



REINSURANCE NEWS

ELECTRONIC NEWSLETTER OF THE REINSURANCE SECTION

FAS 133 Implementation Issue B36 Implications for the Financial Reporting of Reinsurance

by Rebecca Kao Wang and Tara JP Hansen

Background

Financial Accounting Standard No. 133, *Accounting for Derivative Instruments and Hedging Activities*, effective in June 2000, required that derivatives be recognized as assets or liabilities and measured in the financial statements at fair value. Derivatives include financial instruments that hedge against variations in fair value, cash flows or foreign currency rates. Certain instruments, including some insurance products, although not derivatives, contain embedded derivatives. Under FAS 133, certain embedded derivatives must be bifurcated from their host contracts and be reported at fair value, with changes in this value flowing through the income statement.

During the initial implementation of FAS 133, many companies acknowledged the existence of an embedded derivative in Modified Coinsurance ("ModCo"), Coinsurance with Funds Withheld ("CFW"), and other contracts with similar provisions. However, they believed that the embedded derivative was "clearly and closely related" to the host contract, and therefore exempt from bifurcation requirements.

In 2002, numerous discussions and public comments among the AICPA, SEC and FASB focused on this issue. In April 2003, the FASB released FAS 133 Implementation Issue B36 ("DIG Issue B36"), "Embedded Derivatives: Modified Coinsurance Arrangements and Debt Instruments That Incorporate Credit Risk Exposure That Are Unrelated or Only Partially Related to the Creditworthiness of the Obligor Under Those Instruments". DIG Issue B36 will have a dramatic effect on the way both ceding and assuming companies account for ModCo and CFW reinsurance contracts. This guidance is effective the first day of the first fiscal quarter beginning after September 15, 2003. All affected financial instruments will need to be

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Embedded Derivatives in Modco and Similar Reinsurance Arrangements

by Richard H. Browne

At the AICPA 2002 National Conference on Current SEC Developments, the SEC staff announced their views that certain reinsurance agreements, such as modified coinsurance arrangements (modco), under which the ceding company retains the underlying assets and the reinsurer receives an investment return based on that underlying referenced pool of assets, contain an embedded derivative that must be accounted for in accordance with Statement of Financial Accounting Standards No. 133, *Accounting for Derivative Instruments and Hedging Activities* (FAS 133).

In January 2003, the FASB announced that it would clarify this interpretation of FAS 133 in a derivative implementation group (DIG) Issue. On April 10, 2003, the FASB posted the cleared DIG Issue No. B36, *Embedded Derivatives: Modified Coinsurance Arrangements and Debt Instruments That Incorporate Credit Risk Exposures That Are Unrelated or Only Partially Related to the Creditworthiness of the Obligor Under Those Instruments*. DIG B36 is effective for the first fiscal quarter beginning after September 15, 2003.

DIG B36 includes an example of a modified coinsurance arrangement that includes an embedded derivative that must be identified and accounted for separately from the debt host at fair value, provided that the reinsurance arrangement is not already accounted for at fair value. This bifurcation would be necessary by both the ceding company and the assuming company.

DIG B36 requires application of the interpretation to both existing and future modco and similar arrangements for quarters beginning after September 15, 2003, which, for calendar year companies, means that compliance must begin with the upcoming year-end statements.

This article examines the characteristics of modified coinsurance and similar arrangements, which may

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COVER STORY

1 FAS 133 Implementation Issue B36 Implications for the Financial Reporting of Reinsurance

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Embedded Derivatives in Modco and Similar Reinsurance

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accounted for prospectively, with no restatement of prior financial statements required or permitted.

Although it is only the presence of third-party credit risk in a ModCo or CFW contract that is triggering the need for both parties to bifurcate an embedded derivative, DIG Issue B36 deliberately never describes the embedded derivative as a “credit derivative,” because the FASB has acknowledged that each contract may have unique features. Some parties may analyze the embedded derivative feature and conclude that it is solely credit related. Others may conclude that the embedded derivative feature is a compound derivative combining both third-party credit risk and interest rate risk.

A Primer on Reinsurance Contracts

ModCo is a type of reinsurance where the ceding company retains the assets supporting the reinsured reserves. The ceding company pays the reinsurer a proportional share of the gross premium less a specified expense allowance, as well as a return on the assets. The reinsurer, in turn, pays the ceding company the increase in reinsured reserves as well as benefit claims. Generally, the return on assets that the ceding company pays the reinsurer in the form of a ModCo interest adjustment reflects the actual investment return on either some specific segregated group of assets or the underlying asset portfolio in the ceding company’s general account. The reinsurer is therefore exposed not only to the counter-party credit risk of the ceding company, but also to the credit risk of the underlying assets held by the ceding company and issued by third parties. In effect, the ceding company has, at a minimum, purchased credit protection on the portion of these assets backing the reserves while the reinsurer has issued this protection. Thus there is an embedded derivative under which the reinsurer bears the default risk of the third party securities held by the ceding company, in addition to interest rate and other risks.

CFW is a type of coinsurance under which the ceding company retains a portion of the initial premium at least equal to the ceded statutory reserves, and the reinsurer retains the expense allowance with appropriate payables

and receivables on both parties’ balance sheets. Similar to a ModCo agreement, the interest adjustment to the reinsurer usually reflects the actual investment return on an underlying asset portfolio, in which case an embedded derivative is present.

Some reinsurance arrangements contain experience refund provisions under which the reinsurer pays a refund to the ceding company based on the actual performance of the reinsured block of business. This experience refund may reflect a number of factors, such as mortality, expense and investment performance. The investment performance generally will be related to a portfolio of assets backing the underlying business and, consequently, an embedded derivative exists in this case as well. In surplus relief treaties, the two embedded derivatives may substantially offset one another, but a detailed analysis of the agreements would have to be performed to verify that this is indeed the case.

Embedded Derivative Determination

The nature of the embedded derivative feature is strongly influenced by the determination of the host contract. DIG Issue B36 does not proscribe a particular type of host contract, although the guidance does imply that the host contract is either the ModCo arrangement (insurance contract) itself or a “debt host”. Previously released FAS 133 Implementation Issue B19 (“DIG Issue B19”) provides guidance on how to identify the characteristics of a debt host contract. Such characteristics generally should be based on the stated or implied substantive terms of the hybrid instrument (the ModCo or CFW contract). Those terms may include a fixed-rate, floating-rate, zero-coupon, discount or premium, or some combination thereof. In the absence of stated or implied terms, DIG Issue B19 states, an entity may make its own determination of whether to account for the debt host as a fixed-rate, floating-rate, or zero-coupon bond. That determination requires the application of judgment, which is appropriate because the circumstances surrounding each ModCo or CFW contract may be different. In such cases, it is

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appropriate to consider the features of the contract, the issuer (i.e., ceding company), and the market in which the contract is issued, as well as other factors, in order to determine the characteristics of the debt host contract.

DIG Issue B19 goes on to state however that an entity may not express the characteristics of a debt host contract in a manner that would result in identifying an embedded derivative that is not already clearly present in a hybrid instrument. For example, it would be inappropriate to identify a fixed-rate host contract and a fixed-to-floating interest rate swap component in an embedded compound derivative in lieu of identifying a floating-rate host contract.

Once the host contract is determined using these guidelines, the entity must then analyze the embedded derivative feature(s) following the guidance in paragraphs 12 and 13 of Statement 133 to determine whether the economic characteristics and risks of each feature are “clearly and closely related” to the economic characteristics and risks of the host contract. DIG Issue B36 clearly states that the third-party credit risk implicit in the ModCo and CFW contract cannot be “clearly and closely related” to the host contract and must be bifurcated—no matter what the host contract is determined to be.

Additional features in the contract may result in interest rate risk that is also not “clearly and closely related” to the host contract, but this analysis is dependent on the determination of the nature of the host contract. Paragraph 13 of Statement 133 will be particularly relevant to this analysis. Paragraph 13, as amended by Statement 149, requires bifurcation if either of the following conditions exists:

- The hybrid instrument can contractually be settled in such a way that the investor (holder) would not recover substantially all of its initial recorded investment. (We believe the “investor” would be the assuming company in the ModCo or CFW arrangement).

- The embedded derivative meets both of the following conditions: (1) There is a possible future interest rate scenario (even though it may be remote) under which the embedded derivative would at least double the investor’s initial rate of return on the host contract. (2) For each of the possible interest rate scenarios under which the investor’s initial rate of return on the host contract would be doubled, the embedded derivative would at the same time result in a rate of return that is at least twice what otherwise would be the then-current market return (under each of those future interest rate scenarios) for a contract that has the same terms as the host contract and that involves a debtor with a credit quality similar to the issuer’s (ceding company) credit quality at inception.

If as a result of this analysis, interest rate risk is determined to be not “clearly and closely related” to the host contract, then that feature must also be bifurcated with the third-party credit risk feature as part of a “compound embedded derivative” as required by FAS 133 Implementation Issue B15 (“DIG Issue B15”).

The determination of the host contract (insurance host, fixed-rate debt host, floating-rate debt host, etc.) under DIG Issue B19 influences the nature of the embedded derivative. Among the likely results are embedded deriva-

tive features that are comparable to total return swaps or to credit default swaps.

A total return swap (TR Swap) is an instrument in which one party agrees to pay the “total return” of specified assets in exchange for another specified cash flow. For a floating rate TR Swap, the other cash flow is based on some floating interest rate, such as LIBOR. For a fixed rate TR Swap, the other cash flow is based on a fixed interest rate. A credit default swap provides for a payment to be made upon certain third party credit events, such as default, credit rating downgrade, or debt restructuring. The

“Once the host contract is determined using these guidelines, the entity must then analyze the embedded derivative feature(s)...”

buyer of the contract makes periodic payments to a counterparty.

If the analysis in accordance with DIG Issue B19 indicates that the host contract is a loan between the ceding company and the reinsurer, a company may conclude that the embedded derivative is akin to a total return swap. A total return swap further may be viewed as having a floating or fixed rate leg. The assumption is that the reinsurer is swapping out a fixed or variable rate and swapping back the total return on the portfolio.

Alternatively, a company might conclude that the embedded derivative is akin to a credit default swap with credit risk separated out from the other risks, such as interest rate and asset/liability mismatch. The embedded derivative would then be valued in terms of observed changes to the credit spreads of the assets comprising the portfolio as compared to a benchmark interest rate curve over the observation period.

In summary, each company will need to carefully evaluate DIG Issue B19 and paragraphs 12 and 13 of Statement 133 in light of DIG Issue B36 in order to determine the nature of the host contract and the embedded derivative. DIG Issue B36 states that, *at a minimum*, a credit derivative is always going to have to be bifurcated from all contracts. Whether or not additional interest rate features are also bifurcated will depend on the unique analysis applied to each arrangement. There are a number of issues to be considered, such as the nature of the agreement, including its stated or implied terms, the quality and timing of information available, and the nature of the risks inherent in the assets in light of the obligations to policyholders subject to the reinsurance agreement. The analysis will have to carefully consider the facts and circumstances of each treaty/contract, as the approach needs to appropriately address the underlying derivative. The solution should be implemented such that the results can be easily explained, and approval for the approach must be received from both the company's management and auditors.

Other Highlights of DIG Issue B36

Upon the implementation of DIG Issue B36, ceding companies will be allowed a one time

reclassification of securities from the held-to-maturity and available-for-sale categories into the trading category in the fiscal quarter DIG Issue B36 becomes effective. This FAS 115 "mulligan" is limited to the amount and type of securities related to the embedded derivatives that are being newly accounted for under DIG Issue B36. If the results of the analysis performed to determine the nature of the host contract (in accordance with DIG Issue B19) and the nature of the embedded derivative indicate that the hybrid should be characterized as a floating-rate debt host contract with an embedded total return swap, companies may want to take advantage of this one-time reclassification opportunity. This "mulligan" could provide a substantial offset to potential earnings volatility for the ceding company, since the change in market value of FAS 115 assets classified as trading also flows through the income statement.

In addition to the contracts described in the primer above, DIG Issue B36 also applies to other types of receivables and payables where interest is determined by reference to a pool of fixed-maturity assets or a total-return debt index. For example, an experience refund for a group contract may be determined by reference to the actual investment performance of the assets. Some Immediate Participation Guarantee (IPG) group annuity contracts keep participants' deposits in an unallocated fund that reflects immediately the actual experience of the contracts, including mortality, expenses and actual investment returns. This sharing of actual investment returns transfers credit risk that is unrelated to the IPG writer, and thus results in the existence of an embedded derivative that is not clearly and closely related to the host contract.

Once the affected contracts are identified, embedded derivatives must be bifurcated and accounted for at fair value. Moreover, given the inherent nature of the embedded derivatives, it would be difficult to satisfy the hedge accounting criteria. Therefore, it would be unlikely that the embedded derivatives could be accounted for as a hedge.

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Implications for Actuaries and Insurance Professionals

DIG Issue B36 introduces a number of challenges for actuaries and other insurance professionals.

First actuaries will need to work even more closely with investment professionals to properly identify and value the embedded derivatives. Assets supporting the affected treaties will need to be identified. Reinsurance experience refund features will need to be evaluated as they may contain embedded derivatives as well.

Insurance professionals will need to be mindful of the effects of DIG Issue B36 effects in explaining and analyzing GAAP results, since changes in the fair value of the embedded derivatives will flow through earnings. Moreover, gains and losses from derivatives will be part of the gross profit stream that will impact amortization of certain GAAP items, such as deferred acquisition costs and unearned revenue liabilities. Overall, the financial statements will be more volatile and the explanation of profit emergence patterns will be more complex.

In some cases, a new level of asset/liability modeling, particularly for reinsurers, may be required to determine the value of the embedded derivative and the related financial impact.

Offshore reinsurers also may be affected by this new accounting guidance. For those jurisdictions where U.S. GAAP may be used to comply with local statutory reporting requirements, such as Bermuda, DIG Issue B36 impacts will need to be carefully evaluated.

Actuaries in the group insurance or group annuity business will need to evaluate their contracts to determine whether the contracts contain features that are embedded derivatives requiring bifurcation. Again, these actuaries will also need to work with investment professionals

closely to determine the proper approach, and be able to explain the increased volatility in their financials.

Pricing actuaries at reinsurance companies will face many challenges as well. When structuring ModCo, CFW treaties or treaties with experience refunds, not only will pricing actuaries need to continue to further consider the creditworthiness of the direct writer seeking reinsurance, but they will also need to evaluate the credit quality of the supporting asset portfolio on a much more detailed basis given the implications on financial statements. A portfolio with plain vanilla treasury bonds may produce an embedded derivative with no value because its inherent credit risk might be

“A portfolio with plain vanilla treasury bonds may produce an embedded derivative with no value because its inherent credit risk might be viewed as never changing...”

viewed as never changing, while a portfolio of lower quality securities, which exposes the reinsurer to asset default risk, may produce a derivative with significant value. Fluctuations in the fair value of the embedded derivatives are now reflected in the income statement, in addition to other risks the reinsurer is taking on, such as mortality and surrender. To minimize the volatility on financial statements, the pricing actuary could structure the treaty so as to minimize the asset default risk, negotiate better quality assets, or hedge the risk. The

actuary should consider all these issues while being mindful of statutory and GAAP risk transfer requirements.

Direct writers looking for reinsurance also will be affected as the reinsurer may be more focused on the asset quality of the underlying portfolio and will require significantly more data than may have been provided in the past. Pricing actuaries in the group life insurance business or the group annuity business also would need to be more aware of the quality of the underlying assets supporting certain product features, such as the experience refunds that credit actual investment returns, as well as IPG and other contracts in which the actual

investment experience is credited to the policyholder account balance.

Conclusion

There is a great deal of work to be done to develop an approach for implementing this new accounting guidance, and very little time

with which to implement solutions. Companies need to act quickly to understand the issues, analyze their own business situations, develop a plan of attack to understand the nature of the host contracts and the embedded derivatives, determine the fair value of the embedded derivatives, and analyze/explain the results of these solutions. ✍

Glossary of Terms

Embedded Derivative	Derivatives embedded in other instruments. For example, a debt instrument whereby the interest payments fluctuate with changes in the S&P 500.
Clearly and Closely Related	An embedded derivative is considered to be “clearly and closely related” to a host instrument when the economic characteristics and risks of both are closely aligned. An example is a debt note with interest payments tied to changes in the debtor’s credit rating.
Fair Value	Fair value is the amount at which an asset (liability) could be bought (incurred) or sold (settled) in a current transaction between willing parties, that is, other than in a forced or liquidation sale. FAS 133 further defines “fair value” in paragraph 540.
Total Return Swap	A total return swap (TR Swap) is a swap in which one party agrees to pay the “total return” of specified assets in return for another cash flow. For a floating rate TR Swap, the other cash flow is based on some floating interest rate, such as LIBOR. For a fixed rate TR Swap, the other cash flow is based on a fixed interest rate.
Credit Default Swap	A credit default swap provides for a payment to be made upon a third party credit event, such as default, credit rating downgrade, or debt restructuring. The buyer of the contract makes periodic payments to a counterparty such as a banker or an insurance company (known as the “writer”).
Insurance Contract Exception	FAS 133 paragraph 10c defines “certain insurance contracts” to be exempt. The exempt contracts are those that compensate the holder only as a result of an identifiable insurable event. Examples include term or health products.



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result in the presence of an embedded derivative. It reviews the criteria that must be satisfied in order for an instrument to be considered an embedded derivative under FAS 133 and, finally, presents some of the considerations necessary to properly account for the embedded modco derivative according to FAS 133.

Modified Coinsurance and Similar Arrangements

Under modco arrangements the reinsurer participates, on a pro-rata basis, in all premiums and benefits from the underlying contracts. The ceding company retains control of the invested assets necessary to support the reserves for the underlying contracts. The reinsurer funds the statutory reserves on the reinsured portion of the risks through the modco reserve adjustment. The ceding company credits interest to the reinsurer on the statutory reserves at the modco interest rate.

It is useful to think of modco as consisting of traditional coinsurance of the risks, combined with a loan from the reinsurer to the ceding company. The loan balance is maintained at an amount equal to statutory reserves via the modco reserve adjustment, and the loan interest rate is the modco interest rate. Using this interpretation, the reinsurer's balance sheet would show both a reserve for future policy benefits and also a "funds withheld asset" equal to the loan balance. The ceding company's balance sheet would show a reserve liability to the policyholder, invested assets in the underlying portfolio, a reserve recoverable from reinsurers asset, and a "funds withheld liability" equal to the loan balance:

Direct Writer

Assets

Invested Assets
Reserve Recoverable

Reinsurer

Assets

Loan (FWA)

Liabilities

Reserve
Loan (FWA)

Liabilities

Reserve

In most modco arrangements in the United States, the modco interest rate is equal to the

earned interest rate on the underlying portfolio of invested assets, which are typically held in a trust, or some other legally segregated portfolio, or is based on the ceding company's return on general account assets. The reason for this is that this approach will assure transfer of investment risk and allow the arrangement to qualify for reinsurance accounting (for the ceding company) under NAIC rules.

It is precisely this situation, when the reinsurance arrangement provides for sharing of investment results on a referenced pool of assets, that is the concern of DIG B36. The conclusion is that, to the extent the investment return includes credit risk beyond the counterparty credit risk of the ceding/ assuming company, or other risks not clearly and dosely related to the funds withheld asset/liability, the arrangement will include an embedded derivative. In order to see how this conclusion is reached, it is necessary to understand the criteria under FAS 133 for a particular instrument to qualify as an embedded derivative.

FAS 133 Embedded Derivative Criteria

A financial instrument that contains an embedded derivative is called a hybrid instrument, which consists of a host contract and the embedded derivative. In order to be considered an embedded derivative, the following criteria must be met:

1. The embedded derivative must qualify as a derivative as defined in paragraph 6 of FAS 133. The following required characteristics of a derivative are described in paragraph 6:
 - There must be an *underlying* and/or a *notional*. Usually, the value of the embedded derivative is determined from the application of the underlying to the amount of the notional. In the case of a modco arrangement, the notional is the funds withheld asset/liability, and the underlying is the return on the referenced pool of assets (i.e., the modco interest rate).

- At inception, there must be no or insignificant required net investment in the embedded derivative.
 - Investment cash flows must be net settled in cash at each settlement date defined in the contract.
2. The economic characteristics and risks of the embedded derivative must not be clearly and closely related to the economic characteristics and risks of the host.

DIG B36 indicates that if the return on the underlying portfolio includes credit risk associated with the issuers of the underlying securities, this credit risk is to be distinguished from the credit risk of the ceding company (the counter-party risk), and this prevents the embedded cash flows from being clearly and closely related to the debt host (the funds withheld asset/liability) issued by the ceding company. The DIG reads: "The risk exposure of the ceding company's general account assets or its securities portfolio is not clearly and closely related to the risk exposure arising from the overall creditworthiness of the ceding company, which is also affected by other factors. Consequently, the economic characteristics and risks of the embedded derivative instrument are not clearly and closely related to the economic characteristics and risks of the debt host contract."

It should be noted that this treatment of credit risk is very different than the treatment of interest rate risk. Regarding interest rate risk, FAS 133, paragraph 61, suggests that when an embedded derivative related to interest rate risk exists and the host contract is a debt instrument, then in most cases the risks and characteristics of the embedded derivative are considered to be clearly and closely related to the risks and characteristics of the debt host.

3. The hybrid instrument is not carried at fair value under otherwise generally accepted accounting principles, with changes in the fair value of the instru-

ment reported in earnings at each reporting period.

The conclusion of DIG B36 is that many modco arrangements contain an embedded credit derivative. For these, it will be necessary to bifurcate the funds withheld asset/liability (the hybrid instrument) into the embedded credit derivative and the host contract. Once the embedded derivative is identified and separated, it should be recorded as an asset/liability, and changes in its fair value should be recorded in GAAP earnings.

Bifurcation of the Funds Withheld into the Credit Derivative and the Host Contract

The funds withheld (FW) provide a return based on the modco interest rate, which is earned on a notional amount equal to the statutory reserves. The modco interest rate, which is the return on the referenced pool of assets, may be thought of as consisting of a risk-free rate of return plus a spread for the credit risk associated with the issuers of the securities in the referenced pool of assets. Therefore, at any point in time the market value of the FW asset (from the reinsurer's point of view) is the market value of a risk-free asset with the same cash flows as the FW less the discount for the credit risk associated with the issuers of the securities in the reference pool. In particular, at the inception of the reinsurance arrangement there is an anticipated level of default activity that has been reflected in the determination of this discount for credit risk. This suggests that variations in this anticipated level of credit risk should be reflected in changes in the value of the embedded derivative.

Said another way, there is a "baseline" level of anticipated credit risk associated with the FW asset. As long as this baseline does not change, the value of the embedded derivative should not change. In subsequent periods the fair value of the embedded derivative may become positive or negative, reflecting deviations from the baseline in anticipated default experience. In subsequent periods the fair

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value of the embedded derivative will reflect changes in the anticipated cash flows from the FW asset that occur because of credit quality changes in the reference pool.

The host contract would therefore be a “credit risk free” asset with the same anticipated cash flows as the FW asset. These anticipated cash flows would reflect the baseline level of default activity in the reference pool. The embedded derivative represents the risk associated with changes from the baseline.

To illustrate these points, the following section contains a simple example based on the modco reinsurance of a five-year SPDA contract, with underlying investments all in five-year zero coupon bonds. This example suggests that one approach to determining the fair value of the embedded derivative may be based on discounting projected cash flows of the FW asset. The very broad subject of fair value accounting is well beyond the scope of this article. For an excellent discussion of principles of fair valuation of liabilities in an insurance context, some practical techniques, and a very good list of references on these topics, the reader is referred to the American Academy of

Actuaries public policy monograph, *Fair Valuation of Insurance Liabilities: Principles and Methods*, published in September 2002.

A Simple Example

The example is based on a five-year SPDA with investments made in five-year zero coupon bonds, assumed to yield 4.75 percent. Credited interest is anticipated to be 4 percent. There is a 3 percent commission and a surrender charge of 4 percent graded out to 0 percent on any withdrawals. Withdrawal rates are assumed to be zero percent in year one, 5 percent in year two, 10 percent in year three, 15 percent in year four and 100 percent at the end of year five. The following table (Table 1) shows the anticipated fund development for a single deposit of \$10,000.

Deposits net of commissions are assumed to be invested in zero coupon bonds yielding 4.75 percent. The direct writing company will maintain assets backing the business equal to the statutory reserves, with any excess transferred to surplus. Table 3 shows the cash flows from assets, which are anticipated at inception.

Table 1

Year	Deposit	Commission	BOY Fund	Interest Credited	Withdrawals	EOY Fund	EOY CSV =Stat Res
1	10,000	300	10,000	400	-	10,400	9,984
2	-	-	10,400	416	541	10,275	9,967
3	-	-	10,275	411	1,069	9,618	9,425
4	-	-	9,618	385	1,500	8,502	8,417
5	-	-	8,502	340	8,842	-	-

Table 2

Year	BOY Assets	4.75% Investment Income	Surrenders	Assets Transferred	EOY Assets
1	9,700	461	-	177	9,984
2	9,984	474	525	(33)	9,967
3	9,967	473	1,047	(32)	9,425
4	9,425	448	1,485	(29)	8,417
5	8,417	400	8,842	(25)	-

Table 3

Year	Deposits	Allowance	BOY Mod Co Res	ModCo Interest	EOY Mod Co Res	Modco Adjustment	Surrenders	Net Settlement
1	10,000	300	9,700	461	9,984	9,523	-	177
2			9,984	474	9,967	(491)	525	(33)
3			9,967	473	9,425	(1,015)	1,047	(32)
4			9,425	448	8,417	(1,456)	1,485	(29)
5			8,417	400	-	(8,817)	8,842	(25)

Table 4

Year	BOY FW Assets	Investment Income	Assets Released	EOY FW Assets	FW Asset Cash Flow
0					(9,700)
1	9,700	461	177	9,984	177
2	9,984	474	491	9,967	491
3	9,967	473	1,015	9,425	1,015
4	9,425	448	1,456	8,417	1,456
5	8,417	400	8,817	-	8,817

Table 5

Year	BOY FW Asset	Investment Income	Assets Released	EOY FW Asset	FW Asset Cash Flow	PV Asset Cash Flows
0	-	-	-	-	-	-
1	-	-	-	9,984	-	9,899
2	9,984	449	466	9,967	466	-
3	9,967	449	990	9,425	990	-
4	9,425	424	1,432	8,417	1,432	-
5	8,417	379	8,796	-	-8,796	-

Investment income represents accrual of discount, and the 4.75 percent rate is assumed to be adjusted for anticipated defaults. The assets transferred represent the adjustment to assets in the reference pool to maintain a balance equal to statutory reserves.

The FW asset is always balanced to equal the statutory reserves. Table 4 shows the development of the anticipated FW asset cash flows. The cash flow is equal to assets released, which are equal to the surrenders plus assets transferred from Table 2.

Now let us assume that, at the end of year one, the anticipated default experience on the reference pool of bonds has deteriorated, to the extent that the expected return is now 4.5 percent, rather than 4.75 percent. Assume also that no other anticipated assumptions have changed (withdrawal rates, credited interest). We can now project the cash flows from the FW assets under the anticipated experience at the end of year one as follows in Table 4.

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The present value of FW asset cash flows at the end of year one, reflecting the revised anticipated default experience is now 9,899. The present value of FW assets cash flows at the end of year one, based on the baseline default experience, is \$9,984. This suggests that an estimate of the value of the embedded derivative is given by the difference, or $\$9,899 - \$9,984 = (85)$.

In this example, the present values were taken at 4.75 percent. Appropriate discount rates to use in estimates of fair value based on discounted cash flows is beyond the scope of this article. Again, the reader is referred to the Academy's public policy monograph, *Fair Valuation of Insurance Liabilities: Principles and Method* for discussions about this issue.

Two additional observations related to this example should be made. First, in our simple example we assumed that during year one there were no changes in anticipated product experience with respect to persistency or crediting strategy. If in fact these factors had changed, it would be necessary to re-determine the baseline scenario to reflect the current persistency or crediting expectations, but with the original anticipated default experience. To see why this is true, note that if the anticipated default experience does not change, the value of the embedded derivative should not change even if the other factors do change. Also, the baseline scenario would need to be updated to true up for actual inventory changes during the first year.

Second, under most modco arrangements, the ceding company has the ability to move assets in and out of the reference pool, subject to certain asset type and quality restraints, as long as the book value of the assets is maintained equal to the statutory reserves. Such asset movements will cause shifts in the anticipated FW asset cash flows resulting from changes in anticipated default activity within the investment constraints. These would also need to be reflected in the estimate of the value of the embedded derivative.



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What is the Host Contract?

Some public comment about the proposed DIG has concerned the question about whether the host contract is really a debt instrument that

appropriately belongs under the scope of FAS 133. These arguments would contend that the host contract is the entire reinsurance contract and any associated segregated asset agreements. Indeed, the two final observations made in the preceding section show how the cash flows under the host are intricately related to the underlying policy behavior that is transferred via the reinsurance agreement and to the asset balancing allowed within investment constraints. Whether this view will gain favor with the SEC remains to be seen.

Other Similar Situations

It is possible that the guidance in DIG B36 may be generalized or expanded to include similar insurance and reinsurance situations. Whenever an insurance or reinsurance contract provides for a total return based on a referenced pool of assets on a guaranteed basis, it will be necessary to analyze the instruments carefully to determine whether embedded derivatives exist. Possible examples that come to mind include any participating business that provides for a total return on a referenced pool of assets, and perhaps contracts with experience rating formulas that provide a total return to the contract holder.

Conclusion

DIG B36 interpretation will be effective in 2003. Therefore, both ceding and assuming companies should be taking inventory of their modco reinsurance treaties, their coinsurance/ funds withheld treaties and similar arrangements, and reaching conclusions about the presence of embedded derivatives. It should be noted that coinsurance/fund withheld type treaties are similar to modco arrangements and would also be included within the scope of DIG B36. Implementation of accounting for embedded modco derivatives will consume significant time and resources, and will introduce new elements of volatility in GAAP income. *✍*