Commutation of Claims
a CAS Study Note

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Insurance obligations (estimated as reserves for liabilities) held by a risk bearer are most often extinguished by a final claim and expense payment at the maturity of the case, be it a settlement or a court mandated verdict. Sometimes the risk bearer *commutes* a claim or a portfolio of claims (e.g. reinsurer to insurer) early at a discounted value. This study note examines such claim commutations from the following aspects:

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Commutation opportunities arise in many circumstances.

(1) A disabled individual's workers compensation periodic payment claim for life oftentimes settles with a compromise (amount) and release. The claimant desires a cash settlement instead of an annuity. The discount is oftentimes more than merely the time value of money and represents a *utility* value to the claimant.

(2) A liability claim may be resolved with a structured settlement, wherein the risk bearer provides a fixed series of future value payments to the claimant by way of a structured settlement provider at a discounted current cost paid to that structured settlement provider.

(3) Oftentimes a reinsurer is asked to commute its obligations to a ceding insurance company to end a relationship circumventing the long, drawn out runoff of claims portfolio implications.

(4) Companies under supervision, rehabilitation or liquidation, in order to convert non-cash assets into cash, may commute liabilities with their reinsurers.

[1] The views expressed in the Study Note come from the author and do not necessarily reflect the views of his employer. Contributions have also been made by other actuaries from non-affiliated companies.

We define a **claims' commutation** as *a process where the future value of an unpaid claim(s) and associated expenses is "current valued", taking into account financial and non-financial aspects, to accelerate payment and close the case(s).* Individual claims or a portfolio of claims (e.g. all claims subject to a certain (re)insurance contract) can be capitalized. There will be contract, regulatory, accounting, tax, and actuarial considerations plus some judgmental aspects about other risky future conditions.

This study note is limited in scope, not recommending that any unique *model or assumptions* exist to fair value a commutation between the opposing stakeholders. But understanding the perspectives and financial position of each stakeholder will provide valuable information and insight into the probable areas of agreement and disagreement in opposing valuations. The principal emphasis of the text will be between the insurer (or its liquidator) and reinsurer. Individual claimants or insureds may have similar opposing stakes with insurers. An attempt will be made to keep the text as jurisdiction generic as possible, but we will cite some accounting, investment, tax, etc. jursidiction-specific examples which may be useful. This text is limited to property, casualty, and accident/health claims commutations.

Motivations of the parties Let us call the entity that has the claims and expense obligation the commutation seller and the entity receiving the obligation as the buyer. The buyer decides whether to accept the seller's offer to pay a certain amount (call it the consideration) now rather than await uncertain future payment(s) - estimated by appropriate reserves held by the seller. From the general to the specific, a reinsurer of a liquidating company is a seller and the liquidator of the insurer is the buyer. An obligation (modeled by a reserve amount) will be commuted with a payment, or other form of consideration amount.

From the buyer's viewpoint the attractions of a commutation include:

(1) an accelerated settlement of the obligation - delineated in cash or equivalents,

(2) an improvement in current "wealth" using the entity's perception of the value of cash over non-cash assets,

(3) cash flow for reinvestment or liquidity to deploy for other purposes, e.g. other claim and expense payments, projects, etc.
(4) a certain immediate amount is substituted for an uncertain future amount,
(5) possible administrative cost savings associated with monitoring and collection efforts,
(6) creating a marginal underwriting loss (reserve accepted greater than payment) and a federal income tax marginal adjustment. At least this item has a different interpretation when applied to the claimant or insured rather than insurer/reinsurer.

From the seller's viewpoint the attractions are parallel:
(1) an accelerated settlement, oftentimes meaning an end of the relationship with the buyer,
(2) improvement in perceived "wealth" when considering financial and non-financial aspects,
(3) limited attractive cash flow alternatives,
(4) a certain result, not subject to future events such as contract remediation or retroactive legislation or judicial results,
(5) allocated and unallocated loss adjustment administrative expense savings,
(6) creating a marginal underwriting gain with a probable adverse current tax consequence.

Accelerating an otherwise future obligation into a present value payment (and release from future obligations to perform) brings closure to both seller and buyer. Claim commutations occur because of a need - a cash equivalent, satisfying both stakeholders. The subject obligation may be for existing cases - reserve(s) for loss, loss adjustment expenses (LAE), or may include incurred but not reported (IBNR) losses and LAE, inclusive of case development. Commutation may also allow for the simultaneous negotiation of offsets due the seller (e.g. overdue premiums, audit premiums, uncollected deductibles/self insured retentions, adjustable features in the contract like contingent commission return accruals and retrospective rating adjustments).

Commutation forces confrontation over all arguable contract provisions. This confrontation can be very useful in a larger sense perhaps with respect to understanding other similar or related contracts, and when the original parties and correspondence relative to the contract and obligation are available at this earlier, commutation date. People forget, relocate, retire, or die

and documentation isn't always secure, subject to periodic destruction. Contract language becomes dated and imprecise. People understanding the original contractual intent aren't available, leaving others to litigate the meaning of dated, imprecise language (witness the constant coverage litigation surrounding the definition of occurrence in asbestos, environmental, and other mass tort cases). Discussions and language interpretation incident to commutation of one contract may have impact on other contracts with similar language.

Seller and buyer typically each intend to improve wealth. Differences between the buyer and seller positions in regard to the ultimate claim and expense liability, timing recognition, tax position, accounting treatment, all enter into consideration. Each party must consider the limitations in the actuarial forecasts of ultimate claims and expenses, oftentimes associated with latent and incomplete data and exposure analysis. A frequent difference in claims' evaluation is the perception of how claims will be handled once the relationship between the parties ends. There are also potential differences due to currency risk, solvency risk, investment style of cash flows, etc. Having undertaken the risk exposures originally, the seller, with the passage of time, may prefer retaining that risk, and be reluctant to return that risk[2].

The value of cash flow and liquidity can be extremely important. The seller is probably using incoming cash flow from premiums and/or fixed instrument maturities, and measuring its cost-of-capital (if constrained) or investment policy-based yield (matching expected liability and underlying asset cash flows) considering taxes. The buyer similarly values the use of the consideration. The seller may be basing its analysis on a discounted cash flow model[3] of the expected payment profile, while a buyer may be forced to spend the incoming cash flow immediately for other purposes. An example would be an insolvent insurance company as the buyer of its reinsured reserves. It may be smarter for the buyer to take this cash flow than borrow to meet its liquidity needs.

Certainty vs. uncertainty involves not only a financial analysis but also some subjectivity as to the utility of money. Differences between entities always exist as to risk aversion and the

[2] Risk in cash flows may be distinguished from expected values.
[3] DCF models are to be discussed more fully in a latter section.

preference for cash versus an uncertain future obligation. Will there be unpredictably high medical inflation on a periodic payment lifetime workers compensation disability case, unpredicted declaratory judgment action expenses on IBNR claims, a new latent injury mass tort series of claims, or contract remediation due to a change in public policy (e.g. insurability of punitive damages in a jurisdiction)? How much current cash is necessary to make the risk bearer comfortable with this uncertain future?

At some point during the runoff process, the administrative expenses of monitoring, collecting, registering, and auditing periodic payments become disproportional to the payments themselves. Allocated and unallocated LAE savings typically motivate buyers and sellers of minor unpaid claim and expense obligations to commute. As an aside, there are contracts which force "sunseting" of obligations at some age of claim or contract year, that motivates timely action. Sometimes contracts outline a rigid commutation paradigm while others refer to some *mutually agreeable* but unstated paradigm.

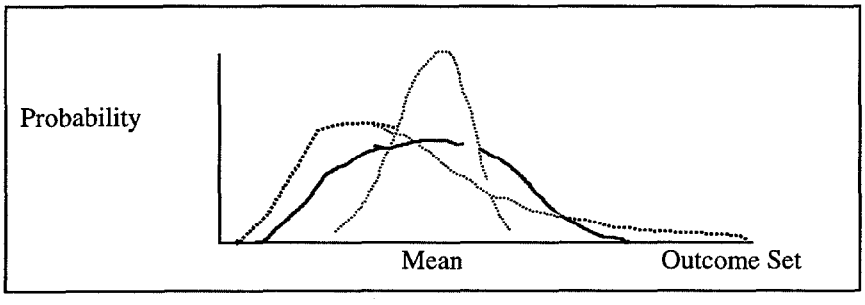
Sometimes the motivation is a mixture of underwriting/accounting/tax treatment. The entity may want to exit a line of business, jurisdiction, market segment, or as noted, contract obligation, and offers to sell its obligations (i.e. a loss portfolio transfer) to a third party. Or it may seek a certain accounting treatment (buying a structured settlement to book an "economic value" vs. ultimate reserve). Or it may gain some tax or accounting presentation advantage between the jurisdiction of the seller versus that of the buyer. Sometimes reserves are different depending on the accounting system and purpose: local statutory reserves, generally accepted accounting principles' reserves, and tax reserves. Differences in definition and timing recognition sometimes presents the opportunity to gain advantage in a commutation.

Actuarial considerations are as numerous as motivation considerations! The most important are:

1. Evaluation of unpaid claims and allocated LAE, including ranges,
2. Estimation of unallocated LAE,
3. Unanticipated Judicial risks,
4. Line of Business specific issues - e.g. WC tabular cases,
5. Asbestos, environmental (meaning pollution and hazardous waste or products) - also known as APH or other mass tort or latent liabilities,

6. Obligations' payment profile,
7. Investment policy for discounting the cash flow,
8. Tax,
9. Risk load,
10. Other receivables or payables,
11. Effect on reinsurance or retrocessions (i.e. reinsurance of reinsurers),
12. Currency risk,
13. Solvency and Leverage of the parties.

Actuaries are uniquely qualified to perform these risk analyses, that is, studying the set of the most probable outcomes and the probabilities of those outcomes. The actuary evaluates its client's obligation for (gross of reinsurance) best estimate, undiscounted, without margin, unpaid claims and allocated LAE. While deterministic forecast models of liabilities most often give point estimate results, requiring scenario testing to quantify other probable outcomes, recent practice improvements include the generation of stochastic forecast models to provide ranges of the outcomes for the most probable outcome set. Comprehensive Standards of Practice[4] as well as numerous professional articles in the Proceedings of the Casualty Actuarial Society[5], guidance from the Canadian Institute of Actuaries, and other international actuarial publications numerate all the considerations necessary and methods appropriate to estimating loss and LAE obligations. The purpose of establishing a range about the best estimate reserves is to quantify the degree of uncertainty that will surround the ambivalence point consideration.



The ***ambivalence point*** is a point estimate monetary figure representing the highest value the seller is willing to pay the buyer, beyond which, the economics become unattractive (relative to

[4] The USA Casualty Actuarial Society (and Society of Actuaries) has worked with the American Academy of Actuaries to develop Standards Of Practcice, which are publicly available.
[5] The reader is reminded that life and pension related commutations are outside the scope of this text.

allowing natural runoff of the obligations). The narrower the range of potential runoff, the more convinced management will be about their negotiation limits.

ULAE reserves of the seller can be added to the commutable loss and ALAE reserves over the runoff years to estimate the possible administrative expense savings associated with a commutation of claims (case and IBNR). Overall non-claim specific functions associated with management, collections and disbursements, recording entries for financial statement purposes, etc. will be marginally reduced with a commutation - which may mean a real savings through staff reduction or redeployment. The actuary must consider whether these expenses, being variable (strictly correlated with claims) can be eliminated from an otherwise largely fixed cost administrative system. The characterization of declaratory judgment action expenses also warrants consideration. DJAs occur when the policyholder and insurer disagree as to coverage and a judicial hearing is the only resolution acceptable to the parties. Oftentimes DJAs are expensive, such as when litigating the meaning of a general liability occurrence-triggered insurance policy using the terminology "sudden and accidental" in APH cases or when the insured is trying to trigger multiple policies for a time series of incremental injuries alleged by claimants. These may be interpreted as ALAE or ULAE[6] but should always be reserved, rather than expensed on *as paid* basis.

Jurisdictions throughout the world have differing and evolving cultural philosophies in regard to the economic/social contract of insurance as interpreted through historic practice and precedent by way of legislation and the judiciary. Each jurisdiction's behavior is both rooted in its past, trending toward the future at some rate, and being influenced by global attitudes and competition. An assessment must be made of the likelihood that the future emergence and settlement of claims and expenses will follow past traditions, practices, and precedents. Countries which create legislation which exacts retroactive liabilities without an offsetting funding mechanism or judicial systems which do not follow historic decisional precedents may require risk adjustment (unless these risks are adequately represented in the historical data and forecasted in the reserves). In general, the longer the payment profile for a cohort series of claims (accident-underwriting-policy year) the more the reserving forecast risk due to changes

[6] In the USA the National Association of Insurance Commissioners have defined DJA expenses as ULAE.

in the runoff environment. We will also see that tax legislation and fluctuations in currency risk affect an entity's risk appetite when considering its ambivalence point.

There are also distinctive line of business considerations to address. DJA expenses in general liability policies are one meaningful example. Casualty periodic payment claims (like workers compensation lifetime) which include annual escalation of wage replacement or inflation of medical payments are another. The socio/economic and medical conditions of the claimant, the claimant's life expectancy, the forecasted amount of escalation and inflation benefit, and the oftentimes discounted (for the time value of money) carried reserve value must be considered. When data underlying a line of business analysis cannot be tracked historically to ultimate, a judgmental "tail factor" must be chosen judiciously. This can be most difficult for a relatively new line of business or recently entered jurisdiction.

Distinctive causes of loss must also be considered. Actuarial reserve analysis from data may not follow a period-to-period developmental approach, so common in most extrapolative "chain ladder" and like methods. Normally "occurrence" claims are independent of each other and emerge from IBNR into case reserves, then become payments in an aggregate predictable aging process. APH claims[7] do not follow traditional time dependent emergence and development models[8], in part due to broader interpretation of claims from occurrences. Insurance coverage and accounting systems are oftentimes dictated by legislation, regulation, or judicial review, in which instance claims move in tandem, rather than developing sequentially over time. Other than asbestos, pollution, or hazardous waste claims arise from product exposures which also have emergence latency and accumulation characteristics (commonly known as mass torts). Examples include herbicides, insecticides, pharmaceuticals, medical prosthetics, etc. It is important to fully understand what exposures and what claims are included in the commutation. The commutation may be for certain identified claims only, or inclusive of IBNR claims, or may hold out certain exposures.

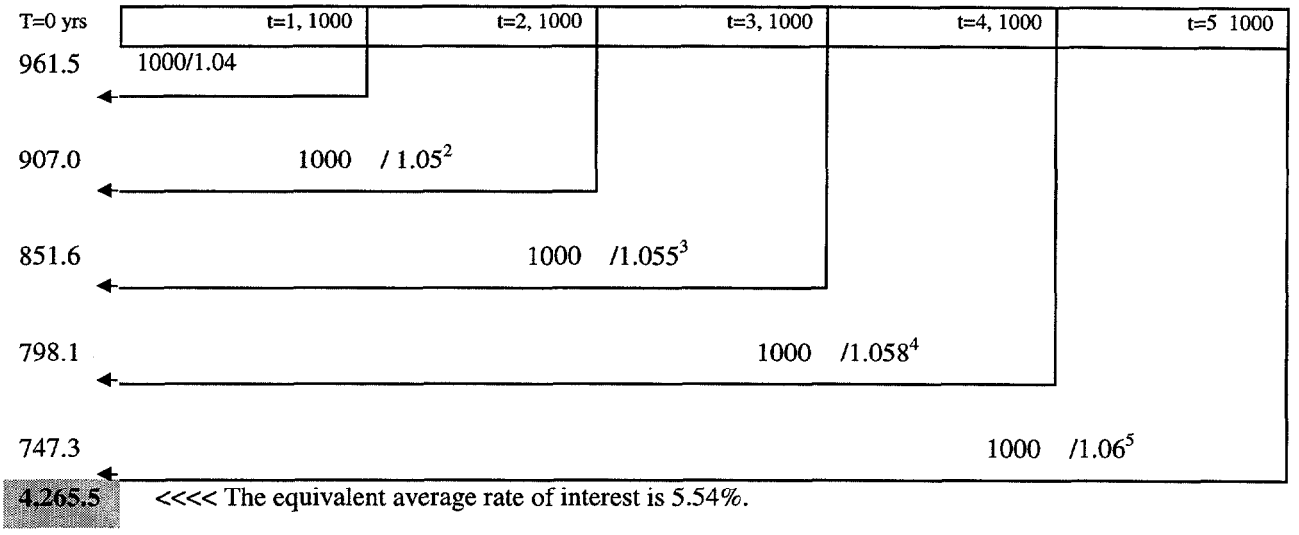
[7] Especially in the USA following the 1980 enactment of the *Comprehensive Environmental Response, Compensation and Liability Act* creating "Superfund" - with joint and several, absolute, and retroactive liability.

The time value of money is a basic principle, coming from individual's time preferences for money. Money today is normally preferred over the same amount of money in the future. Stated another way, one can be ambivalent between future cash and a time-valued current cash amount. When money has a positive earning capacity, future money can be discounted to current cash. The incorporation of the time value of money principle with a risk component, becomes the present value model we apply. Two key drivers of the model are future amount and timing. For an individual or few claims' commutation, the Claims Examiner should be consulted for the expectation of the future payment(s) as well as the date(s) expected for payment. Some claims are expected to be single payment, or one payment per claimant in an occurrence, but an arranged or statutory series of periodic payments may also be present. When the number of claims go beyond individual seriatim treatment, the actuary can use a grouped valuation method. When the commutation is to include IBNR claims it is common practice to use an aggregate payment profile (e.g. accident, underwriting, or policy year) from historical studies, but adjusted to be appropriate to the subject claims.

The discounting rate (risk-free rate + risk) can generally be determined in consultation with the Chief Financial or Investment Officer. One must consider company specific investment policy as regards incoming cash flow investment into taxable vs. non-taxable fixed income instruments, common or preferred shares of stock, etc. With investment yield curves (the term structure of interest rates) generally upward sloping, the distant cash flows have higher investment rates and earnings. One should consider matching the net present value of assets against the time-specific series of cash flows.

The following illustrates an increasing term structure of rates and the impact they have on the *distancing* 5 consecutive 1000 cash flows (claim payments). 5 zero coupon 1000 bonds with annual effective rates for interest, would match the illustrated obligation at a net cost of 4,265.5.

[8] A mass tort exposure is characterized by identification, or essentially simultaneous emergence, of a large number of potential claims involving multiple policy periods and supposedly caused by a common harmful agent, existing for a long time.



Also consider the credit quality (or counterparty) as it affects total return. A decision must be reached as to who "gets credit" for any incremental yield on fixed income instruments due to credit status or expected stock market performance over the duration of the liabilities. Similarly, cash flow deployment into taxables vs. non-taxables can be dependent on the entity's expected underwriting income and tax carry forward[9] positions. The seller and buyer may have quite different time values for money. As noted previously, it can also be appropriate to run the present value model at an company specific cost-of-capital or as a hurdle rate (used to selectively prioritize capital intensive projects, to apply a minimum target rate of return).

A thorough understanding of the tax ramifications to a claims' commutation is essential to both the buyer and seller. While this discussion will be limited to "federal" and "state/province/etc." income taxes, the commutation may attract other taxes (e.g. premium, value added taxes). These vary considerably by country and across countries depending on provisions of various jurisdictions and inter-jurisdictional tax treaties. Double taxation across jurisdictions is generally eliminated by allowing *foreign* income and taxes to be included, consolidated in the home country tax return. In the case of a buyer and seller from the same country it is tempting to suggest that the considerations and math are like *two sides of the same coin.* But like a coin

[9] It is generally accepted and appropriate to use the timing of the income taxes incurred, vs. paid, as this closer follows the matching principle of asset to liability flows.

having 2 different impressions, so too, the seller and buyer may agree on all the cash flows and time value of money and risk aspects, but be in different tax positions, therefore having different ambivalence points.

The seller has an established tax basis on the reserves it holds and the outcome of the runoff. To sell means to marginally change the cash or accrual value of its tax liability. The buyer should have an economically equivalent series of insurance cash flows, but not necessarily the *mirror image* accounting and tax treatment. For example, a reinsurer (the seller) may categorize its assumed reserves as (non-proportional) reinsurance while the insurer (the buyer-back in the commutation) will recapture reserves by line of business. It then may have a different cash vs. accrual impact or tax consequence. In a liquidation proceeding, the seller may have a gain of income (from an accounting model perspective used as the basis for income taxation) and owe taxes, while the liquidating buyer cannot take on a tax-loss, it being unlikely that there is much taxable income for offsetting. The liquidating company didn't get so by being profitable!

Debate surrounds the use of a risk load in pricing claims' commutations. The analyses noted in the prior paragraphs suggested a point estimate of net economic ambivalence value to both seller and buyer. Those point estimates could be communicated to management within a range of possible outcomes without introducing any bias into the analysis, resulting in no risk load requirement. One argument which can be made is that the original premium contemplated a net present value of losses, a charge for overhead, capital use, and profit. Pricing assumptions were made on all aspects of the risk transfer - from loss/expense forecasts, anti-selection, overhead recapture, risky interest earnings potential, liquidity, tax law, legislation and judicial review, foreign currency, even moral hazard. In a capital constrained world, some capital is being released in a commutation. That has value. And if the profit is released with the risk, perhaps measured by an incurred or paid loss emergence curve, then the buyer is taking on risk and should recapture a portion of the original risk load provision. These are negotiating positions, debatable between buyer and seller.

The legal document to commute oftentimes is an endorsement or release to the original insuring agreement. Or commutation may be effected through a separate commutation and release agreement. Both the endorsement and the agreement should be worded in such a way as to end all further contractual obligations being commuted between buyer and seller. In such a case, non- claims' cash flow obligations must be considered. Is the unearned premium to be refunded and on what basis? Were there any unpaid premiums due and owing? If the contract was retrospectively rated, the seller must consider the effect of accrual premiums on the ultimate loss forecast. The same is true for contingent commissions. Having transformed the unpaid claims into discounted payments, it would be anomalous to use these losses in the *adjustable feature* provision calculation. It may be necessary to stop payment on claims in the course of settlement to fix the unpaid claims liability while the commutation is being negotiated. It will also be necessary to confront any disputed claims or expenses.

The commutation accelerates (gross of reinsurance) unpaid obligations into a current consideration amount. That original obligation may be subject to some form of reinsurance. Great debate surrounds the appropriate charge to reinsurers for their portion of the sellers' gross consideration. Imagine a single claim of 1,000,000 due for payment in about 10 years, at 6% present value is commutable for 558,395, but the buyer (claimant) accepts an offer of 500,001. If the reinsurance is proportional it follows that the reinsurer will pay its stated share of the insurance settlement. If the reinsurance is non-proportional, say 500,000 in excess of a 500,000 retention, then the reinsurer's share isn't clear. If commutation is seen as another settlement strategy, then the closed claim of 500,001 triggers a reinsurance loss payment of 1.

50% Proportional Reins.

Insurer	Reinsurer
250,000.50	250,000.50

500,000 xs 500,000 Reins.

Reinsurer 1.00
Insurer 500,000.00

If the 1,000,000 claim had a series of periodic payments, with an average duration = 10 years and the settlement were again 500,001 then the non-proportional reinsurer could argue that its

discounted cash flow is much less than ½ the settlement value of the pro-rata reinsurer (a temporary deferred annuity has a deeper discount) but clearly greater than 1.00.

Yet another interpretation could apply if the 1,000,000 represented a 33.3% chance of paying 3,000,000 and 66.7% chance of paying 0, then the reinsurer might be billed[10] for 1/3 (500,000) + 2/3 (0) = 166,667. Valuation gets more complex if the claim is subject to upward development with time, such that the ultimate claim could reasonably be 1,200,000. Allocating to the reinsurer its portion of the consideration due to the IBNR loss valuation is similarly difficult.

Oftentimes, a reinsurer's obligations are partially retroceded to a retrocessionaire[11]. In the instance of a single claim settlement or commutation, the coverage-fact pattern used to negotiate the recoverable between insurer and reinsurer, may not be identical between reinsurer and retrocessionaire, e.g. non-concurrency of contracts or disputes as to coverage interpretations. For whole agreement commutations, negotiations between reinsurer and retrocessionaire seldom are precisely actuarially driven, although oftentimes the "follow the fortunes" clause may suggest a good faith effort has been made by the reinsurer to represent the interests of the retrocessionaire. This is clearly true when the form of retrocession is proportional, but less obvious when the form is non-proportional, in which case deliberations such as between insurer and reinsurer ensue. There is more argumentation over IBNR than claim reserves or loss adjustment expenses.

Currency issues must be addressed. Fluctuations in the exchange rates between the invested assets and insurance liabilities will change cash flows. For example, suppose at inception of an agreement the reinsurance is of a British Pound Sterling (£) exposure but assets are held in US dollars by a US reinsurer. At the outset, assume GBP1.0 = US$1.5. If the reinsurer provided coverage of £300,000 xs £200,000 and was reinsuring a full limit actual loss, the liability would be £300,000. If the £ strengthens at the time of settlement against the US$ to

[10] Most if not all contracts use paid loss to allocate recoveries, so this is billing interpretation would be in conflict with the contract.

[11] *Equitas* a runoff operation for *old Lloyd's years*, has obligations as insurer, reinsurer, and retroces- sionaire, based on its historic operations.

£1.0=US$2.0, the loss in US$ is now US$600,000. Had the assets backing the reserves been kept in GBP at the outset, the loss would be US$450,000 equivalent[12]. Rather than taking on an uncertain currency risk, most companies immunize themselves by keeping assets in the local country where the coverage is granted. Spot and forward markets for exchange rates provide static or current point estimates of uncertain future values.

In cases of liquidation or financial insecurity, the seller may have a leverage advantage over the buyer of the commutable claims. When assets are not sufficient to extinguish commutable liabilities, a less than mathematically justified consideration is generally offered by the seller. The rationale is that the asset base is eroding and the longer it takes to settle, the more the write-off for uncollectible balances. A thinly capitalized, runoff reinsurer with many commutations to negotiate with buyers, may satisfy the early buyers with few assets for the latter buyers. Another situation can occur where the insurance buyer can demand more in consideration, under the implied threat to settle claims more generously at the expense of the reinsurer. Extreme use of leverage can impact the reputation of the aggressive party, but oftentimes that reputation is already irreparably damaged and reported in the trade and popular presses.

The **Actuarial mathematics** to value an ambivalence point for the consideration uses common financial mathematics involving present valuing a cash flow, but with customization, dependent on a jurisdiction's accounting and tax system. For the purposes of illustration, both the Canadian and US[13] perspectives will be illustrated.

Suppose we have an Unpaid Other Liability loss from reinsurance of 1,000,000 from accident year 1992, as of a valuation date of December 31, 1998.

Payments	Date of payment	Discount period	Present Value @5%
500,000	June 30, 1999	½ year	487,950

[12] £300,000 was equal to US$450,000 at 1:1.5, but with the strengthening £300,000 = US$600,000.

[13] A detailed examination of the US system based accounting and tax treatment is given in Connor and Olsen, "Commutation Pricing in the Post Tax-Reform Era", Proceedings of the Casualty Actuarial Society, Vol. LXXVIII, 1991.

300,000	June 30, 2000	1- ½ years	278,829
200,000	June 30, 2001	2- ½ years	177,034
1,000,000			**943,813**

Assume that 5% represents the after-tax value of money[14] in the jurisdiction.

For Canadian purposes, the tax reserve basis is 95% of the lesser of two quantities:

a) the booked reserve of C$1,000,000

b) the actuarial discounted reserve + Provision for adverse deviation, which we will calculate to be 943,813 + 23,209 [15] = 967,022.

The tax basis reserve is therefore 95% of Min (1,000,000; 967,022) = 918,671.

The reinsurer (seller) ambivalence point would not be 943,813 because of the tax benefit that this commutation would create by way of an underwriting (and tax) loss. The marginal taxable income would be 918,671 - 943,813 = (25,142). Assuming a federal/provincial income tax (immediate) rate of 45%, there would be after tax income generated of 25,142 x 45% = 11,314. While the seller may wish to keep this amount, should the buyer (the ceding insurer) be in the exact mirror image of the accounting, it would not wish to incur a similar after-tax income loss. A knowledgeable buyer and knowledgeable seller do not have an intersecting (or overlapping) ambivalence point at 943,813.

If we assign X as the value of the ambivalence point, then the following is true: X = (X - 918,671) x 0.45 + 943,813. The verbal interpretation is: the commutation ambivalence point is equivalent to the tax on commutation plus the net present value of losses. The buyer and seller are willing to accept the discounted loss provision plus the transfer of tax implied in the transaction. X = C$964,383.

In the USA the Tax Reform Act of 1986 (and subsequent revisions) have created a more complex calculation. Using the same subject unpaid losses and an 8-step process:

[14] This effectively captures the tax impact of the transaction on the marginal underwriting result and investment income, net of taxes.

1) The 5% present value of the **US**$1,000,000 loss is 943,813.
2) The tax basis reserve is 729,995 [16]
3) The difference of 270,005 would *unwind* over the life of the unpaid accident year.
4) But the claim will actually be paid over 3 calendar years, accelerating the unwinding of the discount into: 1999 = 131,271 [17]; 2000 = 86,837; 2001 = 51,897.
5) The 5% present value of that 270,005 *unwind* is 254,754.
6) At a 35% US tax rate, the present value of this discount is 89,164.
7) The *basis* of the seller's ambivalence point or cost to not commute is therefore 943,813 - 89,164 = 854,649.
8) We can now set X as the ambivalent commutation price and solve the equation X = (X - 729,995) x 0.35 + 854,649. X = $921,770.

In the Canadian situation, tax considerations increased the seller's ambivalence point while in the US situation, tax treatment decreased the seller's ambivalence point from the present value of losses. The US reinsurer had to offer less to the ceding insurer in order to finance the taxes incurred. The insurer may not be in a mirror image position, benefiting from the tax loss.

The frequent objective of the commutation exercise is to sever an ongoing relationship between obligation holder and recipient. In whole account commutations, this will likely also engender a return of the unearned premium reserve obligation. As before, buyer and seller must evaluate their entity-specific issues in determining the consideration. From a timing perspective, the risk considerations have not been earned by the seller, but it may be adamant about taking an expected profit or expense within the discounted consideration it offers. It can be argued how taxes should be considered.

There are **other stakeholders and issues** which require elaboration. They are:

1. Loss and expense reserving (for the actuary after the commutation)
2. Claims Department

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[15] a 2.5% loading, perhaps reflecting the risk that payments are accelerated ½ year or that the claim develops
[16] The Internal Revenue Service "factor" for the discounting of Other Liability Reinsurance (a combination of payment pattern and investment rate) for unpaid claims at 12/98 from the 1992 accident year is 0.729995.
[17] Taxable incurred loss = Paid plus Change in reserve = 500,000 - [1,000,000 x 0.729995] + [500,000 x 0.722532] {where 0.722532 is the IRS/taxing authority factor for A/Y 1992 as of 12/99}

3. Investment issues
4. Accounting
5. Marketing
6. Regulation
7. Contractual issues

The data used in the actuary's IBNR loss and expense analyses are *tainted* to varying extents by the accounting of the commutation. While a single claim commutation may not noticeably bias the data, a portfolio of claims having been commuted will likely noticeably distort calendar year claim and expense activity. The incremental and cumulative payments for the (or series of) accident, policy, or underwriting year(s) of the seller will appear higher than historical relationships (derived from "triangle" analysis). Case reserves will be lowered to zero, as claims are closed with payment. The case incurred will go up or down, depending on the relative amounts of IBNR to case reserve and discount underlying the consideration. See appendix. Adjustments to the data are required as this series of commuted obligations will no longer develop (from the seller's perspective). The best adjustment is to isolate all the data subject to the transaction, premium, loss, claim count, etc., remove it from the historic database, and compute IBNR loss and expense reserves as though the commuted agreement never existed. The reverse is true for the buyer. The same isolated data must now be added into the historic net database, since the buyer will experience loss development and IBNR and must forecast it within its reserving structure.

It is important for seller and buyer to understand that the claims (and IBNR) valuation begins with the Claims Department verifying the accuracy of the claim reserves (at least the largest ones), the transfer of reserve amounts from the files into the company's electronic records, and the consistency of reserving philosophy (for projecting loss development and IBNR claims).

(A) Are loss and ALAE reserves set individually or in bulk?

(B) Are there likely to be future emerging mass tort cases, based on the exposure profile of the subject risks? APH claims present unusual problems of evaluation. The interplay between the number of occurrences, the contractual wording dealing with the ability to aggregate otherwise individual losses, and the layer of coverage provided are of critical importance. Most APH cases present some issue as to the number of occurrences, whether the issue

involves number of claimants, job sites, pollution sites, etc. The exposure can be critically influenced by the contractual terms governing the ability to aggregate individual claims, such as the aggregate extension clause.

(C) Are any long-term reserves explicitly or implicitly discounted for the time value of money?

(D) How much ULAE will the organization save if a commutation is successful?

All are pertinent questions to be posing. It would be particularly disturbing if a highly valued periodic benefit payments-for-life claim were being held in reserve conservatively, while the claimant was near death, and the commutation assumed the reserve was a reasonable estimate of significant future payments. Oftentimes, the Claims Department can provide qualitative evidence as to whether an average loss development and IBNR provision is appropriate to a series of claims from a ceding entity.

While the actuaries determine the contingent insurance cash flows, it is a financial problem to determine the appropriate discount rates. The time value of money used in the discounted cash flow analysis of loss and loss adjustment expenses, etc. should be based on the entity's investment policy and opportunities to maximize economic value (which are firm specific). This is not the historical or portfolio rate of the last calendar year(s) or quarter, but probably a market rate on new money. It is generally assumed that the seller will pay the consideration from incoming cash flow - paid premiums, investment income, or maturities, thereby forgoing the opportunity to deploy cash into new investments.

It is generally thought[18] that a low risk, prudent rate of return should be used in the calculation. Risky liabilities require more reserves, and thus are discounted at lower rates. While it is tempting to *reach* by employing lower grade higher yielding securities, one can assume that the risk premium earned on more risky securities is offset by credit risk - default or diminution of contracted cash flows. Taken together, often this translates into using somewhat more or less than a federal or local governmental fixed income security yield (in many jurisdictions some are tax advantaged) or prudent corporate taxable fixed instrument yield, or more, depending on the

[18] According to CAPM - Capital Asset Pricing Model, riskier assets are discounted at higher rates and have smaller values than safer assets. In contrast, riskier liabilities are discounted at lower rates.

entity's current investment policy. That policy may consider a mixture of equities and fixed income securities, and whether the corporate emphasis is on book income or total return, etc.

The discounting rate(s) should consider the expected incremental runoff claim payouts, in order to get an appropriately (duration) weighted yield (or average - to simplify communication of results), in what is ordinarily an increasing yield curve term structure on fixed instruments by age. It will also be necessary to consider the likely future reinvestment rates for fixed instrument "coupons" which are paid periodically, but not "matched" to the payments of the obligation. The following illustrates the differing asset payout dates and present values. The assumed reinvestment rate on the coupons at *present value* provide the aggregate return on the 5,000 obligation. That is, we assume each bond is sold at par so that the investment return is in the coupons (rates are nominal, compounded semi-annually).. Because of reinvestment risk, the present values will differ from the previous example.

6 month		i= 4%		i = 5%		i = 5.5%		i = 5.8%		i = 6%
intervals		1000		1000		1000		1000		1000
1000	20	20								
1000	25	25	25	25						
1000	27.5	27.5	27.5	27.5	27.5	27.5				
1000	29	29	29	29	29	29	29	29		
1000	30	30	30	30	30	30	30	30	30	30
5,000	plus nominal interest of 837									

The accounting of a commutation affects the balance sheet and income statement in the following ways. For balance sheet purposes the seller reduces assets by the cash (or equivalent) consideration and releases liabilities by the amount of reserves held. Premium or commission accruals may be impacted by the change in apparent loss experience. Any tax consequence is also booked, and net worth will usually be impacted. The income statement will reflect the net transactional value in the loss and tax provision lines.

The buyer will be impacted in a somewhat mirror image like way, but there will likely be at least a difference in the unpaid loss and expense forecast[19]. It may be that the buyer thinks that the consideration is more than sufficient to fund the unpaid loss and expense obligation and may book less of a marginal underwriting loss when compared to the seller.

The seller who books favorable development as well as the buyer who books unfavorable development on its reserve structure will present themselves somewhat differently to its audiences - notably an implication to the formulae underlying any Risk Based Capital or Valuation Reserve. Stated another way, the marginal reserve development triggered by the accounting for the transaction may change the statutory treatment of RBC or other margin requirements.

> As a minor footnote on *technical accounting,* the seller will need to allocate the payment consideration against the reserves held and claims closed, which can be individually or proportionally allocated. If IBNR claims have also been commuted, it is possible that the consideration exceeds the value of case reserves, in which instance reported claims will appear to develop adversely at payment (but generally not in total - with IBNR claims). See appendix.

A commutation proposal can be prompted from either buyer or seller. A liquidator is a buyer of the reinsurance asset associated with ceded claims' reserves and may create a proposal. Alternately, the reinsurer may present a commutation offer to its ceding company. Generally, there has to be full agreement on the objective and items subject to the commutation. This may be accomplished through dialog, but eventually a *Commutation and Release Agreement* or an *Endorsement* to the contract will provide the legal framework. Negotiating tactics vary as to subject matter and consideration, but knowing one's ambivalence point for specific obligations provides a limitation, proscribed by management, clarifying as to when opposing perspectives are irreconcilable. Disclosure and documentation are two key features in marketing a commutation.

[19] Another considerable difference in the US is that a non-proportional casualty reinsurer selling reserves back to an insurer will have differing IRS factors, since the reinsurer is subject to Schedule P reinsurance payment patterns and the insurer will be booking reserves by annual statement line of business.

Management must decide how much of its internal analyses it wishes to disclose to the other party. Depending on the circumstances, it clearly ranges from disclosing the entire analysis to disclosing none of it. It may depend on the sophistication of the other party and your motivations. For example, if the consideration offered is your ambivalence point, predicated on the best estimate of unpaid reserves, then it is just as likely that the other party will experience adverse development on those reserves as favorable (assuming it establishes comparable reserves). It may be necessary to provide advice about your anticipated booking effects. If the relationship is to be ongoing for other contracts, profit centers, etc. proper expectations of possible outcomes must be understood and perhaps documented. A final settlement value will appear quite deterministic compared to the stochastic nature of the unpaid claims and expenses runoff.

The last stages to completing a commutation are legal - both contractual and regulatory. From a US regulatory viewpoint, for example, in general there are no specific requirements when commuting obligations when the parties are ongoing concerns. But should the buyer become impaired or insolvent within 6 months of the commutation date, the rehabilitator or liquidator can challenge the commutation as perhaps giving an unfair preference in terms and conditions, since the buyer or seller may be anticipating a business stoppage. The buyer who is "cash poor" may be making poor economic decisions, not fulfilling its fiduciary responsibility. Resolution of the preference issue would likely be by the Liquidation Court. One typical regulatory requirement is that should the buyer be already placed into rehabilitation or insolvency, its legal representative must file with the Court a *plan*, including the terms/conditions of any proposed commutation and that the Court rule on its acceptability. A commutation analysis from the buyer's perspective will need to be entered into evidence, oftentimes provided by a disinterested, independent actuarial consulting firm. In Canada, regulatory approval may be required before effecting a large commutation.

A *commutation and release agreement* or *endorsement*, can precede the actual payment and booking of the consideration and reserve changes, as a penultimate step on the commutation process or procedure. The purpose of both parties signing the release agreement/endorsement is to effect the complete understanding of the heretofore verbal discussions, oftentimes spread

across long time intervals and shared amongst many constituents. A typical commutation agreement can have any number of "recitals" which can serve to identify the parties, the subject matter, and the intent of the agreement. Critical contract provisions pertain to:

1. the consideration, in amount, means and method of payment,
2. the full satisfaction of all subject obligations from the buyer,
3. the full release of all subject obligations by the seller, both known and unknown,
4. the enumeration of the named parties - including related and successor parties,
5. an acknowledgment that this is the complete accord,
6. representations that the parties have conducted responsible (sound mind) *arm's length* negotiations, with access to legal counsel,
7. the binding nature of the agreement,
8. the parties warranting their authority to be signatories,
9. the parties agreement that the compromise envelopes all prior discussions and cannot be considered an admission of liability or responsibility in any aspect of the original insuring agreement,
10. the jurisdictional law governing disputes over meaning and interpretation of the agreement.

Comparisons to other transactions There are many similarities, yet differences between claims' commutations and Valuations done for mergers and acquisitions, loss portfolio transfers, policy buybacks, novations and rescissions.

In M&A, the selling company has posted a balance sheet liability (for claims, unearned premiums, etc.) on which the buyer will apply its judgmental risk-adjust interest rate, present value model. The market value of the reserves will likely be significantly less than a mere calculation of the (risk-free) time value of money set against an expected payment profile from the carried reserves. Unlike a commutation, the buyer is seeking a *high target* economic return, rather than a neutral economic outcome. And the balance sheet obligation of the seller isn't returned to the original insured.

In loss portfolio transfers, the seller is looking to extinguish its balance sheet obligations by a sale to an independent third party. It is selling its portfolio of unpaid losses and LAE. The buyer will take on the obligation at a price which depends on present value model assumptions, but is risk-loaded for uncertainty in the accuracy and timing of the expected cash flows. Further, it is loaded for the buyer's production and maintenance costs of servicing the business.

A policy buyback can be considered a broadly based commutation. Oftentimes a disputed coverage claim arises (instances of APH claims abound) where as part of the settlement and release, the parties agree that the amount of consideration will render the policy obligations "expired". The original policy seller has bought back its policy at that point for all known and unknown, current and future obligations (which were disputed on the presented claim anyway). The buyer is now *bare of coverage.* Another example is where an insured has a paid loss retro rated plan, high deductible or self insured retention, secured by a Letter of Credit, benefiting the insurer. To gain tax deductibility, the insured can pay a third party insurer, transferring its remaining net liability (and releasing the LOC). It is buying back its obligations, gaining full insured coverage.

A novation, in general, is a substitution of a new valid contract between the same or different parties for an old valid contract. A consideration must extinguish the old contract and a succeeding contract with consideration must apply. A commutation may be thought to function like a novation, in that all obligations under a policy of insurance or contract of reinsurance are extinguished by mutual agreement of the parties for a stated consideration and a new agreement, namely, the commutation agreement, with its own set of different mutual obligations, gets substituted for the older agreement.

A rescission is an annulling or undoing of a valid contract with all parties being returned to their original pre-contracting status. If there are no paid claims and the parties agree to commute for a consideration equal to the original premium, then the event takes on the characteristics of a rescission. The accounting of the consideration may then be treated as either a return of premium or a claims commutation. But a commutation cannot exactly return both parties to their original pre-contracting positions, since the passage of time provides information about the emerging claims for the exposures underwritten.

To **summarize and conclude**, this study note has examined various aspects associated with the commutation of an individual claim or a portfolio of claims.

The 1st section addressed the motivations of the seller and buyer: emphasizing the acceleration of the obligation into a firm specific useful cash equivalent; impacting cash flow results (possibly for alternate investment purposes); the way a commutation can impact the accounting and tax models in a firm's jurisdiction; the finalization of an uncertain economic, legislative, or judicial future environment or relationship with the other party; and probable administrative expense savings.

The 2nd section addressed the actuarial aspects of Valuation. These included: establishing best estimated ultimate reserves for loss and all loss adjustment expenses, quantifying any other obligations; considering future legal and judicial risks of the runoff period, oftentimes very line of business specific; establishing an expected payment of reserves' profile and matching appropriate investment rate for discounting that cash flow; tax - risk load - currency effects; offsets for other receivables or payables; implications on reinsurance of the gross obligation; and finally the softer issue associated with the leverage of the negotiating parties (mostly related to credit risk of the counter party).

The 3rd section presented the time value of money model (as applied by the actuary) in determining the party's ambivalence point payment consideration for the transaction. Examples were given within a Canadian and USA accounting and tax system context, to demonstrate the interactions of the true economics, as compared to the apparent results when placed within a context of specific tax and accounting models.

The 4th section identified some issues associated with other stakeholders in the claims commutation process. Actuarial reservists have to make data adjustments to forecast IBNR loss and expense reserves properly, Claims examiners need to corroborate the subject losses, Investment executives must establish opportunity costs to investing, etc.

The 5th section identified similarities and differences between commutations and M&A valuations, loss portfolio transfers, policy buybacks, novations and rescissions.

A claims' commutation discussion provides buyer and seller the opportunity to accelerate and settle various obligation provisions within the contract. The valuation moves from a purely pre-contract prospective view on risk transfer and exposure analysis into a latter day, partially informed "outcome based" analysis. Certain financial efficiencies can be exacted, depending on the agreed monetization of diverse firm specific considerations of buyer and seller, noted throughout this exposition.

Appendix - an illustration of accounting in accident year (A/Y) triangle format. For illustrative purposes, assume 2 identical contracts, issued to "Clear" and "Shade" who experience identical losses. An evaluation is made at December **30**, 1998.

Payment Triangle

	@12 mos	@24 mos	@36 mos	**Estimate of Ultimate**	**IBNR**
A/Y 1996	1000	2000	3000	4000	500 ←
	1000	2000	**3000**	4000	**500**
1997	1000	2000		4000	1000
	1000	2000		4000	1000
1998	1000			4000	2000
	1000			4000	2000

Case Reserve Triangle

1000	1000	500
1000	1000	**500**
1000	1000	
1000	1000	
1000		
1000		

IBNR equal

Case Incurred Triangle

2000	3000	3500	4000	500
2000	3000	**3500**	4000	**500**
2000	3000		4000	1000
2000	3000		4000	1000
2000			4000	2000
2000			4000	2000

If we were to commute "Shade" for accident year 1996 ***only*** on **December 31, 1998**, then we would see adjustments in payments, case reserves, and the IBNR forecast as follows.

- Assuming the commutation price of the unpaid 1000 = 500 (a heavy discount).
  Shade paid becomes **3500**
  Shade case unpaid = **0**
  Shade case incurred = **3500** << same value !
  Shade IBNR becomes **0**

  Paids have increased but case incurreds have not. Case reserves can be booked as though they were 100% paid. Only Clear IBNR remains @ → 500. **Isolate the data!**

- Commuting 1000 of unpaid Shade liability in amounts > 500 will show + case incurred development.
- Commuting 1000 of unpaid Shade liability in amounts <500 will show negative case development.

The company must decide how to register Shade payments against the cases, individually reserved.