

## Recommendations on the measurement of the production of non-life insurance

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### Executive summary

Catastrophic events such as the 11 September terrorist attack, a major storm in France and in other European countries in 1999, hurricanes and major fires in Australia, or similar events in other countries, generate massive claims for non life insurance companies. The mechanical use of the current SNA recommendation leads, in these cases, to absurd movements of the production and, therefore, of the consumption, of insurance services at current price in the national accounts.

This ISWGNA has included this item in the list of issues for the forthcoming SNA revision. The OECD organized a task force which functioned from October 2001 to October 2003. The present report to the AEG is based on the report of this task force<sup>1</sup>. It takes into account comments made by experts during the recent OECD national accounts meeting (October 2003).

#### *The issue*

The current formula proposed by the SNA 93 to compile the estimate of insurance production (and by consequence, which is used as the basis for the measure of insurance consumption) is the following: *Formula (1): Actual premiums earned plus Premium supplements minus Claims due*. In this formula, the third term *Claims due*, can be extremely volatile, as it reflects the occurrence of risks that can happen very irregularly in any period. The volatility is mild for normal risks, but becomes extreme when a catastrophe occurs, especially on quarterly data.

The strict implementation of the formula leads to absurd movements of the measure of production at current prices. As a result, national accountants avoid affecting the volume element, thus assigning it to the price measure. However, the resulting price measure remains absurd: nobody would dare using it in the CPI.

The first conclusion of the task force was therefore to propose to set as a general principle that the production of insurance services does not occur when the risk occurs. The concept of insurance service is the service of covering for the risk. As such, its measurement should not be affected by the volatility of the occurrence of the risk.

The second conclusion was to propose alternative measures of the production of insurance services (and, thus, of consumption, export and import) in order to reflect a volume and price movement that corresponds better to the above concept.

#### *Rejected alternative solutions*

The task force did not challenge the basics of the proposal of the SNA 93, which is to base the measurement of the production on a margin (roughly the difference between receipts and payments), which covers the costs plus the profit resulting from the organization by insurance companies of the risk

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<sup>1</sup> Gabe de Vries, John Walton, Anne Harrison and Fenella Maitland-Smith contributed to the report.

coverage. It rejected old alternative ideas that would base the measure of the production of insurance services on premiums. Such solutions would lead to absurd levels of production.

The margin approach is therefore unavoidable. However, the task force insisted that the formula proposed by the current SNA should only be understood as a proposal for an indirect estimate of the concept that we are looking for. As such it should not be directly (i.e. mechanically) applied for a given period.

#### *Preferred solution*

The second principle proposed is therefore to propose the use of **adjusted** claims and **adjusted** premium supplements rather than observed claims and observed premium supplements to base the measurement of production. There are two workable practical solutions to implement this second principle. Both are acceptable and should be included in the SNA. The first one is called the *expectation approach*. The second one is called the *accounting approach*.

The *expectation approach* consists in replicating the *ex-ante* model used by insurers to price their premiums, on the basis of their expectations. When accepting risk and setting premiums, insurers consider both their expectation of loss (claims) and of income (premium supplements). This expected margin (premiums plus expected premium supplements minus expected claims) is a much better measure of the above concept of insurance service than the current formula applied ex-post. Its extreme version would be to use effectively the micro data transmitted by insurers. In the absence of this data, the proposal is to simulate this approach by (1) using macro statistics, and, (2) using smoothed past data to forecast the macro expected claim and/or macro expected premium supplement. In this case, the SNA formula becomes: *Formula (2) [Actual premiums earned [i.e. premiums receivable less changes in the reserves due to pre-payment of premiums] + Expected premiums supplements - Expected claims due*. In this formula, expected claims and expected premium supplements are estimated using past smoothed data, and applying a special treatment in the case of major catastrophes. The task force discussed of the detail of possible statistical methods to derive a good estimate of expected claims and expected premium supplements. It is proposed in this report that these methods be included either in the new Annex IV of the SNA (or in an Implementation Manual that the ISWGNA proposed to publish alongside the new SNA).

The *accounting approach* consists in (1) extending the scope of the technical reserves (called “technical provisions” in the new SNA), (2) apply an extended formula including, when necessary, changes in own funds : *Formula (4): [Premiums earned + premium supplements] – [claims due + addition to, less withdrawal from, equalization provisions + addition to, less withdrawal from own funds, when necessary]*. It is to be noted that if changes in own funds are introduced in one given period to dampen the volatility of a claim in case of catastrophe, the rebuilding of own funds after this period will also intervene (with an inverse sign,) in the formula for the next periods. Regarding technical provisions it is recommended to include in the SNA definition of provisions for unearned premiums, and provisions for bonuses and rebates, and in the SNA definition of provisions for claims outstanding the provisions for incurred but not (enough) reported incidents and equalisation provisions. These extended technical provisions will be considered assets of policyholders or beneficiaries, depending whether they are classified as provisions for unearned premiums or provisions for outstanding claims. All income from these provisions will be considered as premium supplements. Contrary to the expectation approach, the accounting approach uses ex-post data, thus observed claims due. However, the volatility of claims due is expected to be compensated by the movements of the equalisation provisions and, in the case of catastrophes, of own funds.

Whether using the expectation or the accounting approach, the departure from the current formula of the SNA implies the introduction of an adjustment item in the sequence of accounts of the institutional sectors in order to reintroduce somewhere the actual claims due and actual revenues from investment. Several

alternatives were discussed. The preferred solution is the simplest one, which does not affect the property income flows (D44). It consists in decoupling the current accounting identity:  $D71$  (net non life insurance premiums) =  $D72$  (non life insurance claims). The proposal is that  $D71$  should be now equal to adjusted claims plus the difference between actual premium supplements and adjusted premium supplements. It would therefore differ from  $D72$ , which would remain equal to actual non life insurance claims. As a result, the difference between  $D71$  and  $D72$  will correspond to an implicit current transfer between insurance companies and policy holders. This implicit transfer is positive (in favor of policy holders) if  $D72$  (actual claims) is higher than  $D71$  (adjusted claims), negative is the reverse situation. Overall, with this system, the volatility in claims is transferred from the production/consumption accounts to the secondary distribution of income accounts. In cases of catastrophes, this may have an unwelcome significant impact on of the disposable income of policy holders. The task force therefore envisaged that, on a case by case basis, part of this implicit transfer could be classified as a capital transfer.

Reinsurance is a major way for direct insurers to deal with exceptional claims. In case of catastrophes a large part of the financing of the claims due by direct insurers comes from re-insurers. It was therefore inevitable that the discussion of the task force covered the treatment of re-insurance in the SNA. The conclusion is that the current recommendation of a consolidated treatment of re-insurance should be abandoned. Re-insurance and direct insurance should be treated using exactly the same formulae (based on adjusted claims), and on a gross basis. The production of re-insurance will be consumed by direct insurers, as intermediate production.

The task force made also recommendations to have the terminology used in the SNA more consistent with the one used by the non life insurance industry. Technical liabilities of insurers should be labelled "insurance technical provisions" rather than insurance reserves. Claims due should be labelled "claims incurred".

The task force did not yet reach conclusions on the inclusion of (expected) holding gains/losses in the estimation of the production of insurance services. This is an issue which is still to be reviewed, in conjunction with the task force of financial services. The present report does not therefore discuss further this issue, which would therefore be presented in the next meetings of the AEG.

### *Implication to the System*

The main text of the present report contains, in its section 11, a detailed illustration of the amount of changes needed in the paragraphs of the SNA to reflect the recommendations of the task force. This section is the only real substantial addition to the present report compared with the paper that was presented at the October 2003 OECD meeting. Readers only interested in the proposed changes to the SNA, and not in the background of the discussions, can refer directly to this section. All the recommendations of this report are embedded in these proposed new paragraphs of the future SNA, in a compact format.

The recommendations of the task force do not fundamentally change the SNA: the concept of insurance service is not changed, only its measurement. From section 11, it may look to the reader that many changes are introduced. However, many of these only reflect the change in the terminology referred at the end of the previous paragraph.

In fact, important changes only affect paragraphs 6.138 and 6.139, in which is discussed the measurement of output.

The difference of presentation between the industries' results and the national accounts results is already quite large in the present SNA, with the split of premiums between production and net premiums. The new recommendation on expected claims will increase this gap. It is therefore proposed that a memorandum

bridge account on insurance be compiled and published by countries, alongside the central tables of the national accounts. This bridge account will explain the different steps of estimation of the production of insurance, and, in particular, the compilation of adjusted claims.

#### *Questions to the AEG*

Does the AEG support the rejection of the mechanical use of the current formula to estimate the production of insurance services and its replacement by a formula using *adjusted* claims and *adjusted* premium supplements?

Does the AEG support the inclusion in the SNA of two solutions to estimate adjusted claims: the expectation approach, which uses statistical smoothing of past data, and the accounting approach, which relies on the use of changes in equalisation provisions and changes in own funds to compensate the volatility of claims incurred?

Does the AEG support the extension of technical provisions to equalisation provisions and other special provisions?

Does the AEG support the inclusion of income from own funds as an additional item to premium supplements in the formula used to estimate the production of non life insurance?

Does the AEG support the possibility to use expected premium supplements rather than observed premium supplements?

Does the AEG support the new treatment of reinsurance, where all reinsurance flows are treated gross, and using the same formulae that direct insurance?

Does the AEG support the decoupling of net insurance premiums (D71) and actual non life insurance claims (D72)?

Does the AEG support that, in the case of major catastrophe, the difference between expected and unexpected claims can be optionally treated as capital transfer?

Does the AEG support the change in terminology for technical reserves, which will be called technical provisions, and for claims due which will be called claims incurred?

## 1. Introduction

In the USA, the September 11, 2001 terrorists' attacks led to a record level of life and non-life insurance claims to be paid. Applying the current SNA recommendations, the US NIPA accounts recorded the following flows regarding the effect of these exceptional claims. First, as the SNA recommends (in accordance with accrual principles) using "claims due" rather than claims paid, the massive claims to be paid were all assigned to the third quarter of 2001. Second, also in application of the SNA recommendation, resources (production and imports) in insurance services were estimated as equal to premiums earned less claims due. Thus the current price value of the amount of insurance services delivered to the US economy significantly decreased. Indeed, premiums were "normal" in that quarter, while claims due hiked. Foreign insurers were assumed to insure directly or indirectly (through reinsurance) a large part of the risks. As a result, the BEA introduced a negative adjustment to the data on importation of services of insurance of 11 billion dollars. Part of this decrease was assigned to household consumption, with was downward adjusted by 5 billion. Because the effect on imports was larger than the effect on household consumption, the overall effect on GDP was an increase of 5.5 billion dollars.

The important aspect to retain of this illustration is the negative impact of the catastrophe on the supply of insurance services. This negative impact is very disturbing because it does not correspond to any economist's impression of the activity of the insurance companies, whether US or foreign, during such a period. On the contrary, one would have rather the impression that insurance services are increasing in this situation, if only measured by the probable large increase in the work load of insurance companies in the period and after the catastrophe occurs. On this basis, the BEA safely excluded any impact of these recordings on volume measures, thus affecting all these adjustments to price measures: the index of price of imported insurance services massively declined, the price of total household consumption was adjusted 0.3% downwards, the price of GDP 0.2% upwards.

While the preservation of volume measures was welcome, the impact on prices of the conventions recommended by the SNA remains highly disturbing. Why should the occurrence of a catastrophe lead to a decrease of the "price" of insurance services delivered to policy holders? This is something which is difficult to explain to any sound user of the national accounts. Since that time, and in parallel with the discussions of the present task force, the BEA has decided to introduce changes that will be already in effect in December 2003 and are globally in line with the recommendations of this report<sup>2</sup>.

Many other countries experienced similar difficulties with the implementation of the current recommendations of the SNA regarding the estimation of the production of insurance. If the full recommendations of the SNA had been implemented, an exceptional storm in France in December 1999 would have decreased total household private consumption by 1.3%, increased the saving rate by 1.1% and decreased GDP by 0.8%, all in current prices and for the fourth quarter. Fortunately, the French national accountants decided to neutralize this impact by treating the bulk of the exceptional claims as a capital transfer, with no impact on GDP<sup>3</sup>. Denmark also recently experienced a similar storm, and decided to adopt a similar treatment to avoid these unwelcome impacts on major national accounts aggregates.

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<sup>2</sup> Preview of the 2003 Comprehensive Revision of the National Income and Product Accounts, B. Moulton and E. Seskin, Survey of Current Business, June 2003, <http://www.bea.doc.gov/bea/ARTICLES/2003/06June/0603NIPArevs.pdf>

<sup>3</sup> Internal INSEE memo, by Jacques Magniez, n°01/G450, 26/01/2000

For many years now, the Australian national accountants have implemented a method which reduces the volatility of the national accounts measures of insurance production and consumption. This method was presented to the international community of national accountants as soon as 1999, in the OECD National Accounts Expert meeting<sup>4</sup>. While the present report does not propose exactly, as its preferred method, the method proposed by Australia at that time, it is fair to acknowledge here that the principles of the Australian proposals anticipated the principles that form the core recommendations of the present report.

Following all these concrete difficulties, the OECD started a task force in 2001 to review changes needed in the SNA to avoid such unwelcome effects of the current interpretation of the SNA. The present report is the final report of this task force. All other papers discussed in the task force are available on its EDG<sup>5</sup>. The recommendations of this report are put forward to the 2003 OECD National Accounts Expert meeting, with the objective of forwarding them to the ISWGNA for consideration of change in the SNA.

The mandate of the task force did not cover the split between volume and price measures for the non-life insurance branch. An exchange of best practice on this issue, perhaps as important as the measure of the current price value of insurance output, would be a logical follow-up for the recommendations of the task force. The experts attending the OECD meeting might consider the necessity to open a task force on this issue.

## 2. General principles

The SNA defines the activity of insurance as “providing individual institutional units exposed to certain risks with financial protection against the consequences of the occurrence of specified events (6.135)”. However, it recognizes that no explicit charge is made to consumers of these services thus obliging national accountants to estimate indirectly this service (6.136). The SNA recommends that this estimate is obtained using the following formula, based on accounting results that are derived from insurance companies’ accounts:

*Formula (1): [Actual premiums earned [i.e. premiums receivable less changes in the reserves due to pre-payment of premiums] plus Premium supplements (=income from investments)] minus Claims due [i.e. claims payable during the period plus changes in reserves against outstanding claims]*<sup>6</sup>.

The SNA explains that this difference represents *[an indirect estimate of]* the amount available to an insurance enterprise to cover its costs and provide for an operating surplus (6.139).

The task force did not challenge the concept proposed by the SNA 93, based on a measurement of the production by this margin, which covers the costs plus the profit resulting from the organization by insurance companies of the risk coverage. It rejected old alternative ideas that would base the measure of the production of insurance services on premiums. However, the task force insisted that the formula proposed by the SNA should be understood as a proposal for an indirect estimate of the concept that we are looking for. This is why the author of the present report has added “*[an indirect estimate of]*” in the preceding paragraph extracted from the SNA.

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<sup>4</sup> The measurement of non-life insurance output in the Australian National Accounts, STD/NA(99)20, <http://www.oecd.org/pdf/M00020000/M00020775.pdf>

<sup>5</sup> <http://webdomino1.oecd.org/std/inservice.nsf>. A password is necessary to access the EDG. It can be obtained from [marie.viriat@oecd.org](mailto:marie.viriat@oecd.org)

<sup>6</sup> The formula for the calculation of insurance services in paragraph 6.140 of the SNA is wrong. The correct formula is given in Annex IV, paragraph 18.

The task force discussed at length the concepts of “normal” risks and “abnormal” (esp. catastrophic losses) risks. Both might occur during any accounting period. Conceptually these two classes of risks could be distinguished but in practise it is fairly impossible to classify all individual risks unambiguously into one of both classes of risks<sup>7</sup>. A simple (quantitative) borderline between “normal” and “abnormal” risks does not exist. A large grey area is existent. Additionally, it will depend on country-specific features. Both the normal and the abnormal risks have their random variations over time (years and quarters), either in size and/or in number of claims. The total amount of claims incurred will fluctuate because of variations in the number and/or size of the normal claims and/or the occurrence of (a) large incidental claim(s) and its/their size. The existing SNA/ESA-algorithm carries these fluctuations forward to the insurer’s output. With both the variations of the normal claims and with the catastrophic losses this effect is counterintuitive and non-interpretable from an economic perspective.

In the view of the task force, the concept measured by the indirect estimate of output should not be affected by volatility or accidents that are not consistent with the concept of the production and consumption of insurance services. The economic rationale that drives the pricing of insurance companies is not limited to an accounting period of one year. “Normal” risks may be quite regular and the claims observed for a period of one year may be quite smooth. But they can also be irregular and other risks may occur only on a five yearly or decennial basis. When they occur on a specific year or quarter, the claims will be large, but, in principle, they had been taken into account by the companies to set their regular annual premiums. The unusual difference between the premium and the unusual claim in this specific year (or quarter) is not therefore to be attributed to a movement of the service charge in this period. The difference is in fact to be split over several periods.

In conclusion, the national accounts variables of production and consumption of insurance services should reflect the very regular volume and price components of the service of providing risk coverage. The non-life insurance service as part of the SNA goods and services accounts should not be affected directly by the occurrence of the risks. As such, the volatility of claims should not affect the measure of the production and consumption of insurance services.

***Recommendation 1: The concept of insurance service in the SNA should be preserved. However, it should be made clearer that the formula proposed in the SNA is only the basis for an indirect estimate of the value of the insurance service. The measure of the production of insurance services should not be affected by the volatility of claims. Conceptually, neither the volume nor the price of insurance services is affected by the volatility of claims.***

The task force therefore proposed to move away from the letter of the SNA regarding the use of formula (1) to indirectly measure insurance services<sup>8</sup>.

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<sup>7</sup> Insurers take account of the sources of these variations in the amount of claims incurred. Their individual claim’s history is separated into top-claims and non top-claims. The concepts of “non-top-claims” and “top-claims” show a large conceptual similarity with the above-mentioned breakdown into “normal” and “abnormal” claims. The most significant difference is the use of the (non-)top-claims concept on a company level whereas the (ab) normal claims concept is used on a macro level. With the non-top-claims past experience will suffice in calculating estimates of their total amount of claims on a company-level. With top-claims modelling of expectations is much more complex with individual direct insurers. Reinsurance often is a way out. (As the larger claims occur much more often with the reinsurers, the borderline between these two classes of claims is much higher with the reinsurers.)

<sup>8</sup> It is interesting to note that this departure also implicitly affect the conceptual view on the redistributive role of insurance between policy holders. While this is not mentioned in the present SNA, some may interpret the

This departure will have consequences on the rest of the accounts. At this stage, it is therefore useful to describe in very simple terms the current accounting framework of non-life insurance in the SNA. It will be helpful later when discussing the consequences of the proposals of the task force. This is done in the box below titled “a simplified model of non life insurance”. The important conclusion of this box is that the current proposed SNA estimate of production is linked to a series of recordings in the allocation of income accounts which ensures that balancing items are relevant. A different estimate of production, such as the one proposed by the task force, will modify this equality, and therefore entails the introduction of additional adjustment items. This is discussed in paragraph 6.

*A simplified model of non life insurance<sup>9</sup>*

An insurance company receives premiums each period. Part thereof relates to risks in future periods. At the same time the insurer incurs claims. Part thereof only is paid in future periods. With both premiums and claims these future components constitutes assets of the insured and liabilities of the insurer. The insurer buys financial and/or non-financial assets with these funds and receives property income from these investments. The (technical) account of insurers for a given period therefore is the following<sup>10</sup>.

<i>Charges</i>		<i>Receipts</i>
<i>Claims</i>	80	<i>Premiums</i> 100
<i>Balancing item</i>	30	<i>Property income</i> 10

*The recording of these simple flows is different in the national accounts. First, national accountants want to show a “production” item. Using the formula in the main text, and in the context of this simplified example, the production (or “output”) is equal to Premiums + Property income from investment minus Claims: 100 + 10 – 80 = 30.*

*Then, as the property income of the insurance company is made using premiums that belong to policy holders (for simplification, we will suppose in this report that they are households), this property income is considered to belong to policy holders and thus the revenue from investment is deemed to be first distributed by insurance companies to households, who then repay it to the insurance company, in the form of “premiums supplements”.*

*As a result, the national accounts will record the following entries for the same company:*

<i>Uses</i>	<i>Account 1</i>	<i>Resources</i>
	<i>P1 Output (equal to actual premiums + premium supplements – claims)</i>	30
<i>D44 property income distributed to the policy holders 10</i>	<i>D4 11 Property income earned by the insurance company</i>	10

application of formula (1) on an individual basis as if the consumption of insurance by an individual who has suffered an accident is very low or negative while for another individual who has not suffered an accident it is positive. In the new definition, the consumption of both individuals are not affected by the occurrence of a claim, but only by their expected claims.

<sup>9</sup> This model accounting framework is extracted from the already quoted memo by Jacques Magniez.

<sup>10</sup> The profit & loss account of European insurers is separated into a technical account, which deals with the insurance technical income and expenditure, and a non-technical account, which deals with the remaining entries of the profit & loss account, according to the European accounting directive.

<sup>11</sup> In fact some of this property income will be in the form of rentals of buildings which would be classified as B2, operating surplus, and not as D4. The exact recording would therefore be *D4 or B2*. However, we will omit this precision in the rest of this report.



D72 Non life insurance claims  
B8 Saving

80  
30

| D71 Net non life insurance premiums

80

*This simple theoretical model shows that except for the production element, which represents the service charge for the organization of the insurance business, the rest of the flows are completely balanced: (1) Property income from investment (D4<sup>12</sup>) received by the company is redistributed to policy holders (D44), (2) the claims disbursed (D72) are equal to the resource constituted by the “Net premiums” (D71), which constitute the part of actual premiums that the company redistributes to policy holders.*

*The balancing item of the national accounts (we have chosen “B8 Saving”) is equal to the one of the company in terms of ordinary charges and receipts. The SNA proposed measure of production is tailored to obtain this equality. It is important to note that if, as proposed by the task force, another definition of production is adopted this will modify this identity. There will therefore be the need to introduce somewhere adjustment items.*

### 3. Concepts of adjusted claims and adjusted investment income

One of the conclusions of the task force was to recognize that, as observed claims could not be used in the formula, they should be replaced by **adjusted** claims. Also, it was recognized that observed premium supplements could be replaced by **adjusted** premium supplements.

**Recommendation 2: adjusted claims and adjusted premium supplements should replace actual claims and actual investment income in the calculation of the output and consumption of non-life insurance services. Formula (1) should be adapted to this recommendation and become:**

**Formula (2): [Actual premiums earned [i.e. premiums receivable less changes in the reserves due to pre-payment of premiums] + Adjusted premium supplements - Adjusted claims due.**

Two solutions were discussed regarding the estimate of adjusted claims and adjusted premium supplements. The first solution is called the expectation approach, the second the accounting approach.

### 4. Expectation approach

**Expectation** plays an essential part in the business of insurance. When accepting risk and setting premiums, insurers consider both their **expectation** of loss (claims) and of income (premium supplements). This is not new for the SNA. Indeed, in paragraph 6.139, it is explained that “insurance enterprises take all the items (b) to (d)<sup>13</sup> into consideration when fixing the levels of the premiums they charge in order to ensure that the excess of total resources over total charges provides sufficient remuneration for their own services”.

What is new is the proposal of the task force to apply this line of reasoning, *on an ex-ante expectation basis*, which reflects the actual way insurers decide on the level of actual premiums, rather than, as is currently interpreted today, on an ex-post-observed basis. This applies also to property income. Using expectations will give a much more reasonable estimate of the “normal” insurance service charge that the

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<sup>12</sup> In fact some of this property income will be in the form of rentals of buildings which would be classified as B2, operating surplus, and not as D4. The exact recording would therefore be *D4 or B2*. However, we will omit this precision in the rest of this report.

<sup>13</sup> In the context of these SNA paragraphs these items are: (b) income from investment, (c) claims, (d) changes in actuarial reserves.

companies expect to get from “normal” business, which is consistent with the concept of consumption of insurance services.

**Recommendation 3: In the expectation approach, expected claims and expected premium supplements should replace actual claims and actual investment income in the calculation of the output and consumption of non-life insurance services. This applies for all claims –regular, catastrophic and unexpected – and for all years. This applies for all investment income. Formula (1) should be adapted to this recommendation and become:**

**Formula (3): [Actual premiums earned [i.e. premiums receivable less changes in the reserves due to pre-payment of premiums] + Expected premium supplements - Expected claims due.**

National accounts are fully integrated. Therefore, this new measure of production could lead to new measures of value added, operating surplus, savings, and net lending borrowing of the insurance sector. One important aspect of the discussions of the task force was therefore at what stage of the accounts the new and the old measure should be reconciled, or, in other terms, where the actual claims and actual investment income are reintroduced in the accounts. This is discussed in paragraph 7. It is however useful for readers to note that the new measure will impact, in any case, value-added and operating surplus. Thus, after implementation of the task force recommendations, the national accounts “operating surplus” for insurance companies will represent an estimate of a “normal” operating surplus<sup>14</sup>.

The difference of presentation between the industries’ results and the national accounts results is already quite large, with the split of premiums between production and net premiums. The new recommendation on expected claims will increase this gap. It is therefore proposed that a memorandum bridge account on insurance be compiled and published by countries, alongside the central tables of the national accounts. This bridge account will explain the different steps of estimation of expected claims.

## **5. Estimation of expected claims**

The process of estimating expected claims was seen by the task force as replicating exactly what insurance companies do when establishing their level of premiums: estimate expected claims by line of business, based on past information and probability models, taking into account new or amended legislations, add their margin for the service charge (including their expected profit, taking into account competition constraints), estimate future investment income and thus establish the level of premiums.

The task force was informed that companies, while effectively doing that, would not agree, in general, to hand out this type of confidential data to statisticians, as it represents the core of their professional skills as insurers. While recommended in theory<sup>15</sup>, there is therefore very little hope that help can come from the insurance companies themselves. Even if obtained, the amount of company specific data would probably be difficult for statistical offices to digest.

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<sup>14</sup> This is based on a simplified model which leaves out the intermediate consumption and labour costs of insurance companies. The Task Force proposes that these should continue to be recorded as actual amounts. The precise definition of value added would therefore be output, as modified, less actual intermediate consumption, and that of operating surplus would be value added less actual labour surplus and production taxes/subsidies. In a bad year, both value added and operating surplus would be reduced by exceptionally high actual operating costs, particularly claims handling costs.

<sup>15</sup> However, insurers estimate future claims but may amend these estimates explicitly or implicitly for commercial factors. In this context, their estimates would be biased for use in the context of the measurement of output.

The task force proposal is therefore to implement a simple macro-estimate of expected claims. As in the calculation made by companies, it would be based on past data. But by necessity, the proposed model would be simple.

The task force mainly explored a method for estimating macro-expected claims using a statistical method whereby past data on claims due are smoothed and used to forecast the claims expected in the current period.

The task force discussed the quality of several smoothing methods. The experience in the US is that the process is improved using smoothed loss ratios (losses / premiums written) rather than smoothing claims themselves. The resulting loss ratio resulting from past information is then applied to actual premiums of the period, resulting in an estimate of expected claims. The difference between premiums (plus expected premium supplements) and the measure of expected claim, is the measure of non-life insurance output.

*Calculation of expected claim: the US method<sup>16</sup>*

*For each type of insurance, “normal losses” (this is the name given in the US national accounts for “expected claims”) is calculated as a geometric-weighted moving average of past loss ratios (that is the ratio of actual losses to premiums earned) multiplied by the premiums earned during the current period. That is, the normal loss in period t, NLt, is  $NLt = NLRt * Pt$ , where  $NLRt = \alpha LRT + \alpha(1 - \alpha)LRT-1 + \alpha(1 - \alpha)^2LRT-2 + \dots$ , Pt is the premium earned, LRT is the loss ratio --that is Lt/Pt--in period t, and  $\alpha$  is a parameter. Premiums earned and loss ratios are based on trade source data. The formula is based on the adaptive-expectation model developed by Cagan<sup>17</sup>. The “free” parameter  $\alpha$  is the weight applied to the prior period’s value in the weighted average; this parameter will be assigned a value of 0.3 based on evidence that it provides the best prediction of future values.*

However there are drawbacks of this method of smoothing loss ratios<sup>18</sup> and, in some cases, direct smoothing of claims can be recommended. In particular, premiums can be affected by movements that are independent from the measure of expected claims such as a change in a regulation, or competition processes between companies<sup>19</sup>. The loss ratio can therefore be affected by an unwelcome movement in the denominator. On contrary, any system of smoothing should take into account inflation trends and the smoothing of loss ratios is better in handling inflation than the direct smoothing of claims. Direct smoothing of claims needs the use of a “reflator” to apply to past claims data. In any case, there is no miracle: a macro statistical method will only be a crude approximation of the expected claims, which, however, will be better than the current interpretation of formula (1) which is to use simply observed claims of the year.

It is essential to note that no “normal” smoothing method will be able to deal with exceptional events such as those that were at the origin of the task force. Faced with such a situation, any “normal” smoothing method will induce a significant increase in claims due when the exceptional event enters in the formula of smoothing and a significant decrease when quitting the smoothing formula, thus affecting the measurement of insurance production in the national accounts.

<sup>16</sup> Extracts from *Preview of the Comprehensive NIPA Revision*, by B. Moulton and E. Seskin, June 2003, *Survey of Current Business*

<sup>17</sup> Phillip D. Cagan, « The Monetary Dynamics of Hyper Inflation » in *Studies in the Quantity Theory of Money*, ed. Milton J. Friedman (Chicago: University of Chicago Press, 1956).

<sup>18</sup> See in particular reference 8 in the bibliography.

<sup>19</sup> Not to mention changes in taxes: in some countries specific taxes exist on premiums, in addition to VAT. It is obvious that the measurement of expected claims should use premiums excluding taxes.

Therefore, a pragmatic decision must be made to exclude these exceptional events from the first step of the calculations. The proposed method is the following: (1) each statistical office should determine what might be a set of catastrophic claims, for example on the basis of its size (a practical rule could be an event leading to claims reaching more than 0.1% of GDP), (2) determine on a pragmatic basis the amount of claims linked to the catastrophe and exclude these claims from the normal smoothing formula, (3) split these catastrophic claims over a very long period (twenty years), (4) reintroduce these additional claims in the compilation of expected claims for the long period (twenty years) ahead (not centered on) of the current year, taking into account expected inflation. In other words, a catastrophe that happened in the current year would have an impact on expected claims for the next 20 years but no impact on earlier years.

Whether using smoothed loss ratios or direct smoothing of claims, the overall (two steps) method uses results in a reasonable estimate of the concept of insurance services. Apparently, the method of applying loss ratios on premiums has been used in practice by balance of payments compilers to compile international flows of insurance services. An indirect advantage of the method of loss ratios will therefore be that national accounts and balance of payments data could become more consistent. Another advantage for users will be that forecasts of insurance production, and of its contribution to GDP, will be rendered much easier, as, basically, it will essentially depend on a forecast of premiums. Today, a significant amount of the errors in forecasts or of revisions to preliminary data is due to the impact of the volatility of claims on the measure of insurance production.

In this context, the task force recommended that, whatever the smoothing method used, the estimate of expected claims (including the splitting over a very long period of catastrophic claims) should not be affected by revisions of data posterior to the theoretical date of calculation of these expected claims. In particular, the task force did not recommend smoothing methods relying on a center moving average. This method will result in revision of the measure of expected claims when actual claims are observed. Such a method is used in Australia, but was considered by the task force as having two drawbacks. First it does not replicate the theoretical notion of expectation, as it uses ex-post data: expected claims should be measured in the beginning of the period, based only on past information, and not using the information on the occurrence of risks. Second, users could be puzzled by a compilation system where the measure of one period cannot, *by principle*, be known for sure only after several years. Today, national accounts figures can be revised for statistical reasons several years after the period under review, but, this is for statistical reasons, not because the principle itself of measurement leads to such delays. The Australian argument for using the centered moving average approach is that insurers use far more sophisticated methods than simple moving average techniques of past data to make their expectations of the future. Accordingly, one would expect their forecasts to be closer to what actually eventuates. Hence, the rationale for using simple, symmetric smoothing techniques. On balance, the task force considered it was best to use only ex ante data in the estimation of expectations. However, the Australian argument could be integrated by recommending that the smoothing method includes the year under study.

***Recommendation 4: In the absence of actual expected data from insurers, the first method for measuring expected claims is a statistical method based on the smoothing of past claims either through the calculation of an expected loss ratio derived from smoothed past loss ratios, and applicable to actual premiums, or the direct smoothing of past claims. The smoothing method must include a prior step which excludes major exceptional claims. These exceptional claims should be reintroduced ahead of the current year by splitting them evenly over a very long period of time, taking account of inflation. The task force recommended that the method should not lead to built-in revisions of the data. It should use past data available at the moment of the theoretical decision by insurers of the level of their premiums. This includes the year under study.***

However, not all experts in the task force agreed that such a statistical method should be imposed on compilers of national accounts. Some delegates in the task force think that, in the absence of information

from companies on how they evaluate the expected claims, some consequences of the statistical approach may be too significant, namely, the introduction of external factors and/or dynamics in output estimates. Therefore they advocated a further development of use of ex-post accounting data instead or alongside the statistical method. This approach would include an analysis of the mechanisms that insurance companies have developed to face unexpected large claims and was called the *accounting approach*.

## **5.2 The accounting approach**

The accounting approach heavily uses the classifications and terminology of the insurance business. It is therefore useful to start this presentation with a first discussion on terminology. Then a proposal is made to extend the coverage of the provisions that are included in the scope of the SNA. Finally, the inclusion of these provisions in the calculation of output is discussed.

### *5.2.1 Provisions or reserves: a terminological issue:*

In general accounting, a distinction is made between provisions and reserves. This issue is of special importance with insurers, as the life and non-life insurers have to set aside large amounts of funds to organise their business (as liabilities). General accounting practice seems to differ from insurance practice with respect to the terminology used in labelling these funds in some countries whereas in other countries the approach is identical.

General accounting defines “provisions” as those liabilities of an enterprise which relate to uncertain future events, in timing and/or in size. A simple example is the provision for the maintenance of the enterprise’s property. The maintenance of the building (interior and/or exterior), the office furniture etc. takes place say every three to five years. The costs of this program are evenly spread over these years. So, each year an amount is added to a dedicated provision whereas the expenditures are covered by this provision.

“Reserves” on the other hand are not specially earmarked according to the general accounting principles. The company can use these funds in the way they want. They can pay them back to the owners of the company, or do with them whatever the company would like. In other words: the reserves are at the free disposal of the company. Of course they perform a role in the company’s solvability, which could restrict the possibilities of using these funds outside the company. This implies that the reserves have a role in accommodating any loss the company might run across.

Insurance principles are ambiguous in their terminology in this respect in some countries. They use the term provisions with respect to the types of liabilities they have in common with the non-insurance companies. The insurance technical liabilities, which are clearly earmarked as well, however, are labelled as “reserves” in many countries. Other countries use the term “insurance technical provisions”. Also the European accounting directive and the forthcoming international accounting rules (IAS) on insurance use the term provisions concerning these technical liabilities.

***Recommendation 5: It is proposed to align with the general accounting principles and to label the technical liabilities of insurers as “insurance technical provisions”.***

### *5.2.2 Classes of technical provisions*

The insurance industry uses various classes of technical provisions. The two main classes of technical provisions with non-life insurers are:

- The provisions for unearned premiums;
- The provision for claims outstanding.

The provisions for unearned premiums relates to the part of gross premiums written (this is without subtracting premium reinsurance) which is to be allocated to the following financial year or years. This provision therefore deals with the fact that the policy's period to which the insured events relate does not coincide with the insurer's financial year (prepayment of premiums).

The provision for claims outstanding concerns the total of the estimated ultimate costs to the insurer of settling all claims arising from events which have occurred up to the end of the financial year, whether reported or not, less the amounts already paid in respect of such claims. Therefore, this provisions deals also with claims unknown to the insurer or the insured. Irrelevant is whether the claims becomes reported within days or weeks after the end of the financial year or only after several years.

Additionally, national or international accounting rules could leave open possibilities to set up further technical provisions. According to the European accounting directive these other technical provisions concern:

- Provision for bonuses and rebates;
- Equalisation provision;
- Provision for unexpired risks<sup>20</sup>;
- Other technical provisions.

The accounting rules of individual non-European countries might allow more and/or different technical provisions. The box below describes some possible technical provisions.

#### *The different provisions*

##### Provision for unearned premium

*The provision for unearned premium is a liability representing the unearned portion of written premiums on all outstanding policies at the time of valuation. It is only after the full completion of the period during which coverage against risks is insured that the premium is fully earned.*

*The 1993 SNA discusses the prepayment of premiums in terms of the fact that the policy period does not usually coincide with the accounting period – 'therefore, at the end of the accounting period, parts of the premiums paid, and thus appearing in the balance sheet, are in fact intended to cover exposure in the subsequent period ..... premiums earned [are] those parts of the premiums that are paid in the current period or the preceding period and that are intended to cover risks outstanding during the current period'.*

*For most classes of non-life business it is true that risks do remain outstanding only as far as the following period. With single premiums the period of coverage could extend over several years (e.g. CAR-insurance).*

##### Provision for unexpired risks

*This provision deals with the amounts set aside in addition to the unearned premiums in respect of risks to be borne by the insurer after the end of the financial year in order to provide for all claims and expenses (i.e. handling costs) in connection with insurance contracts in force in excess of the related unearned premiums receivable on those contracts. This provision could be part of the "other technical provision" or combined with the provision for unearned premiums. The ageing provision with health insurance normally will be part of this provision.*

##### Provisions for claims outstanding

*The provision for claims outstanding can also be called claim provision or loss provision. The claims could be paid through a single payment or a set of separate payments during a restricted period (pending materialisation and/or*

<sup>20</sup> The European accounting directive classifies this provision as part of the "other technical provision" with the option to the individual countries to combine it with the provision for unearned premiums, renaming this provision into "provision for unearned premium and unexpired risks". This combined provision should also include the "ageing provision".

agreement on the total amount of the claim) or as an annuity (a lifelong series of periodical payments by month or year). The latter especially occurs where the victim of the insured incident is compensated for the loss of his/her capability to earn an income (part of health insurance).

Claims are identified and recorded in the 1993 SNA at the time of the insured event, even though the settlement of the claim may not occur until much later. For long-tail business, such as insurance against medical malpractice or insurance of workers' compensation where quite often the claims materialise only after a long period. Reporting of these claims to the insurer is only possibly after they have shown themselves. This implies that with these classes of risks and with claims where lengthy litigation is involved, the lag to payout on claims can be long and so the technical provisions are relatively large.

The provisions for claims outstanding cover the total estimated ultimate cost to an insurer of settling all claims arising from events which have occurred, whether reported or not (i.e., including estimates for losses incurred but not (enough) reported – IBN(E)R), less amounts already paid in respect of such claims. According to the European accounting rules and the forthcoming international accounting rules this provision includes the provision for future handling costs. The provision for IBN(E)R is sometimes identified separately, but the SNA does not explicitly include IBN(E)R. The incidents, which caused the claims, have occurred but the damages/claims are not yet known to the insured or not yet (fully) reported to the insurer (for example: a car accident where only after several months a whiplash appears to be a consequence of this accident). The total amount of claims relating to a financial year, therefore, includes a significant element of estimation.

According to the SNA the 'reserves against outstanding claims are reserves that insurance enterprises hold in order to cover the amounts they expect to pay out in respect of claims that are not yet settled or claims that may be disputed', and 'the present value of the amounts expected to be paid out in settlement of claims, including disputed claims'.

For some classes such as general liability or casualty business written on a losses occurring basis, the insurer could receive claims relating to incidents, which occurred in the (far) past. This occurs where the damage materialises only after several years (for example asbestosis).

#### Equalisation provisions

Equalisation provisions are amounts set aside in compliance with legal or administrative requirements to equalise fluctuations in loss ratios in future years, often with respect to special risks. These would be particularly relevant in connection with catastrophe business.

These provisions, therefore, relate to future events causing claims. The provisions in this respect are comparable to the provisions for unearned premiums and the provisions for unexpired claims.

In many countries and in ESA 1995, but not the 1993 SNA, they are included in technical reserves.

According to the 1993 SNA, they should not be recognized as transfers or liabilities to policyholders because there is no liability to pay the policyholders until an uncertain future event occurs, i.e. they are contingent liabilities. Contingent assets and liabilities are excluded from the 1993 SNA framework and internal accounting entries do not qualify as transactions. However, the equalisation provision concerns the situation where the insurer takes account of the fact that a future high claim (set of claims) might show itself. To avoid the effect thereof on the insurer's profit, the insurer sets part of the financial year's premiums aside in a dedicated provision. This is comparable to treatment of the non-earned part of the written premiums.

Although this is an argument for not recording equalisation reserves as liabilities on insurers' balance sheets, it could be argued that the income on these reserves should be included in premium supplements. Similarly, there may be arguments for including them in the calculation of insurance services.

The 1993 SNA approach of not treating equalization provisions as technical reserves means that when reserves are built up, insurers will be shown as saving, when they are used for claims, they will appear as a run-down of insurance saving and transfer to policyholders.

Under ESA 1995's paragraphs that describe financial accounts, technical reserves are explicitly extended to include equalization provision. However, this extension is not explicitly mentioned in the formula that describes the compilation of output, but a recent Eurostat task force on insurance measurement confirmed that the ESA should be interpreted as including these provisions in its recommended measure of output

Provision for bonuses and rebates

*These provisions should comprise all amounts intended for policyholders or contract beneficiaries by way of bonuses and rebates to the amount that these amounts have not been credited to them. It especially concerns return payments of premiums with respect to a relatively small total amount of claims (bonuses) or with respect to the individual insured (rebates).*

From their description, it might be clear that the various provisions are of a character that coincides with the characteristic of either the provision for unearned premiums or the provision for claims outstanding. For including the various provisions in the SNA it is suggested to classify them all as either part of the provision for unearned premiums or the provision for claims outstanding, in the formula, defining the premiums earned, the claims incurred, the output and the risk premium of non-life insurers the various provisions are included under either the provision for unearned premiums or the provisions for claims outstanding. The content of these provisions therefore is wider than their content in the accounts of non-life insurers. The table below summarises the classification of the various separate provisions.

**Table. Classification of technical provisions**

	SNA Provision for unearned premiums	SNA Provision for claims outstanding
Provision for unearned premiums	X	
Provision for unexpired claims	X	
Equalisation provision		X
Provision for claims outstanding		X
Provision for bonuses and rebates	X	
Provision for incurred but not (enough) reported incident		X

The “other technical provisions” are not mentioned here as the nature of this provision will differ from country to country. The classification thereof should be made given the characteristics of the individual provisions.

***Recommendation 6: It is proposed to include in the SNA’s definition of provision for unearned premiums and provisions for claims outstanding the other special provisions recorded by the insurance companies<sup>21</sup>.***

The following paragraphs do not however pre-empt of the approval of this recommendation and are drafted as if the additional special provisions are not covered by the SNA definition.

*5.2.3 The estimation of output using the accounting approach*

A large part of the discussions in the task force focused on the possibility to extend the provisions items included in formula (1) to all relevant technical provisions used by non-life insurance companies, and even, in some cases, to own funds. Where equalisation-type provisions exist, some participants in the task force think that it could be therefore possible to estimate a reasonable measure of the output of insurance services, by including movements in these reserves to the current formula of the SNA, which would then become:

*(3) [Premiums earned + premium supplements] – [claims due + addition to, less withdrawal from, equalization reserves].*

<sup>21</sup> The impact of the inclusion of these provisions on the calculation of premium supplements is discussed in paragraph 5.



In principle, if insurance companies use these technical provisions and/or equalization provision in an ideal accounting perspective, the movements of these accounts should compensate for some of the volatility of claims to be paid. On the other hand, a number of members of the Task Force found practical problems with the idea of including equalisation provisions in the scope of technical provisions. First, in many countries, companies use equalisation provisions as a tax avoidance measure, not simply as a method for smoothing flows. Secondly, because of this tax-avoidance, many countries do not permit companies to hold equalisation provisions. The OECD review of country accounting practices (admittedly produced in 1988), suggested that five OECD countries required reporting of equalisation reserves, but that eight countries also reported separate reserves for disasters/large risks. The practices are reasonably harmonised in European countries though.

As in the case of the statistical method of estimating expected claims, the new formula proposed by the accounting approach does not treat the extreme cases of major catastrophes. In these cases, the reserves that the company has made are not sufficient to face the claims, and companies are often obliged to use their own funds (the UK and Germany were given as examples). Some participants to the task force proposed that an exceptional catastrophe year is precisely defined as one in which withdrawals are made from own funds. Thus, when an exceptional loss is considered to have occurred, an additional item would be introduced in the calculation, for the loss year, and for subsequent recovery years. The formula would then become:

(4) *[Premiums earned + premium supplements] – [claims due + addition to, less withdrawal from, equalization reserves + addition to, less withdrawal from own funds, when necessary].*

***Recommendation 7: SNA’s formula (1), which defines the indirect measure of production from an accounting perspective, should extend the scope of the reserves to include equalization provisions and other special provisions destined to cover unusual claims. Where it can be proved that movements in these special provisions compensate the volatility of claims, an alternative method to estimate the production of insurance would be to use this extended formula: [Premiums earned + premium supplements] – [claims due + addition to, less withdrawal from, equalization provisions + addition to, less withdrawal from own funds, when necessary]. When the withdrawal of own funds intervene in a period, the rebuilding of these funds should intervene in subsequent periods.***

### ***5.3 The “sum of costs” approach***

The task force discussed also of an alternative approach based on the sum of costs. The idea is the following. In the current SNA, the measure of output is equal to  $o = p + i - c$ ; where  $o$  is output,  $p$  premiums,  $i$  property income, and  $c$  claims. The new recommendation changes this formula into  $o = p + ie - ce$ ; where  $ie$  is the expected investment income and  $ce$  the expected claims. However premiums can also be written as  $p = ce + a + w - ie$ ; where  $a$  is the costs of handling the insurance service and  $w$  is the profit margin. Output can therefore be obtained as  $o = a + w$ , this is costs plus profit.

It should be therefore possible to estimate the output using costs and adding a measure of profits. Costs are a well mastered statistical variable. In fact, some participants in the task force think that it could, in itself, be a realistic indicator for the change in the output of insurance. However, the national accounts measure of production, at least for the calculation of levels, needs the integration of a measure of operating profit.

The problem is precisely this measure of profit. It is impossible to take the industry measure of profit, because we would fall into the trap which is the task force objective to avoid: a very irregular measure of production, affected by the volatility of claims. The only solution is therefore to build a measure of “normal profit”, that one may note “ $w$ ”, so that  $o = a + w$ . The issue is now how to measure this “ $w$ ”. The task force was not informed of practical proposals to measure “ $w$ ”. One could however imagine

directly smoothing past profits in order to estimate this expected normal profit. This approach would then become very similar to the statistical estimate of expected claims: rather than smoothing claims, we would smooth profits. In fact, the equations above lead to:  $w_e = p + ie - ce - a$ , which shows the direct relation between this measure of expected profit and the measure of expected claims and expected investment income. Implicitly, this approach is therefore equivalent to the statistical estimate of expected claims and investment income. As such, the task force does not reject this approach. However, the task force focused more on the measure of expected claims as the theoretical approach of this estimate seemed easier to grasp. Also, a direct measure of expected claims is easier to introduce in the accounting framework than a measure of expected profits.

## **6. Estimation of expected premium supplements**

The discussion on premium supplements covered four different issues: (1) Should expected premium supplements replace observed premium supplements in the formula used for the compilation of insurance production? (2) Should premium supplements include income from special reserves and own funds? (3) Should premium supplements include holding gains/losses?

### ***6.1 Expected premium supplements***

As stated in recommendation (2), the proposal of the task force is to introduce expectation to measure the contribution of premium supplements in the formula used to compile production. The rationale is the same as for claims: insurance companies will forecast their expected investment income (i.e. premium supplements) in order to fix the premium level that will insure the coverage of their costs and normal profit. While the principle of the use of expected premium supplements is consistent with the general recommendation of the task force, its practical implementation was not very much discussed. However, the task force was informed that the US BEA was implementing an estimation of expected premium supplements based on a similar smoothing method that the one used for smoothing claims. The data used by the BEA is insurance trade data by line of business, and represent the industry rate of return on investment multiplied by the reserves that are directly attributable to policy holders because of pre-payment of premiums or accruals of benefits. It does not include investment from own funds, but includes holding gains/losses. In principle, the SNA excludes the inclusion of holding gains/losses in the calculation of premium supplements (see below).

### *Calculation of expected premium supplements, the US method<sup>22</sup>*

*For each type of insurance, premium supplements are calculated as a geometric-weighted moving average of past investment gain/loss ratios (that is, “net investment gain/loss on funds attributable to insurance transactions” divided by premiums earned), multiplied by the premiums earned during the current period. That is, the premium supplement in period  $t$ ,  $PS_t$ , is  $PS_t = NIR_t * P_t$ , where  $NIR_t = \beta IR_t + \beta(1 - \beta)IR_{t-1} + \beta(1 - \beta)^2 IR_{t-2} + \dots$ ,  $P_t$  is the premium earned,  $IR_t$  is the investment gain/loss ratio --that is  $I_t/P_t$ --in period  $t$ , and  $\beta$  is a parameter, which is assigned a value of 0.3. Net investment gains/losses on funds attributable to insurance transactions are available from trade source data and represent the industry rate of return on investment multiplied by the reserves that are directly attributable to policy holders because of prepayment of premiums or accrual of benefits.*

The smoothing of past claims to obtain an estimate of expected claims was presented above as a simple model to replicate the more detailed and complex models used by the insurance companies to evaluate their risks and adjust their level of premiums. In this context, the use of past data seems particularly justified: the probabilistic models used by the insurance companies are based on past occurrences of risks.

The same does not apply to the revenues insurance get from their investments and this would discourage the use of a similar method in which variations of the premium levels will affect the estimate of premium supplements while the premium level has only a very indirect relation with the investment income. A method applied in the Netherlands consists in taking an average yield of long-term interest rates and short term interest rate and apply it to the level of the technical provisions.

***Recommendation 8: Expected premium supplements could replace actual premium supplements in the formula used to estimate insurance production. The method used to estimate expected premium supplements should be the best statistical predictor of premium supplements.***

An exchange between countries of best practice regarding the practical estimation of expected premium supplements would be useful.

## **6.2 Special reserves and own funds**

Besides technical reserves, all insurers have free reserves or own funds, which include all the excess of the insurer's assets over liabilities, and which are all potentially available to meet future claims. These are clearly not liabilities to policyholders and so should not be part of technical reserves on the 1993 SNA balance sheet. But they are not fully at the disposal of the insurer either since they are available to meet claims – they are an integral part of being an insurer. Thus the associated investments are not necessarily treated separately from those for technical reserves by the insurers when fixing their premiums. In this context, and in accordance with the conclusions of the task force on financial services, it is proposed to extend the calculation of expected premium supplements to investment coming from these special reserves and from own funds.

In fact, it will probably simplify the calculations as there is also a practical problem, in the current SNA, associated with restricting premium supplements to the income on reserves for unearned premiums and claims outstanding. While different types of reserves may be reported as separate categories on the liabilities side of the insurer's balance sheet, the corresponding assets and income are not necessarily associated with any particular category of reserves.

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<sup>22</sup> Extracts from *Preview of the Comprehensive NIPA Revision*, by B. Moulton and E. Seskin, June 2003, *Survey of Current Business*

However, the issue of including own-funds in the calculation of production is also discussed by the financial services task force. Recommendations on this point needs therefore to be coordinated.

***Recommendation 9: Investment income from special reserves and own funds should be included in the formula that determines expected investment income. However, this would not lead own funds to be classified as owned by policy holders and consistence is needed on that point with the recommendations of the task force on financial services.***

### **6.3 Holding gains/losses**

This issue was a secondary one for the task force on insurance, while it is a major one for the parallel task force on financial services. However, the elements of the discussion are similar. Should holding gains/losses intervene in the investment income element of the formula used to compile the production of insurance services? On one hand, the SNA excludes it, probably on the basis that increases/decreases of the value of assets cannot be considered as a productive activity, especially when there is no activity but just the observation that the holdings of the company have increased/decreased because of the general movement of the market (stock market, buildings). On the other hand, companies could include holding gains in the process of setting the price of their premiums and would not differentiate this type of “revenue” from the other investment revenues. Why then should we exclude these holding gains/losses from the investment income element in the formula of the calculation of the insurance service? However, there were strong reservations to the inclusion of holding gains during the discussions of the task force. In any case, it is not the actual observed holding gains which should enter in the formula measuring the insurance service but the expected holding gains. In this context, the best prudent prediction for expected holding gains should be based on a very prudent very long-term trend, and not be affected by short and medium term movements.

In any case, the conclusion of the task force was to wait on this issue for the conclusions of the task force on financial services. If it proposes (and if this proposal is accepted in the new SNA) to include holding gains/losses in its measurement of the financial services, then the task force on insurance could build on this proposal and could recommend its inclusion for insurance production. If not, it should not enter in the calculation of insurance production.

***Recommendation 10: The issue whether holding gains/losses should be included in premium supplements will be decided upon when the conclusions of the task force on financial services will be known.***

## **7. Incorporating adjusted claims and adjusted premium supplements in the accounting framework.**

As explained in the simple model of the box in paragraph 1, the current formula of the SNA links the estimation of the production to the other flows recorded in the accounts. If we change the formula for estimating production, we have to introduce adjustment items in the sequence of accounts of the institutional sectors in order to reintroduce somewhere the actual claims due and actual revenues from investment.

It is useful to recall the simple example of box 1, which we will assume represents the situation using actual premiums and actual claims:

		<u>Account 1</u>	
<u>Uses</u>			<u>Resources</u>
		<i>P1 Output (equal to actual premiums + premium supplements – claims)</i>	
			30
<i>D44 property income distributed to the policy holders</i>	10	<i>D4<sup>23</sup> Property income earned by the insurance company</i>	10
<i>D72 Non life insurance claims</i>	80	<i>D71 Net non life insurance premiums</i>	80
<i>B8 Saving</i>	30		

Let us now suppose that adjusted premium supplements are equal to 7, to be compared with actual investment income of 10; at the same time, adjusted claims are equal to 65, to be compared with 80 of actual claims due.

Thus, using the formula proposed by the task force, production will be equal to actual premiums (100) plus adjusted premium supplements (7) minus adjusted claims (65):  $100 + 7 - 65 = 42$ . It is clear that if we introduce this new estimate of production without changing any other item in the accounts, the balancing item will change and become irrelevant.

There are various ways to adjust for this and these ways are very clearly illustrated in Anne Harrison's July 2003 paper "Recording Non-life Insurance Premiums and Claims in the SNA accounts" (available on the EDG)<sup>24</sup>. Five solutions are proposed: (1) the one titled "ABS solution" which is the simplest one and is described in detail in the below paragraphs, (2) an "INSEE approach" which treats all exceptional differences as a capital transfer, (3) a solution where exceptional differences are treated as capital transfers with the recording of corresponding "capital premiums", (4) a variation of the preceding solution, simpler, with no capital premiums, (5) a "radical" solution, treating all flows related to premiums and claims in the financial accounts.

This report focuses on a solution that the moderator thinks could be a workable consensual solution. It is based on a mix of two of the proposals made above by Anne Harrison: solution (1) and solution (4). Solution (2) is discarded because it does not take into account any impact on production of exceptional claims both in the current year and in future years. Solution (3) is a more complex version of solution (4). Solution (5) is not proposed here because leading to major changes to the SNA that have some disadvantages as explained in Anne Harrison's paper.

### **7.1. The simplest solution: decouple one accounting identity in the current accounts<sup>25</sup>**

The following adjustment can be proposed to preserve the relevance of the sequence of accounts. As in the current SNA, the imputed net non life insurance premiums will be equal to premiums plus premium supplements *less output*:  $D71 = AP + D4 - P1$ . However, because of the new calculation of output and unlike the current SNA, this amount will be different from actual claims, thus generating an implicit transfer (which can be positive or negative) between the insurance companies and the policy holders.

<sup>23</sup> In fact some of this property income will be in the form of rentals of buildings which would be classified as B2, operating surplus, and not as D4. The exact recording would therefore be *D4 or B2*. However, we will omit this precision in the rest of this report.

<sup>24</sup> And recent comments by André Vanoli.

<sup>25</sup> This solution is named the "ABS solution" in Anne Harrison's paper.

The new accounts will be the following:

*Account 2: new accounting framework*

<i>Uses</i>	<i>Resources</i>
<i>D44 Distributed income to policy holders</i>	<i>P1 Output (equal to actual premiums (AP) + adjusted premium supplements (EPS) – adjusted claims (EC)) 42</i>
<i>D72 Actual non life insurance claims</i>	<i>D4 Property income earned by the insurance company 10</i>
<i>B8 Saving</i>	<i>D71 Adjusted net non life insurance premiums 68</i>

Under this simple solution, the change introduced in the accounting framework is limited to the single decoupling of the identity between D72 and D71. Actual non life insurance claims received by policy holders (D72) is unchanged. But, contrary to the present situation, it is no longer the equivalent flow which is received by the insurance companies but an amount depending on adjusted claims and premiums: D71 is equal to adjusted claims (EC) plus the difference between actual premium supplements (D4) and adjusted premium supplements (EPS):

$$D71 = EC + D4 - EPS.$$

It is easy to prove that this new recording guarantees the consistency of the balancing item. This can be done by generalization of account 1 and account 2:

*Account 3: Generalization of account 1, current SNA*

<i>Uses</i>	<i>Resources</i>
<i>D44 property income distributed to policy holders</i>	<i>P1 Output (equal to actual premiums (AP)+ premium supplements (D4) – claims (D71))</i>
<i>D72 Non life insurance claims</i>	<i>D4 Property income earned by the insurance company</i>
<i>B8 Saving</i>	<i>D71 Net non life insurance premiums</i>

$$B8 = P1 + D4 + D71 - D44 - D72 = AP + D4 - D71 + D4 + D71 - D44 - D72$$

The assumption of account 1 is that  $D44 = D4$  and  $D71 = D72$ , we obtain therefore:

$$\underline{B8 = AP + D4 - D72}$$

*Account 4: Generalization of account 2, new proposal, using adjusted flows*

<i>Uses</i>	<i>Resources</i>
<i>D44 Property income distributed to policy holder</i>	<i>P1 Output (equal to actual premiums (AP)+ adjusted premium supplements (EPS) – adjusted claims (EC))</i>
<i>D72 Non life insurance claims</i>	<i>D4 Property income earned by the insurance company</i>
<i>B8 Saving</i>	<i>D71 Adjusted net non life insurance premiums</i>

$$8 = P1 + D4 + D71 - D44 - D72$$

As  $D4 = D44$  and  $D71 = AP + D4 - P1$ , we obtain  $B8 = P1 + D4 + AP + D4 - P1 - D4 - D72$

$$\underline{B8 = AP + D4 - D72}$$

As can be seen, B8 saving (and further down B9 Net lending/borrowing) is not affected by the measures of adjusted claims or adjusted premium supplements and is thus identical in both accounting systems.

Let us now illustrate the implications on the accounts of policy holders. For simplification, we will suppose that all policy holders are households. As in the presentation above, we will first present the current SNA accounts and then the new proposal:

*Account 5*

*Households: current SNA account*

<i>Uses</i>		<i>Resources</i>
<i>D71 Net non life insurance premiums</i>	80	<i>D44 Distributed income to policy holders</i> 10
<i>B6 Disposable income</i>	10	<i>D72 Non life insurance claims</i> 80
<i>P3 Final consumption expenditure</i>	30	
<i>B8 Saving</i>	-20	

The proposed new accounting framework would lead to:

*Account 6*

*Households: new accounting framework*

<i>Uses</i>		<i>Resources</i>
<i>D71 Adjusted net non life insurance premiums</i>	68	<i>D44 Distributed income to policy holders</i> 10
<i>B6 Disposable income</i>	22	<i>D72 Non life insurance claims</i> 80
<i>P3 Final consumption expenditure</i>	42	<i>Of which D721 Expected claims</i> 65
<i>B8 Saving</i>	-20	<i>Of which D722 Non expected claims</i> 15

Compared to the current accounting framework, the main change is that disposable income is modified, because households receive more in D72 (or less, in other cases than the one illustrated in this precise example) than they “pay” in D71. But final consumption expenditure is modified in parallel, thus *B8 savings* remains unchanged. In this account, we have introduced, for information, a possible breakdown of D72 between Expected claims and D722 non expected claims. It is important to note that D722 can be positive (as in this example) or negative (if actual claims are below expected claims).

This solution is a workable solution in terms of the accounting framework. However, some participants in the task force think that its drawback is that the difference between D72 and D71 affects disposable income, while the difference between these two flows would be better located, in some cases, in the capital accounts. Indeed, this difference originates from irregular and even exceptional events, thus the difference between D71 and D72 is financed by insurance companies not from their current revenues but from movements from equalization accounts and/or even from their own-funds. In effect, the counterpart entry of the implicit transfer from insurance companies to policy holders is in the financial accounts. The same is true for the policy holder: the payment for the write-off of a car, the settlement of a liability claim for medical malpractice or the rebuilding costs for a building destroyed in a fire or a hurricane, may well be of a capital nature.

## 7.2. *Alternative treatment as capital transfer*<sup>26</sup>

This proposal would lead to the following alternative accounts:

### *Account 7*

#### *Households: new accounting framework, treatment as capital transfer*

<i>Uses</i>			<i>Resources</i>
<i>D71 Adjusted net non life insurance premiums</i>	68	<i>D44 Distributed income to policy holders</i>	10
<i>B6 Disposable income</i>	7	<i>D721 Expected non life insurance claims</i>	65
<i>P3 Final consumption expenditure</i>	42		
<i>B8 Saving</i>	-35		
<i>B9 Net lending/borrowing</i>	-20	<i>D99 (= D722) Exceptional claims</i>	15

In this solution where D72 is now equal to expected claims, disposable income is no longer affected by the difference between expected claims and actual claims. Saving is affected by the difference on final consumption. The exceptional claims appear as an entry in the capital account, which compensates the effect of the new treatment on net lending/borrowing, which is unchanged. It is important to note that in all treatments B9 net lending/borrowing remains unchanged, resulting from the fact that financial accounts are unchanged.

Another recent proposal from a participant to the task force would be to classify claims as current transfer or as capital transfer on the basis of the type of claim: claims on accidents, health, assistance, legal expenses would be classified as current transfers, while claims generated by other classes of insurance products (motor, fire, etc.) would be classified as capital transfers. The below table was proposed:

<i>Insurance products</i>	<i>Current transfer</i>		<i>Capital transfer</i>	
	<i>fully</i>	<i>largely</i>	<i>largely</i>	<i>fully</i>
<i>Accident</i>				
<i>Lump sum</i>				
<i>Income replacement</i>				
<i>Health</i>				
<i>Motor, third party</i>				
<i>Motor, other classes</i>				
<i>Marine, aviation, transport</i>				
<i>Fire etc.</i>				
<i>General liability</i>				
<i>Credit and surety</i>				
<i>Assistance</i>				
<i>Legal expenses</i>				
<i>Miscellaneous financial losses</i>				

However, this proposal would complicate seriously the presentation of the accounts as it would demand that expected claims be calculated for all these different classes of insurance. The moderator did not include it in its final recommendation.

<sup>26</sup> This corresponds to Anne Harrison's fourth solution



### 7.3. *Towards a consensual recommendation*<sup>27</sup>

The discussion above showed that (1) the simple solution of decoupling of D71/D72 is a workable solution, (2) that in cases of very significant exceptional claims, linked to catastrophes, it could be preferable to not affect the disposable income of households with an exceptional transfer that is not a current ordinary revenue, and that it is possible by introducing a capital transfer, (3) that no modification is needed in financial accounts.

We have seen in the paragraphs on the measurement of expected claims that, inevitably, the methods for estimating expected claims includes two steps: (1) the need to exclude from calculations the very exceptional claims linked to catastrophes and the manual treatment of it, (2) the “normal” smoothing method leading to the series of “normal” expected claims.

In parallel with this two step treatment, it is proposed that, in the accounting framework, differences between “normal claims due” and expected claims is treated in the current account, as a difference between D72 and D71, while a difference between “very exceptional claims” due and expected claims is treated as a capital transfer.

***Recommendation 11: the introduction of expected claims and expected premium supplements in the calculation of production will result in a decoupling of non-life insurance claims (D72) and the corresponding imputed net non-life insurance premiums (D71). D71 will be equal to expected claims plus the difference between actual premium supplements and expected premium supplements. In the case of catastrophes, where the difference between D71 and D72 may be deemed too important to affect current disposable income of policy holders, the difference attributed to the catastrophe can be treated as a capital transfer, to avoid affecting disposable income.***

It is important to note that the decoupling of D71 and D72 on an annual basis (short-term in respect to the insurance business) does not imply a total decoupling of these flows: in the long term, D71 and D72 should be equal. This long term identity could be an interesting check of the validity of the implementation of the new method.

## 8. The treatment of reinsurance

Reinsurance is a major way for direct insurers to deal with exceptional claims. In fact, a large part of the financing of the claims due by direct insurers in the case of catastrophes comes from re-insurers. Another characteristic of the market of insurance is that re-insurance is mostly an international business in which a few very large companies based in very few countries (Germany, Switzerland and the UK) are active. This explains what was recalled in the introduction of the present paper regarding the effect on imports of services of the September 11 attack: re-insurance affects essentially external trade flows in most countries.

Because of the role of re-insurers in catastrophe claims, it was therefore inevitable that the discussion of the task force covered the treatment of re-insurance in the SNA. This discussion is complex because it developed on two levels: the first level is a demand for change of the general recommendations of the SNA regarding the treatment of re-insurance, the second level is the capacity of any new treatment of re-insurance to resolve the central problem discussed in this paper regarding the volatility of the current measure of production.

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<sup>27</sup> This solution is a mix of Anne Harrison’s solution (1) and solution (4).

In this paper, the discussion is organized in the following way: (7.1) shows that the current SNA should be modified regarding re-insurance; (7.2) proposes two workable solutions regarding the treatment of re-insurance: a net and a gross approach; (7.3) explains that none of these solutions resolve, by themselves, the central issue of the volatility of claims; (7.4) concludes that the only solution is to apply expected claims to both direct insurers and re-insurers; (7.5) explains that in this context, the gross method seems to be the most practical method.

This paragraph is essentially based on the paper by Elena Marton (OFS, Switzerland) and Gabe H. de Vries (Independent consultant, Netherlands): “Treatment of reinsurance in the national accounts”. This paper is available on the EDG. Also, several reactions to this paper, by Anne Harrison, John Walton, Michael Davies, and reactions to these reactions by Elena Marton and Gabe de Vries have been used.

### **8.1 The current SNA has to be clarified and changed regarding re-insurance.**

The SNA deals with re-insurance in its paragraphs 27 to 30 of its Annex IV. The papers prepared by the experts of the task force showed that these paragraphs are, first, unclear. The SNA recommends “consolidating” the transactions between *resident* direct insurers and re-insurers (which can also be, at the same time, direct insurers). However, this consolidation is not explained in detail and different interpretations are possible. In addition, the SNA considers “inappropriate” to completely consolidate flows between non-resident re-insurers and resident direct insurers, but still proposes to measure the international service of reinsurance as the “*balance of all flows occurring between the re-insurers and the direct insurers*”. Also, ESA seems to differ from SNA by preferring to not consolidate, a difference which makes the issue even more complex. On the whole, it is fair to say that paragraphs 27 to 30 should be more detailed and made clearer.

It is therefore recommended that a new treatment of reinsurance be included in the SNA which would base its approach on a totally symmetric method of estimating direct and indirect insurance: direct insurance and reinsurance should be treated using the same principles. The economic rationale of this recommendation is that, in both cases, the underwriting and pricing practices are similar.

### **8.2 There are two workable solutions to improve the SNA: the net approach and the gross approach**

There appears to be two workable solutions to implement the principle of symmetry called for in the preceding paragraph. Both do it by using exactly the same formula of compilation both for direct insurers and re-insurers. In particular, both include a premium supplement for re-insurers in the formula. At this stage of this presentation, the formula is the standard SNA formula (simplified by omitting the changes in provision for unearned premiums and unpaid claims):

$$Production = Total\ actual\ premiums + Premium\ supplements - Claims\ due.$$

- *The net approach*

The first method is called the “net method”. It is based on the idea that reinsurance is nothing else than the transfer of a risk (or a part of it) initially accepted by a direct insurer to another insurer. The service charge of the transferred risk is therefore itself transferred from the direct insurer to the re-insurer. In this method, the formula uses flows that are systematically netted, for direct insurers, of reinsurance flows. Therefore the formula for direct insurers is now:

$$Production\ of\ direct\ insurer = Total\ actual\ premiums\ minus\ premiums\ paid\ by\ the\ direct\ insurer\ to\ the\ re-insurer + Premium\ supplements\ (on\ net\ technical\ provisions\ of\ the\ direct\ insurer) - Claims\ due\ minus\ claims\ payable\ by\ the\ re-insurer.$$

The production of the re-insurer uses the standard formula:

$$\text{Production of re-insurer} = \text{Total actual premiums} + \text{Premium supplements} - \text{Claims due.}$$

In this approach, the production of direct insurers which is consumed by their policy holders concerns only the part of the risk that is not transferred to re-insurance. In parallel, the re-insurers' production reflects the service charge of the risk that has been transferred to him *and is directly consumed by the policy holders*. There is no intermediary consumption of re-insurance by insurance companies.

- *The gross approach*

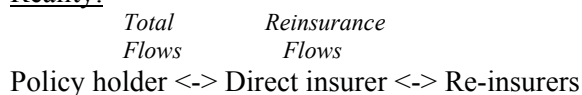
The second method is called the gross approach because rather than netting off reinsurance flows, as in the net method, it records all flows *gross* of re-insurance. The production of the direct insurer is therefore:

$$\text{Production of direct insurer} = \text{Total actual premiums} + \text{Premium supplements (estimated on gross technical provisions of the direct insurer)} - \text{Total claims due.}$$

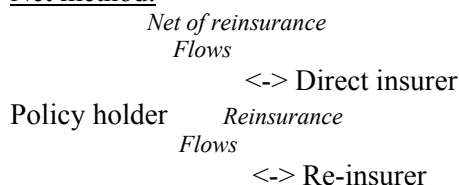
The production of the re-insurer uses the same formula as in the net approach and is consumed by direct insurers, as intermediate consumption.

- The following diagrams (inspired from a paper by Gabe de Vries) are useful to understand the global picture.

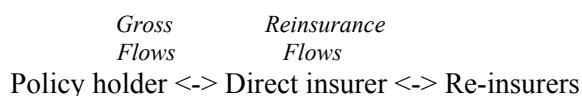
Reality:



Net method:



Gross method:



In the *real economic world*, there are full transactions (premiums/claims/investment income) between direct insurers and their policy holders. In parallel, there are full reinsurance flows (premiums/claims/investment income) between the direct insurers and their re-insurers.

In the net approach, the flows between direct insurers and their policy holders are netted of reinsurance flows, and the latter are considered *as if* they were done directly with the policy holder.

In the gross approach, the recordings reflect the real economic transactions.

Both net and gross approaches were considered by the task force workable solutions. One of them should however be chosen as the central SNA recommendation.

### ***8.3 None of these two workable solutions treat the problem of the volatility of claims***

Despite the hope that, under the assumption that re-insurance takes a major part in the handling of the volatility of claims of direct insurers, an improved treatment of re-insurance could resolve the central problem of the present paper, the papers prepared by the experts show that the two proposed solutions do not achieve this result. A catastrophe, or more generally an unusual claim, has a negative impact on insurance production in both the net and gross approaches.

The negative impact is larger in the case of the gross method than in the case of the net method because the gross method assigns the impact to the production of the direct insurer and, at the same time, to the production of the re-insurer. However, it is useful to recall that one of these impacts is limited to the intermediate consumption of insurance services by the insurance branch itself. The net approach splits the impact, once, between the direct insurer and the re-insurer, each one for the part of the risk it covers.

But, in both methods, the negative impact is the same on non insurance policy holders (i.e. households, non insurance businesses and general government). For countries where re-insurance is essentially imported, the advantage of the net method would be that the domestic production of insurance services would be less affected by a catastrophe, but the problem would be passed to the imports figures, which would show the negative impact. On the whole, the impact on GDP is the same in both methods.

The obvious conclusion is therefore that, even if it is recommended to change the treatment of re-insurance in the SNA, the change to one of the two methods proposed will not by itself resolve the central issue discussed in the present paper.

### ***8.4 The only solution is to apply the expected claim approach both for direct insurers and re-insurers***

Whatever new treatment of re-insurance, the basic formula used remains an adaptation of the formula (1), which has the original default of mixing non volatile premiums with volatile claims. In this context, the only solution to resolve the problem of the volatility of claims is to apply the expected claims method to both direct insurers and re-insurers.

### ***8.5 In this context, the gross approach seems the most workable one***

Several reasons have been given in favor of the gross approach, compared to the net approach. First, reinsurance is a separate business from direct insurance. Modern reinsurance increasingly uses “excess of loss reinsurance” which is a different contract from direct insurance. In this respect, it is more realistic to differentiate the two types of businesses in the national accounts. This difference is recognized in business statistics in Europe (NACE) and in North America (NAICS) which classifications now include a specific activity (and its output) of reinsurance. Third, recording in the national accounts full transactions between direct insurers and re-insurers corresponds to the transactions that exist in reality. In particular, when re-insurance is, totally or for a large part imported (which is the case for most countries), it is more natural to show this as a flow between insurers rather than between policy holders and non resident re-insurers, which would appear the case with the net approach.

The context of the inclusion of a compilation of expected claims seem to go also in this direction. The data used in the compilation of expected claims uses heavily trade sources, in time series. It should be easier in this context to smooth the data as obtained directly from insurance companies than to do it after the re-treatment implied by the net method.

***Recommendation 12: The treatment of re-insurance in the SNA has to be revised. The consolidated approach for re-insurance transactions of the current SNA should be replaced by an approach which treats direct insurers and re-insurers exactly in the same way. In particular, the formula to compile***

*production in both cases should be identical in their principles. Both should use expected claims and expected premium supplements. The gross presentation, where the production of re-insurance is consumed by direct insurers, is preferred to the net approach, where this production is netted out.*

## **9. Bonuses and rebates**

The existing SNA and ESA do not explicitly deal with bonuses and rebates paid or granted by the direct insurer to its policy holders or by the re-insurer to the direct insurer.

Bonuses comprise all amounts concerning the financial year which are paid or payable to the policyholders or provided for their benefit, including the amounts added to the technical provisions, or applied to reduce future premiums to the extent that these amounts represent an allocation of surplus or profit arising on the business as a whole or a section of the business after the deduction of amounts provided in previous years which are no longer required. With reinsurance contracts, the comparable phenomenon is labelled as “profit sharing”.

Rebates comprise all amounts to the extent that they represent a partial refund of premiums resulting from the experience of the individual contract.

Bonuses and profit sharing should be classified as a class of (insurance specific) other income transfers from the insurer to the policyholder respectively from the reinsurer to the direct insurer.

Rebates should be classified as a negative component of the premiums of the direct insurer.

With proportional reinsurance the reinsurer will pay “commissions” to direct insurer. These commissions are intended to compensate the direct insurer for the administrative costs of the total business. These commissions should be classified as a negative component of the premiums reinsurance earned<sup>28</sup>.

***Recommendation 13: The commissions paid by the reinsurer to the direct insurer and the rebates paid by the direct insurer to the policyholders should be classified as a negative component of the premiums earned. The profit sharing paid by the reinsurer to the direct insurer and the bonuses paid by the direct insurer to the policyholders should be classified as a form of other income transfers.***

## **10. Change in terminology in the SNA**

Some participants in the task force proposed that the opportunity given by the redrafting of the SNA in relation to this new approach based on expectations should be used to make the terminology used in the SNA closer to the terminology used in the insurance branch.

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<sup>28</sup> For more details on these reinsurance transactions see G.H. de Vries, Some comments on reinsurance, the transactions between direct and indirect insurers in the European system of national accounts, Reeuwijk, 24 January 2003.

<b>Description</b>	<b>Current SNA/ESA term</b>	<b>Accounting term* and proposed new SNA term</b>
The amount of premium, which became payable by the policyholders		Written premiums
The amount of premium, which relates to risks in the accounting period	Actual premiums earned	Earned premiums
The part of the earned premiums needed to compensate the claimants	Net premiums receivable (ESA) or payable (SNA)	Risk premium (earned), but term is contested for the SNA
The amount of claims paid during the accounting period	Claims paid	Claims paid
The amount of claims concerning risks which have manifested themselves during the accounting period	Claims due	Claims incurred

*\*according to the European accounting directive*

**Recommendation 14:** *the terminology used in the SNA should be made closer to the one used in the insurance industry. In particular, “Claims due” should be changed to “Claims incurred”.*

## **11. Implications to the System of National Accounts**

The recommendations imply numerous changes of the SNA located:

- in the paragraphs 6.135-6.140 of the main text and paragraphs 14 to 18 of the special annex IV on insurance which explain the specific measurement of the output of non life insurance.

- in the paragraphs 7.123 to 127 (and annex IV, § 22 and 23) regarding the definition of D44

- in the paragraphs 8.85 to 8.87 (and annex IV § 24, 25) which give the definition of D71 and D72

- in the paragraphs 14.44 and 14.112 and 14.113 (and annex IV § 26) which explain the measurement of imports and exports of insurance services, and the measurement of re-insurance

- annex 4, paragraphs 27 to 30 on reinsurance

- in paragraph 10.141 regarding the treatment of exceptional capital transfers

- in paragraphs 11.89, 11.97, 11.98, 13.80 (as well as the annex on balance sheet page 313) regarding the definition of the financial asset “F62 prepayments for insurance premiums and reserves for outstanding claims”.

- annex IV: paragraphs 31 38 39 40 41 (and example page 578) regarding the identity d71/d72

In the present report, we illustrate changes to be implemented to the current SNA text in consequence of the recommendations of the task force. These drafting proposals are not to be considered as final proposals. Final redrafting will be made by the SNA editor, and he/she could choose to organize differently the changes needed. They are not either to be considered as extensive. In particular, we have chosen to illustrate the changes in the main text and not the special annex IV of the SNA, except in some cases where the item appears only in the annex IV. These redrafting proposals should be simply considered illustrative

of the amount of change needed in the main text. They are presented using the Track Change feature of Word.

*Changes to paragraphs on the measurement of output.*

6.135 The activity of insurance is intended to provide individual institutional units exposed to certain risks with financial protection against the consequences of the occurrence of specified events. It is also a form of financial intermediation in which funds are collected from policyholders and invested in financial or other assets which are held as technical ~~provisions~~~~reserves~~ to meet future claims arising from the occurrence of the events specified in the insurance policies. Although insurance involves transfers in which funds are redistributed among institutional units, insurance enterprises also produce services that are paid for, directly or indirectly, by their policyholders. It is not easy to disentangle the different elements involved in the transactions between insurance enterprises and their policyholders and to record them appropriately in the System. Accordingly, a comprehensive explanation of insurance and pensions and the ways in which the various elements interact is given in annex IV at the end of this manual. The purpose of the present section is to explain how the output of the services produced by insurance enterprises is calculated and valued in the System.

6.136 Typically, insurance enterprises do not make a separate charge for the service of arranging the financial protection or security which insurance is intended to provide. Whenever insurance enterprises do make explicit charges to their policyholders or others, these are treated as payments for services rendered in the normal way. For those services for which no explicit charges are made the value of the services they provide has to be estimated indirectly, however, from the total receivables and payables of insurance enterprises, including the income accruing from the investment of their reserves.

6.137 Insurance enterprises build up technical ~~provisions~~~~reserves~~ for several reasons. One is that insurance premiums are payable in advance at the start of each period covered by the policy so that insurance enterprises typically hold funds for a period of time before an eventuality giving rise to a payment occurs. This applies to non-life insurance as well as to life insurance. Another reason is that there is sometimes an important time-lag between the eventuality occurring and the payment of the subsequent claim taking place. In addition, insurance enterprises must hold considerable ~~provisions~~~~reserves~~ in the form of actuarial ~~provisions~~~~reserves~~, including ~~provisions~~~~reserves~~ on "with-profits" ~~life~~-policies, and in respect of life insurance, provisions on unit-linked policies. The technical ~~provisions~~~~reserves~~ built up for those reasons are invested in financial or non-financial assets, including real estate. The income generated by these investments in the form of the property income or net operating surpluses earned by renting residential or non-residential buildings is called premium supplements. It has, as well as the income received from own funds, has a considerable influence on the level of premiums insurance enterprises need to charge. The management of its investment portfolio is an integral part of the business of insurance which has a considerable bearing on the profitability and competitiveness of the enterprise.

6.138a The value of the output of both non-life and life insurance services is obtained residually from an accounting relationship in which the following elements are involved.

- (a) Actual premiums earned
- (b) Income from the investment of the insurance technical provisions, as described above.
- (c) In the case of non-life insurance, income from the investment of own funds.
- (d) Claims incurred during the accounting period. In the case of non-life insurance, where observed claims have a significant volatility, claims incurred are adjusted as described below.
- (e) Changes in the actuarial provisions, including provisions for with profits insurance and unit linked life insurance.

Each of these elements is described below. The residual represents the cost of producing the insurance service and operating surplus; it is often referred to as the "service charge".

6.138b The risks insured are often reinsured. Reinsurance is particularly important in the case of non-life insurance, but exists also for life insurance. Reinsurance services are internationally traded to a significant extent. The value of the output of reinsurance services is measured in the same way as that of other insurance services.

6.138c In the following text, the term "direct insurance services" means insurance services which are provided to a policy-holder whose main activity is not in S.125. The term "reinsurance services" applies to insurance services provided by an insurer to a policy-holder whose main activity is in S.125 (or the equivalent, if non-resident), including autonomous pension funds. Many insurers act as both direct insurers and reinsurers, providing direct insurance services to non-insurance policy holders and reinsurance services to policy-holders who themselves are insurers or pension funds. Others specialise in reinsurance services, but may still provide some direct insurance services. Reinsurance services include those provided by one insurer acting as reinsurer to another also acting as reinsurer, known in the industry as "retrocession". In this case the policy-holder of the second reinsurer is the first reinsurer, and so on.

6.138d The value of direct insurance service produced relates to the whole of the risk which is insured, including any reinsured component. Thus, direct premiums and claims are recorded gross of reinsurance. The reinsurer's share of both is recorded as output of the reinsurer and as intermediate consumption of the direct insurer. It is the same in regard to premium supplements and their obverse, property income attributed to insurance policy-holders, which therefore includes, in the case of reinsurance services, policy-holders who are themselves insurers.

6.138e For simplicity, certain items to be found in the profit and loss accounts of insurance corporations are assimilated to others in the calculation of the value of direct and reinsurance services produced :

-- Gross premiums earned include changes in the provision for unexpired risks, as part of changes in the

provision for unearned premiums (see (a) below).

-- Gross premiums earned are recorded after deducting rebates paid to policy-holders when these result from

the experience of individual contracts. These rebates should be distinguished from bonuses paid or payable

in future to policy-holders, even though the two are often merged in the published accounts of insurance

corporations (see below).

-- In the case of a reinsurer accepting risks on proportional reinsurance contracts, gross premiums

earned are recorded after deducting the reinsurance commissions payable by him to the direct insurer.

-- Gross claims incurred include changes in the equalisation provision.

-- Gross claims incurred include bonuses actually payable in the accounting period.

-- Changes in the actuarial provisions and provisions for with profits insurance include the provision made for

bonuses payable in future.

6.138f Adjustment of non-life claims incurred.

The value of the total output of insurance services is obtained residually. Observed claims incurred have a significant volatility, in particular when major catastrophes occur, thus impeding their mechanical use in the measurement of the output of insurance services for a given accounting period. Indeed, this measure should



not be affected by the volatility of claims: conceptually, neither the volume nor the price measure of the insurance output is affected by the volatility of claims. Thus the formula used to estimate the output of non life insurance services relies on *adjusted* claims incurred rather than *observed* claims incurred. It is also possible to extend this line of reasoning to *adjusted* premium supplements rather than *observed* premium supplements, but the volatility is lower in respect to premiums. Overall, the formula to calculate the output of non life insurance services includes the following elements in which the following elements are involved:

(a) ~~Gross~~ actual premiums earned: these refer to those parts of the premiums payable in the current or previous periods which cover the risks incurred during the accounting period in question. They are not equal to the premiums actually payable during the accounting period, as only part of the period covered by an individual premium may fall within the accounting period in which it is payable. The prepayments of premiums, which refer to those parts of the premiums which cover risks in the subsequent accounting period or periods, form part of the technical provisions reserves. Thus, ~~gross~~ total premiums earned are equal to gross premiums receivable less the value of the changes in the gross provisions reserves due on unearned premiums; ~~the rebates paid by the direct insurer to the policy holders are to be treated as a negative component of the gross premium earned, as are reinsurance commissions payable by an insurer acting as a reinsurer; but profit sharing payable by a reinsurer is not deducted from the premiums which he accepts and is treated as a miscellaneous current transfer (D.75).~~

(b) Premium supplements or expected premium supplements ~~Income~~ from investment of the insurance technical provisions reserves, as described above, plus income or expected income from own funds. Although the provisions reserves are held and managed by the insurance enterprises, ~~they~~ they are treated in the System as assets of the policyholders. The income earned on the investment of these provisions reserves is, therefore, attributed to the policyholders for whose benefit the provisions reserves are held. The income on the own funds of insurance corporations held in respect of non-life business is also attributed to the policyholders, because in practice the policy-holders benefit from it in much the same way; but, by convention, these own funds are not regarded as assets of the policy-holders. The ~~income total of the income~~ is recorded as receivable by the policyholders who pay it all back again to the insurance enterprises as premium supplements. ~~These~~ these premium supplements must therefore always be equal in value to the corresponding income from the investment of the technical provisions; however, in the calculation of output expected premium supplements rather than observed premium supplements can be used, but, considering the lesser volatility of premium supplements compared to claims, adjusted premium supplements can be taken in practice as equal to observed premium supplements;

(c) Adjusted ~~claims which become due for payment~~ during the accounting period: adjusted claims differ from actual gross claims incurred, which are equal to gross claims actually payable during the accounting period plus changes in the gross provision for outstanding claims. Adjusted claims can be estimated using two methods. The first, the expectation approach, is based on an estimate of expected claims, using smoothed past figures of gross claims incurred or smoothed past ratios of gross claims incurred over premiums applied to current premiums. This method is fully described in the annex IV. The second one, the accounting approach, uses gross claims incurred become due when the eventuality takes place which gives rise to a valid claim; they are equal to claims actually payable within the accounting period plus changes in the reserves against outstanding claims, and, if necessary, changes in own funds, when the latter are used by insurance companies and subsequently rebuilt to face major unexpected claims; when withdrawal of own funds intervene in one period to dampen the impact of major claims, the subsequent rebuilding of these own funds should intervene in the next periods;

(d) Changes in the actuarial provisions reserves and provisions reserves for with-profits insurance. These changes consist of allocations to the actuarial ~~actuarial~~ provisions reserves to build up the capital sums guaranteed under these policies and provisions reserves for with-profits insurance policies ~~to build up the capital sums guaranteed under these policies.~~ Most of these provisions reserves relate to life insurance but they are also ~~may be~~ needed in the case of non-life insurance when premium rates are fixed for more than one year (including policies providing mortality or disability benefit only on the occurrence of an event within a term, when correctly treated as non-life insurance) and when claims are paid out as annuities instead of lump sums.

All changes in insurance technical provisions reserves referred to (a), (c) and (d) are measured excluding any nominal holding gains or losses.

6.139 Items (a) and (b), i.e.:

Actual premiums earned; and

Premium supplements (or adjusted premium supplements) plus income from own funds (or adjusted income from own funds) (= income from investments)

determine the total resources (or adjusted resources) of an insurance enterprise arising from its non life insurance activities. Items (c) and (d), i.e.:

Adjusted Claims incurred due; and changes in the actuarial provisions and provisions for with profits insurance

~~Changes in actuarial reserves and reserves for with profits insurance~~

determine the total adjusted technical charges to be met out of these resources. The difference between the total adjusted resources and total adjusted technical charges represents the adjusted amount available to an insurance enterprise to cover its costs and provide for a normal operating surplus. It is therefore taken as measuring the value of the output of non-life insurance services produced by the enterprise. This method simulates the model used by insurance enterprises to fix the level of premiums. Insurance enterprises take all the items (b) to (d) into consideration when fixing the levels of the premiums they charge in order to ensure that the excess of total resources over total charges provides sufficient remuneration for their own services.

Thus, the basic formulae accounting used to estimate the value of the output of non life insurance services is as follows:

Actual gross premiums earned  
plus gross premium supplements (or adjusted gross premium supplements), including  
property income on own funds held in respect of non-life insurance business

~~Less Adjusted gross Total claims- incurred~~

~~Less Changes in actuarial provisions and provisions for with profits insurance~~

~~due~~

~~plus Changes in actuarial and reserves for with profits insurance~~

~~=plus Value of the output of non life insurance services~~

~~=~~

~~— Total actual premiums earned~~

~~plus Total premium supplements~~

~~The value of the output of insurance services is determined residually as the item that balances both sides of the above account. The outputs of both life and non-life insurance services are estimated by means of this identity. The value of life insurance services (and pension funding services) do not rely on expected measures but on actual ones:~~

~~Gross premiums (and contributions) earned~~

~~Plus gross premium (and contribution) supplements~~

~~Less gross claims (and benefits) incurred~~

Less Changes in actuarial provisions and provisions for with profits insurance, unit linked life insurance (and defined contributions pension funding)

= Value of life insurance services

Unit linked life insurance policies are also called "life insurance policies where the investment risk is borne by the policy-holder". The technical provisions in respect of these policies are often separated in insurance corporations' balance sheets. {Defined contributions pension funds are also contracts where the investment risk is borne by the policy-holder.}

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NB. The formula above is subject to change in the case of defined benefits pension funds. This is why it is in italics. In the present formula, changes in liabilities to members are included in "changes in actuarial provisions".

6.152 When goods or services produced within the same establishment are fed back as inputs into the production within the same establishment, they are not recorded as part of the intermediate consumption or the output of that establishment. On the other hand, deliveries of goods and services between different establishments belonging to the same enterprise are recorded as outputs by the producing establishments and must, therefore, be recorded as intermediate inputs by the receiving establishments. " The valuation of the use of reinsurance services by other insurers is described in annex IV.

*Changes in the paragraphs related to property income (D44)*

7.123 The technical provisionsreserves held by insurance enterprises consist in (1) provisions for unearned premiums, (2) provisions for claims outstanding. Provisions for unearned premiums include the industry definition of provision for unearned premiums plus provision for unexpired risks and provisions for bonuses and rebates. Provisions for claims outstanding include provisions for claims outstanding including provisions for incurred but not (enough) reported incidents and provisions for the equalization of claims. When the policy is designed to extend cover beyond the end of the accounting year, actuarial provisions are made, including of the actuarial reserves against outstanding risks in respect of life insurance policies, including provisionsreserves for with-profit policies which add to the value on maturity of with-profit endowments, annuities, or similar policies and in the case of life-insurance, unit linked policies, prepayments of premiums and reserves against outstanding claims. Although held and managed by insurance enterprises, the technical provisions reserves are held in trust for the benefit of policyholders, or beneficiaries in the case of provisionsreserves against outstanding claims. These provisionsreserves are, therefore, considered to be assets of the policyholders or beneficiaries and liabilities of the insurance enterprises. In the financial accounts, the claims of holders of both life and non-life insurance policies over the insurance enterprises are described as the net equity of households on life insurance provisionsreserves and on pension funds and prepayments of insurance premiums and provisions reserves for outstanding claims.

7.124 Insurance technical provisionsreserves are invested by insurance enterprises in various ways. They are commonly used to purchase financial assets, land or buildings. The insurance enterprises receive property income from the financial assets and land, and earn net operating surpluses from the renting or leasing of residential and other buildings. The total of the primary incomes received in this way from the investment of insurance technical provisionsreserves is described as investment income. It does not, of course, include any income received from the investment of insurance enterprises' own assets. However, as-as the technical provisionsreserves are assets of the insurance policyholders, the investment income receivable by insurance enterprises must be shown in the accounts as being paid by the insurance enterprises to the policyholders. The income payable by insurance enterprises to policyholders in this way is described as property income attributed to insurance policyholders. However, this income is retained by the insurance enterprises in practice. It is therefore treated as being paid back to the insurance enterprises in the form of premium supplements that are additional to actual premiums payable under the terms of the insurance policies. By convention, income on the own funds of insurance enterprises held in respect of non-life insurance business is also regarded as being attributed to policyholders and paid back by them as premium supplements. -These premium supplements on non-life insurance policies and on life insurance policies taken out under social insurance schemes are recorded together with the actual premiums in the secondary

distribution of income accounts of the units concerned. The premium supplements on individual life insurance policies not taken out under social insurance schemes, like the actual premiums, are not current transfers and are therefore not recorded in the secondary distribution of income accounts. They are used directly to acquire financial claims over the life insurance reserves and are included as one of the elements contributing to the change in the net equity of households on life insurance provisionsreserves and pension funds recorded in the financial accounts of the units concerned.

7.125 Receipts of income by insurance enterprises from the investment of the technical provisionsreserves are recorded in the primary distribution of income account of insurance enterprises in the normal way. Net operating surpluses earned from the activity of renting buildings are recorded in the generation of income account while property incomes receivable from investment in financial assets or land are shown in the allocation of primary income account. An amount equal to the total value of this investment income plus investment income on own funds held in respect of non-life business is then shown under uses in the allocation of primary income account as being payable to policyholders as property income attributed to insurance policyholders. Thus, the balance of primary incomes and the disposable incomes of insurance enterprises are not influenced by the amounts of income received from the investment of technical provisions or investment income on own funds held in respect of non-life business.reserves.

7.126 The total value of the investment income of an insurance enterprise is allocated among policyholders in proportion to the actual premiums paid. The amounts receivable by individual policyholders as property income attributed to insurance policyholders are shown under resources in the allocation of primary income accounts of the institutional units and sectors concerned.

#### *Changes in the paragraphs regarding the definition of net non life insurance premiums (D71)*

8.85 Non-life insurance premiums included under this heading refer to those payable under policies taken out by enterprises or individual households. The policies taken out by individual households are those taken out on their own initiative and for their own benefit, independently of their employers or government and outside any social insurance scheme.

8.86 Non-life insurance premiums as stated earlier comprise both the actual premiums payable by policyholders to obtain insurance cover during the accounting period (premiums earned) and the premium supplements payable out of the property income attributed to insurance policyholders (including investment income on own funds held in respect of non-life business). The total of the non-life insurance premiums payable in this way has to cover payments of service charges to the insurance enterprises for arranging the insurance and payments for the insurance itself. The way in which the service charges are calculated was explained in chapter VI, paragraphs 6.138 to 6.140. After deducting the service charges from total non-life insurance premiums, the remainder is described as net non-life insurance premiums. These are the expected amounts available to provide cover against expected various events or accidents resulting in damage to goods or property or harm to persons as a result of natural or human causes - fires, floods, crashes, collisions, sinkings, theft, violence, accidents, sickness, etc. - or against financial losses resulting from events such as sickness, unemployment, accidents, etc. Net non life insurance premiums can also be compiled directly as equal to adjusted claims plus the difference between actual premium supplements and adjusted premium supplements. Only the net non-life insurance premiums constitute current transfers and are recorded in the secondary distribution of income account. The service charges constitute purchases of services by the policyholders and are recorded as intermediate or final consumption, as appropriate.

### *Changes in the paragraphs regarding Non life insurance claims (D72)*

8.87 Non-life insurance claims do not include payments to households in the form of social insurance benefits. They are the amounts payable in settlement of claims that become due during the current accounting period. Claims become due at the moment when the eventuality occurs which gives rise to a valid claim accepted by the insurance enterprise. They are called claims incurred. Non life insurance claims can be split between (D721) Expected claims and (D722) Non expected claims. D722 is compiled as the difference between total claims incurred (D72) and expected claims (D722). As the service charges on non-life insurance are calculated by subtracting ~~adjusted claims incurred due~~ from the combined value of the premiums earned and premium supplements (or, if applicable, adjusted premium supplements), it follows that the total claims ~~incurred due~~ for an insurance enterprise ~~is not equal to~~ must equal the net non-life premiums (D71) receivable by that enterprise during the same accounting period. The difference between D72 and D71 for a given period can be positive or negative, depending on the relation between expected claims and unexpected claims. Over a very long-term period, however, the average flow D71 should be equal to the average flow D72. ~~This emphasizes the fact that the essential function of non life insurance is to redistribute resources.~~

8.88 The settlement of a non-life insurance claim is treated as a transfer to the claimant. Such payments are ~~generally always~~ treated as current transfers. However, in the case of major catastrophes, when non expected claims can be massive, it can be useful to record this exceptional flow as a capital transfer (see D99), even when large sums may be involved as a result of the accidental destruction of a fixed asset or serious personal injury to an individual. The amounts received by claimants are usually not committed for any particular purpose and goods or assets which have been damaged or destroyed need not necessarily be repaired or replaced.

8.89 Some claims arise because of damages or injuries that the policyholders cause to the property or persons of third parties, for example, the damages or injuries that insured drivers of vehicles may cause to other vehicles or persons. In these cases, valid claims are recorded as being payable directly by the insurance enterprise to the injured parties and not indirectly via the policyholder.

### *Changes in paragraphs referring to exports and imports*

14.44 Exports and imports of services are to be valued at the actual prices agreed upon, subject to the above-mentioned limitations. Two specific service components warrant special mention as to valuation: insurance services and financial services. International insurance services are valued by the amount of service charges and not by the total premiums earned. ~~Also, by convention because of data constraints, estimates of the insurance service charge in the external account of goods and services are calculated ignoring investment income on technical reserves.~~ As for international financial services, in addition to explicit commissions and fees, there are "financial intermediation services indirectly measured", derived from and valued according to the difference between the property income received from loans or debt securities and the interest paid on deposits (see exports and imports of goods and services below).

14.112 Exports of insurance services cover the provision of insurance to non-residents by resident insurance enterprises, while imports cover the provision of insurance to residents by non-resident insurance enterprises. It is convenient to consider separately two main groups of international trade in insurance services: direct insurance of internationally traded goods; other direct insurance; and reinsurance. Other direct insurance includes insurance of ships, aircraft and other transport vehicles. The treatment of the cost of insurance on goods which are in the process of being exported and imported has to be consistent with the valuation principles adopted for exports and imports of goods and the same conventions must be followed as for goods transportation in these circumstances. These conventions may be summarized as follows: insurance on internationally traded goods from the exporter's factory, or warehouse, up to the frontier of the exporter's country is to be included in the f.o.b. value of the goods exported. If this insurance is paid for by the importer using an enterprise resident in the importer's country, the exporter is deemed to purchase the insurance and simultaneously recover its cost out of the f.o.b. price recorded in the accounts. Insurance services on goods after they have passed the frontier of the exporting country are recorded as imports of insurance services by the importer when the insurance is provided by a non-resident of the importing country. If the insurance is provided by an enterprise resident in the importer's country, it should not be

recorded in the external account of goods and services, bearing in mind that imports, as well as exports, are recorded f.o.b. and not c.i.f.

14.113a International insurance services are to be estimated or valued by the amount of service charge included in total premiums ~~earned~~<sup>earned</sup>, not by the total premiums themselves. ~~In principle,~~ the measurement of transactions in international insurance services is consistent with that of insurance services for resident sectors. Estimates should be based on the ratios of service charge to premiums applicable to an appropriate class of business conducted by resident insurers. ~~However, in practice, both the System and the Balance of Payments Manual allow resident/non-resident flows associated with investment income on technical reserves to be ignored because of problems of estimation, particularly for imports.~~ Thus, for goods, the insurance service charge for resident issuers providing direct insurance services to non-residents (export) can often be based on administrative data relating to premiums earned from non-residents in the "marine aviation and transport" class (which also includes transport vehicles), or on the assumption that most direct insurance premiums earned from non-residents relate to this class. The subdivision of premiums earned between goods and transport vehicles can be based on cash-based or other supplementary information. The proportion of service charge to premiums is that appropriate to this class of business, if figures are available or, if not, can be based on data relating to a wider range of the direct non-life insurance activities of resident insurers. Where necessary the service charge to premium ratios should take account of the adjustments made for the volatility of claims. ~~is the difference between premiums earned and claims payable on goods lost or destroyed in transit.~~ Similarly, ~~t~~he service charge for non-resident issuers providing services to residents (import) can be estimated by applying to total premiums payable to non-resident issuers, the ratios of either the ratio of estimated service charges to total premiums for total exports of insurance services to total premiums paid to non-resident issuers, or of estimated service charges to total premiums received by resident issuers in the "marine aviation and transport" class of business. The ratio should be based on a medium- to long-term period.

14.113b In respect to other types of direct insurance, the service charge for both exports and imports, adjusted as necessary for the volatility of claims ~~non-resident insurers providing services to residents~~ can be estimated by applying to premiums earned or payable internationally the ratio of estimated service charges to ~~total~~ total premiums for resident insurers, for preference after excluding business in the "marine aviation and transport" class. Again, the ratio should be based on a medium- to long-term period. For non-life insurance, total premiums minus the estimated service charge and adjusted claims ~~incurred~~ payable should be recorded under current transfers. For life insurance, premiums minus the service charge and claims ~~payable~~ incurred are to be recorded in the financial account, under insurance technical ~~provisions~~ reserves. For reinsurance, the principles are identical to those applied to direct insurers.

but the estimates will usually be based on data relating to the total of reinsurance activities of all types (see the description in Annex IV).

Insertion to Annex IV, on internationally traded reinsurance services

Exports of reinsurance services. It is preferable to base the estimates on accounting data relating to the resident reinsurance industry, by applying to the reinsurance premiums accepted from non-resident insurers the ratio, of reinsurance service charge to reinsurance premiums accepted, which is derived from the total of reinsurance activities of residents.

Imports of reinsurance services. The estimates can be based on the accounting data of the resident direct insurers who use reinsurance services, which show separately the share of all reinsurers, resident and non-resident in gross premiums, gross claims and gross technical provisions, from which estimates of their intermediate consumption of all reinsurance services are derived (see the Table in paragraph 6.138f). The ratios of reinsurance service charge to premiums ceded to reinsurers, for all reinsurance business, can be applied to the premiums ceded to non-resident reinsurers. The latter may be available from administrative sources or cash-based sources. Also, for countries where exports of reinsurance services are nil or minimal, premiums ceded to non-resident reinsurers can be derived as total premiums ceded less reinsurance premiums accepted by resident insurers acting as reinsurers, which data is usually available in administrative sources.

~~exports of services are, in principle, estimated as the balance of all flows occurring between resident reinsurers and non-resident insurers. Imports are, in principle, estimated as the balance of all flows occurring between resident insurers and non-resident reinsurers.~~

*Changes to the treatment of re-insurance (annex IV, paragraphs 27 to 30)*

27. Insurance corporations undertake insurance in two different ways. The first of these is direct insurance with an institutional unit outside the insurance corporation and pension-fund sub-sector. The second is reinsurance which is a form of insurance that involves only institutional units classified as insurance corporations and pension funds, though one party to a transaction may be non-resident. ~~This practice somewhat complicates the recording of transactions for the sub-sector.~~

28. Reinsurance transactions between resident insurance corporations should be recorded similarly to direct insurance transactions. ~~consolidated~~ The same formula as the one used for direct insurance should be used: actual premiums earned plus premium supplements and income from own funds in respect of non-life business less adjusted claims incurred. Premium supplements should be compiled based on income from the total technical provisions of the reinsurer. The commissions paid by the reinsurer to the direct insurer are to be treated as a negative component of the reinsurance premium earned. The profit sharing paid by the reinsurer to the direct insurer is treated as a miscellaneous current transfer (D.75).

~~The production of reinsurers is classified as intermediate consumption of direct insurers.; non-life direct insurance with non-life reinsurance corporations and life direct insurance with life reinsurance corporations. In consequence, the System records transactions between policyholders and claimants on the one hand and the resident life and non-life industries on the other without regard to the division between direct insurance and reinsurance.~~

29. The same treatment applies w~~hen~~ reinsurance takes place between resident direct insurers and non-resident insurers or between non-resident insurers and resident reinsurers, ~~a complete consolidation is not appropriate. However, rather than show all flows of premiums, claims, commissions, etc, between direct insurers and reinsurers, it is simpler and more comprehensive to consider that the reinsurers deliver a service to direct insurers measured as the balance of all flows occurring between the reinsurers and the direct insurers. In principle, imports of reinsurance services are estimated as the balance of all flows occurring between resident direct insurers and non-resident insurers. These flows include premium ceded, investment income from technical reserves payable, commissions receivable, claims recovered and reinsurers' share in the addition to technical reserves if relevant. Exports of reinsurance services are similarly estimated as the balance of all flows between resident reinsurers and non-resident direct insurers. Apart from these two flows, all insurance transactions in the rest of the world account refer to direct transactions only.~~

30 ~~Imported reinsurance services appear as intermediate consumption of resident direct insurers.~~ in this case, premium supplements may be based on the difference between the technical provisions of the importing direct insurer gross of reinsurance and the same net of reinsurance, adjusted if necessary for reinsurance services provided by other residents.



**Additional paragraphs to be included in the annex IV for reinsurance and merged with the above other paragraphs:**

The value of direct insurance service produced relates to the whole of the risk which is insured, including any reinsured component. Thus, direct premiums and claims are recorded gross of reinsurance. The reinsurer's share of both is recorded as output of the reinsurer and as intermediate consumption of the direct insurer. It is the same in regard to premium supplements and their obverse, property income attributed to insurance policy-holders, which therefore includes, in the case of reinsurance services, policy-holders who are themselves insurers. This is because a direct insurer who cedes part of a risk to a reinsurer obtains, as part of the price of the reinsurance service, the benefit of the property income received by the reinsurer from the ceded premiums; in effect the benefit to the direct insurer's policy holders is the same as if no premium had been ceded and all the property income was received by the direct insurer. In the gross of reinsurance system, therefore, the value of reinsurance services produced and consumed includes premium supplements payable by direct insurers to reinsurers, which are also attributed by reinsurers to the direct insurers, as their policy-holders. In turn, this property income is attributed to the direct insurer's policy-holders as an unseparated part of the estimate of property income attributed gross of reinsurance and premium supplements gross of reinsurance.

This system has the advantage of being neutral, in regard to the output of direct insurance services, as between variations in the extent of reinsurance, over both space or time. Consolidation of resident to resident transactions does not meet this objective, because reinsurance services are often exported and, in many economies, are mostly imported, so that intra-resident reinsurance transactions are relatively unimportant. When reinsurance services produced by residents are exported, the property income generated on the total of reinsurance business should be attributed to non-resident policy-holders in the same way as to resident policy-holders. It is desirable to record the value of reinsurance services imported in the same way, in regard to obtaining both neutrality in the measure of the output of direct insurance services and consistent recording of both exports and imports .

The information system relating to premiums and claims flowing between direct insurers and reinsurers can be obtained from the accounts of both direct insurer and reinsurer, and is therefore complete even when one party is non-resident. However, in the case of the property income attributed which is associated with reinsurance services and the corresponding premium supplements, the information system is not complete, when one party is non-resident. The premiums supplements received by an insurer represent the property income on assets stemming from the investment of premiums not ceded to reinsurers. An amount representing the property income receivable by both the original insurer and the various reinsurers to whom premiums have been ceded can be estimated, however, in the manner indicated below, where all amounts other than estimated amounts ("estd.") are to be found in the published accounts of insurance corporations [at least in Europe].



**RESIDENT DIRECT INSURER**

**COUNTERPARTS**

	<u>GROSS OF REINSURANCE</u>	<u>REINSURERS' SHARE</u>	<u>NET OF REINSURANCE</u>	<u>SUM OF REINSURERS*</u>
<u>Premiums earned</u>	<u>A.1</u>	<u>- A.2</u>	<u>- A.3</u>	<u>- A.2</u>
<u>Premium supplements</u>	<u>B.1 (estd.)</u>	<u>- B. 2 (estd.)</u>	<u>- B.3</u>	<u>- B.2 (estd.)</u>
<u>Claims incurred</u>	<u>C.1</u>	<u>- C.2</u>	<u>- C.3</u>	<u>- C.2</u>
<u>Intermediate consumption of reinsurance services</u>	<u>Σ (A.2 + B.2 (estd.) - C.2)</u>			
<u>Property income attributed to i.p.h :-</u>				
<u>Uses</u>	<u>- B.1 (estd.)</u>	<u>- B. 2. (estd.)</u>	<u>- B.3.</u>	<u>- B.2 (estd.)</u>
<u>Resources</u>		<u>- B.2 (estd.)</u>		
<u>Level of technical provisions</u>	<u>D1.</u>	<u>D.2.</u>	<u>- D.3</u>	

\* Resident and/or non-resident.

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The item B.1 (est.) is called "gross premium supplements". It is estimated as  $D1 / D3 \times B3$ , which means making the assumption that the average rate of return of all the reinsurers in the sum of reinsurers is the same as the rate of return of the resident direct insurer on the investment of his technical provisions. [Where intra-resident transactions in reinsurance services are a large proportion of the total, there is an option to base the total gross amounts of premium supplements payable to direct insurers on consolidation of the net of reinsurance figures of premium supplements (item B3 above), combining both resident direct insurers and resident reinsurers in respect only of their resident to resident business. The contribution of premium supplements to the output of direct insurance services will then be the same as under the gross method, when summed over the whole economy. But this

method fails to record the output of reinsurance services correctly, when these are considered separately. It also requires separation of all data relating to premium supplements when one party is non-resident, and is therefore not suitable when exports or imports of reinsurance services form a significant proportion of the total.] Part in italics to be confirmed.

It should be noted that there are two types of reinsurance contract –

Proportional reinsurance: the reinsurer accepts an agreed proportion of the risks, receives the same proportion of premiums and pays the same proportion of claims. He pays the direct insurer a “reinsurance commission” to cover his share of the direct insurer’s operating costs, but not necessarily in direct proportion; it appears that the reinsurer’s own costs are regarded as being covered – perhaps more than covered – by his property income associated with the ceded premiums.

Excess of loss reinsurance: the reinsurer undertakes to pay all losses over a given threshold, or part of such losses. He shares with the direct insurer the profit on such reinsurance contracts, in appropriate circumstances, for instance if there are no or few claims. The reinsurer’s payments in such circumstances are known as “profit sharing”.

These two types of payment are often merged in the published accounts of insurance corporations. They should be separated as best possible.

#### *Changes regarding exceptional capital transfers (paragraph 10.141)*

10141 Capital transfer may take various other forms, of which some examples are given below:

(a) Major payments in compensation for extensive damages or serious injuries not covered by insurance policies. The payments may be awarded by courts of law or settled out of court. They may be made to resident or non-resident units. They include payments of compensation for damages caused by major explosions, oil spillages, the side effects of drugs, etc;

(a prime) In the case of major catastrophies, the difference between excepted claims and unexpected claims incurred by insurance companies can be recorded as a capital transfer to policy holders;

(b) Transfers from government units to publicly or privately owned enterprises to cover large operating deficits accumulated over two or more years;

(c) Transfers from central government to units at lower levels of government to cover some, or all, of the costs of gross fixed capital formation or large expenditure deficits accumulated over two or more years;

(d) Legacies or large gifts inter vivos, including legacies to NPIs;

(e) Exceptionally large donations by households or enterprises to NPIs to finance gross fixed capital formation: for example, gifts to universities to cover the costs of building new residential colleges, libraries, laboratories, etc.

*Changes in the paragraphs related to the definition of insurance technical provisions (§11.89, 11.97, 11.98, 11.99).*

11.89 Insurance technical reserves are subdivided between net equity of households in life insurance and pension funds (F.61) and provisions for unearned premiums and provisions for claims outstanding~~prepayments of premiums and reserves against outstanding claims~~ (F.62). The former category comprises provisions~~reserves~~ against outstanding risks and and provisions~~reserves~~ for with-profit insurance, unit-linked life insurance and pension funds; it is subdivided between net equity of households in life insurance reserves (F.611) and net equity of households in pension funds (F.612). F.62 concerns non life insurance and comprises provisions for unearned premiums~~prepayment of premiums~~ and provisions for outstanding claims~~reserves held by insurance enterprises~~ (including automobile, health, term life, marine, aviation and transport and other accident/injury, income maintenance, and other forms of non-life insurance) against claims. ~~The former - Reserves against outstanding risks, reserves for with profits insurance, and prepayments of premiums~~ are considered to be assets of policyholders, while the latter reserves against outstanding claims are assets of the beneficiaries. Insurance technical provisions~~reserves~~ may be liabilities, not only of life or non-life insurance enterprises (whether mutual or incorporated) but also of autonomous pension funds, which are included in the insurance enterprise sub-sector, and non-autonomous pension funds which are included in the institutional sector that manages the funds.

Provisions for unearned premiums and provisions for claims outstanding~~Prepayments of insurance premiums and reserves for outstanding claims~~ (F62)

11.97 Provisions for unearned premiums~~epayments of premiums first~~ result from the fact that, in general, insurance premiums are paid in advance. Insurance premiums are due to be paid at the start of the period covered by the insurance, and this period does not normally coincide with the accounting period itself. Therefore, at the end of the accounting period when the balance sheet is drawn up, parts of the insurance premiums payable during the accounting period are intended to cover risks in the subsequent period. These prepayments of premiums are assets of the policyholders and form part of the insurance technical provisions~~reserves~~. The amounts of premiums recorded in the accounts as transactions between policyholders and insurance enterprises consist of the premiums earned - those parts of the premiums that are paid in the current period or the preceding period and that are intended to cover risks outstanding during the current period. The SNA definition of provisions for unearned premiums also includes the provision for unexpired risks and provisions for bonuses and rebates.

11.98 Provisions for claim outstanding are held by~~Reserves against outstanding claims are reserves that~~ insurance enterprises ~~held~~ in order to cover the amounts they expect to pay out in respect of claims that are not yet settled or claims that may be disputed. Valid claims accepted by insurance enterprises are considered due for payment when the eventuality or accident that gives rise to the claim occurs - however long it takes to settle disputed claims. Provision~~Reserves~~ against outstanding claims are therefore considered to be assets of the beneficiaries and liabilities of the insurance enterprises. The SNA definition of provision for claims outstanding includes provisions for incurred but not (enough) reported incident and provisions for the equalisation of claims.

11.99 The financial account of the SNA records changes in provisions for unearned premiums and provisions for claims outstanding~~prepayments of premiums and reserves for outstanding claims~~ that result from transactions between policyholders and insurance enterprises under the general heading of changes in insurance technical reserves. Changes in these provisions~~reserves~~ resulting from holding gains or losses are recorded in the revaluation account and not in the financial account

*Addition to a future new annex IV (or to be included in an Implementation Manual): Methods of estimation of expected claims and expected premium supplements*

When micro-data on expected claims and expected premium supplements can be obtained from insurance companies and can be extensively treated, it is recommended to use this source to estimate expected claims and thus obtain a micro measure of the production of insurance that can be then aggregated. In most cases this will be impossible. It is therefore recommended to use a macro-estimate of expected claims using a statistical method whereby past data on claims due are smoothed and used to forecast the claims expected in the current period.

Two approaches are possible. The first is based on a direct smoothing of claims incurred. Direct smoothing of claims needs the use of a "reflator" to apply to past claims data. The second uses smoothed loss ratios (losses / premiums written) rather than smoothing claims themselves. The resulting loss ratio resulting from

past information is then applied to actual premiums of the period, resulting in an estimate of expected claims. It is recommended that the smoothing method should not lead to built-in revisions of the data. It should use past data available at the moment of the theoretical decision by insurers of the level of their premiums. This includes the year under study. A possible smoothing method is a geometric-weighted moving average of the type  $EV_t = \alpha V_t + \alpha(1 - \alpha)V_{t-1} + \alpha(1 - \alpha)^2 V_{t-2} + \dots$ , where  $EV_t$  is the expected variable (either claims or loss ratios) and  $V_t$  is the observed variable (either claims or loss ratios). The parameter  $\alpha$  should be chosen so that to optimize the prediction of future values, based on past experience.

It is essential to note that no "normal" smoothing method will be able to deal with exceptional events such as major catastrophes. Faced with such a situation, any "normal" smoothing method will induce a significant increase in claims due when the exceptional event enters in the formula of smoothing and a significant decrease when quitting the smoothing formula, thus affecting the measurement of insurance production in the national accounts.

Therefore, a pragmatic decision must be made to exclude these exceptional events from the first step of the calculations. The proposed method is the following: (1) determine what might be a set of catastrophic claims, for example on the basis of its size (a practical rule could be an event leading to claims reaching more than 0.1% of GDP), (2) determine on a pragmatic basis the amount of claims linked to the catastrophe and exclude these claims from the normal smoothing formula, (3) split these catastrophic claims over a very long period (twenty years), (4) reintroduce these additional claims in the compilation of expected claims for the long period (twenty years) ahead (not centered on) of the current year, taking into account expected inflation. In other words, a catastrophe that happened in the current year would have an impact on expected claims for the next 20 years but no impact on earlier years.

If considered necessary, estimates of expected premium supplements can be derived from past observed premium supplements using the same moving average method as for claims. However, for several reasons, including that in general, premium supplements (excluding holding gains/losses) are much less volatile than claims, observed premium supplements can simply be used.

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