**Derivation of a framework for annual financial statements of a property-casualty insurance firm: from Adam Smith to the modern insurance firm**

**Abstract**

This article derives a framework for annual financial statements of a property-casualty insurance firm from first principles using Adam Smith’s statement of the operation of an insurance firm as the point of departure. The derivation incorporates current standard accounting principles and regulatory requirements. In the end it will be seen that a substantial correlation exists between the final derived framework and current practice of a modern insurance firm. It remains to be seen if a similar correlation will exist once the long awaited international accounting standard for insurance accounting is adopted.

**Keywords:** Financial Condition Reporting (FCR), insurance accounting, insurance provisions, insurance reserves, International Accounting Standards Board’s (IASB) *Insurance Contracts*, IFRS 4’s *Insurance Contracts*, Incurred But Not Reported provisions (IBNR), solvency of insurers, long tail legal liability risks, Solvency Assessment and Management (SAM), Solvency II, Risk Based Capital (RBC).

**JEL Classification**: G22, M41

1. **Introduction**

This article derives a framework for the Annual Financial Statements (AFS) of a property-casualty insurance company.[[1]](#endnote-1) It does so from first principles following the accounting process. The point of departure is Adam Smith’s (1776) statement on insurance which is no more than common sense and is as relevant today as it was when first made in 1776. Other researchers also have used this statement as a point of departure (Borch 1990:1; Ghossoub 2011:5) but for more limited purposes. Borch (1985; 1990), regarded as one of the founders of economics of insurance, for example used it to develop a theory insurance premiums. It has, as yet, not been used to develop a comprehensive framework of the operation of an insurance firm which is encapsulated in the annual financial statements. Applying an accounting process is useful since this process embodies both revenue and balance sheet items. If an accounting process is not used, more likely than not, only income-expenditure items would be used which can result in an outcome less useful in practice and some theoretical applications. The use of the accounting accrual system also results in the final outcome being more in line with practical reality. For example if an insurer incurs a loss of say R1bn in the last week of the financial year, clearly this claim will not be settled by the end of the financial year but has to be brought into account in the year in which the liability arose to determine the solvency of the risk pool as discussed below. Applying the accrual system overcomes what could otherwise be a complex mathematical problem, with great simplicity.

The process used to arrive at the final framework is straightforward enough. Adam Smith’s verbal statement is incrementally restated and expressed symbolically taking cash flows into consideration applying the accrual system following the accounting process. By expanding Adam Smith’s fundamental equation considering the various transactions as they logically occur the final framework is arrived at from Adam Smith’s statement. The process quickly becomes too complex to express in the form of evolving equations and is more easily expressed as a double entry spreadsheet. The process is complete when all the elements in the framework are identified. As an example the spreadsheet is populated with entries taken from the Annual Financial Statements of South Africa’s largest property-casualty insurance firm, Santam. The outcome demonstrates a high degree of correlation between the framework derived in this article from first principles and actual published statements of a modern insurance firm. Since the correlation exists the article thus fulfils a useful pedagogical purpose and can be used by anyone wishing to understand the complexities of property-casualty insurance firm accounting.

The framework derived herein has further benefits. Currently, a great deal of work is taking place in South Africa and internationally involving the management and accounting of insurance firms. Increasingly these involve international accounting standards which are to be applied to South African firms. Bearing these developments in mind it is thus not surprising to note a renewed interest in accounting of property-casualty insurance firms (Horton and Macve 1996; Simonet 2000; Lindberg and Seifert 2010, Foroughi *et al* 2011). This article is not a comprehensive discussion of these current developments or accounting standards but the framework derived in this article can provide a basis which will be useful to analyze and discuss many of these current developments. Examples of the current issues being developed include the announcement by South Africa’s Financial Services Board (FSB) the regulator *inter alia* of insurance industry that a new method of determining the Statutory Reserve Requirement (SRR) of property-casualty companies is to be implemented,[[2]](#endnote-2) which was initially called the Financial Condition Reporting (FCR)[[3]](#endnote-3) system, a form of what the American’s call Risk Based Capital (RBC) or what Europe calls Solvency II. The evolved and improved version of FCR is named the Solvency Assessment and Management (SAM) system, the development of which is now well underway. Another example is the ongoing work of the International Accounting Standards Board (IASB) in preparing accounting standards for insurance companies. International Financial Reporting Standards (IFRS 4) Part I has already been implemented as work progresses on Part II.[[4]](#endnote-4) It is anticipated that these will be replaced by the proposed International Accounting Board Standards.

1. **Adam Smith’s statement on insurance**

Adam Smith’s oft quoted statement concerning the requirement for a successful insurance firm is a useful point of departure to derive a fundamental framework of a property-casualty insurance firm from first principles. He wrote (1776: Bk 1.121):

In order to make insurance, either from fire or sea-risk, a trade at all, the common premium must be sufficient to compensate the common losses, expense of management, and afford such a profit as might have been drawn from an equal capital employed in any common trade. The person who pays no more than this, evidently pays no more than the real value of the risk, or the lowest price at which he can reasonably expect to insure it.

*Risk pool – income and expenditure*

Implicit in this statement is that a specific period of time is involved and the statement is referring to the position at the end of that period. The common (or earned[[5]](#endnote-5)) premium is the fund income, and the fund expenses are the costs of claims and expenses of operating the insurer which are attributable to the same period. The financial statements at the end of the period must demonstrate the viability or otherwise of the risk pool. The financial year of the risk pool and the various insurance contract-years, of the various individual insurance contracts entered into by the insurer must not be confused. These are unlikely to coincide, a significant fact which must be taken into consideration in the accounting system.

*Capital*

Adam Smith’s reference to capital needs consideration. Recall, he wrote the insurer will make ‘... such profit as might have been drawn from an equal capital employed in any common trade.’[[6]](#endnote-6) The statement refers to capital but does not indicate the purpose of the capital. Claims are paid, as the statement indicates, out of premiums (revenue) and not capital.[[7]](#endnote-7) If the premiums are adequate to cover the cost of claims and expenses there does not appear to be much need for capital.[[8]](#endnote-8) A possible, oft quoted reason is to hold “capital” is as a reserve in case the risk pool runs at a loss, especially in the event of abnormal losses or in the aggregate in what is referred to as bad years.[[9]](#endnote-9) In nature this “capital” would be a more of a premium contingency reserve. Abnormal losses or bad years are first covered by reinsurance, then investment income and only thereafter by reserves.[[10]](#endnote-10) Initially, during the first year of operation, the Owners’ Equity (OE) for the insurance company should be equal to or greater than the minimum reserve, RES, the prescribed Minimum Capital Requirement (MCR). For purposes of this derivation it is accepted that the Owners’ Equity, initially RES, does exist and is kept as cash or near cash, but is held as a long-term investment. This initial start-up reserve is then augmented (or depleted) as time progresses by retained earnings (or losses). Where insurers have been in existence for a long time the question of start-up capital is no longer an issue and the reserve is the ongoing reserve funded largely out of retained earnings.[[11]](#endnote-11)

Another reason for insurers’ reserves can be suggested. Since the premiums are set at the beginning of the insurance contract before claims are incurred and cannot be changed after the contract is concluded, if the aggregate cost of claims of the pool will run at a loss. The problem is it can take years for the final value of losses to be determined. It can be argued a reserve is required to cater for this eventuality. It is argued below that a special provision, a provision to close, should be raised to cater for this eventuality.

An example of a year where insurers incurred abnormal losses from an abnormal event was 2001, caused by the September 11, 2001 attack on the World Trade Center. In that year the Swiss-Re one of the world’s largest reinsurers reported its first loss in a century.[[12]](#endnote-12)  The September 11 event also resulted in enormous losses on capital markets. Those losses were far greater than the insured losses. The capital market losses also posed problems to insurers since insurers’ claims provisions and reserves were invested, in part, on capital markets. Insurers thus also experienced a sharp decline in the value of their assets.

Shareowners’ capital being capital held as a reserve is not capital deployed in terms of the usual notion of capital, as understood by economists, being applied to produce an income. Capital in the case of insurance plays a passive role of being on the balance sheet in case needed to for abnormal years, which may as in the case of Swiss Re may only happen once in a hundred years or so.[[13]](#endnote-13) While on the balance sheet the capital can be invested, with other assets, with the proviso that it should be readily available if needed to pay losses. Because capital is not used to produce the income, it could be argued that insurers by nature do not form part of capital industry but form part of the service industry. In this case then, the profit due to shareowners, which in the words of Adam Smith should be equal to ‘... such a profit as might have been drawn from an equal capital employed in any common trade’ is misleading since the capital is not directly employed to produce the profit. The insurer does indeed provide a service. For example in the case of property insurance, after a loss, the insurer will cause the property to be repaired or replaced or give the insured a sum of money equal to the loss enabling the insured to replace the lost, destroyed or damaged item. An insurer may still make a profit, but this is not from the deployment of capital. It earns a profit for services rendered, paid for out of current contributions in the form of earned premiums or investment income.

* 1. **Fundamental equation**

Adam Smith’s statement can be expressed, symbolically in the familiar symbols of the income statement of an insurance company:

Gross Premiums[[14]](#endnote-14) (PG) = Cost of Claims (C) + Expenses (E) + Return on Investment (RoI)

or;

PG = C + E + RoI ………………………………………………………. (E1)

RoI, once earned at the end of the accounting period, is distributed three ways, firstly taxes are paid, secondly dividends are distributed and thirdly the balance is retained to strengthen the insurer’s reserves.

Equation 1 illustrates the usefulness of invoking the accounting system in this analysis. E1 does not explicitly incorporate the reserve and is therefore an incomplete statement of the affairs of the insurer. It needs to be augmented by balance sheet items to complete the picture. If claims are abnormally large and hence expenses exceed the income E1 is still valid but RoI becomes negative, which will be covered by the reserve. E1 however does not reflect the involvement of the reserve. To complete the picture the reserve must be indicated and this can usefully be incorporated by introducing balance sheet items.

E1 is incomplete in other aspects. Claims C do not occur all at the same time, they occur at any point during the insurance and accounting period. Once they occur and the insurer is notified at best only an estimate of the value of the claim is known. Claims also take time to finalise, which is also not indicated in E1, which treats the values of the claims as if they are known to arrive at C. In reality this is incorrect. The value of the claim may take years to be determined. The premiums on the other hand are known since these are set and paid in advance. However, a portion of the collected premium may belong to future accounting periods. These timing differences are not apparent from E1.

A further problem is that payments to settle claims may well be made in different accounting years. If C represents provisions for claims, and not the payment of claims when reflected in E1, then it does not matter when the claims payments are in fact made. Introducing the balance sheet resolves all of these problems and renders the process more realistic, compensating for the limitations of E1. Equation (1) is shown tabular form, in Table 1, involving both the income statement and balance sheet, ignoring at this stage taxation and dividends:[[15]](#endnote-15)

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The standard industry term Underwriting Profit (PU) is preferable to Adam Smith’s Return on Investment (RoI). Smith’s statement can thus be written as:

PG = C + E + PU (E2)

or since more oft than not, it is profit which is being determined, equation (2) can be rewritten so as to express the underwriting profit:

PU = PG - (C + E) …………………………………………………… (E3)

1. **Income - expenditure statement**

The various items in the fundamental equation are examined in greater detail, starting with the income items.

* 1. **Income**
		1. *Gross premiums*

The trading income or revenue of the insurance firm is the gross premiums written (PG).[[16]](#endnote-16) This is the aggregate premiums, accruing over the accounting period from the host of insureds for all classes (or lines) of insurance. The accounting system is accrual based. Transactions are accounted for as and when they occur, not when the cash is received. As soon as individual premiums accrue, the insurer can issue an invoice. Generally insurers do not issue invoices for personal lines insurance preferring to collect premiums via debit orders. The absence of an invoice can raise VAT issues.[[17]](#endnote-17) If an invoice is issued the income statement can be credited and debtors, a balance-sheet item, can be debited, assuming that is, the insurer opens a debtors’ folio to record premiums due, before they are received. Once payment is received (PREC) debtors are credited and current assets (the bank) debited. The difference, or balance of the debtors’ folio, is trade debtors. Where an invoice is not issued and the transaction recorded from cash received in the bank from debit orders, the income statement is credited and the bank debited.

The smooth operation of insurance firms requires that the premiums be collected, as soon as possible, after insurers accept the risk.[[18]](#endnote-18) Premiums are paid in advance of claims because the income is needed to pay claims as and when these arise. Insurers accordingly in principle do not extend credit to insureds.Insurers should have very low levels of outstanding debts in the form of outstanding premiums. Indeed the prompt collection of premiums has, for some time been regulated in South Africa, to ensure that once an insurer is on risk, the cash reaches the insurer as quickly as possible.[[19]](#endnote-19) The reason for the introduction of this legislation was not tardiness on the part of insureds to pay premiums but to prevent insurance brokers from retaining the premiums instead of expeditiously passing these over to the insurer. It was in the interests of insurance brokers to retain premiums as long as possible and earn investment income on the retained premiums. It can be argued that legislation for this purpose was unnecessary since insurers are able to and do manage their own cash flows through the mandatory contracts with brokers (s45 of Act 53 of 1998). Be that as it may the legislation does exist. Brokers nevertheless use the legislation to ensure prompt payment of premiums by insureds and pay the collected premiums over within the prescribed period.

The practice of brokers collecting premiums raise an important question. In the event of an insurer being placed in liquidation, the question becomes who owns the premiums held by brokers; the insured or the insurance firm? In South Africa it was held in an unreported test case, correctly it is submitted, that the premiums belong to the insurance firm.[[20]](#endnote-20) It is generally accepted that brokers are the agents of the insurance company for the collection of premiums and thus the premiums are held on behalf of insurers.[[21]](#endnote-21) This raises a further problem; insurers are exposed to the risk that brokers may abscond with the premiums. Where brokers hold premiums on behalf of the insurer is a requirement that brokers take out fidelity insurance to cover the premiums in their custody.[[22]](#endnote-22) In many cases, especially where smaller brokers are involved insurers insist premiums be deposited directly into their own bank accounts.

* + 1. *Investment income*

Insurers also earn investment income (II), an issue which does not appear in Adam Smith’s above statement. Investment income is derived from a number of sources. As pointed out above, insurers must hold some initial capital which, as the years progress, is augmented by retained earnings. This constitutes the insurer’s total reserve. The existence and quantum of the reserve is regulated by legislation which requires insurers to hold an additional amount over and above amounts needed to cover the insurer’s liabilities.[[23]](#endnote-23) Before the current risk based capital initiative the additional amount had to be greater than 15 per cent of net premiums. In addition to this, after the liquidation of the AA Mutual in 1986, the Melamet Commission (1988) which was appointed to investigate the collapse of the AA Mutual recommended that a further catastrophe reserve equal to 10 per cent of net premiums be held by insurers. The Insurance Act was amended to incorporate this recommendation. In other words the Owner’s Equity or reserve of an insurer had to be equal to or greater than 25 per cent of the net premiums. The Owners’ Equity, the mandatory reserve, also generates investment income which is thus a source of investment income. The Owner’s Equity held by conservative insurers usually exceeds the mandatory 25 per cent of net premiums. The additional capital strictly speaking is not legally required and could be distributed to shareowners. A second source of investment income thus comes from amounts held by insurers in excess of the mandatory reserve.

Another source of income comes from holding various provisions. As will become clearer below, insurers raise a number of provisions; for example, when a claim is reported a provision is raised for the claim and assets are held to, eventually, pay the claim. A source of investment income is thus the investment income generated on assets held to match provisions such as outstanding claims provision, or in IFRS terminology, *Insurance liabilities or contracts*. Some classes of claims such as liability claims may take years, even decades, to be resolved.

The above sources result in the insurer having assets which are invested and which produce an investment income. Nowadays this investment income is divided into earned income (IIE) and unrealized gains (IIU) (or losses) which arise from changes in market prices of assets. These movements are currently taken through the income statement and shown as unrealized gains or losses at fair value through the income statement. Investment expenses EI are incurred in managing the investment income, for example fees paid to asset managers and other consultants. The difference between investment income and expenses is the investment profit (PI).

An insurer also will almost certainly earn income from miscellaneous sources, IMIS which is not significant for the purposes of this article.

Smith’s equation can accordingly be expanded to take investment income into account:

PU + PI = [(PG + IMIS)- (C + E)] + (II – EI) (E4)

Where investment profit (PI) is the investment income (II) less investment expenses (EI).

Profit before Tax (PbT) = PU + PI ………………………………… (E5)

PbT thus comes from two sources underwriting activities and investment income. Adam Smith’s observation that the operation of the insurance firm must be such as to ‘afford such a profit as might have been drawn from an equal capital employed in any common trade’ is important at this stage. The profit from the insurance operation is not only the underwriting profit but the total profit from the operation; the sum of both underwriting and investment profits. If the profit falls below ‘what can be drawn from … capital employed in any [other] common trade’ then clearly investors will not be interested in investing in insurance firms. The profit is thus not the maximum profit but the minimum profit needed to attract investors and is in general fairly constant, being the market return. This rate of return is the cost of capital. A fairly constant rate of return implies that as one source of the two profit sources increases the other decreases. Investment income could thus subsidize underwriting profits. The mathematical function of underwriting profits of property-casualty insurance firms has been extensively studied, in particular the cyclical nature of these profits, or the so-called [profit] underwriting and insurance cycles.[[24]](#endnote-24)

PbT is used to pay taxes, dividends and the balance retained as retained earnings (RE) to increase the reserves. Insurers’ reserves are held for the long term and hence not all assets of insurers need to be held in cash or near cash. Some investments can and are usually held as non-current assets. Equations 4 and 5 are shown in Table 2 in the familiar tabular accounting form.



* + 1. *Cession of income for reinsurance*

Insurers usually reinsure part of their exposure. The reinsurance premium which is paid must be brought into account. A portion of the gross the premium is ceded to reinsurers. The reinsurance premium is not treated as an expense, a deduction, but is treated as a portion of the gross premium income ceded to reinsurers. The insurer’s gross income is accordingly reduced by the amount ceded to reinsurers as the reinsurance premium (PR). The ceded portion is subtracted from the gross premium, and the difference is the net premium (PN).[[25]](#endnote-25)

* + 1. *Reinsurance commission (RC)*

Although a loss is reinsured the direct insurer remains responsible for the full value of the loss (unless co-insurance is involved). The direct insurer thus incurs expenses in dealing with the claims, including dealing with the reinsurers’ portion of the claims. It is appropriate for the reinsurer to pay the direct insurer a commission, in the same way that an insurer pays the broker a commission (acquisition cost). The direct insurer thus receives a reinsurance commission for business placed with the reinsurer (RC), which forms part of the direct insurers income.

PbT = [(PG - PR + RC) - (C + E+ EI)] + II ……………… (E6)

PbT = PN + II +RC – (C+E+ EI) …………………… (E7)

* + 1. *Unearned premium provision (UPP)*

Premiums may accrue at any time during the accounting period as and when policies are issued. In most cases the period of the policy is also a calendar year, starting from the date of the policy inception.[[26]](#endnote-26) This inception date is hardly likely to coincide with insurer’s accounting period. Provision thus must be made to account for premiums which accrue in one accounting period but a portion of which belongs to another. Thus assume an insured pays an amount ***p*** for one year’s (365 days) cover, ***n*** days into the insurer’s accounting period, also usually a year. Only a portion of that premium, ***p*** . [365 - (***n***-1)]/365, belongs to the insurer’s current year, the balance belongs to the next year. A further example is where an insurer receives a single premium which covers several years. Thus in the case of credit life insurance which covers say the outstanding purchase price of a motor vehicle. A single premium used to be paid up-front, covering the credit period, of say five years.[[27]](#endnote-27) This single premium then must be apportioned over the five years. A further example is project insurance which is taken out at the beginning of the project and covers the duration of the project. Multi-billion rand projects can run over several years and it is inadvisable to change insurers during the course of project, if indeed possible. The allocation of the premium over the duration of the project also cannot be on a linear basis, since during the early part of the construction period the value of the completed work, the value at risk, is relatively small. The insured risk is small at that stage. These examples make it clear that a provision, the Unearned Premium Provision (UPP) must be raised against the accrued premiums to cater for income apportioned to insurance periods and is required to be raised in terms of s32(1)(b) of Act 53 of 1998.

The income statement is debited with the UPP and, the balance sheet is credited, in terms of IFRS terminology, to *Insurance liabilities* with the same amount. Since the insurer is a going concern, a UPP exists on the balance sheet on a continuous basis and accordingly the debits to the income statement constitute increments to the overall UPP provision which is maintained on the balance sheet. The income statement thus reflects the increments to the Unearned Premium Provision on the gross premium (ΔUPP). Since, as pointed out above, accrued premiums are ceded to reinsurers, a provision must also be raised to cater for the portion Unearned Premium Provision on the ceded premiums (ΔUPPR). The provisions on the balance sheet are also adjusted accordingly.[[28]](#endnote-28) Since as a general rule the quantum of premiums increase on a year-to-year basis, the ΔUPP is expected to increase on a year-to-year basis. What is left after the unearned premium provision adjustment is subtracted is the Earned Premium PE.

PbT = (PN - ΔUPP ) + II + RC - (C + E+ EI) …………………. (E8)

PbT = PE +II+RC - (C+E+EI) …………………………………..(E9)

* 1. **Expenditure**
		1. *Claims provisions*

The most important category of expenses consists of provisions for the cost of claims.

* + - 1. Provision for incurred and reported claims (CP)

Because of the nature of insurance claims C, in Adam Smith’s statement can seldom be the actual value of claims paid. When a claim is reported to an insurer the accrual principle requires that the income statement be debited with a claim provision (CP), based on the best estimate at that time of the quantum of claim. It is also a statutory requirement to raise this provision (s32(1)(a) of Act 53 of 1998). This is done as a matter of course on a case by case basis. This provision is associated with an actual claim which is reported to the insurer. A balance sheet item is credited with the same provision, which terms of the IFRS requirement is labeled *Insurance liabilities*, It is unlikely that the accounting year in which the claim is reported will also be the year in which the final payment in settlement on a claim is made. Interim payments may be made and payments may be made in years subsequent to the year when the claim was first notified to the insurer. Some claims, especially legal liability claims, may take years if not decades to settle. However once a provision has been raised it does not matter in which year payments are in fact made. What does matter is that the provision be accurate. Since eventually when all claims for a particular year are settled there may be a short-fall in the original estimate of the cost of claims, insurers should raise a provision, *Year to Close* P*rovision* to cater for this as discussed below. In any event the shortfall, if not covered, could be catered for in the reserve as discussed above. Individual Lloyd’s syndicates because of their particular nature, covered this eventuality by taking out *Reinsurance to Close* cover. On the other hand the other syndicates which accepted this risk faced insolvency in the liability crisis of the 1980-2000s.

*Long tail liability claims*

Liability risks and claims pose particular problems, the implications of which generally are not understood and specifically not by managers of insurance companies, professionals involved in insurance or insurance regulators. The accounting treatment of long liability risks requires separate in-depth discussion which is beyond the scope of this article. The problem is therefore only briefly discussed herein. Problems arise because liability risks can involve what are called long tail liabilities.

Current liability claims can involve events which happened in the far distant past. Take for example the R400 m settlement that Gencor paid in an out of court settlement for asbestosis related claims. Some claims arose from events which occurred forty or so years prior to the year of settlement. At that time, 40 years previously, no legal liability claim would in law have been possible. These are thus legally retrospective claims. No provision was ever raised for these claims. When these claims were finally settled, they were settled at current day values. The aggregate value of the claims exceeded the total revenue ever generated by the asbestosis sales forty years previously. If covered by insurance the cost of the claims would have exceeded insurance premiums collected. Thus with these retrospective type of claims, no premiums were ever charged, no provisions were ever raised. It should be clear that these claims can cause an industrial company or insurer to face insolvency. Fortunately in the Gencor case insurers were not involved. As a consequence of the American liability crisis of the 1980s liability policy wordings were changed to cater for this problem from the *occurrence wording* to the *claims first made wording* to deal with this type of problem. Only claims which are reported during the year of insurance need to be provided for.

Liability claims can also be long tail in the length of time they can take to settle. When a claim is first notified, the available information may be insufficient to raise an accurate provision. In theory the initial provision should equal the final settlement cost or the cost will be attributable to subsequent years. Additional information usually becomes available in subsequent years and if a variation is passed during these years, this will result in amounts being charged to these successive years which have nothing to do with these intermediate years. Expenditure and income will be mismatched. The claim did not arise in any of the subsequent years. When the claim is finally settled, the cost in some cases could be 15 or so times the initial estimate. Again it should be clear that the aggregate cost of claims in the order of 15 times the initial estimate could cause the insolvency of an insurer.

A further problem associated with liability claims is the realization of the possibility that future claims will be raised against insurance policies issued in the past. The question then arises what accounting transactions must be raised when the realization dawns? It can be argued that this was the source of the financial difficulties which Lloyd’s faced in the late 1980s to the early 2000s. The same problems were associated with asbestosis and pollution claims. Once the common law was reinterpreted resulting in the possibility of insurers becoming liable for these claims the financial problems became inevitable. At the time these were not actual reported claims but concern for the cost of claims which might be instituted. It is suggested the estimated cost of these concerns should form part of the insurer’s reserve requirements and no provisions should be raised.

As indicated how liability claims should be accounted for, is currently poorly understood and is best dealt with as a separate study. It should be clear however that a case by case provision may in many instances be inadequate to cater for this class of risk. Specifically where long tail risk exist the insurer should raise a further provision, the *Year to Close* provision, to cater for claims which cannot be accurately estimated on a case by case basis as discussed. The *Year to Close* provision could result in the initial year’s loss ratio, of a liability insurer, exceeding 100 percent, with the bulk of the claims expenditure forming part of the Year to Close provision.

* + - 1. Provision for reinsurance recoveries

Where a claim is subject to a reinsurance recovery (RR) a provision is raised to reflect the recovery. This provision is credited to the income statement to offset the estimated cost of the reported claim and the identical amount is debited as a current asset to reflect the amount due from reinsurers. Amounts due from reinsurers, *reinsurance assets*, form a substantial part of the assets of the insurer. Reinsurers do not pay direct insurers when notified of the claim but will generally pay the direct insurer to coincide with the direct insurer’s payment to the insured. Assume for example that the insurer agrees to settle say a R500 m claim and the reinsurer is liable for R450 m. The insurer will issue a cheque for R500 m to the insured and back to back the reinsurer will make the deposit of R450 m into the insurer’s bank account. The reinsurer will not deposit R450 m cheque on the mere notification of the loss.

With smaller claims the insurer prepares a bordereau of claims which is submitted to the reinsurer rather than submit claims on a claim by claim basis. The reinsurer issues a cheque to cover the bordereau.

* + - 1. Incurred But Not Reported (IBNR) provision

Insurers only become aware of a claim when the claim is reported. In most cases, especially in those cases where policies are issued on an occurrence basis, the insurer is liable when the loss event occurs, and not when the claim is reported to the insurer. Clearly, there is a delay between the date of occurrence and date the claim is reported to the insurer. An insurer must raise a provision to account for these incurred but not (yet) reported claims; this is the *Incurred But Not Reported* (IBNR) provision.[[29]](#endnote-29) This provision is not matched to an existing notified claim. It is in relation to possible existing claims; claims in the pipeline. In concept every notified claim first existed as an IBNR provision. The insurer must thus raise an IBNR provision and at the same time raise a provision for any reinsurance recovery associated with these for these. As with other provisions, the IBNR exists every day and not only at the end of the year, since every day there are claims in the pipeline. Consequently an IBNR provision exists on the balance sheet as an element of *Insurance liabilities* and the income statement indicates changes in the IBNR provision. An insurer should regularly check if the IBNR provision on the balance sheet is adequate and if not, pass an adjustment to the IBNR provision via the income statement. Claims attributable to the income statement thus include the change in IBNR provision (∆IBNR) with the corresponding provision, IBNR, on the balance sheet.

There is unnecessary confusion as to what should be included in the IBNR provision. The asbestosis crisis can be used to illustrate why this can be so. As the American courts began to reinterpret the common-law and then insurance contracts to recognize asbestos liabilities, long tail liabilities, insurers began to account for these possible liabilities. Some appear to have included estimates for these possible long tail liabilities as part of the IBNR provision instead of these forming part of the *Year to Close,* Unexpired Risk provision or the most correct reserves. It is suggested that it is incorrect to include possible unknown claims as part of the IBNR provision and that the IBNR provision should be confined to claims in the pipeline attributable to the previous financial year. Claims beyond that period cannot be regarded as existing claims in the pipeline. These possible long tail liabilities are thus something different from the usual exiting claims in the pipeline catered for within the IBNR provision. It is thus recommended that IBNR provisions be confined to the previous financial year. Care should be taken not to raise provisions when in fact a reserve and not a provision is appropriate.[[30]](#endnote-30) To do so will result in a solvent firm being portrayed as being insolvent. The IBNR by definition is not attached to any known claims, since the provision is to account for unknown claims in the pipeline. If more than a year as lapsed and no claim has been reported serious doubts must exist as to the actual existence of these claims. Simply allowing for possible claims as apposed for accounting for claims in the pipeline is more appropriate to a reserve than a provision and if treated as a provision then a separate provision should be raised.

* + - 1. Year to Close (YtC) provision

Insurers do not usually raise a *Year to Close* provision, PY, but it is suggested that this provision is important and should be raised. As indicated each financial year of an insurer should be treated as a separate annual risk pool. It is important to know if the annual risk pool was solvent or not. When a year is closed if doubt exists whether or not the existing provisions are adequate to cover the liabilities a further provision, the Year to Close provision should be raised. This provision should be raised to cover possible liabilities which may become clearer in subsequent years. As indicated above, in certain classes of insurance, the case by case method may not produce accurate estimates of the final cost of claims since the initial information may be inadequate. In this case the additional provision the *Year to Close* provision becomes necessary to ensure adequate provision has been made to cover the liabilities.

The importance of the *Year to Close* provision can be gauged from the financial problems which beset Lloyd’s of London starting in the in the mid 1980s as well as the collapse of the HIH Insurance company in Australia. Lloyd’s syndicates took out *reinsurance to close* with other syndicates which was one of the sources of Lloyd’s problems, especially for the syndicates which accepted the risks.[[31]](#endnote-31) HIH was wound-up mainly because of estimates of uncertain future claims costs.[[32]](#endnote-32) Clearly future claims should not have been for provided for as costs for claims already reported but to be settled in the future. As indicated once a provision has been raised it is irrelevant when the claim is settled. If the provisions for reported claims were inadequate that is one thing. Liability for possible future claims, still to be reported in future years on existing policies is a different problem. This should not happen. Policies should be issued to cover the insurance year, not years indefinitely into the future. If the income for a year has be exhausted, the an Unexpired Risk Provision should be raised (s32(1)(d) and (2) of Act 53 of 1998). At the end of the each year a provision should be raised to cater for any outstanding liabilities not covered by existing provisions but attributable to each year, the *Year to Close* provision.

* + - 1. Settling claims - closing variations

As pointed out above, the claims entries which appear on the income-expenditure statement are in reality mainly provisions and not actual claims payments. The actual cost of claims paid may not be known for some years after the close of the year, Thus each reported claim will produce a variation compared to the provisions when the claim is finalized. If the initial case by case provision is accurate the small balance covered by the *Year to Close* provision will be small, if not zero. If the provisions are in accurate the *Year to Close* provision will be large. The final value of the *Year to Close* provision reflects the accuracy of the claims provisions.

 Settling claims, if raised as provisions, involve balance sheet items, not the income-expenditure statement items. Payments made to insureds covers the total cost of the claim including amounts recovered by the direct insurer from the reinsurer. When a claim is settled the insured is paid, CPD and *Insurance liabilities* is debited and the bank credited. When a reinsurance recovery is involved a payment is also received (RREC) from the reinsurer with respect to the claim. With respect to this transaction the bank is debited with the payment and reinsurance recoveries, credited. After the settlement of the claim has taken place there could be a balance, claims variance, CV because the original estimate was slightly out. This balance should be posted to the appropriate *Year to Close Provision*. If in the end when all claims, for the specific year, are settled and if a balance remains on the *Year to Close* provision, this final closing balance is posted to the then current year income and statement. By monitoring the balance of the *Year to close* provision for each year, it can be determined whether or not the claims estimates were accurate and if the risk pool for that year was in fact viable. It can take decades to settle some claims and thus to finally close off a year. A year can be considered to be closed when there are no unfinalized reported claims left for that year. The profitability of each year, or Adam Smith’s risk pool then becomes known. Knowing the solvency of each annual risk pool is important.

If a claim is rejected, repudiated or withdrawn reversal entries can be posted.

The claims entries on the income-expenditure statement can thus be summarized as follows:

Provision for reported claims: CP

Change in the provision for IBNR claims ΔIBNR

Less: Reinsurance recoveries (RR)

Less: Change in the reinsurance provision for IBNR claims ΔIBNR

Year to close provision: YtC

If CP is accurate then in the end CP has the same value as claims paid and final variation posted to YtC is small. Since reinsurance recoveries are subtracted from the value the total claims reported, claims paid of an insurer is only the portion of the cost of claims for which the insurer is responsible and not the value of actual claims paid.

* + - 1. Unexpired Risk Provision (URP)

As pointed out there is another provision, the Unexpired Risk Provision (URP) which is sometimes raised. It can happen that the risk continues in circumstances where it is known that the premiums are insufficient to cover the remaining period of the policy. Under these circumstances a provision, the URP, is raised to cover the unexpired portion of the risk. As indicated above confusion can exist between the URP and required reserves especially where possible long tail liabilities exist. The treatment of this kind of risk is left for a more detailed paper on that problem.

* + 1. Expenses

As indicated in Adam Smith’s statement, in addition to claims expenses need to be taken into consideration. Four main categories of expenses can be identified or E can be sub-divided into four categories. Firstly there are acquisition costs (EA). In most cases and especially in South Africa, which traditionally is regarded as predominantly a broker market, the bulk of insurance business is introduced or acquired via insurance brokers.[[33]](#endnote-33) Insurers pay brokers, usually, a commission or in terms of accounting standards it is said that insurers incur acquisition costs; costs to acquire the business. The second category of expenses are the management costs, the costs of running the insurance company (EM).[[34]](#endnote-34) Thirdly there are claims handling expenses (EC). These costs are not always easy to separate from general claims expenses or in some cases even management expenses, EM. Claims costs could be apportioned to claims and management costs. The claims handling costs are not usually shown as a separate expense category but form part of the cost of claims. This could be important since some of these costs are then recoverable from reinsures.

Finally there is the fourth class already discussed, investment expenses. Since the investment profit, is as large as and often much larger than the underwriting profit investment expenses (EI) should be indicated as a separate category.

**2.3 Statutory Reserve Requirement (SRR)**

As indicated in South Africa insurers until recently were required to hold a amount of assets equal to 15 per cent of net premiums and an additional catastrophic reserve of 10 per cent of net premiums giving a total additional amount of 25 per cent of net premiums.[[35]](#endnote-35) At this point in time there is no accepted theoretical basis determining how the quantum of this additional amount should be determined.[[36]](#endnote-36) The current ratio is referred to as the solvency ratio. Insurers are required thus to have a solvency ratio of not less than 25 per cent. The phrase ‘solvency ratio’ is however deceptive since it implies that if the ratio falls below this figure the insurer is or faces insolvency or has a solvency problem. This of course is incorrect. Any value of Owners’ Equity greater than zero means that the insurer is technically solvent, ie it can meet every known outstanding liability. The failure to understand this, results in regulators applying to court to wind-up perfectly solvent companies as happened in South Africa with the AA Mutual and IGI insurance companies. The AA Mutual was declared insolvent by press headlines[[37]](#endnote-37) but was in reality perfectly solvent, having a substantial surplus at the end of the 20 year winding-up process.[[38]](#endnote-38) To avoid confusing solvent companies with insolvent companies, it is recommended that instead of using the term *solvency ratio*, the term *Statutory Reserve Requirement* (SRR) be used instead.

Clearly at all times the insurer must check if its Statutory Reserve Requirement is above the prescribed limit and if not steps must be taken to improve it. Where the Owners’ Equity exceeds the statutory amount, the excess can be distributed to shareowners. Most insurers maintain reserves well in excess of the SCR.

1. **FINAL FRAMEWORK: SANTAM’S ANNUAL FINANCIAL STATEMENTS**

The above completed framework of a property-casualty insurance firm is set-out in Tables 3 and 4. The framework is populated with corresponding results taken from Santam’s annual financial statements for 2011. Santam is South Africa’s largest short-term insurer. The populated figures are included in the table merely for illustrative purposes. The Santam results are for the insurance company and not the group. The figures have not been recast for purposes of the analysis. Obviously not all the items in the derived frameork can be taken directly from the financial statements of an operational company. So for example in developing this framework an indication of various banking transactions were discussed but the published financial statements do not record the individual banking transactions but merely the total on the banking account. As a general conclusion, however, it is clear that the financial statements of property-casualty insurance companies in South Africa accord closely to the framework which was derived from Adam Smith’s statement and explained in this article. Currently annual financial statements of insurance firms can be said to rest on a sound theoretical basis.

1. **CONCLUSION**

Using Adam Smith’s statement of the operation of an insurance firm it is possible to derive a practical framework of a property-casualty insurance firm. As it turns out the derived framework coincides largely with the current insurance accounting statements. Adam Smith’s statement can result in each accounting year effectively being treated as a risk pool. From this article two recommendations can be made which will result in current accounting practices being more clearly aligned to Adam Smith’s statement. Firstly, the IBNR provision should be restricted clearly to providing for claims in the pipeline and not for more remote uncertain claims especially possible unreported future claims. Accordingly IBNR provisions should be limited to claims from the proceeding accounting year. Secondly, a new but not altogether unknown provision should be introduced, the *Year to Close* provision. Contributions to this provision, from the income statement, the outstanding balance on the balance sheet and final closing balance will give a good indication as to the profitability of each year, or the profitability of each annual risk pool.





**Annexure A - Symbols**

C Cost of claims

CA Claims adjustments

CE Claims estimate

CP Claims provision for reported claims

CPD Claims paid

CV Claims variations

Div Dividends paid

E Expenses

EC Claims handling costs

EA Cost of acquiring, servicing and retaining business. Brokers’ commissions

EI Investment expenses

EM Management or administrative costs of the insurance company

EMIS Miscellaneous expenses

FCR Financial Condition Reporting

GWP Gross written premiums

IASB International Accounting Standards Board

IBNR Claims Incurred but Not Reported provision

∆IBNR Adjustment to Claims Incurred but Not Reported provision

∆IBNRR Adjustment to Claims Incurred but Not Reported provision for reinsurance recoveries

IFRS International Financial Reporting Standards

IGF Intermediaries Guarantee Fund

II Investment income

IIE Earned or realized investment income or gains

IIU Unearned or unrealized investment income or gains

IO Income from insurance operations

IP Investment profit

IMIS Miscellaneous income

***n*** Number of days into an insurer’s financial year

MCR Minimum Capital Requirement

NWP Net written premiums

OE Owners’ Equity equal to Assets minus Liabilities

PbT Profit before Tax

PE Earned premiums

PG Gross premiums

PI Investment profits

PM Miscellaneous profits

PN Net premiums

PR Premiums ceded to reinsurers

PREC Premiums received

PU Underwriting profits

PY Year to close provision

***p*** Premium paid by an individual

RBC Risk Based Capital

RC Reinsurance commissions due to the insurer

RE Retained earnings

RES Reserve at the beginning of the period

RR Reinsurance recoveries for reported claims

RREC Reinsurance payments received in settlement of claims

RoI Return on investment to shareowners

RR Reinsurance recoveries

SAM Solvency Assessment and Management project

SCR Solvency Capital Requirement

SRR Statutory Reserve Requirement

UPP Unearned Premium Provision

UPPR Unearned Premium Provision for reinsurance

ΔUPP Adjustment to the Unearned Premium Provision

∆UPPR Adjustment to the Unearned Premium Provision for reinsurance

URP Unexpired Risk Provision

Tax Taxes paid

YtC Year to Close provision

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1. **End notes**

 In South Africa a distinction is made between life (long-term) and short-term insurers. Short-term insurers are also sometimes referred to as General or Non-life insurers. Actuaries usually refer to short-term insurers as General Insurers. South Africa is one of very few countries which refers to short-term insurance companies (Cummins and Venard 2008). To make this article more understandable to an international audience the description property-casualty is used. Property-casualty (or liability) insurers is used in America. [↑](#endnote-ref-1)
2. The proposed terminology for the Statutory Reserve Requirement in terms of SAM is the Statutory Capital Requirement (SCR). Previously (ie the current measure) is the solvency ratio. [↑](#endnote-ref-2)
3. The details of the proposed system were set-out in an Issues paper by the FSB in early 2007. The closing date for comments was the 31st May 2007. The proposed date of implementation was 1st January 2009. Calibration studies indicated a great deal of additional work would be required before the system could be implemented and as a consequence with additional work FCR mutated into SAM which is more closely aligned to Solvency II. Work is progressing on SAM and the implementation date is set at 2016. In Europe country wide consensus has not been reached and it appears unlikely that this consensus will be reached on Solvency II. It is likely that variants of Solvency II will be introduced in member countries of the European Union. [↑](#endnote-ref-3)
4. An Exposure Draft was released in June 2010 for public comment. The second or revised Exposure Draft was released in July 2013 with the call for comments closing on the 25th October 2013. Implementation date is three years after the standard is published. [↑](#endnote-ref-4)
5. The meaning of *earned* is discussed in the article. [↑](#endnote-ref-5)
6. Smith’s statement may have been more accurate in terms of how insurance operated in 1776. Wealthy individuals accepted risk in return for the premium. In the event of the loss they paid the loss out of their own capital. Premiums were not pooled as happens today. Individuals then risked their capital in accepting risk. Almost inevitably modern insurance companies pay claims out of the pooled premiums and reinsurance and investment income. [↑](#endnote-ref-6)
7. This point is made despite the existence of an enormous body of literature on capital and capital allocation of short-term insurance companies. [↑](#endnote-ref-7)
8. Some capital of course, will be needed for the insurer’s infrastructure such as buildings, furniture, motor vehicles and so on. [↑](#endnote-ref-8)
9. An example of this is the view of Kemp (2008) who was reacting to a statement that an insurer does not require capital in the normal sense of the word. He suggested that capital is required as a reserve which is built-up out surpluses from ‘good’ years to cater for ‘bad’ years. [↑](#endnote-ref-9)
10. Hence quite correctly, being an abnormal loss, a substantial portion of the losses of the World Trade Center was borne by the reinsurance market, explaining the loss experienced by the reinsurers. [↑](#endnote-ref-10)
11. Many of South Africa’s current insurers were formed from mergers which took place over a long period, in excess of a century. The ancestry of Mutual & Federal can be traced back to the origins of the South African insurance market, just over 200 years. For the history of the Mutual & Federal see Vivian (1995). [↑](#endnote-ref-11)
12. ‘Swiss Re in red for first time in over 100 years’ *Business Report* February 27, 2002. By 2006 reinsurers were once again making profits; ‘Munich Re’s profit rises six fold’ *Business Report* June 4, 2006 [↑](#endnote-ref-12)
13. Even in the case of an unusual year, in practice it is unlikely that the losses will be paid out of reserves. Insurers have a constant stream of income from of current premiums. Losses will be paid, in the first instance, out of this stream. The reserves ensure that the insurer is factually solvent, should it cease operations. [↑](#endnote-ref-13)
14. The usual phrase is Gross Written Premiums, but since this old terminology is being phased out in more recent discussions. Gross Premiums will be used in this article. [↑](#endnote-ref-14)
15. A recent change introduced by IFRS is to no longer refer to the Balance Sheet but to refer to it as the *Statement of Financial Position*. This article will retain the phrase Balance(s) Sheet as a functional reference. Traditionally folios were either revenue or balance sheet items. At the end of the period of accounting all revenue items were posted to the profit or loss account resulting in a zero balance and what was left was a list of balances. The Balance Sheet was thus the list of folios which had a balance. The Balance Sheet functionally was thus the sheet of balances. [↑](#endnote-ref-15)
16. Gross premiums are often referred to as Gross Written Premiums (GWP) and indicated in note 9 above. [↑](#endnote-ref-16)
17. The Vat issues were clarified by Binding General Ruling (Vat) No 14 dated 22nd March 2013 which specifies the conditions required to exempt an insurer from issuing a tax invoice. [↑](#endnote-ref-17)
18. An erroneous view often encountered in practice is that an insurer is not on risk unless the premium is paid. The payment of the premium is not however a prerequisite for the validity of an insurance contract; *British Oak Insurance Co., Ltd v Atmore* 1939 TPD 9; *Lake and Others NNO v Reinsurance Corporation Limited* 1967 3 SA 124 W [↑](#endnote-ref-18)
19. The relevant legislative provision was s20bis of the now repealed Insurance Act 27 of 1943. This section was inserted into the Act by s17 of Act 10 of 1965 and was subsequently amended. The issue is currently regulated by s45 of Short-term Insurance Act 53 of 1998 and in particular the regulations promulgated in terms of the Act. The substantive requirements are now contained in the regulations. [↑](#endnote-ref-19)
20. This conclusion reached by the Appeal Court relied heavily on s20bis of the now repealed insurance Act. The relevant cases would have to be carefully read to decide if the conclusion is still valid now that s20bis has been repealed and replaced with the new and differently worded provisions. In the UK which does not have the legislation equivalent to s20bis, the question has no clear answer. [↑](#endnote-ref-20)
21. Vivian (2002); The issue of ownership of premiums held by brokers did arise with respect to the liquidation of the AA Mutual and a test case was taken to the courts. The High Court judgment which dealt with the common law position was unfortunately not reported but the appeal court decision was; *Premier Milling and Co v Van der Merwe and others NNO* 1982 2 SA 1 A. This judgment relied heavily on s20bis. See also the judgment of *Connolly NNO v National Aviation Insurance Broker* 1990 W which also arose out of the liquidation of the AA Mutual. [↑](#endnote-ref-21)
22. See regulation 4 read together with s45 of the Short-term Insurance Act 53 of 1998. The cover is provided by the Intermediaries Guarantee Fund (IGF). Again, it is not clear why this should be a legislative requirement. The public are not exposed to any loss since the broker collects the premium on behalf of the insurer. The public do not receive any protection from the fidelity insurance. Fidelity insurance can be dealt with via the contract. [↑](#endnote-ref-22)
23. This aspect is governed by s29 of the Short-term Insurance Act 53 of 1998 which was amended by Act 27 of 2008 in preparation of the risk based capital regime. S29 must be read in conjunction with the 2nd Schedule to the Act. [↑](#endnote-ref-23)
24. Venezian (1985), Cummins (1987), Doherty (1988), Gron (1990). [↑](#endnote-ref-24)
25. This is also often called the Net Written Premium (NWP). [↑](#endnote-ref-25)
26. With personal lines insurance the tendency is that annual premiums are paid as monthly instalments. When first introduced this was regarded as a revolutionary breakthrough. It is generally thought that Santam was the architect of this development Vivian (2001; 120). [↑](#endnote-ref-26)
27. In terms of s106 of the National Credit Act 34 of 2005, credit life premiums may be offered on a monthly or annual basis but not be single term premiums. This of course greatly increased the administration costs with no discernable benefit to the public. [↑](#endnote-ref-27)
28. The method of calculating the Unearned Premium Provision was set-out in schedule 2 item 5 to the Short-term Insurance Act 53 of 1998 before it was repealed. The current requirements are set-out in Board Notice 169 of 2011 (BN 169 of 2011). This is presumably a temporary measure to be replaced when SAM is finalized. [↑](#endnote-ref-28)
29. The IBNR provision is governed by s32(1)(ii) of the Short-term Insurance Act 53 of 1998 which used to be read in conjunction with the now repealed Item 4 to schedule 2. If a figure other than the 7 per cent was used, the approval of the Financial Services Board was required. In recent years auditors have indicated that it is preferred that the figure be determined in preference to using the statutory 7 per cent. It is now common-practice for insurers to estimate the IBNR provision, rather than use the 7 per cent. Item 4, schedule 2 was replaced by BN 169 of 2011 which is far more complicated, unnecessarily so. Presumably once SAM is promulgated a new provision will be introduced. [↑](#endnote-ref-29)
30. Vivian and Britten (2012) [↑](#endnote-ref-30)
31. For a discussion of the role played by *Reinsurance to Close* in the crisis the book by Ian Davison (1987), a former chairman of Lloyd’s should be consulted. [↑](#endnote-ref-31)
32. From the reports on the HIH it is not clear what is meant by future claims. It should not mean claims which will may arise in the future. As indicated an estimate of these should rather be consulted in formulating the required reserve. [↑](#endnote-ref-32)
33. There is a long running debate about insurers acquiring business directly; these are the so-called direct insurers. [↑](#endnote-ref-33)
34. Management expenses, Adam Smith’s term conveys a rather narrow notion. Administrative expenses are probably a more appropriate term. [↑](#endnote-ref-34)
35. It is unclear that net premiums are the correct yardstick. Earned premiums may be preferable. [↑](#endnote-ref-35)
36. The quantum of this additional amount (and the method of determining it), is currently under review, in terms of the FSB’s so-called Solvency Assessment Management (SAM) proposals. [↑](#endnote-ref-36)
37. ‘AA Mutual debacle: other companies in danger – insurers facing new crisis’ *Star* May 29, 1986; ‘AA Mutual will offer compromise’ *Citizen* May 30, 1986, [↑](#endnote-ref-37)
38. Vivian (2006). [↑](#endnote-ref-38)