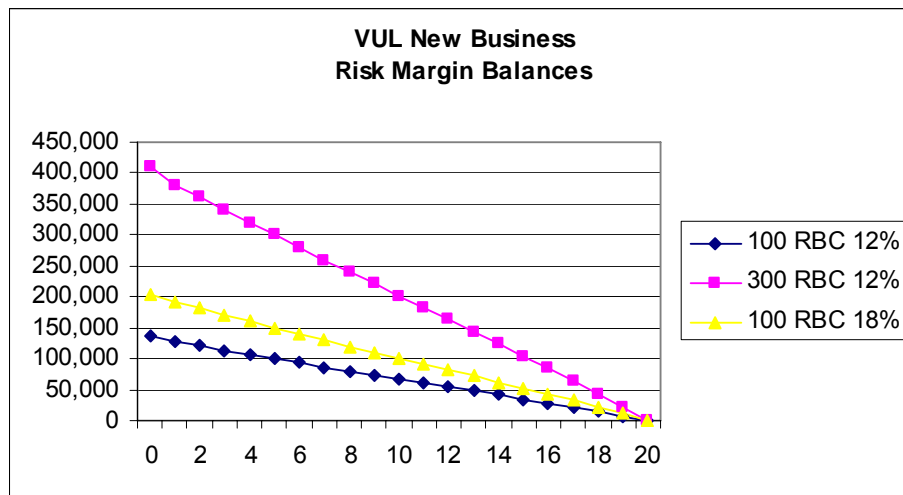
(First-Year Premium of \$3.2 Million)



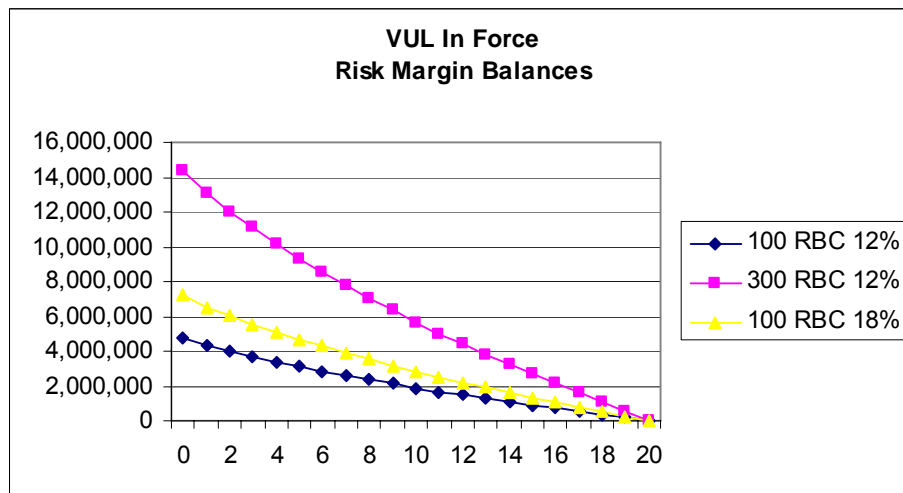
### 3.5.3 Sensitivities

For VUL, the product sensitivities shown here focus on differences in the risk margins calculated using the cost of capital method. Because the resultant IFRS incomes are relatively consistent, rather than show income, we illustrate the sensitivities reflecting the risk margin balances in Figures 3.5-5 and 3.5-6 for new and in-force business, respectively. They compare the risk margin balances in each year for new and in-force business under three different risk margin assumptions. The first is the level of the risk margins from the baseline IFRS results, 100% RBC, and a 12% cost of capital. The other two set of assumptions are risk margins using (1) 300% RBC and a 12% cost of capital and (2) 100% RBC and an 18% cost of capital. As expected, increasing the cost of capital has a relatively small impact, whereas increasing the level of capital has a more significant impact on the amount of risk margin.

**Figure 3.5-5. Variable Universal Life New Business, Risk-Based Capital Factor Sensitivities Risk Margins**  
(First-Year Premium of \$3.2 Million)



**Figure 3.5-6. Variable Universal Life In-Force, Risk-Based Capital Factor Sensitivities Risk Margins**  
(Initial Liability of \$541 Million)



### 3.6 Long Term Care Insurance

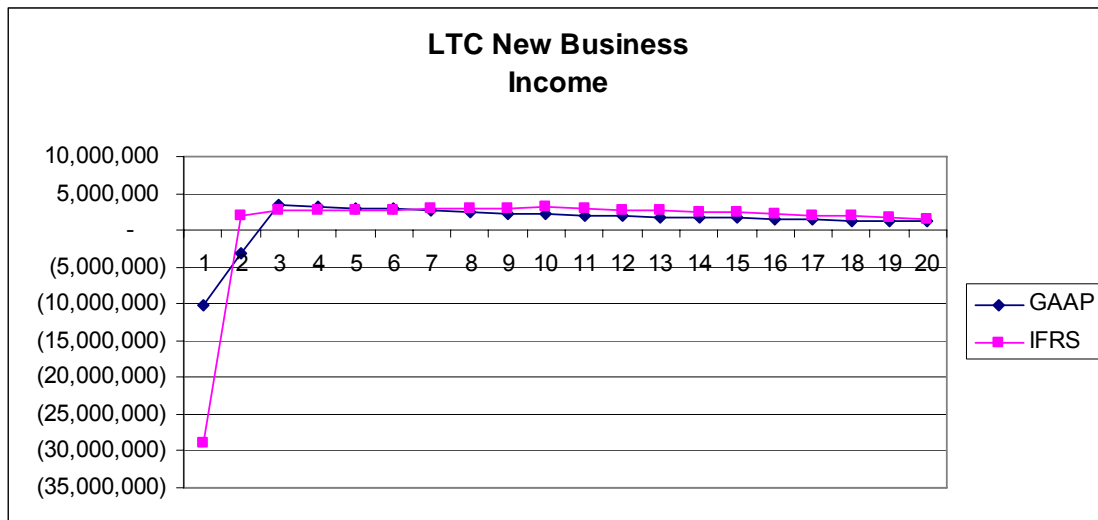
The models for this product included both in-force and new business. The products included nursing home benefits with and without inflationary adjustments, home health care only, and comprehensive coverage.

For U.S. GAAP, balance sheets, income statements, and deferred acquisition expenses were developed based on FAS 60, with liabilities equal to the present value of future expected cash flows for both the pre- and post-claim incurral periods. The projections were based on best estimate assumptions, including for mortality, morbidity, and lapse, with a provision for adverse deviation for the pre-claims period. It was assumed that the products were issued on a profitable basis and that no adverse change in expectations occurred, and so the projections assume that there are no recoverability issues, including no changes in claims costs or consequential premium changes.

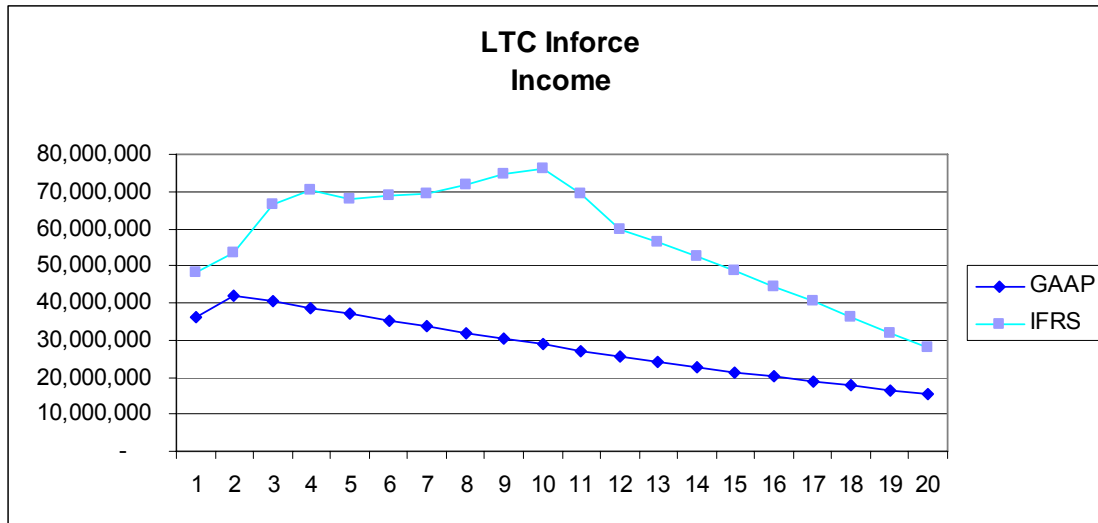
#### 3.6.1 Baseline GAAP and IFRS Results

Figures 3.6-1 and 3.6-2 provide comparisons of the emergence of earnings for both U.S. GAAP and baseline IFRS for new and in-force business, respectively. The risk margin under IFRS was calculated using a cost of capital formula as described in Section 2.2.2. The initial loss under GAAP is primarily due to relatively large nondeferrable first- and second-year acquisition costs, whereas the larger IFRS loss is primarily due to expected investment income on actual invested assets used in pricing the product being greater than the market-based risk-free discount rates. For in force the IFRS income results peak where the difference between the investment rate and risk-free rate is the greatest and then declines as that differential declines.

**Figure 3.6-1. Long Term Care New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$27 Million)



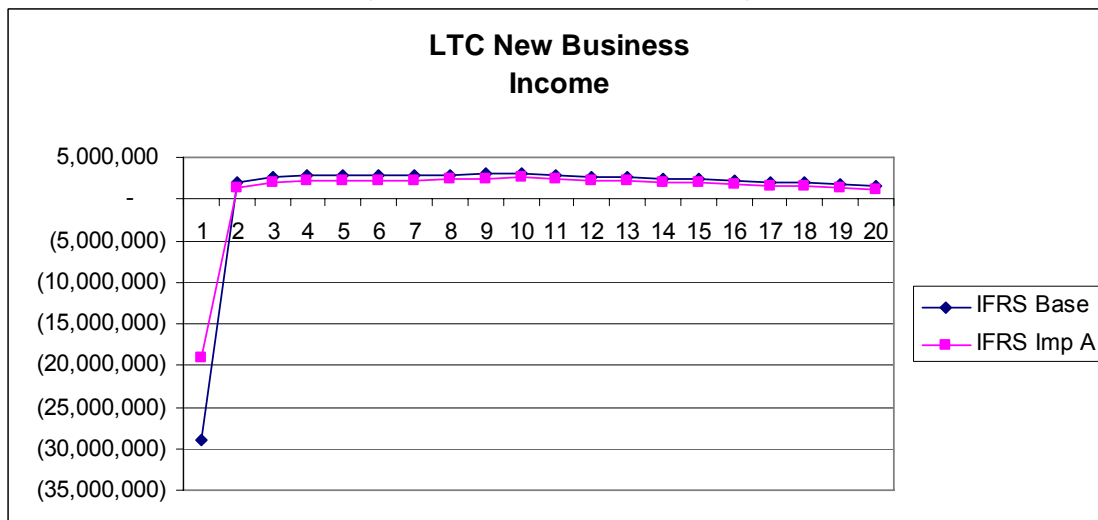
**Figure 3.6-2. Long Term Care In Force, IFRS Baseline and U.S. GAAP**  
 (Initial IFRS Liability of \$3,524 Million)



**3.6.2 Alternative IFRS Results**

The application of the alternative view (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at contract issue. In the case of a resulting loss at issue, it is assumed that no risk margin would be included in the combined pre- and post-claims liability (see Figure 3.6-3). If the liability adequacy test liability includes a risk margin, the Implementation A results would be identical to the baseline IFRS results shown in Figure 3.6-1.

**Figure 3.6-3. Long Term Care New Business, IFRS Baseline and Implementation A**  
 (First-Year Premium of \$27 Million)



**3.6.3 Sensitivities**

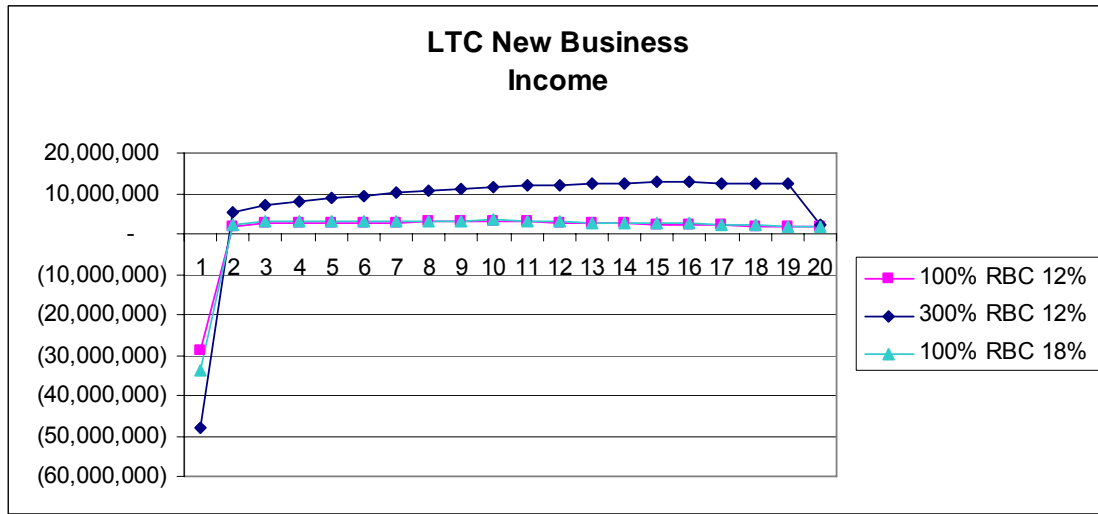
For long term care, the product sensitivities shown here focus on differences in the risk margins calculated using the cost of capital method, varying the amount of capital and its cost. The first is the

level of the risk margins from the baseline IFRS results, 100% RBC, and a 12% cost of capital. The other two set of assumptions are risk margins using (1) 300% RBC and a 12% cost of capital and (2) 100% RBC and an 18% cost of capital. The results are presented in Figures 3.6-4 and 3.6-5, for new and in-force business, respectively, with respect to the impact on IFRS.

As expected, increasing the cost of capital has a relatively small impact while increasing the level of capital has a more significant impact on the amount of risk margin, but with limited impact after the first policy year.

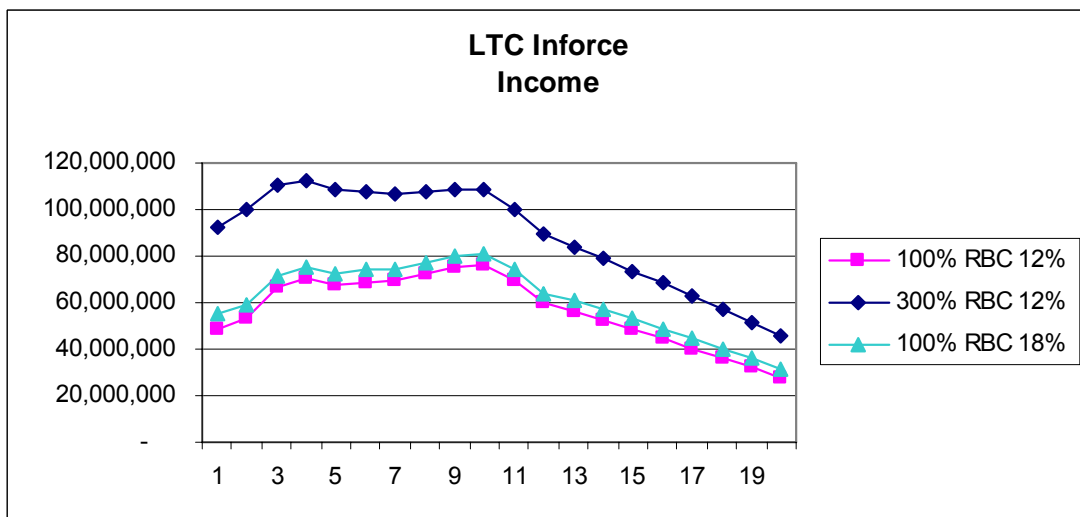
**Figure 3.6-4 Long Term Care New Business, Risk-Based Capital Factor Sensitivities**

(First-Year Premium of \$27 Million)



**Figure 3.6-5. Long Term Care In Force, Risk-Based Capital Factor Sensitivities**

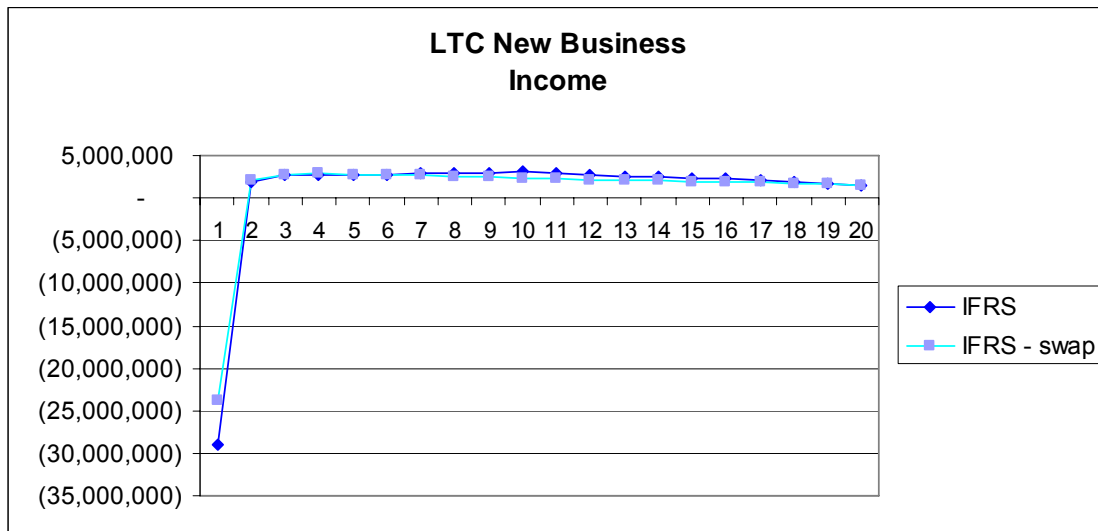
(Initial IFRS Liability of \$3,524 Million)



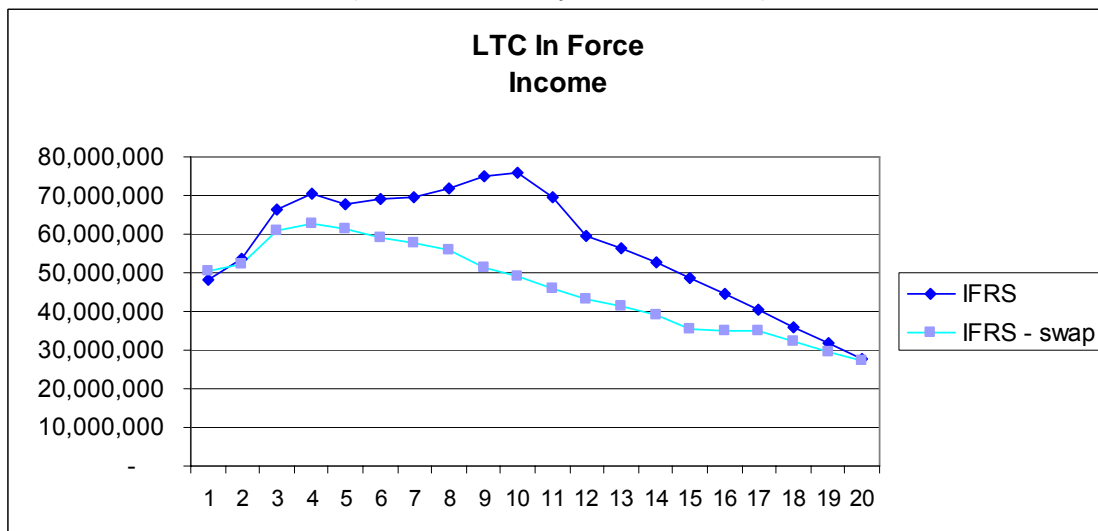
A sensitivity using the swap curve instead of the spot rates for discounting was also performed. For long term care, the difference is primarily evident in the extent of the at issue loss, which is recovered over time through higher renewal profits. There are periods during which the

difference between the swap curve and the original spot curve at December 31, 2006, widens and contracts, which leads to the income streams becoming farther and closer together. This can be seen more clearly in Figure 3.6-7 for in-force business, rather than in Figure 3.6-6, which is for new business where the two lines are too close to notice the difference. The different pattern of income is due to the difference between the swap curve and U.S. Treasury spot curve widening and contracting.

**Figure 3.6-6. Long Term Care New Business, Baseline Spot and Swap Rates Discounting**  
(First-Year Premium of \$27 Million)



**Figure 3.6-7. Long Term Care In Force, Baseline Spot and Swap Rates Discounting**  
(Initial IFRS Liability of \$3,524 Million)



### 3.7 Supplemental Health Insurance

The models for supplemental health insurance include both in-force and new business. The product is guaranteed renewable (i.e., renewal of the policy is guaranteed, but future premiums can be changed) with indemnity (i.e., predefined fixed amount) benefits.

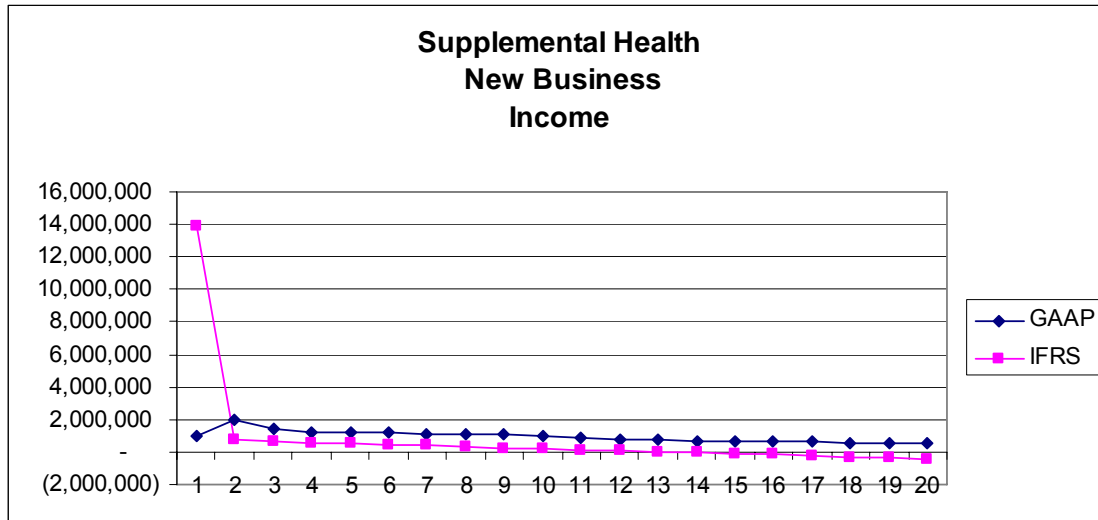
For U.S. GAAP, balance sheets, income statements, and deferred acquisition expenses were developed based on FAS 60 with liabilities equal to benefit liabilities. As the claim liability is very short term in nature: that is, a claim is paid almost immediately after receipt of the notice of an occurrence, a claims liability was not modeled. The projections were based on best estimate assumptions, including those for morbidity and lapse. It was assumed that the products were issued on a profitable basis and that no adverse changes in expectations occur, so the projections do not reflect any recoverability issues nor will a need for any rate increases arise.

#### 3.7.1 Baseline GAAP and IFRS Results

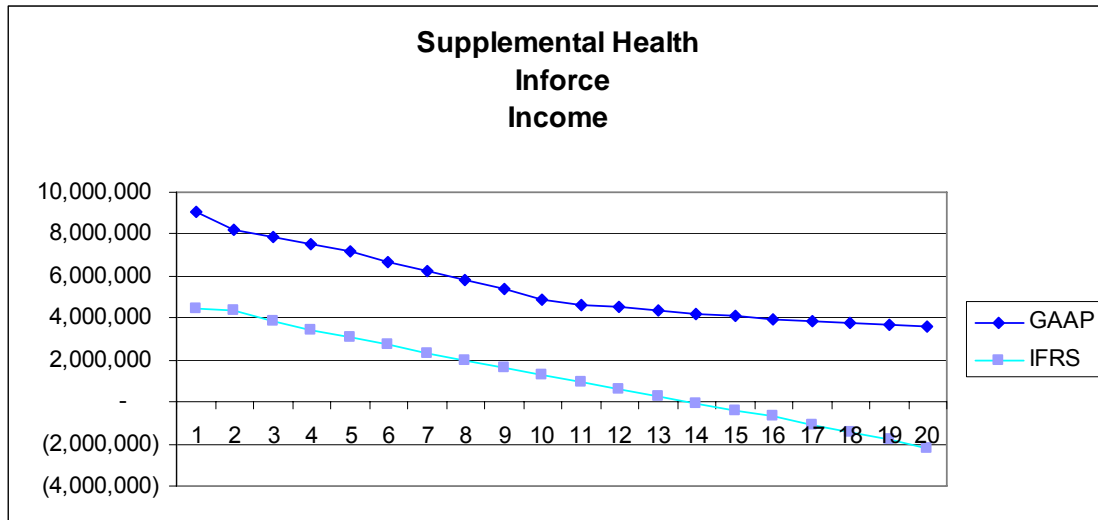
Figures 3.7-1 and 3.7-2 provide a comparison of the emergence of earnings for both U.S. GAAP and baseline IFRS for new and in-force business, respectively. The risk margin under IFRS was calculated using a cost of capital approach as described in Section 2.2.2. The product appears to be very profitable, with a resulting relatively large initial gain at issue. The in-force income is lower for IFRS than GAAP, consistent with the renewal-year income relationship between GAAP and IFRS for new business.

**Figure 3.7-1. Supplemental Health New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$3.2 Million)



**Figure 3.7-2. Supplemental Health In Force, IFRS Baseline and U.S. GAAP**  
 (Initial IFRS Liability of \$45 Million, an Asset)



The supplemental health products included in this study have a long-term benefit period (longer than 20 years). The IFRS loss generated in policy years 15 and later shown in Figures 3.7-1 and 3.7-2 resulted from (1) negative investment income in excess of the imputed risk-free returns from the negative assets at those durations and (2) the effect of the asset released at the end of policy year 20 associated with the treatment of cash flows after the completion of the 20-year projection period.

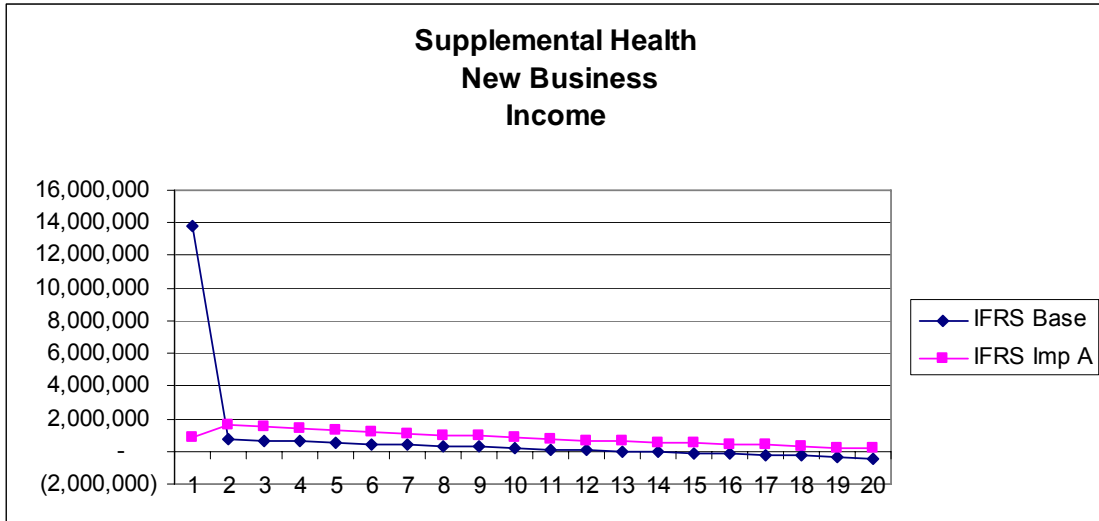
**3.7.2 Alternative IFRS Results**

The alternative view (Implementation A from the Discussion Paper) determines the initial risk margin as being equal to the present value of the costs of future capital in a way that there is no gain at issue. This results in a release of risk margins over time that offsets the up-front profits. To accomplish this, we determined the discount rate change that would eliminate the gain at issue. The results for new business are shown in Figure 3-7-3.



**Figure 3.7-3. Supplemental Health New Business, IFRS Baseline and Implementation A**

(First-Year Premium of \$3.2 Million)



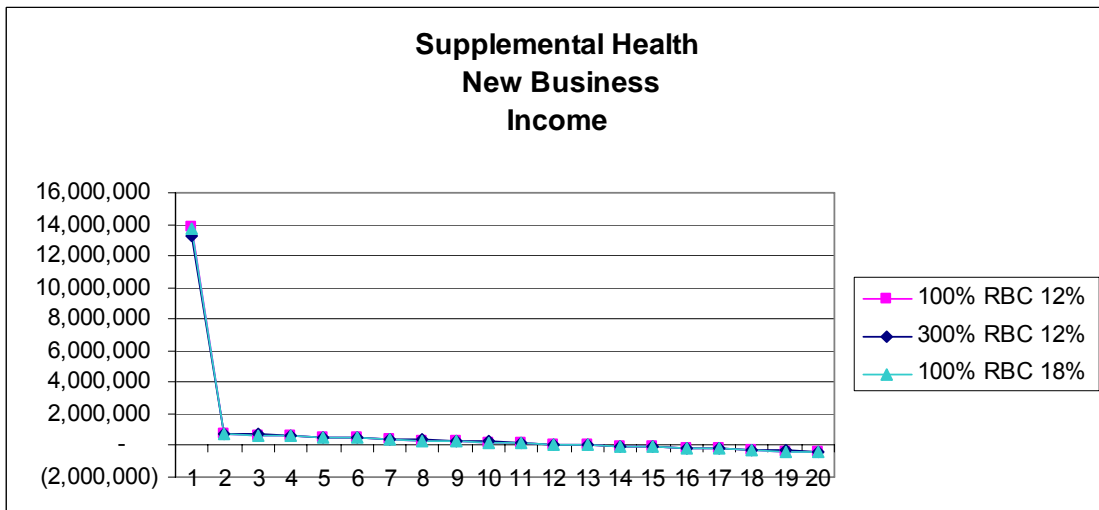
**3.7.3 Sensitivities**

For supplemental health insurance, the product sensitivities shown here focus on differences in the risk margins calculated using the cost of capital method, varying the amount of capital and its cost. The first is the level of the risk margins from the baseline IFRS results, 100% RBC and a 12% cost of capital. The other two set of assumptions are risk margins using (1) 300% RBC and a 12% cost of capital and (2) 100% RBC and an 18% cost of capital. The IFRS income results are presented in Figures 3.7-4 and 3.7-5, for new and in-force business, respectively.

Because of the relatively small amount of capital needed to support this business, there is relatively limited effect of the change in either of these two factors (amount of cost or capital) on income.

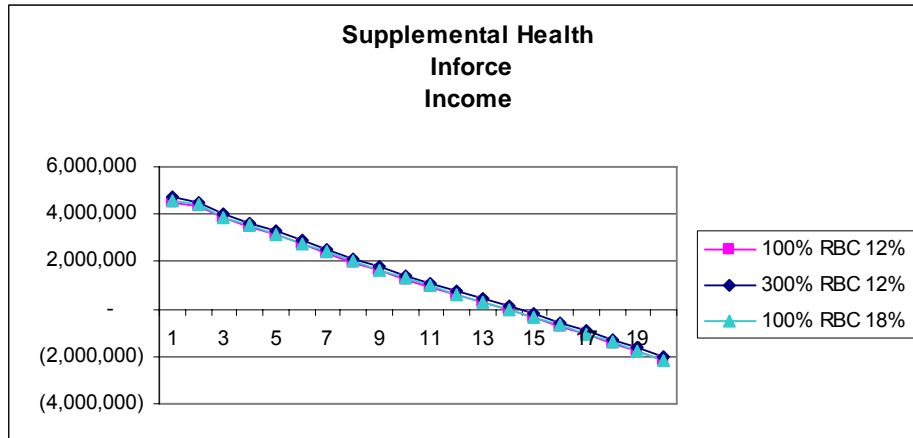
**Figure 3.7-4. Supplemental Health New Business, Risk-Based Capital Factor Sensitivities**

(First-Year Premium of \$3.2 Million)



**Figure 3.7-5. Supplemental Health In Force, Risk-Based Capital Factor Sensitivities**

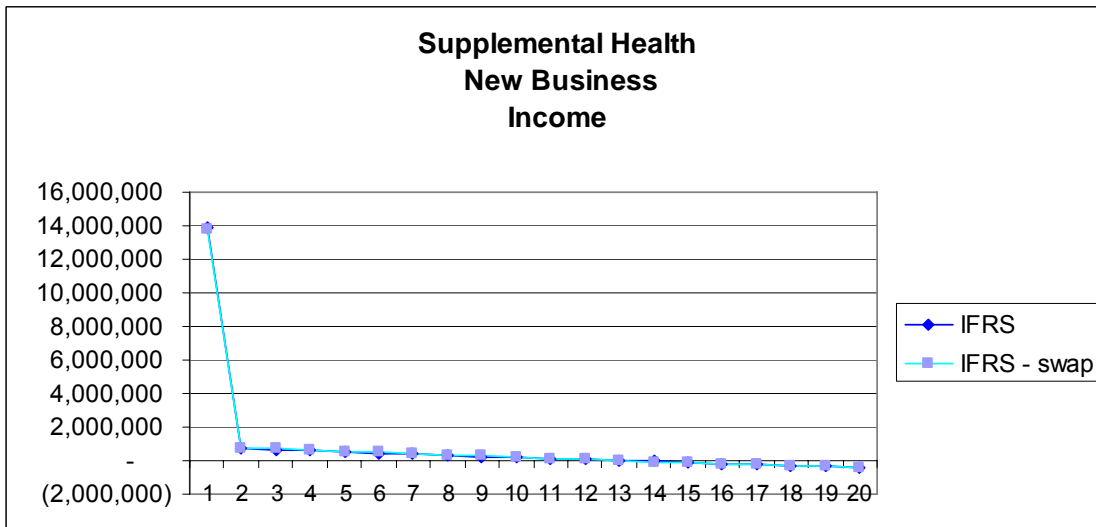
(Initial IFRS Liability of \$45 Million, an Asset)



A sensitivity using the swap curve instead of the spot rates for discounting was also performed. For this product, and its relatively flat set of cash flows, the difference is quite small and barely noticeable in Figures 3.7-6 and 3.7-7, although because of the cash flow pattern for these contracts, the difference reverses direction eventually.

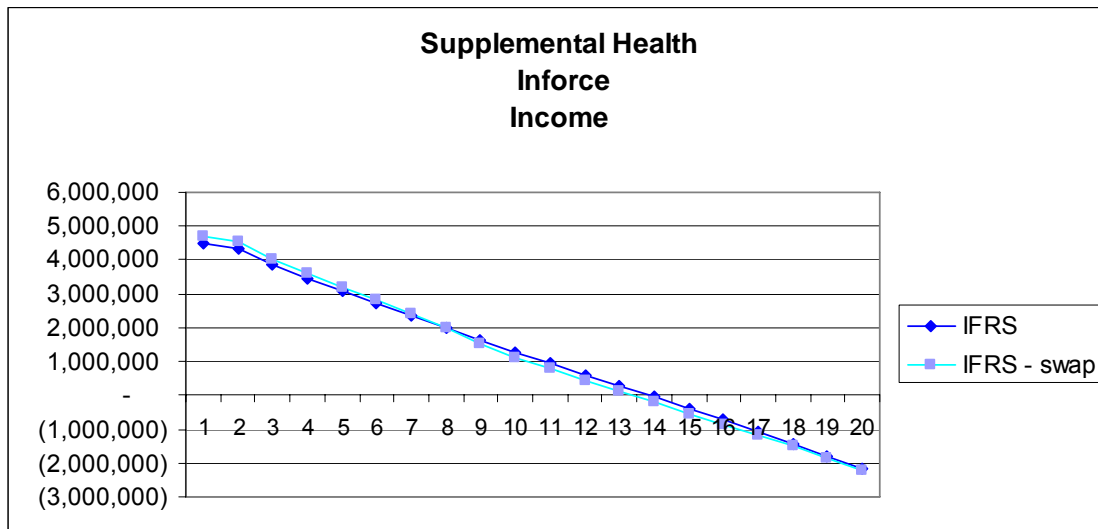
**Figure 3.7-6. Supplemental Health New Business, Baseline Spot and Swap Rates Discounting**

(First-Year Premium of \$3.2 Million)



**Figure 3.7-7. Supplemental Health In Force, Baseline Spot and Swap Rates Discounting**

(Initial IFRS Liability of \$45 Million, an Asset)



### 3.8 Single-Premium Fixed Deferred Annuity

The models for this product included both new and in-force business. The single-premium deferred annuity products (SPDA) included feature five- or seven-year interest guarantees (measured from the initial effective date). Some products modeled included a first-year bonus interest rate.

For U.S. GAAP, balance sheets and income statements were developed based on FAS 97 with liabilities equal to the contracts' account values. The amount and amortization of deferred acquisition expenses were also in accordance with FAS 97. The projections are based on best estimate assumptions, including those for mortality and lapse. As a result, the projections do not assume any unlocking of DAC amortization.

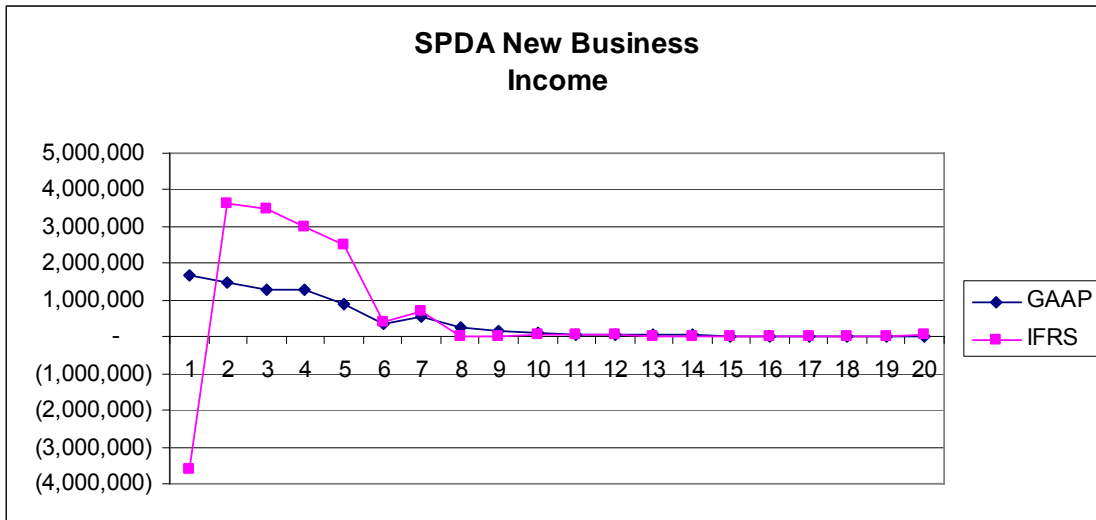
The IFRS cash flows reflect the expected total cash flows. See the beginning of Section 3.8.4 for an alternative view of the principal approach to the determination of cash flows under these contracts.

#### 3.8.1 Baseline GAAP and IFRS Results

Figures 3.8-1 and 3.8-2 provide a comparison of the emergence of earnings under both U.S. GAAP and baseline IFRS. The risk margin under IFRS was calculated using a cost of capital approach as described in Section 2.2.2. GAAP income is less than IFRS income in the second through seventh years because of the amortization of DAC and the release of the SOP 03-1 liabilities.

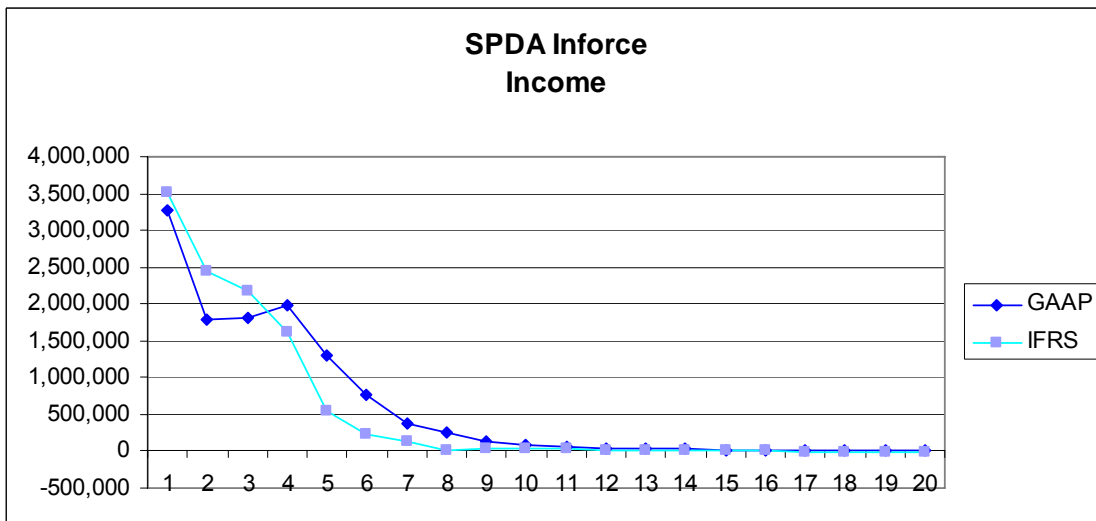
**Figure 3.8-1. SP Deferred Annuity New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$200 Million)



**Figure 3.8-2. SP Deferred Annuity In Force, IFRS Baseline and U.S. GAAP**

(Initial IFRS Liability of \$197 Million)

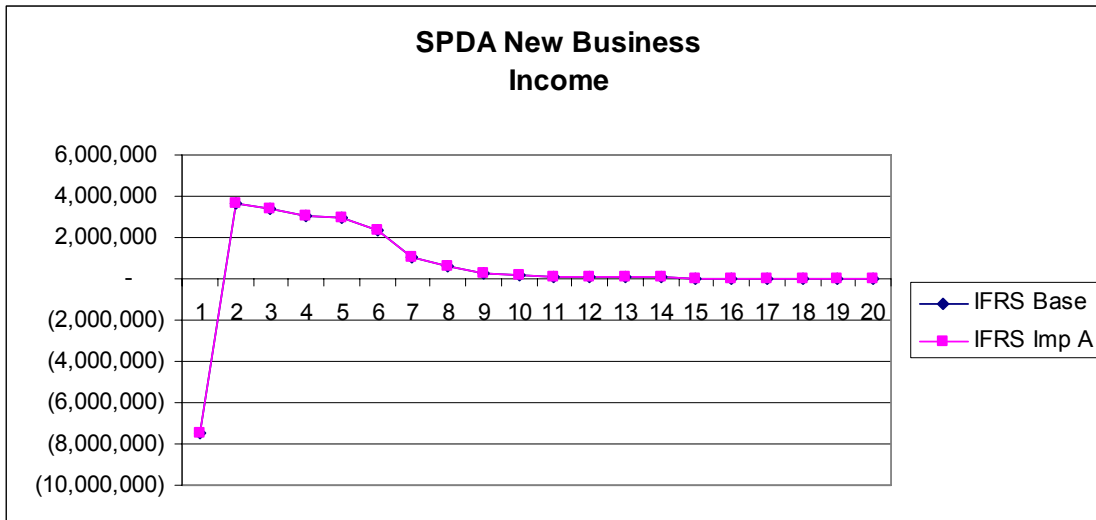


**3.8.2 Alternative IFRS Results**

The application of the alternative view (Implementation A from the Discussion Paper) involves solving for the risk margin such that there is no gain at issue. In the case of a resulting loss at issue, it is assumed that no risk margin would be included in the liability (see Figure 3.8-3). If the liability adequacy test liability included a risk margin, the Implementation A results would be identical to the IFRS baseline results. In this case, because the risk margin for this contract is quite small, the difference in results between the two implementation bases is indistinguishable. For this product line the loss at issue is recognized because the cash flows without investment income are insufficient to cover the cash flow needs of the product line.

**Figure 3.8-3. SP Deferred Annuity New Business, IFRS Baseline and Implementation A**

(First-Year Premium of \$200 Million)



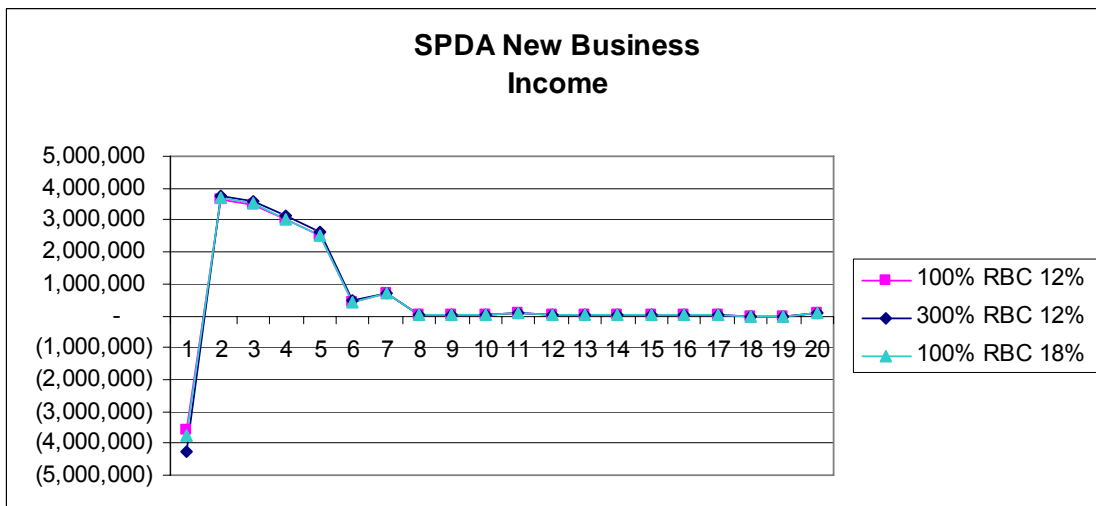
**3.8.3 Sensitivities**

For SPDAs, the product sensitivities shown here focus on differences in the risk margins calculated using the cost of capital method, varying the amount of capital and its cost. The first is the level of the risk margins from the baseline IFRS results, 100% RBC and a 12% cost of capital. The other two sets of assumptions are risk margins using (1) 300% RBC and a 12% cost of capital and (2) 100% RBC and an 18% cost of capital. The IFRS income results are presented in Figures 3.8-4 and 3.8-5, for new and in-force business, respectively.

Because of the relatively small amount of capital associated with these products, reflected in the baseline IFRS, there is relatively limited effect of the change in income.

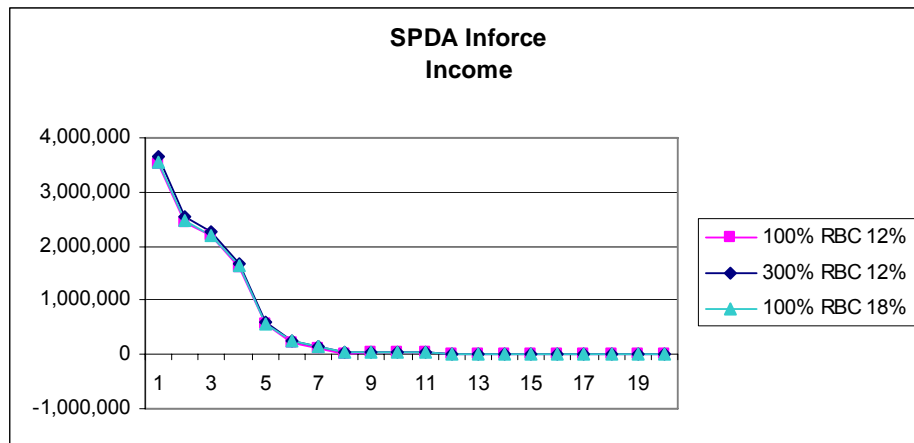
**Figure 3.8-4. SP Deferred Annuity New Business, Risk-Based Capital Factor Sensitivities**

(First-Year Premium of \$200 Million)



**Figure 3.8-5. SP Deferred Annuity In Force, Risk-Based Capital Factor Sensitivities**

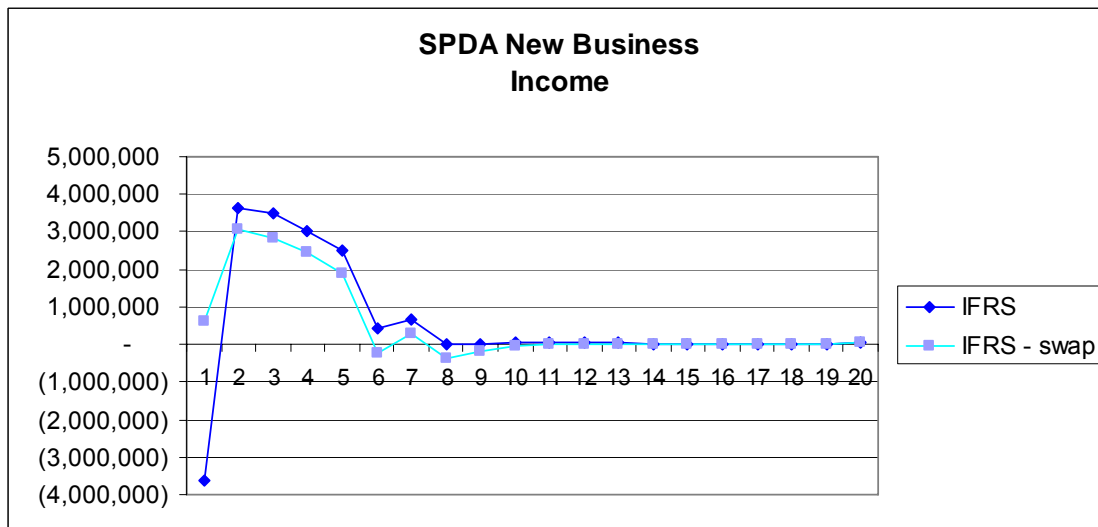
(Initial IFRS Liability of \$197 Million)



A sensitivity using the swap curve instead of the spot rates for discounting was also performed. For the SPDA baseline approach, the difference is shown in Figures 3.8-6 and 3.8-7.

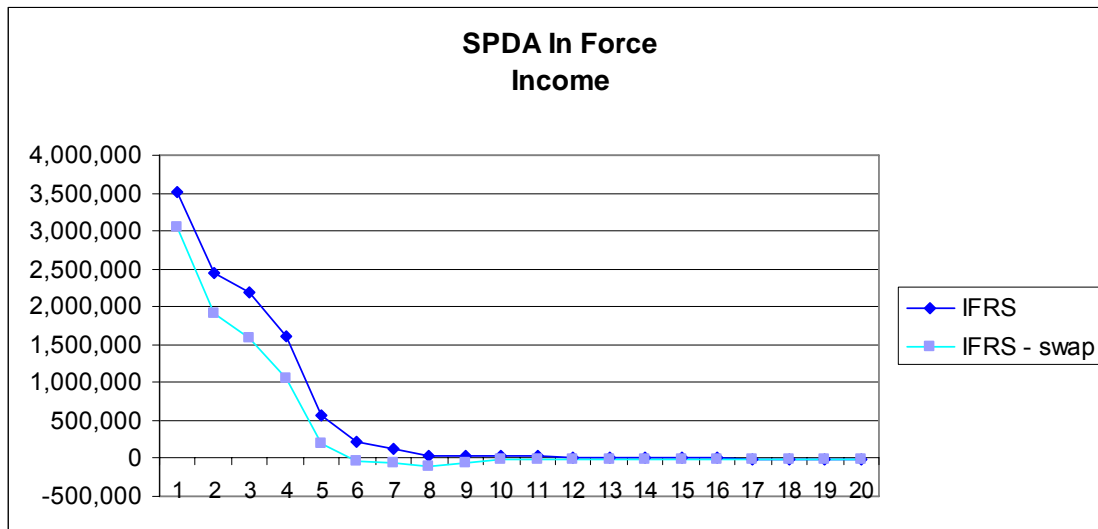
**Figure 3.8-6. SP Deferred Annuity New Business, Baseline Spot and Swap Rates Discounting**

(First-Year Premium of \$200 Million)



**Figure 3.8-7. SP Deferred Annuity In Force, Baseline Spot and Swap Rates Discounting**

(Initial IFRS Liability of \$197 Million)



**3.8.4 Unbundling**

As with the UL model discussed in Section 3.1.4, the IFRS income shown in the SPDA figures above are all based on a single-contract approach in which total cash flows determine the IFRS liability on a bundled basis. The income would be the same as shown above if the Discussion Paper proposal for unbundling was applied. However, as described in Section 3.1.4, alternative approaches could be taken. The more completely unbundled alternative formulation described in Section 3.1.4 would treat the consideration for the deposit component as a change in liability, and the insurance and service components as a single (or multiple) residual or margin component (we refer this as a margin or unbundled approach).

Figure 3.8-8 shows the income that would arise if we apply an unbundled (deposit) approach, separating the deposit component and margins for the residual insurance and service components. The treatment of the cash flows differs significantly from that of the bundled approach. In it, the deposit element is measured as the value of the deposit, with calculations of the other components just including cash flows of those components.

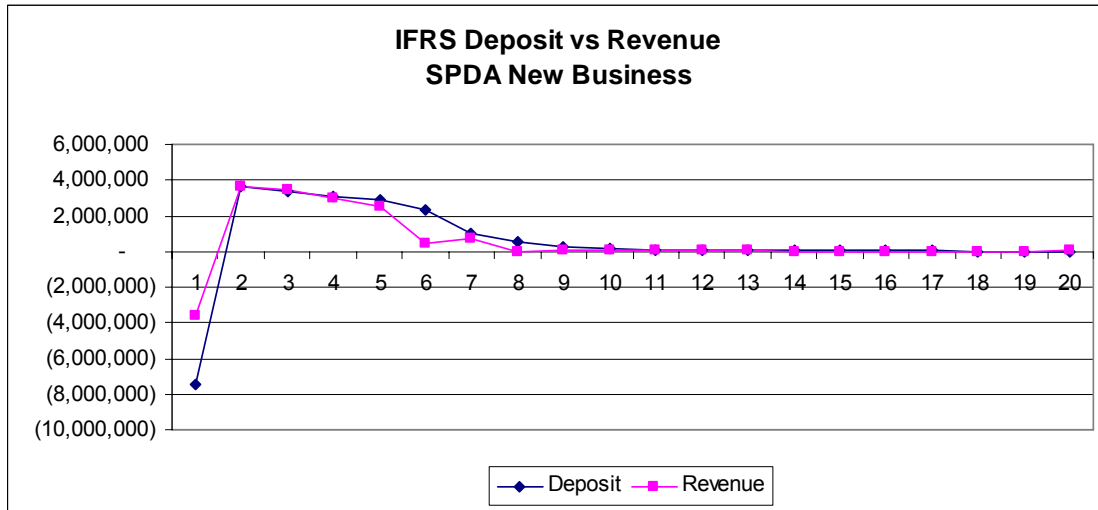
Although the underlying modeled incomes each year remain identical, the treatment of the cash flows differs significantly, with the calculations that depend on cash flows consequently affected, thus affecting the liability impact at issue and in renewal periods.

Investment income is not reflected in determining the liability, but instead is reflected as part of income. The cash flows are discounted at the same rates as described earlier. “Margin” refers to the unbundled IFRS presentation, and “Revenue” refers to the bundled or single contract approach.

The revenue approach markedly increases the gain at issue, as it considers all expected cash flows on a combined basis and decreases in a corresponding fashion the renewal years’ income. This reduction in renewal years reflects the timing of the measures benefit cash flows. The liability interest component also increases the expense and lowers the income in the revenue presentation.

**Figure 3.8-8. SP Deferred Annuity New Business, Alternative Unbundling Approach**

(Initial IFRS Liability of \$197 Million)



### 3.9 Participating Whole Life Insurance

The models for this product category include only new business. We have taken several approaches to model the participating whole life products that should be noted before reading the remainder of this section:

1. *The baseline.* Consistent with the baseline for other products, market-based interest rates are used for discounting purposes. In addition, expected policyholder dividends are incorporated in the measurement of the liability, and the risk-based capital factors shown in Section 2.2.2 are used in the cost of capital risk margin method. This approach is taken as the baseline for IFRS as it is consistent with other approaches; however, note that the Discussion Paper proposal seems to indicate that discounting consistent with actual and expected investment income may be more appropriate, which may be closer to that given under Variation 1.
2. *Variation 1.* Similar to the baseline, but using ATF-provided expected earned investment returns for discounting purposes and no explicit risk margin because policyholder dividends may offset in whole or in large part the risk to the insurer on a net of policyholder dividend basis.
3. *Variation 2.* Similar to the baseline, but with no explicit risk margin because policyholder dividends may offset in whole or in large part the risk to the insurer on a net of policyholder dividend basis.
4. *Variation 3.* Similar to the baseline, but no policyholder dividends are incorporated in the measurement of the liability.

We recognize that further variations are possible, for example, discounting at U.S. Treasury-based rates and recalculating policyholder dividends as if investment income earned was equivalent to the market-based rates. However, it was thought that the variations calculated were sufficient for the purpose of this paper.

For U.S. GAAP, balance sheets, income statements, and deferred acquisition expenses were developed based on FAS 60 and FAS 120 with liabilities equal to benefit liabilities. The projections were based on best estimate assumptions for experience, including mortality and lapse. There is no



change in expectations after issue, so the projections do not assume that any recoverability issues arise.

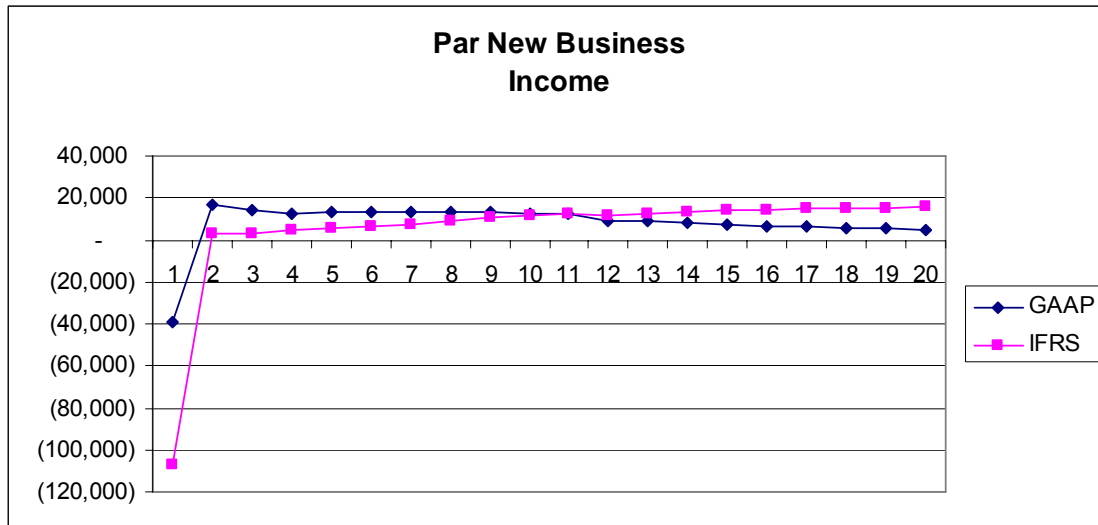
The development of an IFRS standard for participating contracts has been quite controversial. A primary issue has involved the extent to which policyholder dividends can be recognized as part of the liability for a participating contract. The Discussion Paper indicates that the Board's preliminary view is that expected policyholder dividends can be recognized only if a legal or constructive obligation exists to pay them. Much, but not all, of the discussion has involved stock companies offering participating contracts to whom distribution to shareholders are limited, typically expressed as a percentage of accumulated surplus, and some of the dividends are paid at the discretion of the insurer. The contracts modeled in this project are not subject to any distribution limitations.

### 3.9.1 Baseline GAAP and IFRS Results

Figure 3.9-1 below provides a comparison of the emergence of earnings for both U.S. GAAP and baseline IFRS. The risk margins under IFRS were calculated using a cost of capital formula as described in Section 2.2.2.

The baseline IFRS values were generated on the assumption that a sufficient obligation exists to reflect expected policyholder dividends as a component of the liability (determining whether this is the case for the insurers whose policies were modeled by the ATFs are outside the scope of this project). In addition, the time value of money is determined on the basis of market-based interest rates (in some observers' views, this is inconsistent with the Discussion Paper; see Variation 1 for the results of the latter approach). The primary reason why Figure 3.9-1 shows an initial U.S. GAAP loss is there are nondeferrable acquisition expenses in the first policy year. The primary reason for the larger IFRS loss is that the applied market-based discount rate is significantly lower than that anticipated in the policyholder dividends.

**Figure 3.9-1. Par Life New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$133,000)



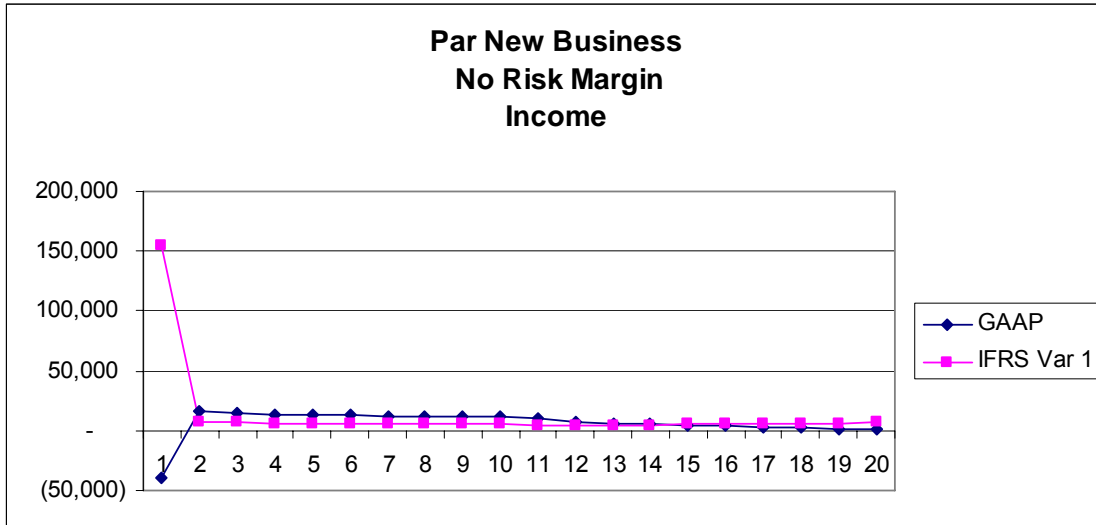
### 3.9.2 Alternative IFRS Results

The first alternative view, or Implementation A from the Discussion Paper, involves solving for the risk margin such that there would be no gain at issue. The baseline case includes policyholder dividends and discounts at market-based discount rates, so a loss would be recognized at issue. Because it would be appropriate to reflect a loss at issue, no such calculation was performed. It is recognized that, under one of the variations, such a margin could be determined.

### 3.9.3 Sensitivities

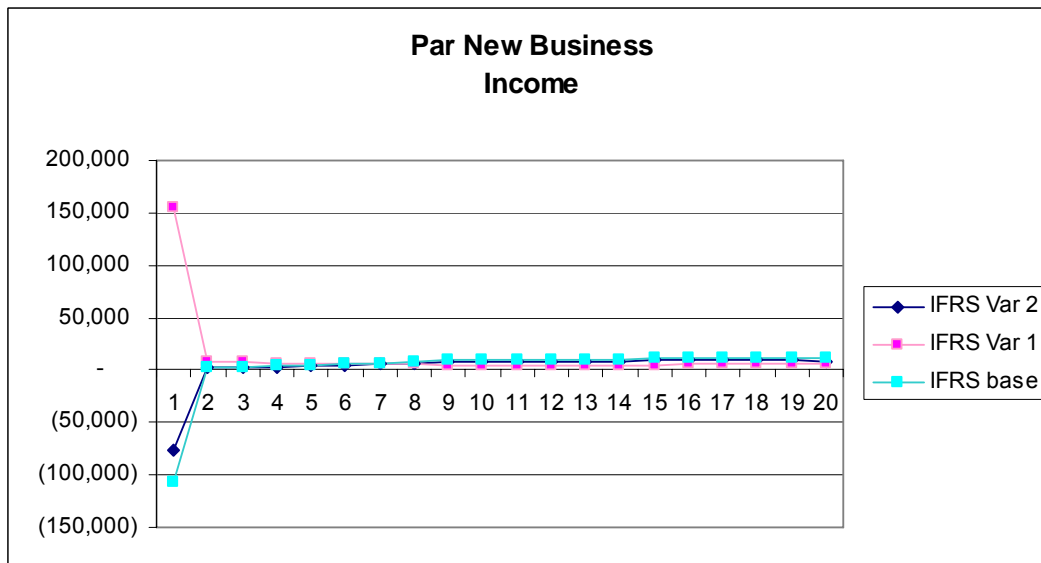
Variation 1, the results of which are shown in Figure 3.9-2 for IFRS (with U.S. GAAP shown for comparative purposes), uses (1) discount rates equivalent to the expected earned rate of assets underlying the net obligations of the contract and (2) no risk margins because policyholder dividends are available to offset fluctuations, rather than the factor-based approach described in Section 2.2.2.

**Figure 3.9-2. Par Life New Business, U.S. GAAP and Variation 1**  
(First-Year Premium of \$133,000)



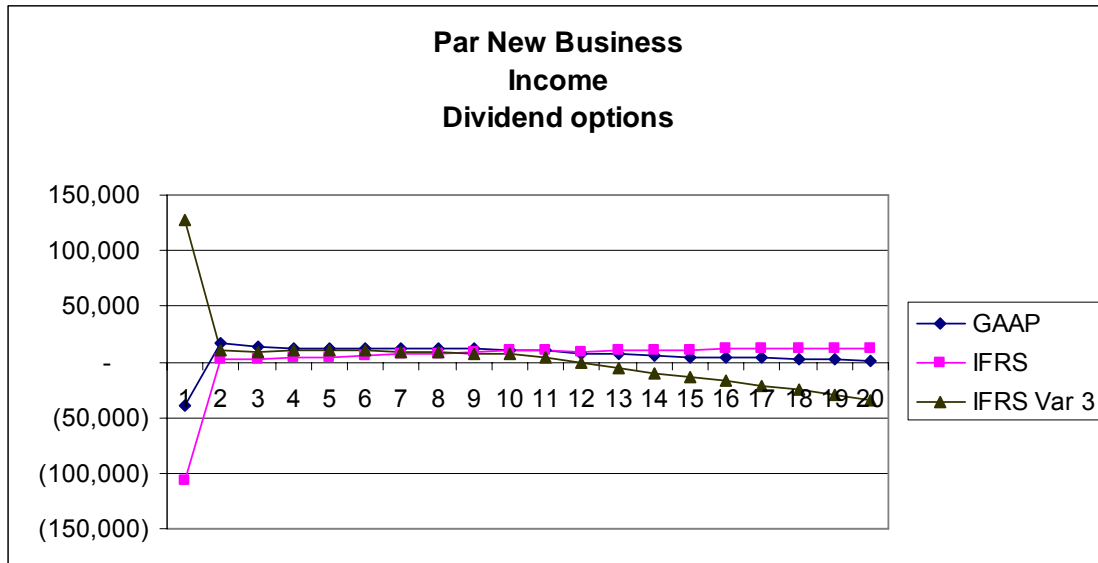
Results based on Variations 1 and 2 as described above (different discounting and no risk margin) versus the baseline are compared in Figure 3.9-3. By including the cost of capital reduction in our baseline, more of a loss initially followed by increased income thereafter is seen.

**Figure 3.9-3. Par Life New Business, Baseline IFRS and Variations 1 and 2**  
(First-Year Premium of \$133,000)



Variation 3 examines the effect of not recognizing policyholder dividends in the liabilities of new participating whole life business. Figure 3.9-4 shows the effect of including and excluding policyholder dividends in the IFRS liability calculations, alongside U.S. GAAP income for perspective. Note, however, that all of the values use the same policyholder persistency assumptions, whether or not policyholder dividends are included in the measurement of the liability. The losses shown in later years in Variation 3 are the result of policyholder dividend payments during the year not being offset by a release of the IFRS liability.

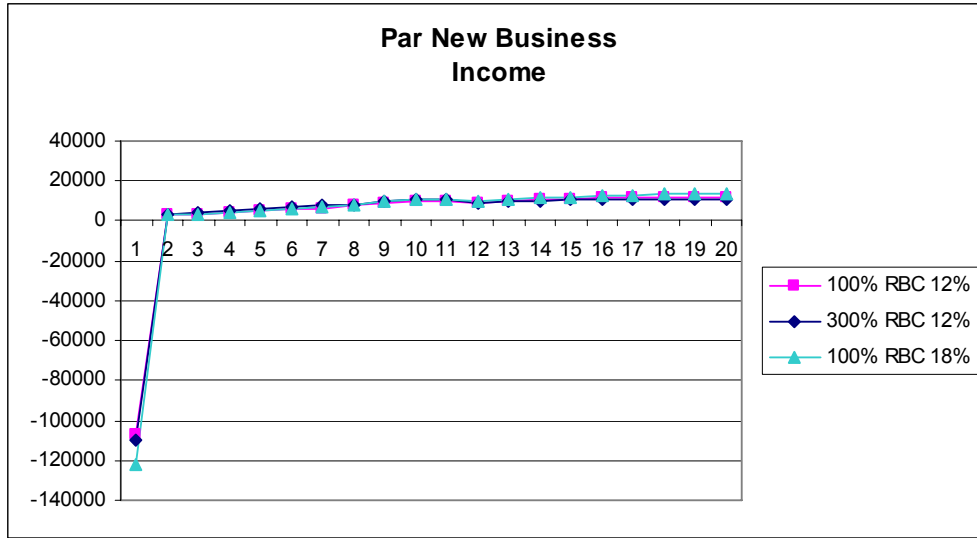
**Figure 3.9-4. Par Life New Business, Baseline IFRS, U.S. GAAP and Variation 3**  
 (First-Year Premium of \$133,000)



For the baseline IFRS for participating whole life insurance that include a risk margin based on a cost of capital method, Figure 3.9-5 varies the amount of capital and its cost used in the calculation of the risk margin for new business. The first is the level of the risk margins from the baseline IFRS results, 100% RBC and a 12% cost of capital. The other two set of assumptions are risk margins using (1) 300% RBC and a 12% cost of capital and (2) 100% RBC and an 18% cost of capital.

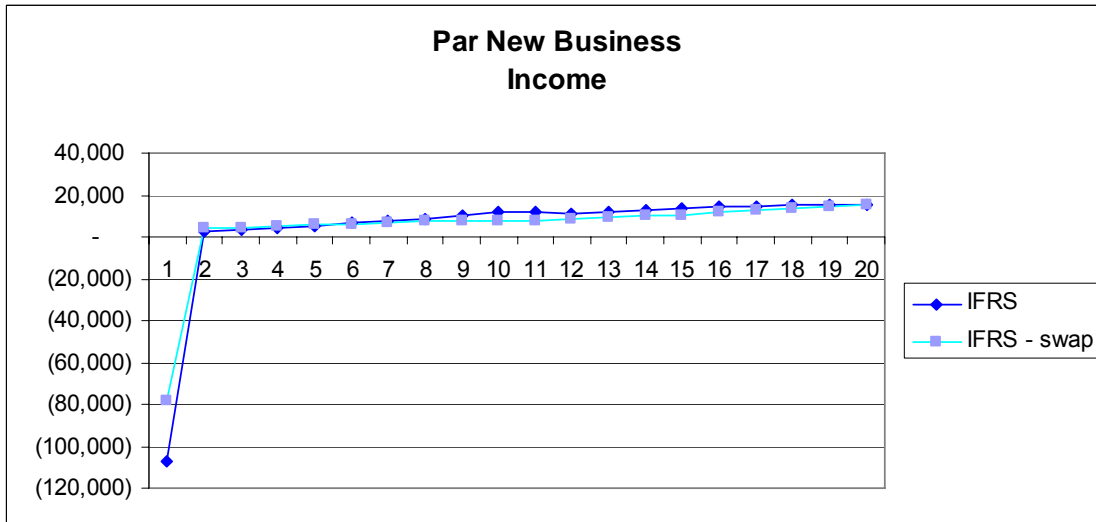
For these sensitivity values, the effect of the amount of capital is more significant than the discount rate. The effect in renewal years is relatively modest in either case.

**Figure 3.9-5. Par Life New Business, Risk-Based Capital Factor Sensitivities**  
(First-Year Premium of \$133,000)



A sensitivity using the swap curve instead of the spot rates for discounting was also performed. For participating whole life baseline approach, the difference shown in Figure 3.9-6 is captured mainly in the at-issue gain and is released over time through higher renewal profits. However, the difference is relatively small.

**Figure 3.9-6. Par Life New Business, Baseline Spot and Swap Rates Discounting**  
(First-Year Premium of \$133,000)



### 3.10 Group Medical Expense Insurance

Both new business and in-force models were created for the group medical expense business submitted. Although this business includes a wide variety of coverages and types of funding, all are paid for on a monthly premium basis, for which expected cash flows were modeled on the basis that claims are incurred uniformly throughout the year. Although it might be argued that, theoretically, there may be some seasonality, deductible, benefit maximum, or inflationary effects, practically

speaking for most of the contracts written with an effective date of January 1, there is no pre-claims liability under U.S. GAAP or IFRS at December 31. For the limited business with a contract termination date other than December 31, the portion of the monthly unearned premium or unexpired risk liability is inconsequential for the purpose of this study. Although there is a claims (IBNR) liability, it is also quite small, because group medical has a very short average payout pattern (the time between service and payment) and the large majority of claims are paid within two or three months after the claims incurral date. As a result, although the discounted value of the outstanding claims could be calculated, because of the relatively small size involved, for practical reasons it is usually assumed that the small risk margin approximately corresponds with the small amount of discount for the time value of money.

We do not believe that anything could be learned from an illustration of either a baseline comparison of U.S. GAAP and IFRS income or liabilities or alternative or sensitivity variations for this product line. Therefore, we have not provided any quantitative displays of modeled values in this section or the next for the balance sheet section of this report.

### 3.11 Income at Issue

Table 3.11-1 provides, for products with new business modeled, a split of baseline IFRS income earned during the first contract year between that earned at issue after direct acquisition costs and subsequently during the year. The total first-year income is that shown in the figures in Section 3.

**Table 3.11-1. Baseline IFRS Income Segmented between That at Issue and during the Remainder of the First Contract Year**

Product	Income			First-Year Premium
	At Issue	During the Contract Year	Total First Contract Year	
Universal Life	\$ 546,707	\$ 131,774	\$ 678,481	\$ 5,800,000
Term Life	20,575,850	1,797,949	22,373,799	28,000,000
Immediate Annuity	(7,417,802)	3,286,521	(4,131,281)	117,000,000
Long Term Care	(29,267,672)	316,208	(28,951,464)	27,000,000
Supplemental Health	13,480,047	379,207	13,859,254	3,200,000
Fixed Deferred Annuity	(12,030,609)	8,418,133	(3,612,476)	200,000,000
Par Whole Life	(102,539)	(4,584)	(107,124)	133,000

## 4. Balance Sheet Results

### 4.1 General Comments

This section provides illustrative balance sheet values for the products modeled within the scope of this report. In particular, it focuses on comparisons between baseline IFRS and U.S. GAAP net liability (note that net liability values are shown, which for GAAP purposes represents the benefit and claim liabilities minus any outstanding deferred acquisition cost assets). The values shown are at the end of the policy year indicated.

Table 4.1-1 shows the two primary components of the IFRS liability for the new business modeled: the expected value of future cash flows and the corresponding risk margin (as determined according to the method described in Section 2.2.2) for the end of the first five contract years.

**Table 4.1-1. Baseline Liability Components\***

New Business IFRS Cost of Capital Risk Margin to Liability Comparison Per Million Initial Premium						
Product		1	2	3	4	5
Par Total	PV(Cash Flows)	(493,851)	401,400	1,267,932	2,099,188	2,916,405
	PV(Cost of Capital)	231,664	228,645	224,633	219,864	214,540
	<i>Liability</i>	(262,187)	630,045	1,492,565	2,319,052	3,130,945
UL Total	PV(Cash Flows)	68,275	424,711	757,109	1,047,143	1,326,600
	PV(Cost of Capital)	53,311	51,359	48,837	45,996	42,844
	<i>Liability</i>	121,586	476,070	805,945	1,093,139	1,369,443
SPIA Total	PV(Cash Flows)	919,204	872,460	822,569	771,693	721,629
	PV(Cost of Capital)	9,125	8,345	7,568	6,819	6,113
	<i>Liability</i>	928,328	880,805	830,137	778,513	727,741
Term Total	PV(Cash Flows)	(1,766,259)	(1,472,064)	(1,228,729)	(1,033,095)	(875,583)
	PV(Cost of Capital)	461,656	430,721	400,429	371,608	344,477
	<i>Liability</i>	(1,304,603)	(1,041,342)	(828,300)	(661,488)	(531,106)
VULTotal	PV(Cash Flows)	(2,329,552)	(2,150,439)	(1,954,665)	(1,761,310)	(1,572,999)
	PV(Cost of Capital)	142,180	140,257	136,779	132,820	128,587
	<i>Liability</i>	(2,187,372)	(2,010,182)	(1,817,886)	(1,628,490)	(1,444,412)
SPDFATotal	PV(Cash Flows)	940,450	941,305	927,476	911,605	892,690
	PV(Cost of Capital)	1,580	1,300	1,009	712	428
	<i>Liability</i>	942,030	942,605	928,485	912,317	893,118
Supplemental Health	PV(Cash Flows)	(4,526,092)	(3,704,923)	(2,891,836)	(2,165,860)	(1,507,222)
	PV(Cost of Capital)	87,026	81,202	75,615	70,286	65,277
	<i>Liability</i>	(4,439,065)	(3,623,721)	(2,816,221)	(2,095,575)	(1,441,945)
LTC Total	PV(Cash Flows)	(20,489)	603,653	1,585,897	2,416,661	3,137,222
	PV(Cost of Capital)	366,858	341,438	316,572	292,852	270,597
	<i>Liability</i>	346,369	945,090	1,902,470	2,709,513	3,407,820

\*(\$xx) represents a negative liability (asset) or a negative component.

As in Section 3 the figures and tables that follow in this section are all based on IFRS with U.S. GAAP assets. Note that the following was not done for variable products.

### 4.2 Comparison of Year-by-Year Net Liabilities

The patterns of balance sheet values consisting of the net liability shown in Figures 4.2-1 through 4.2-13 are similar under IFRS and U.S. GAAP for most products. The net liability presentation shown below for GAAP includes benefit liabilities plus SOP 03-1 liabilities, claim liabilities (for long term care), unearned revenue liabilities, and outstanding DAC asset balances. For IFRS they consist of the composite of the present value of the cash flows plus applicable risk margins for the baseline approach ("Current Estimate").

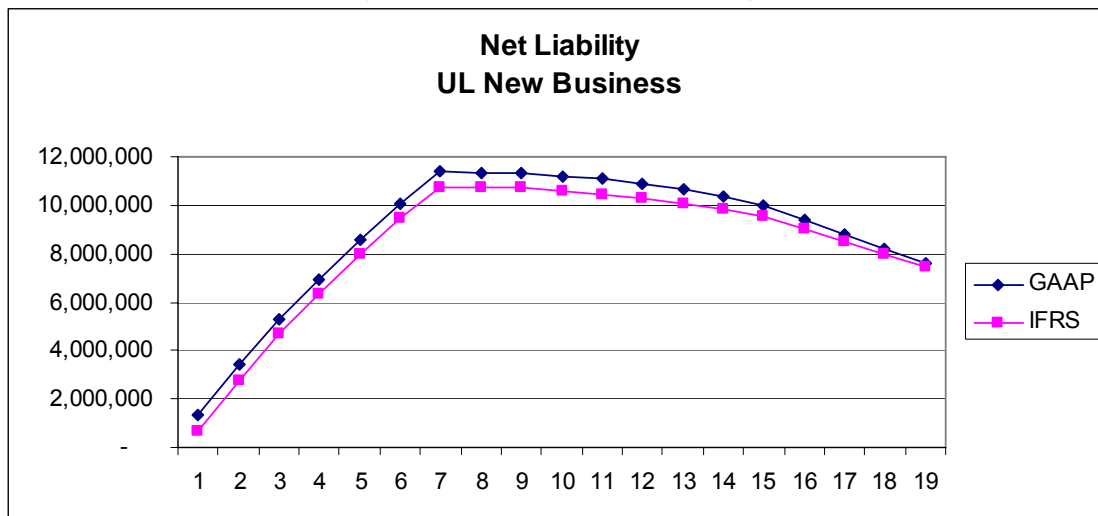
Although the patterns are similar, the relative size of the U.S. GAAP and baseline IFRS liabilities are not consistent for all product categories. Those products/contracts that are written in the expectation of a greater relative expected profit show more up-front profit in financial statements prepared according to the Discussion Paper proposal. Those products/contracts that are written with

a heavy investment-oriented basis using pricing assumptions for investment return in excess of current risk free rates show an up-front loss in financial statements prepared according to the Discussion Paper proposal.

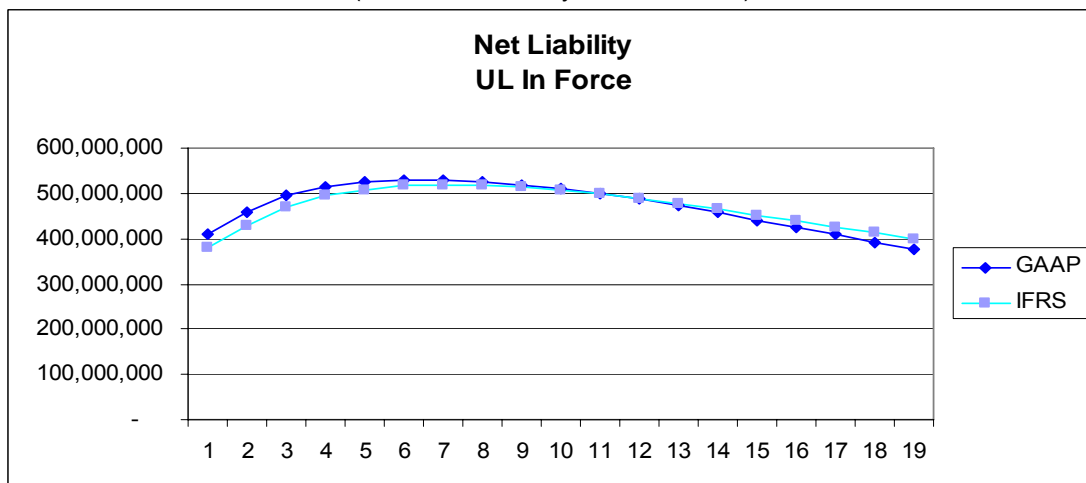
For certain product lines and durations the Current Estimate liability is negative in value, equivalent to an asset. This tends to be the case for product lines in which the cash flows are not as significantly affected by investment income above that which would have been earned had the assets been invested at risk free rates. For example, in the supplementary health line in which premiums are required to maintain insurability, significant assets are accumulated that decline prior to expiry.

For universal life, the IFRS baseline results shown in Figures 4.2-1 and 4.2-2 indicate a somewhat smaller IFRS liability than that for U.S. GAAP. This is because of the initial IFRS gain at issue. At the end of the 20-year period for new business, the two sets of liabilities are approximately equal because of the use of a 20-year projection period.

**Figure 4.2-1. Universal Life New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$5.8 Million)

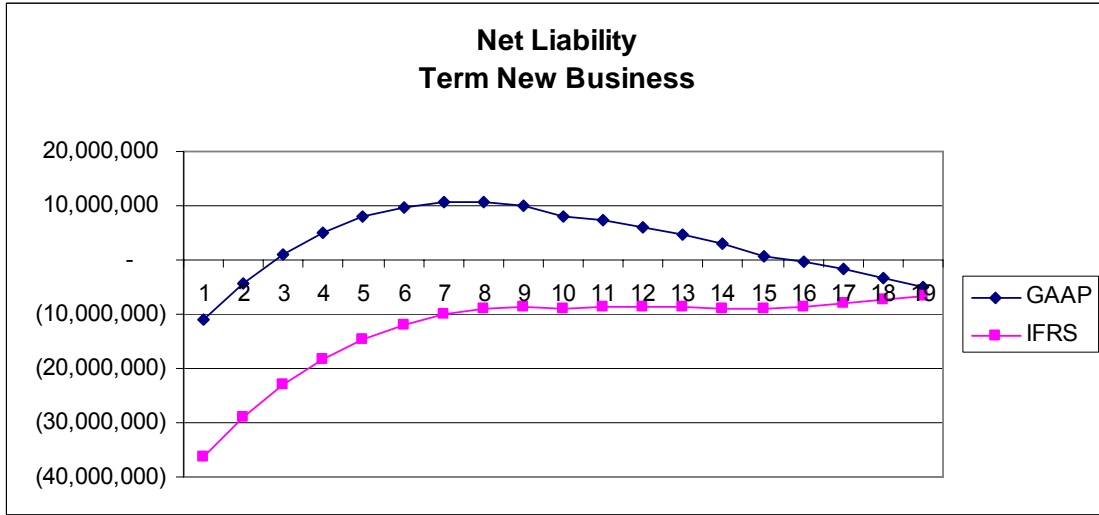


**Figure 4.2-2. Universal Life In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$380 Million)

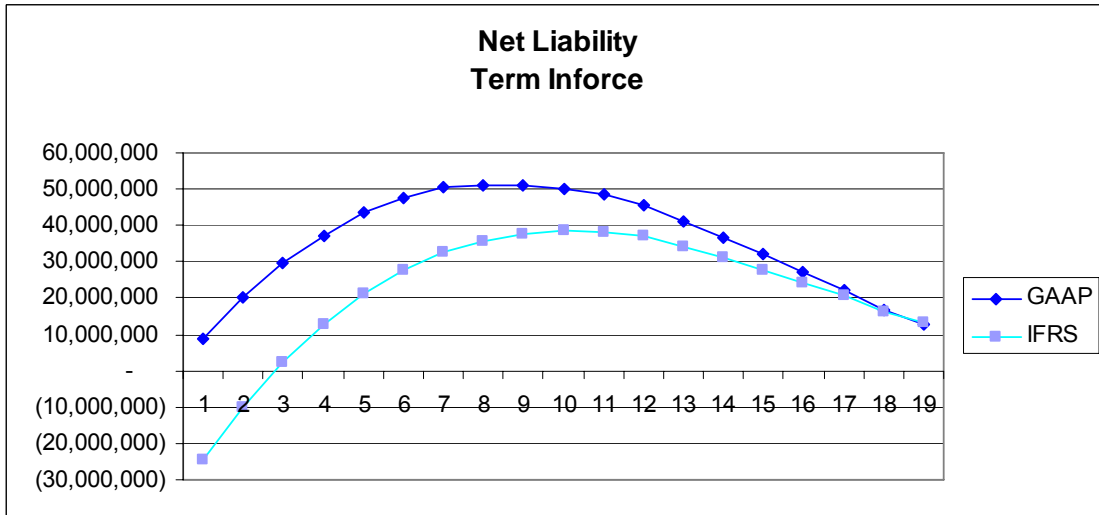


For term products, Figures 4.2-3 and 4.2-4 show a smaller IFRS baseline liability primarily because of the expected profitable nature of the products included in the term category, the profits of which are spread over the contracts' lifetime in U.S. GAAP, reflecting its deferral and matching approach of most of the risk and profit (other than the initial nondeferrable acquisition expenses).

**Figure 4.2-3. Term Life New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$28 Million)



**Figure 4.2-4. Term Life In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$380 Million, an Asset)

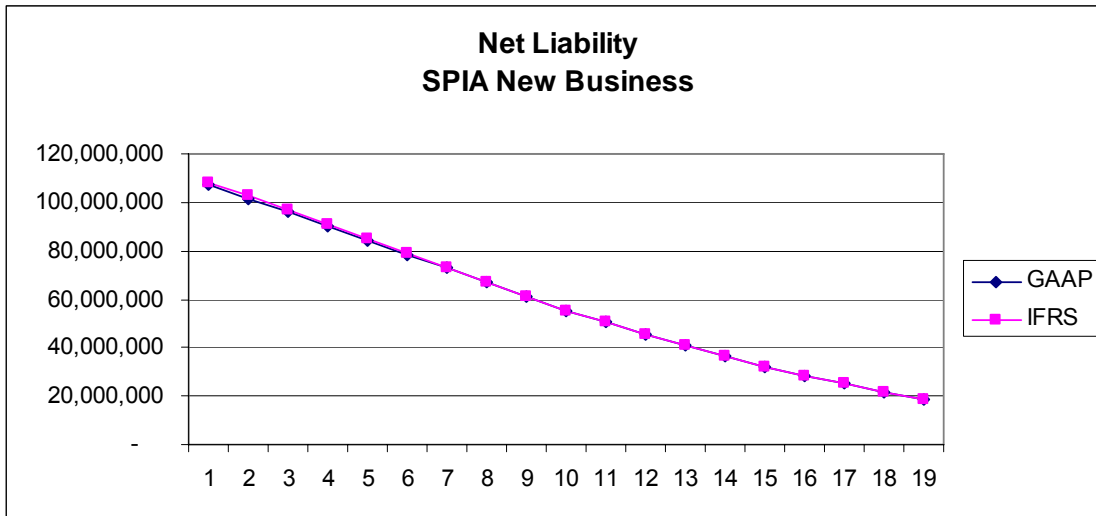


In Figures 4.2-5 and 4.2-6, the difference in the net liabilities for single-premium immediate annuities is relatively small. The difference that arises can be attributed to the differences in discount rates and risk margins.



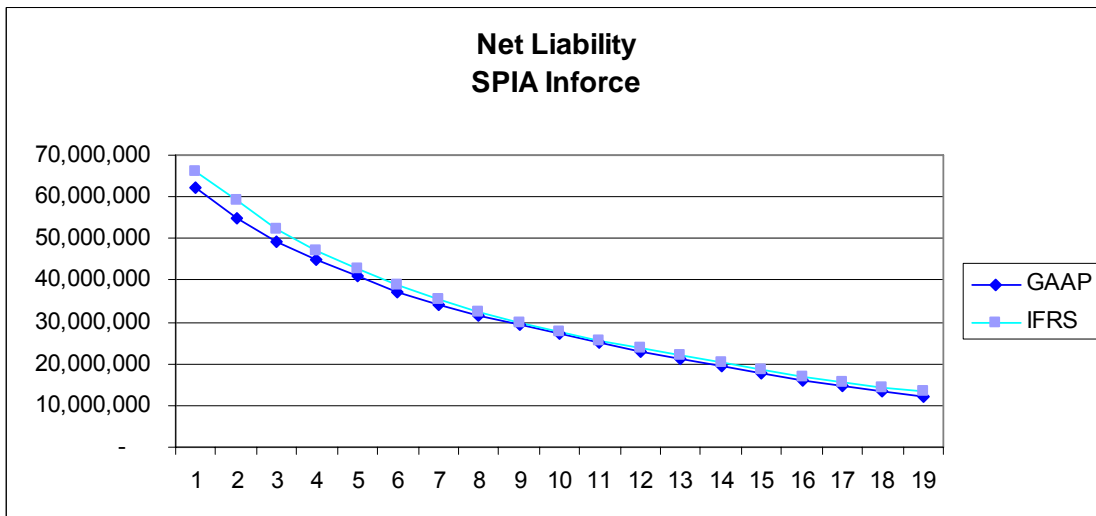
**Figure 4.2-5. SP Immediate Annuity New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$117 Million)



**Figure 4.2-6. SP Immediate Annuity In Force, IFRS Baseline and U.S. GAAP**

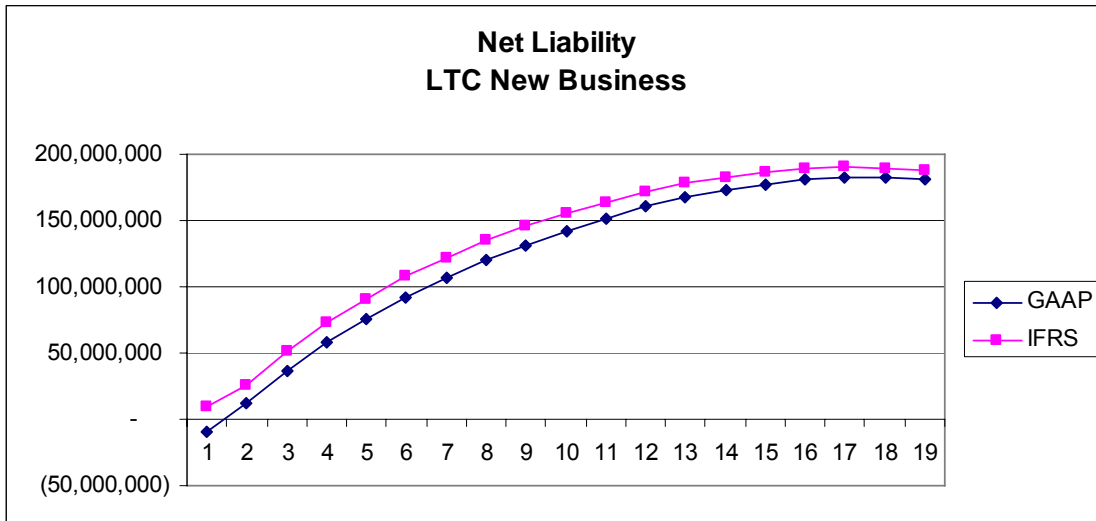
(Initial IFRS Liability of \$66 Million)



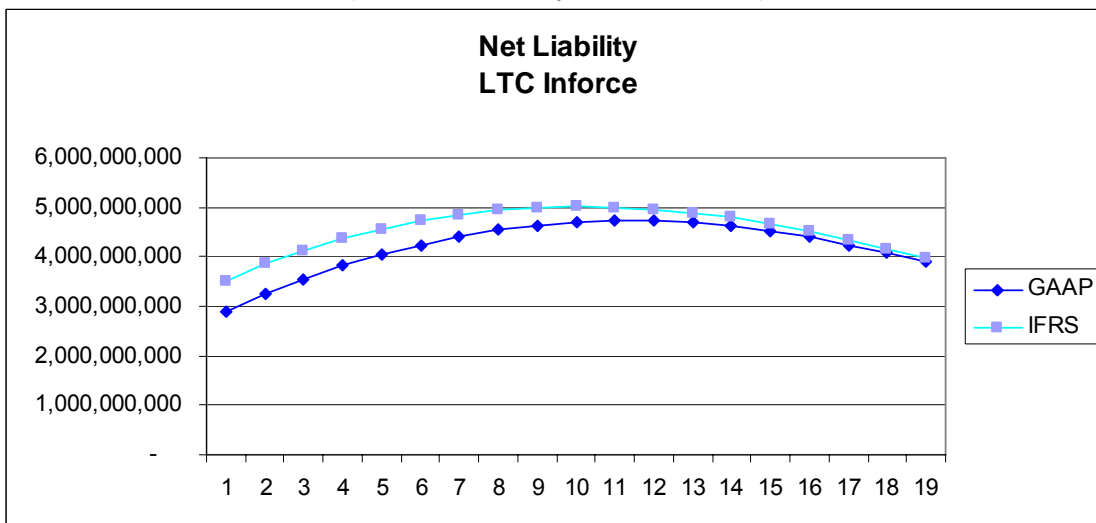
Long term care liabilities are greater for IFRS than for U.S. GAAP for all durations shown in Figures 4.2-7 and 4.2-8. This relationship is primarily driven by the difference in expected investment income over the life of the contracts and the duration of the expected claim period.

**Figure 4.2-7. Long Term Care New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$27 Million)



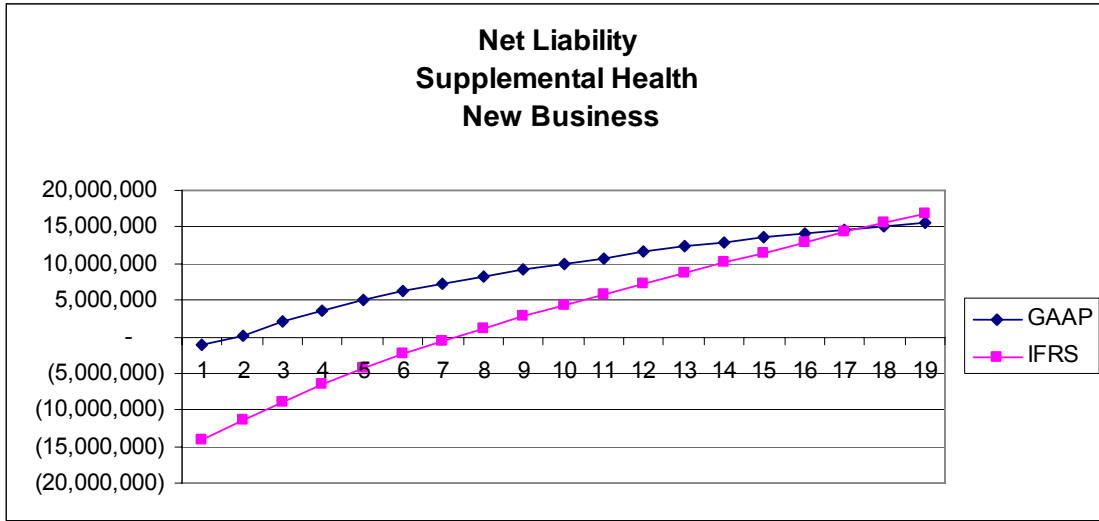
**Figure 4.2-8. Long Term Care In Force, IFRS Baseline and U.S. GAAP**  
(Initial IFRS Liability of \$3,524 Million)



For the supplemental health line, the IFRS liabilities are less than those of U.S. GAAP for both new and in-force business, as shown in Figures 4.2-9 and 4.2-10, respectively, contributed to by the expected profitable nature of the contract and the difference in investment earned rate assumed.

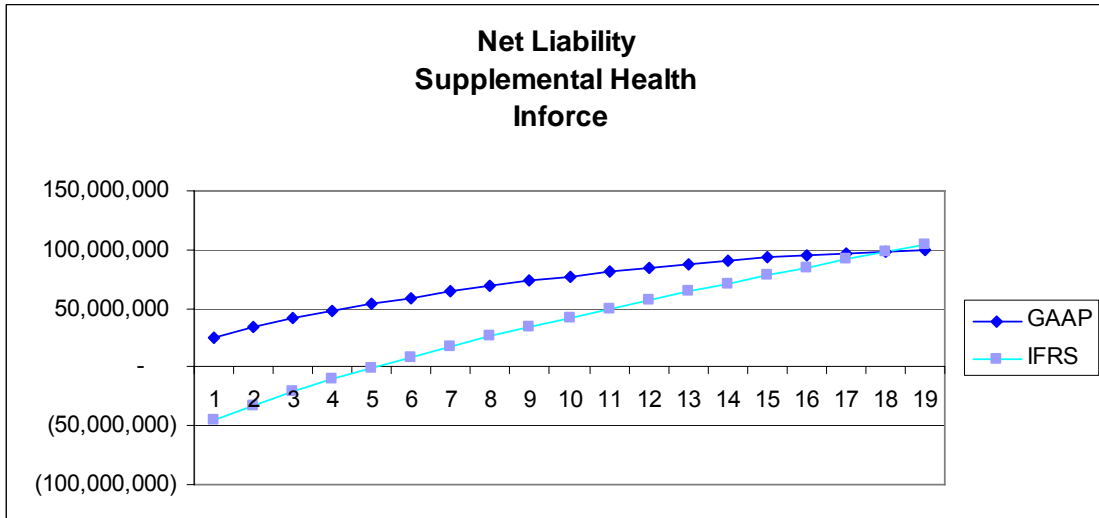
**Figure 4.2-9. Supplemental Health New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$3.2 Million)



**Figure 4.2-10. Supplemental Health In Force, IFRS Baseline and U.S. GAAP**

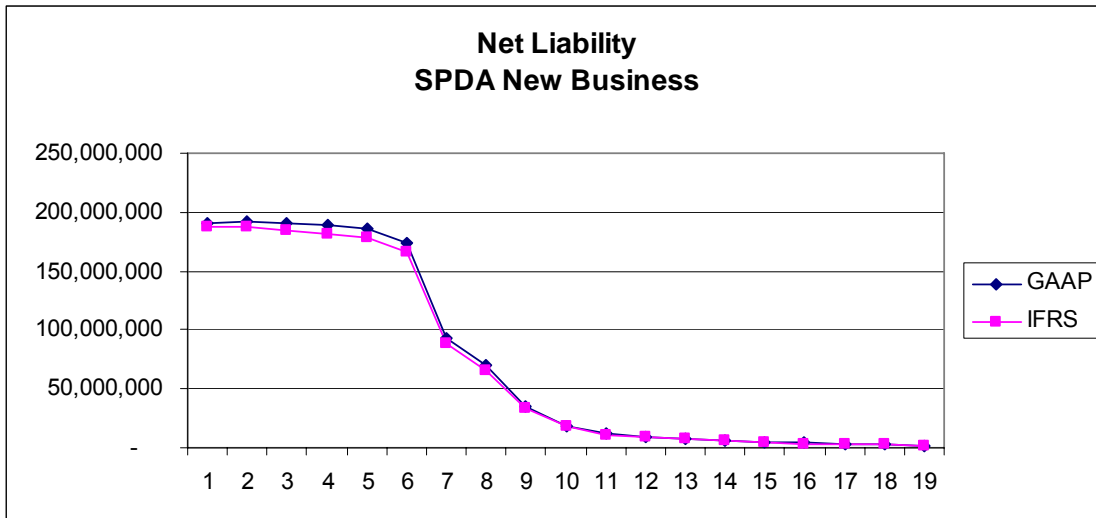
(Initial IFRS Liability of \$45 Million, an Asset)



For the liabilities for SPDAs, the differences are also relatively minor, as the savings element is the predominant component of the liabilities under both U.S. GAAP and IFRS. Net GAAP liabilities are slightly larger initially because of the liability required by SOP 03-1 and surrender charges exceeding the outstanding DAC balance. Note the significant decrease in liability between the sixth and tenth contract year, due to the large expected contract terminations as the surrender charge wears off.

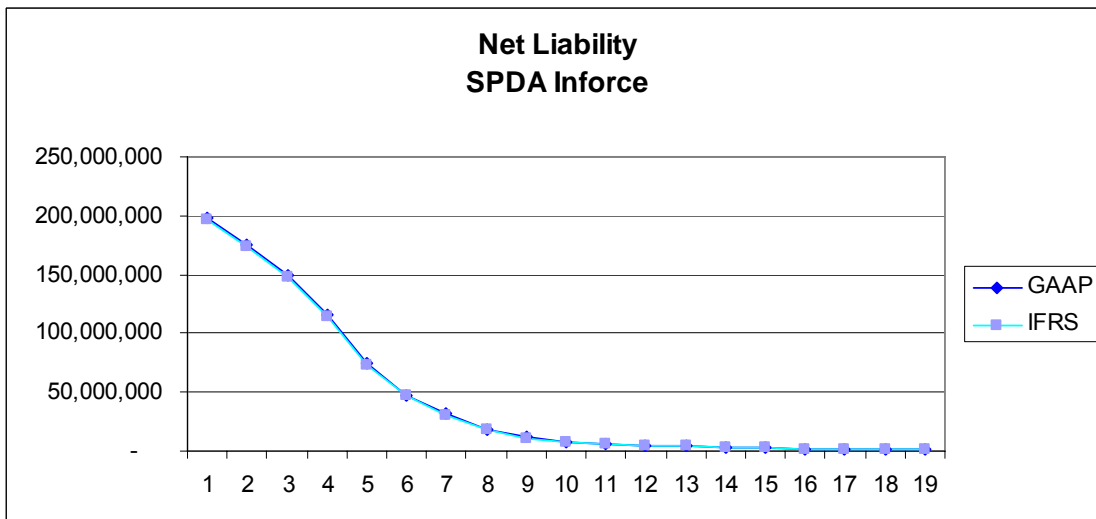
**Figure 4.2-11. SP Deferred Annuity New Business, IFRS Baseline and U.S. GAAP**

(First-Year Premium of \$200 Million)



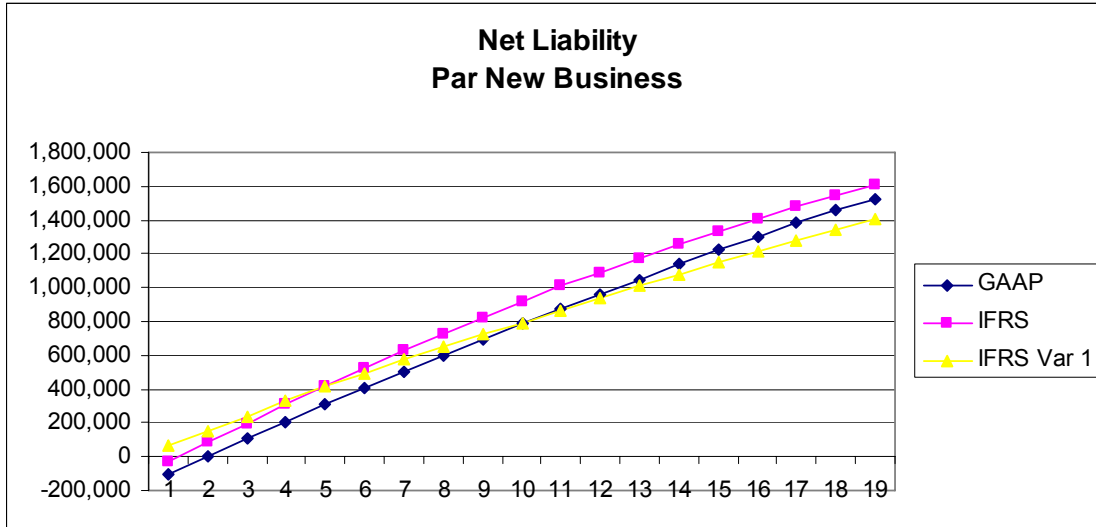
**Figure 4.2-12. SP Deferred Annuity, IFRS Baseline and U.S. GAAP**

(Initial IFRS Liability of \$197 Million)



The baseline IFRS liabilities shown for participating whole life in Figure 4.2-13 are greater than the corresponding net U.S. GAAP liabilities because they reflect future expected policyholder dividend payments that are not fully reflected in the GAAP results and the treatment of investment income is different. IFRS Var 1 is included here as it represents another view of the Discussion Paper proposal methodology as discussed in Section 3.9.

**Figure 4.2-13. Par Life New Business, IFRS Baseline and U.S. GAAP**  
(First-Year Premium of \$133,000)



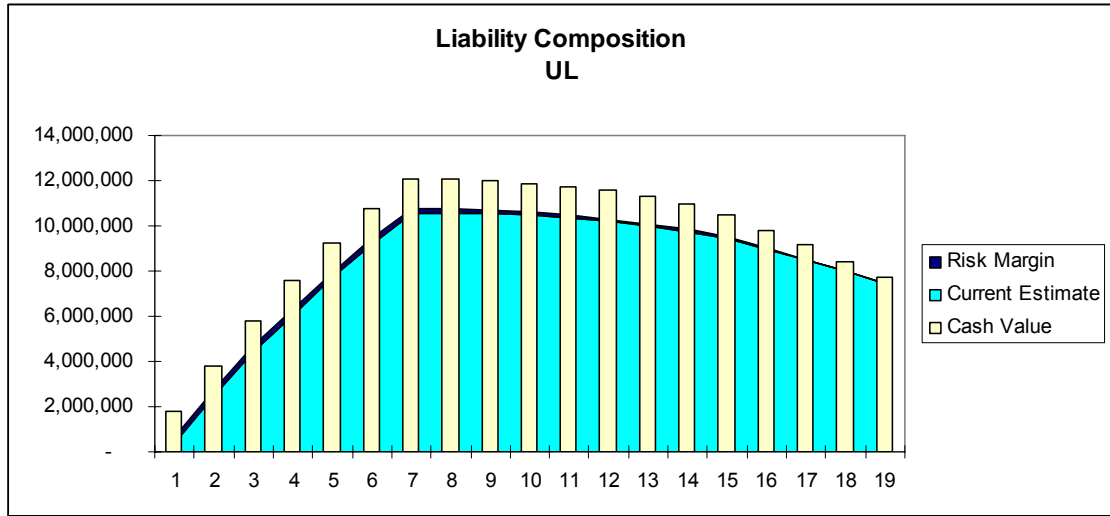
### 4.3 Unbundling and a Comparison of Components

A fundamental concept of IFRS phase II is the use of an asset and liability approach in which in most cases the liability is a current value and does not reflect the expectation of investment income on actual or expected invested assets. This contrasts with the deferral and matching approach used under U.S. GAAP that spreads expected profit and risk over a contract's coverage period. Under GAAP, for account-based products such as universal life and deferred annuities, net GAAP liabilities consist of their account value (the cash value plus the current surrender charge) less the current balance of an unamortized deferral of acquisition costs.

According to the Discussion Paper, "if an insurance contract contains both an insurance component and a deposit component, the insurer should ... if the components are interdependent but can be measured separately on a basis that is not arbitrary, then IAS 39 should apply to the deposit component." In other words, the entire contract would be measured by applying the currently proposed IFRS Discussion Paper approach. Consequently, the insurance and service components would be measured as the difference between the measurement of the entire contract and the measurement of its deposit component. Although it is problematic as to whether the components of universal life and deferred annuity contracts can be measured separately in a reliable manner, for illustrative purposes Figures 4.3-1 and 4.3-2 compare the two components for new business for these two products.

For universal life, the two major components of an IFRS liability are its current estimate and risk margin components. The components for the first five policy years and year 10 are shown in Table 4.3-1. If there would be a cash value floor, the total liability for the contracts would be its cash value for the period affected.

**Figure 4.3-1. Universal Life New Business, Alternative Unbundling Approach**

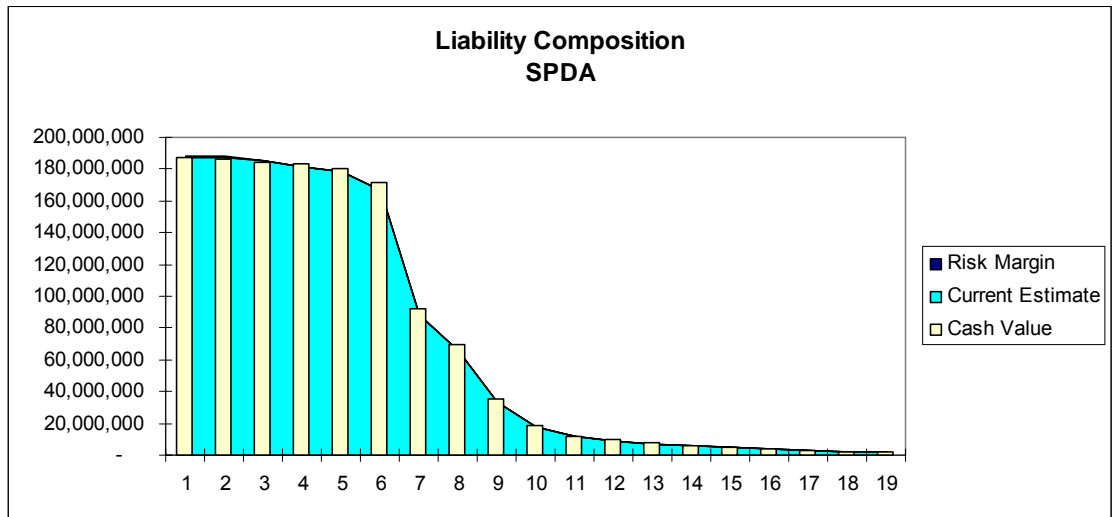


**Table 4.3-1. Universal Life New Business, IFRS Unbundling and Liability Values**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>10</b>
Cash Value	1,768	3,809	5,807	7,574	9,230	11,892
Difference	1,063	1,049	1,133	1,235	1,288	1,275
IFRS Liability	705	2,761	4,674	6,340	7,942	10,617
Current Estimate	396	2,463	4,391	6,073	7,693	10,463
Risk Margin	309	298	283	267	248	154
IFRS Liability	705	2,761	4,674	6,340	7,942	10,617

For the SPDA products the residual (difference between the total IFRS liability and the cash value) is a positive liability value initially that is, the IFRS liability exceeds the amount of the deposit component (cash surrender value). Because of the relatively small insurance component, this risk margin value is very small relative to the current estimate value in this example.

**Figure 4.3-2. SP Deferred Annuity New Business, Discussion Paper Unbundling Components**



**Table 4.3-2. SP Deferred Annuity New Business, IFRS Unbundling and Liability Values**

	1	2	3	4	5	10
Cash Value	187,733	186,479	184,135	183,023	180,394	18,852
Difference	(47)	(1,416)	(945)	1,166	2,364	1,035
IFRS Liability	187,780	187,895	185,080	181,857	178,030	17,817
Current Estimate	187,465	187,636	184,879	181,715	177,945	17,804
Risk Margin	315	259	201	142	85	13
IFRS Liability	187,780	187,895	185,080	181,857	178,030	17,817

## **5. Observations on Sensitivities**

The following is a summary of general observations regarding the sensitivities conducted over the course of the project shown in Section 3 of this report.

### **5.1 Effect of Implementation A**

The effect of changing the total Implementation A margin so that no gain at issue is recognized varies significantly depending on the amount of the gain that would otherwise be reported at issue and the method applied to release the margin. As can be seen by the products illustrated, the amount and timing of income is also affected by the basis for the margin selected through the release of risk. The choice of an alternative basis for the margin from the cost of capital basis was related to the product type modeled; alternative methods might be used. Note that the values for Implementation A were provided only for new business, as the Discussion Paper does not provide guidance as to how this methodology would be applied to in-force business written prior to IFRS adoption.

### **5.2 Risk Margin Calculations**

#### **5.2.1 Change to Level of Capital**

Increasing the amount of economic capital used in the cost of capital method used to determine the risk margin in the baseline IFRS liability by a factor of three, as done in this study, has the effect of increasing the liability and decreasing the initial amount of profit, with a smaller effect in renewal years as the risk margin is released over time. In several cases, because the risk margin is relatively small in comparison with the liability, this sensitivity does not have a significant effect. Its subsequent effect also varies depending on the basis for which it is determined in subsequent periods. Because the method used in this study was factor-based, this effect depends on the factor selected.

#### **5.2.2 Change to Cost of Capital**

The sensitivity to a change in the cost of capital as incorporated into the cost of capital risk margin methodology in this study was similar to that of the change to level of capital in the method. Because of the sensitivity selected (18% compared with the 12% in the baseline measurement), the effect was usually less than the sensitivity to the level of capital and varied by the product and the level of the baseline economic capital amounts.

#### **5.2.3 Other Methods**

A sensitivity of risk margin determined on the basis of CTE and individual assumption methods was conducted for variable annuities, the only product category modeled using a method other than the cost of capital. This sensitivity indicates that the relative amount of risk margin and its pattern by policy duration can vary significantly depending on the assumptions made.

### **5.3 Discounting Using the Swap Curve**

Swap rates are generally larger than spot rates. The effect on the amount of the liabilities (and in turn income) as determined on the basis of IFRS of using the swap curve in discounting the cash flows compared with that of using the spot rates increases the initial gain or decreases the initial loss at issue. This set of larger discount rates has the effect of a lower liability, which consequentially results in somewhat greater income, particularly in early contract years. However, because of the relatively small amount of the difference between the swap and spot rates in the United States at December 31, 2006, the effect was not particularly large. Nevertheless, depending on the level of the differential between the two sets of yield curves, it does have an effect on the incidence of earnings.

### **5.4 Unbundling**

The use of a different measurement approach for the deposit component of a bundled contract can affect not only the revenue recognized (depending on the accounting standard applied), but also income. The difference in income might result from the imposition of a minimum cash value floor to the combined or separate components, such as in the alternative unbundling approach described in Sections 3.1.4 and 3.8.4. The difference could be expressed in terms of different approaches to



measure the deposit component. It may be helpful to examine whether the residual combined insurance and service components on the Discussion Paper approach provide meaningful and comparable information. It might be concluded that it is not desirable to unbundle a contract such as universal life insurance in the manner illustrated.

### **5.5 Changes in Expected Experience**

The sensitivity to additional expected mortality shown for the term life insurance product category provides an example of how different levels of expected experience affect income and the liability. Note that this sensitivity addresses the effect of differences in expected experience at issue, rather than to changes in the actual experience. In U.S. GAAP income projections, because of the lock-in of assumptions for these FAS 60 contracts, there would be no change to the calculation of benefit liabilities from a subsequent change in expectation, unless it resulted in an overall failure of a liability adequacy test. Thus, it does not affect income until the actual mortality experience occurs. IFRS results would reflect a change in expectations when the change is made, because they are based on projected cash flow, at which time a spike in income would result because of the anticipated change in expected experience. For a different level of expected experience, most of the incremental effect of such a change as it affects new business emerges in year 1.

### **5.6 Participating Contracts**

The result of including policyholder dividends as an expected cash flow for purposes of measurement of the current estimate portion of the liability compared with excluding them in the liability leads to a smaller gain at issue, as expected. This captures some of the effect of the excess premiums charged to the policyholder in anticipation of payment of these policyholder dividends that serves as a risk mitigation technique as well as a product feature that is attractive to many purchasers of insurance contracts. It would be expected that the risk margin would reflect this mitigation effect and be reduced significantly.

## **6. Practicality**

This section includes a discussion of the significant practical concerns that were raised in the course of this project as they relate to a full implementation of the Discussion Paper proposal. They are categorized as relating to the modeling of the liabilities (Section 6.1) and other observations (Section 6.2).

### **6.1 Modeling Issues**

The Discussion Paper proposal indicates that the cash flows used in the measurement of the liability should be estimated on a probabilistically weighted basis and then discounted, with a risk adjustment reflecting the views of market participants. It is not currently anticipated that detailed guidance on measurement issues will be provided by the IASB, and so a certain amount of measurement guidance and education from the actuarial profession will be needed to provide significant assistance to preparing and reviewing actuaries in the implementation of any such standard.

As part of an IFRS implementation, models may need to integrate stochastic variables in certain cases on such variables as persistency, mortality, investments and company strategy. Often models are constructed only varying the investment component to project future cash flows stochastically. The ATF results that were provided on a stochastic basis in this study followed this approach.

Many U.S. life insurers have been developing modeling systems to support actuarial opinions with regard to regulatory liabilities, pricing, and asset and capital adequacy testing purposes (for implementation of valuation requirements adopted by the NAIC). It will likely be possible to extend those models to produce the cash flow projections needed according to the Discussion Paper proposal. A significant challenge will be to reflect properly the interrelationships among the expected experience and risk elements that drive the future cash flows. However, historically these models have been used in a non-production environment with moderate time frames. The short time frames available to produce “exact” financial reporting values for liabilities for insurance contracts will represent a considerable calculation challenge for many insurers, particularly those without deep and experienced actuarial staffs. An example is establishing models and processes to prepare monthly or quarterly values within the very short financial closing time frames that currently exist for many insurers will present a particular challenge.

In many but not all U.S. insurance products, complicated structures (embedded options and guarantees and insurer strategies that are used to manage these risks, including those related to hedging programs) exist that will result in a significant level of complexity in creating models. As a result, acceptable modeling simplifications may have to be developed that are both adequate in the assessment of the risks involved and yet transparent enough to enable adequate auditing of the work product.

The modeling used in the course of this project involved several product and methodological simplifications. For example, the insurance risk associated with SPDAs after annuitization was ignored as not being material because, at the time of issue, this insurance risk was not deemed to be material for the first 20 policy years; however, as values will be needed for all contract durations, such assumptions will have to be tested for the life of the contracts and, where deemed significant, modeled. Other examples of simplifications applied included the use of entity-based expenses because of a lack of market-based expenses, and a relatively simple capital model was applied in place of a rigorous economic capital model.

Many small company and health insurance practitioners are not accustomed to the more sophisticated modeling that will be needed for this purpose. Adequate education and guidance will be needed for them to implement adequate models for this purpose.

In some cases, different interpretations were applied to the Discussion Paper proposal by different ATFs, even with the detailed discussion provided in the Discussion Paper and an educational Webcast provided to the ATF members regarding this proposal. Although the final standard is expected to provide more clarity than the Discussion Paper, differing because of the complex nature of many insurance products, different interpretations will be inevitable due in part to the complex nature of many insurance products.

To produce the expected cash flows, considerable new modeling was required by some of the ATFs involved. In some cases, considerable simplification was applied, for example, the period modeled was shorter than what would be required for products in a “live” environment. The effort needed to apply the final standard rigorously should not be underestimated.

The basic models used to develop the cash flows for this project were primarily currently in existence. Based on the changes from current practice (e.g., risk margins, explicit measurement methods, and measurement of embedded options and guarantees), it is clear that a considerable period for implementation will be needed to develop valuation systems from scratch, particularly in view of audit requirements, which historically have not been applied to similar models used for cash flow testing or economic capital calculation purposes.

## 6.2 Other Observations

Several additional aspects of a practical nature other than modeling have been apparent throughout the course of this project. In some cases these were avoided by means of the use of simplified assumptions, while in others they were not relevant to the modeling that was conducted in the context of this project. These include:

1. *Assessment of market-based measures.* For example, if the final standard requires market-based expense or other market-consistent assumptions, significant effort may be required of companies or the actuarial profession in each country to develop approaches to measure such assumptions.
2. *Risk margin methodologies.* Two approaches were used in the modeling process (primarily a cost of capital method and a CTE method for variable annuities). Although significant developmental work is now being done in this area, for example, by the IAA and within the context of Solvency II, more work on methodologies and calibration will be necessary, at least under the assumption that the IASB does not decide to dictate a specific method. In addition, a simplistic approach was taken in the methods used for subsequent measurement, that is, in determining the amount of risk margin that is released every year. These and other issues regarding measurement will have to be addressed.
3. *The proposal.* The Discussion Paper proposal is either not specific enough for consistent implementation or is purposefully incomplete (see Section 1.4 for a further discussion of some of these). For example, the proposal is not developed in the area of universal life and nonguaranteed contractual elements, and significant questions remain regarding the recognition of renewal premiums, estimation of contracts agreed to but not yet recorded as such, and credit characteristics of the insurance obligations, to name a few. Depending on the structure of the final standard, different methods may have to be used in measuring their effects.
4. *Experience gathering.* Given the sensitivity in measurement of slight differences in certain assumptions, many insurers will have to revise their experience-gathering efforts. Although sufficient for current purposes, these may not be sufficient in the implementation of a final financial reporting standard.
5. *Disclosures.* Although certain sensitivities were developed, further work will certainly be needed to provide meaningful disclosures. Depending on the requirements of either the final standard or best practice as it evolves, significant additional effort will be necessary.
6. *Education.* The members of the ATFs, although mostly not knowledgeable regarding the intricacies of the Discussion Paper prior to this project, are all associated with relatively large insurers, reinsurers, or consultant firms. Many other actuaries and accountants have not been exposed to the concepts that will be involved in future accounting standards, which in many cases are far more refined and different in comparison to a great deal of current practice. A considerable educational effort will be involved.

7. *Small companies, simple products, and undeveloped markets.* Questions relating to how the large majority of smaller companies with a relative lack of skilled and experienced staff in this area will apply the new requirements remain open. The need for simplified, yet adequate, approaches will have to be further explored.
8. *Actuarial standards of practice.* Although best practices in this area will certainly evolve, it would be helpful if educational resources or guidance on either an international level or at least not inconsistent national level will be desirable for implementation of the ultimate financial reporting standard for insurance contracts.

In summary, a new international financial reporting standard will likely require significant education, resources, and effort both to implement new or significantly revised valuation systems and to embed them into insurers' operations.

## **7. Areas for Future Research**

Several of the items below are also mentioned in the Discussion Paper as open issues.

### **7.1 Discounting**

An approach that can be used to derive the present value of cash flows when applying stochastic modeling methods is to discount at scenario-dependent rates. Methods used for this purpose may require future development.

Discounting cash flows for products where the underlying cash flows are dependent on investment performance either directly or indirectly, such as universal life, participating whole life, and certain annuities, needs further investigation. Should the cash flows be discounted based on the expected earned rate, credited rate, scenario-dependent rate, or a mixed basis depending on the extent of asset dependence?

### **7.2 Premium Recognition**

The amount of future premiums that should be recognized is an open accounting topic. Although it has an obvious impact on universal life products, it may also affect other types of contracts as well. In addition, depending on the use of policyholder dividends, this issue may also be relevant to the treatment of premiums in participating contracts.

### **7.3 Policyholder Dividend Recognition and Measurement**

Among participating contract issues is whether policyholder dividends should be included in the estimate of future cash flows. If they are, then how should the assumptions used relate to valuation assumptions, for example, the use of risk-free or expected yield rates? Should the policyholder dividend be unbundled from the product or premium, and which dividend option should be assumed? Many of these issues also relate to nonparticipating nonguaranteed elements.

### **7.4 Risk Margins**

In this paper we have relied primarily on a cost of capital approach. Other approaches may be determined to be just as appropriate. Further research is needed to develop the methodologies used to estimate the risk margin, for example, approaches to calibration and whether or how to reflect diversification effects across products, which were not incorporated in this project. In addition, the question of how to estimate a risk margin for participating contracts and contracts with nonguaranteed elements should continue to be addressed.

### **7.5 Credit Characteristics of Liabilities**

No effort was given to estimate the credit characteristics of the liabilities of insurance contracts. If these are included in the final standard, research is needed to be able to quantify their effect.

### **7.6 Product Development**

The final financial reporting standard on insurance contracts will certainly affect future product design. Research, most likely to be conducted at the company level, will be required to determine what types of products and features will be sold under the new accounting environment. And because it is likely that the new standard will affect in-force business, time will be of the essence to conduct these company-specific research efforts.

### **7.7 Market-Based Assumptions**

The Discussion Paper relies heavily on market-based information being available. As such, there are several areas, including expenses, contract persistency, and mortality, in which research or a clearinghouse for gathering experience may prove beneficial.

## 8. Appendices

### 8.1 Discount Rates

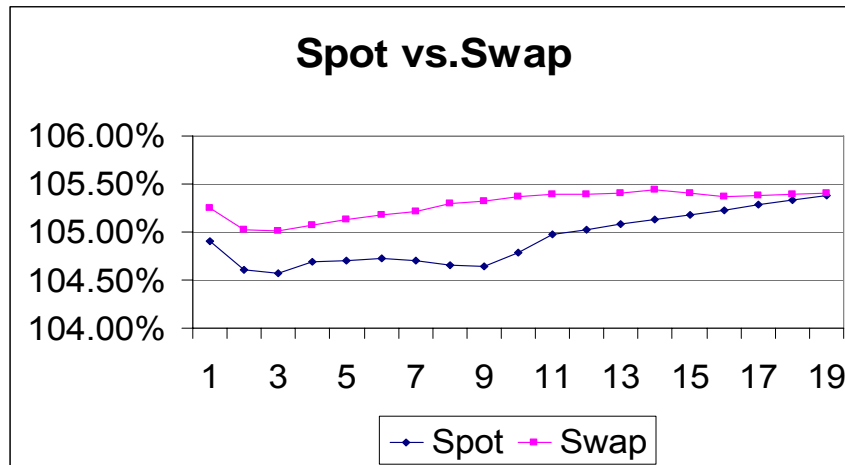
Table 8.1-1 presents the discount factors used in the study that were based on the December 31, 2006, U.S. Treasury rates and swap curve.

**Table 8.1-1. Discount Rates at December 31, 2006**

<u>Treasury</u> <u>Discount factor</u>	<u>Swap</u> <u>Discount factor</u>
97.55%	97.42%
92.99%	92.56%
88.90%	88.13%
85.01%	83.93%
81.20%	79.88%
77.55%	75.97%
74.06%	72.23%
70.73%	68.65%
67.59%	65.20%
64.58%	61.91%
61.63%	58.75%
58.71%	55.75%
55.90%	52.89%
53.20%	50.18%
50.60%	47.59%
48.11%	45.15%
45.72%	42.85%
43.42%	40.66%
41.22%	38.58%
39.12%	36.60%

Figure 8.1-1 compares the annual rates at each future duration.

**Figure 8.1-1. Spot Rates and Swap Rates at December 31, 2006**



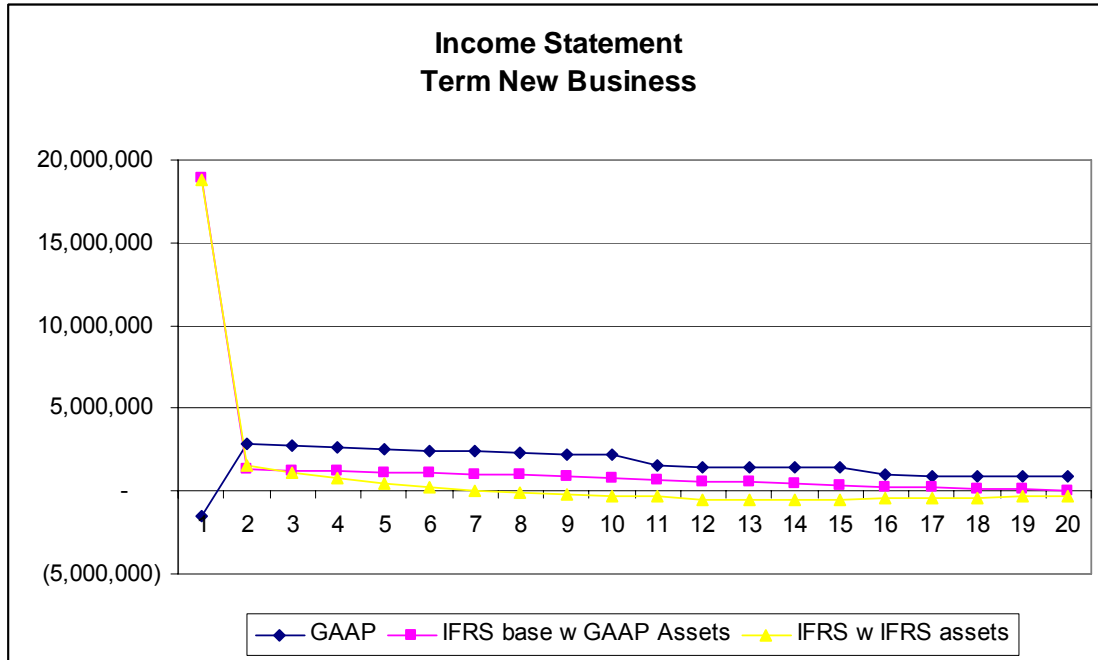
### 8.2 Investment Income for Income Statement Figures

The income results shown in Section 3 reflect the effect of holding assets supporting the net obligations to policyholders equal to net U.S. GAAP liabilities (liabilities less outstanding DAC asset

balances) and the income returned on those assets. Note that a better measure of projected income on the currently proposed IFRS basis that removes the income related to the financial risk inherent in the assets may be to estimate assets associated with a replicating portfolio based on the accounting attribute of the liabilities consistent with the market-based yield rates applied in the discounting process. However, development of the latter approach is outside the scope of this project.

As an example of the effect of the differences in IFRS financial statements, values for new business for a sample term life insurance contracts are shown in Figure 8.2-1 and Table 8.2-1, including both the balance sheet and income reflecting U.S. GAAP, IFRS with GAAP assets, and IFRS with IFRS assets.

**Figure 8.2-1. Term Life, Example of Effect on Assumed Assets on Income Statement**



The impact of the difference between the investment income approaches for this sample is about \$14 million over the 20-year study period. Table 8.2-1 provides a look at the balance sheet values and the differences. Note that the income was paid out to the entity's owners in our examples, and the accumulated income line is the historical sum (without interest) of those payments. U.S. GAAP assets include the net DAC balance that remained at the end of the projection period, on average a half year prior to the expiry of the contracts still in force in their twentieth year.

**Table 8.2-1. Term Life Balance Sheet, U.S. GAAP and Baseline IFRS**

Balance sheet	1	2	3	4	5	10	20
<b>GAAP</b>							
Invested assets	(11,761)	(2,368)	5,833	13,066	19,484	38,281	32,159
DAC	16,327	14,958	13,678	12,470	11,307	5,854	543
Total Assets	4,566	12,589	19,512	25,535	30,791	44,134	32,703
<b>Liabilities</b>							
Policy liabilities/Deposit funds	6,046	11,176	15,353	18,764	21,509	23,256	-
Total Liabilities	6,046	11,176	15,353	18,764	21,509	23,256	-
Annual Income	(1,480)	2,893	2,745	2,612	2,511	2,201	864
Accumulated income	(1,480)	1,413	4,159	6,771	9,282	20,879	32,703
<b>IFRS base w GAAP Assets</b>							
Invested assets	(11,761)	(2,368)	5,833	13,066	19,484	38,281	32,159
Total Assets	(11,761)	(2,368)	5,833	13,066	19,484	38,281	32,159
<b>Liabilities</b>							
Current Estimate	(31,332)	(23,278)	(16,276)	(10,192)	(4,889)	9,321	-
Risk Margin	687	654	617	575	532	291	-
Total Liabilities	(30,646)	(22,623)	(15,660)	(9,616)	(4,357)	9,612	-
Annual Income	18,885	1,370	1,238	1,189	1,159	806	22
Accumulated income	18,885	20,255	21,493	22,682	23,842	28,669	32,159
<b>IFRS w IFRS assets</b>							
Invested assets	(11,797)	(2,243)	5,812	12,628	18,398	32,098	18,285
Total Assets	(11,797)	(2,243)	5,812	12,628	18,398	32,098	18,285
<b>Liabilities</b>							
Current Estimate	(31,332)	(23,278)	(16,276)	(10,192)	(4,889)	9,321	-
Risk Margin	687	654	617	575	532	291	-
Total Liabilities	(30,646)	(22,623)	(15,660)	(9,616)	(4,357)	9,612	-
Annual Income	18,849	1,532	1,092	772	511	(299)	(256)
Accumulated income	18,849	20,380	21,472	22,244	22,756	22,486	18,285

Based on the models developed in the course of this project, the IFRS liability is negative (equivalent to an asset) until year 7, reflecting all of the free cash flows. After year 7 it becomes a positive liability. The gain at issue is reflected in the negative liability in year 1.