Appendix 6c. Topical Summary—Insurance, Pension Funds, and Standardized Guarantees

A. General Issues

Reference:
1993 SNA Rev. 1, Chapter 17
Cross-Cutting and Other Special Issues

A6c.1. Insurance provides individual institutional units exposed to certain risks with financial protection against the consequences of the occurrence of specified events. In addition, insurers often act as financial intermediaries who invest funds collected from policyholders in financial or other assets to meet future claims.

A6c.2. Pension funds are established for the purpose of providing benefits for retirement or invalidity of specific groups of employees. They are similar to insurance in that they act as intermediaries for investing the funds for their beneficiaries and redistribute some risks.

A6c.3. Insurance and pension fund operation have common features, but can be distinguished in that life insurance and pension funds include a large saving component, while the objective of nonlife insurance (including term life insurance) is largely undertaken to pool risk.

A6c.4. The transactions undertaken by insurers include charging premiums, paying claims, and investing funds. Similarly pension funds transactions include receiving contributions, paying benefits, and investing funds. To analyze the underlying economic nature of these operations, it is necessary to rearrange these processes to derive the service, investment income, transfer, and investment elements. Users may also be interested in supplementary data on insurance transactions before the adjustments discussed in this section, particularly data on premiums and claims. (Box A6c.1 provides a numerical example to show the calculation of the derived items for service, investment income, transfers, and investment.)

A6c.5. Insurance corporations and pension funds are defined as institutional subsectors in paragraphs 4.82-4.83. Insurance reserves, pension entitlements, and provisions for standardized guarantees are defined as financial instrument in paragraphs 5.60-5.66 and as part of the other investment functional category in paragraph 6.61. The measurement in the IIP is discussed in paragraphs 7.62-7.67. Financial account entries are discussed in paragraphs 8.46-8.49. Insurance and pension services are discussed in paragraphs 10.105-10.112. The investment income accruing to policyholders and contributors is discussed is paragraphs 11.75-11.79. The transfers associated with these schemes are discussed in paragraphs 12.25-12.39 and 13.23.

A6c.6. Cross-border insurance is particularly common in specialized areas such as reinsurance and high-value items

such as insurance of ships and aircraft. For some small economies, the small size of their risk pool means that a wider range of items tends to be insured with nonresidents. With international mobility of population, life insurance and pensions can also occur cross-border on a significant scale.

B. Nonlife insurance

Reference:
1993 SNA Rev. 1, Chapter 17 Cross-Cutting and Other Special Issues, Part 1

1. Types of nonlife insurance

A6c.7. Types of nonlife insurance include accident and health; term life; marine, aviation and other transport; fire and other property damage; pecuniary loss; general liability; and credit insurance.

A6c.8. Direct insurance is between an insurance company and the public. Reinsurance is defined as insurance where both parties to the policy are providers of insurance services. That is, reinsurance allows insurance risk to be transferred from one insurer to another. Many insurers act as both direct insurers and reinsurers. There may be chains of transferring risk, from insurer to reinsurer to secondary reinsurer and so on. Reinsurance companies and their policyholders are often residents of different economies because of the specialized functions of reinsurance and the objective to spread risk. A direct insurer may pass on an entire set of risks (i.e., the direct insurer is like a retailer), a proportion of risks, or pass on the risk of claims being more than a specified amount (for example, due to a catastrophic loss) to a reinsurer. Because it is often used as protection against exposure to large losses, reinsurance is particularly likely to be subject to lumpy transactions.

A6c.9. The principles for measurement of reinsurance and direct insurance services are the same. They are shown as separate items on a supplementary basis, as can other components such as auxiliary services and standardized guarantees.

A6c.10. Freight insurance is a form of nonlife insurance that raises particular issues for valuation of goods. Like freight transport, as discussed in paragraph 10.114, the identification of who pays the insurance and whether it is included in the price of the good is determined by the FOB valuation concept.

A6c.11. Nonlife insurance is distinguished from life insurance in that it pays benefits only if an insured event occurs. That is, nonlife insurance is designed primarily for pooling risk, rather than as an investment. For that reason, nonlife insurance claims and net premiums are recorded as transfers, while the equivalents for life insurance are recorded in the financial account. In contrast to life insurance, term life insurance benefits are only payable on the death or incapacity of the insured, and so term life insurance is included in nonlife insurance.

2. Role of reserves in insurance

A6c.12. Insurance policies are paid in advance, while claims are only paid after the insured events happen, sometimes much later. Insurance technical reserves represent the amounts identified by insurance companies to account for these prepayments of premiums and claims incurred but not yet paid. That is, reserves can be seen as the application of usual accrual accounting principles. Reserves for claims reported but not yet resolved, and

estimates of claims incurred but not yet reported are correctly included, as they relate to insurable events that have already occurred.

A6c.13. Insurance corporations in some economies, may also set aside other reserves, such as amounts to cover fluctuations in claims between periods (e.g., the increase in claims in the event of a natural disaster). However, if there is no entitlement by any counterparty to these reserves, they cannot be recognized as an asset of the policyholders.

A6c.14. Insurance technical reserves are defined as a financial instrument in paragraph 5.62. They are always liabilities of insurance corporations and assets of their policyholders and other beneficiaries. They are classified as other investment in the functional classification, see paragraph 6.61. More details are provided on recording them in the IIP in paragraphs 7.63-7.67, and the financial account in paragraphs 8.46-8.49.

A6c.15. Insurance companies hold assets to meet the liabilities represented by the reserves. The management of these financial and nonfinancial assets is an integral part of the business of insurance. The income generated by these investments has a considerable influence on the level of premiums that insurance enterprises need to charge (indeed, in some cases, they have allowed claims to exceed premiums). Consequently, the income earned on the investment of the reserves is treated as being receivable by the policyholders who are then treated as paying it back to the insurance enterprises as premium supplements.

3. Value of insurance service output

A6c.16. Premiums and investment income represent the inflow of resources to the insurance company, while the claims due are the resources allocated to the policyholders. The margin between these inflows and outflows is the amount available to the insurance company to cover its costs and provide an operating surplus. This margin represents the value of insurance services provided.

A6c.17. The value of output of nonlife insurance services can be expressed with the following formula:

Gross premiums earned;

\+ Premium supplements;

\- Claims payable;

\- Adjustment for claims volatility, if necessary.[1]

[1] Alternatively, the formula can be expressed as:

Gross premiums earned;
\+ Premium supplements;
\- Expected claims

where expected claims are based on longer term measures of claims, taking out the effects of volatility.

The formula can also be expressed in terms of payments:

Gross premiums paid;
\+ Premium supplements;
\- Claims paid;
\- Net increase in technical reserves (including reserves for claims volatility).

(continued)

a. Gross premiums earned

A6c.18. Gross premiums earned refers to those parts of the premiums payable in the current or previous periods that cover the risks incurred during the accounting period. Premiums earned are on an accrual basis, so differ from premiums received because insurance policies are usually paid in advance. In the case of a reinsurer accepting risks on proportional reinsurance contracts, gross premiums earned are recorded after deducting the reinsurance commissions payable to the direct insurer. Similarly, other gross premiums should be calculated by deducting any rebates payable to the policyholder.

A6c.19. Insurance premiums are normally paid in advance, so a measure on an accrual basis differs from premiums paid by the deduction of prepayments for insurance cover in future periods and adds back cover for the current period that was prepaid in previous periods.

b. Premium supplements

A6c.20. Investment income earned on the assets invested to meet insurance companies' provision liabilities is attributable to insurance policyholders. The income is recorded in the primary income account as discussed in paragraphs 11.75-11.79 and A6c.27. The same value is then treated as being paid back to the insurance companies as premium supplements. Premium supplements are added to premiums in the calculation of the value of insurance services, as shown in Box A6c.1.

c. Claims payable

A6c.21. Claims payable are claims for events that occurred within the accounting period. Claims payable include claims actually payable within the accounting period plus changes in the reserves against outstanding claims. That is, claims on an accrual basis are recognized as due when an event takes place that gives rise to a valid claim, whether or not paid, settled, or reported during that period.

d. Adjustments for claims volatility

A6c.22. Adjustments for claims volatility should be included in the calculation for lines of insurance subject to fluctuations. For example, major catastrophes such as earthquakes and hurricanes may be expected to occur, on average once in each several years. If only claims incurred during a single accounting period are used in the formula, the resulting values of insurance services could be erratic, and even negative in catastrophic periods, and so are an inadequate measure of the production and pricing of insurance. In such cases, an adjustment to claims due should be made, to reflect a longer term view of claims behavior, in line with insurance decision-making.. In periods when large values of claims are incurred, the adjustment would be negative (thus, causing an increased value of the service), while in other periods, the adjustment would be positive (thus, reducing the value of the service). However, for some types of insurance, there is limited volatility and no adjustment is necessary.

A6c.23. The adjustments for claims volatility show the difference between

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where the technical reserves account for prepayments of premiums and delays in paying out claims as well taking out the effects of volatility.

See Box A6c.1 for a numerical example of these calculations.

actual claims in a particular period and a normally expected level of claims. The expected level of claims may be calculated according to one of the following methods:

(a) 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. It replicates 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;

(b) The **accounting approach** is based on changes in insurers' equalization reserves and changes in own funds to account for the volatility of claims. In contrast to the expectation approach, the accounting approach uses ex-post data, thus observed claims incurred. 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. Practices for calculation of equalization reserves vary, so they may not be sufficient to cover all volatility in claims; or

(c) The **sum of costs plus "normal" profit** approach consists in obtaining a measure of output as the sum of costs plus an estimate of "normal" profit. The estimate of "normal" profit generally implies the use of smoothed past actual profits. Thus this approach is, in practice, similar to the expectation approach. "Normal" profit is indeed equal to premiums + adjusted premium supplements – adjusted claims – costs.

e. Reinsurance

A6c.24. The output of reinsurance is measured in a way similar to that for direct nonlife insurance. However, there are some payments peculiar to reinsurance. These are commissions payable to the direct insurer under proportionate reinsurance and profit sharing in excess of loss reinsurance. Once these are taken into account the output of reinsurance can be calculated as:

Total actual premiums earned less commissions payable;

\+ Premium supplements;

\- Adjusted claims incurred;

\- Profit sharing.

Box A6c.1 Numerical Example of Calculations for Nonlife Insurance

1. Basic information

This example covers policies of resident insurers with nonresident policyholders; the same principles apply for nonresident insurers with resident policyholders, although the availability of data is less in practice, as discussed so that ratios may be needed for some items, as discussed in Box 10.2.

Gross premiums receivable from abroad—135
- Gross premiums received from abroad—150
- Reserves relating to prepayments—beginning of period—40
- Reserves relating to prepayments—end of period—55
- Net increase in reserves relating to prepayments—15

Investment income attributable to nonresident policyholders—8

Claims payable abroad—160
- Claims paid to abroad—155
- Reserves relating to claims incurred—beginning of period—10
- Reserves relating to claims incurred—end of period—15
- Net increase in reserves for claims incurred but not paid—5

Adjustment for volatility in claims payable—-40
- (i.e., expected long-term level of claims would be 120, that is 160 - 40)

2. Derived items

Goods and services account:
Insurance service (credits)
= gross premiums receivable plus premium supplements less expected claims (i.e., expected claims is derived as actual claims payable plus adjustment for volatility
= 135 + 8 – 120
= 23
(Note: not taking into account the volatility would lead to a negative value of services: -17)

Primary income account:
Investment income attributable to policyholders (debits) = 8

Secondary income account:
Net premiums receivable (credits)
= gross premiums receivable less service = 135 + 8 – 23 = 120
Claims payable (debits) = 160

Financial account:
Insurance reserves (increase in liabilities to policyholders)—20 (= 15 + 5)
Currency and deposits (increase in assets of resident insurers)— -5 (= 150 - 155)

IIP—Liabilities
Insurance reserves (prepayments and claims incurred)—beginning of period—50 (= 40 + 10)
Insurance reserves (prepayments and claims incurred)—end of period—70 (= 55 + 15)

4. Exports and imports of insurance services

A6c.25. The formula for total production of insurance services stated in paragraph A6c.17 includes elements that may only be able to be observed by insurers in aggregate. For exported and imported insurance services, which represent the output provided to a subset of policyholders, additional methods are required to allocate totals.

A6c.26. Usually, ratios will be able to be used to make estimates. The case of imports is particularly difficult, as the insurance companies are not residents in the economy of compilation and so data collection is constrained. In each case, the objective is to find a result consistent with the overall method, after taking into account which information is available in the circumstances. Possible methods are discussed in paragraph 10.109 and Box 10.2.

5. Investment income attributable to insurance policyholders (primary income account)

A6c.27. Investment income earned on the assets invested to meet insurance companies' provision liabilities is attributable to insurance policyholders. The income is recorded in the primary income account as discussed in paragraphs 11.75-11.79. The same value is then treated as being paid back to the insurance companies as premium supplements in the calculation of the value of insurance services, as shown in paragraph A6c.20 and Box A6c.1 (and consequently increases the value of net premiums, which is gross premiums less the value of insurance services).

6. Net insurance premiums (secondary income account)

A6c.28. Net insurance premiums are gross premiums earned less the service charge. (Gross premiums were discussed in paragraph A6c.18 in the context of deriving the service charge.) Net insurance premiums are shown as current transfers. They are discussed in paragraphs 12.34-12.35.

7. Claims receivable/payable (secondary income account)

A6c.29. Claims incurred during the period are generally shown as current transfers. They are discussed in paragraphs 12.37-12.39 and in paragraph A6c.21 in the context of deriving the service charge. In exceptional cases, they may be classified as capital transfers, as discussed in paragraph 13.23. The stock of claims outstanding is recognized as a financial asset/liability and is shown in the international investment position (see paragraphs 5.62 and 7.62-7.63).

C. Life Insurance

Reference:
1993 SNA Rev. 1, Chapter 17 Cross-Cutting and Other Special Issues, Part 1.D

A6c.30. Life insurance is distinguished from nonlife insurance in paragraph A6c.11 above. Life insurance involves a stream of payments by the policyholder in return for a lump sum at the end of the policy. Annuities are the reverse, where a stream of payments is made by the insurer in return for a lump sum at the beginning of the policy. Both direct insurance and reinsurance also exist for life insurance and annuities.

A6c.31. The principles for the measurement of life and nonlife insurance are similar. However, in the case of life insurance, the net premiums and payments of claims are recorded in the financial account, rather than the secondary income account. This treatment follows from the role of life insurance as paying as benefits even without an insured event occurring, and therefore operating mainly as a way for policyholders to build assets; in contrast nonlife insurance operates to redistribute costs among policyholders by transfers. Because life insurance is based on managing large values of assets, the premium supplements can be relatively large.

A6c.32. The value of output of life insurance services can be expressed with the following formula:

Gross premiums;

\+ Premium supplements;

\- Benefits due;

\- Increases in actuarial reserves and reserves for with-profits insurance.

A6c.33. The item for actuarial reserves in the formula for life insurance reflects the amounts that are payable at the end of the policy, rather than as claims in the current period. They are shown as accruing to particular policyholders because they consist of allocations to the actuarial reserves and reserves for with-profits insurance policies to build up the sums guaranteed under these policies. Changes in the actuarial reserves and reserves for with-profits insurance include the provision made for bonuses payable in future.

A6c.34. In the case of annuities, the same principles apply, but the calculation is different because of the opposite cash flow, and is elaborated in *1993 SNA Rev.1* Chapter 17 Cross-Cutting and Other Special Issues.

A6c.35. In the current account, as well as services, life insurance gives rise to investment income attributable to policyholders, as discussed in paragraphs 11.75-11.79, of equivalent value to premium supplements. For life insurance, net premiums and benefits are shown as increases and reductions in insurance reserves in the financial account. (In contrast, for nonlife insurance, net premiums and claims are shown as transfers.)

A6c.36. Life insurance technical reserves are defined as a financial instrument in paragraph 5.63. They are classified as other investment in the functional classification, see paragraph 6.61. More details are provided on recording them in the IIP in paragraphs 7.62-7.63, the financial account in paragraph 8.48, and other changes in volumes in paragraph 9.17.

D. Pension Schemes

Reference:
1993 SNA Rev. 1, Chapter 17 Cross-Cutting and Other Special Issues, Part 2.J

A6c.37. Pension schemes include those operated with an autonomous fund as well as funds that are not separate units and unfunded pension schemes. Pensions may be provided by social security schemes, employer-related schemes other than social security, and social assistance schemes.

A6c.38. Social contributions to social security schemes are dealt with in paragraphs 12.25-12.28. Social benefits under social security and social assistance schemes are dealt with in paragraph 12.33. These schemes operate through transfers, and do not have financial account entries because an obligation to pay is not recognized. For further information on social security and social assistance schemes, and for employer-related schemes through social security schemes, see *SNA Rev. 1* Chapter 17. The remainder of this appendix deals with employer-related schemes other than social security.

A6c.39. Pension funds are defined as an institutional subsector in paragraphs 4.82-4.83. Pension entitlements are defined as a financial instrument in paragraphs 5.64-5.65. These entitlements may be liabilities of pension funds or unfunded schemes. They are classified as other investment in the functional classification, see paragraph 6.61. The valuation of pension entitlements in the IIP is discussed in paragraph 7.64. Financial account entries are discussed in paragraph 8.49. Changes to pension entitlements as a result of changes in demographic assumptions and the conditions of the scheme are shown as other changes in volume and are discussed in paragraph 9.17.

A6c.40. There may be explicit or implicit service charges for pension schemes. The implicit charges are measured in a comparable way as that for life insurance and annuities, namely:

Gross contributions;

\+ Contribution supplements;

\- Benefits payable;

\- Changes in pension entitlements.

A6c.41. Investment income is attributable to beneficiaries of pension schemes, similarly to investment income attributable to insurance policyholders, as discussed in paragraphs 11.75-11.79. For defined contribution schemes, it is measured in the same way as the investment income attributable to insurance policyholders. For defined benefit schemes, it is an actuarial measure of the increase in entitlements during the period as a result of changes in age, salaries, years of service, etc.

A6c.42. Social contributions are the amounts payable to pension schemes. They are discussed in paragraphs 12.25-12.29. Social benefits are the amounts payable to the beneficiaries, and are discussed in paragraph 12.33. In the *SNA*, social contributions are viewed as both transfers and an investment in the scheme; similarly, social benefits are viewed as both transfers and a withdrawal of investment from the scheme. These different views require an entry for change in pension entitlements, discussed in paragraphs 12.31-12.32.

E. Standardized Guarantees

Reference:
1993 SNA Rev. 1, Chapter 17 Cross-Cutting and Other Special Issues, Part 3

A6c.43. Standardized guarantees are issued in large numbers along similar lines. Examples include export credit

guarantees and student loan guarantees. Standardized guarantees are contrasted with other guarantees in paragraph 5.66. The guarantors are usually general government units or financial corporations. Because the guarantor provides large numbers of guarantees, it is possible to estimate the risk of default. A guarantor operating on a commercial basis will charge fees, meet claims, and earn investment income in a way parallel to nonlife insurance, and the value of services, income, and provisions are calculated in the same way as described for nonlife insurance in Section B of this appendix.

A6c.44. Provisions for calls under standardized guarantees are defined as a financial instrument, and contrasted with one-off guarantees and financial derivatives in paragraph 5.66. They are classified as other investment in the functional classification, see paragraph 6.61. Changes to provisions for calls under standardized guarantee schemes not resulting from transactions are shown as other changes in volume and are discussed in paragraph 9.17.